



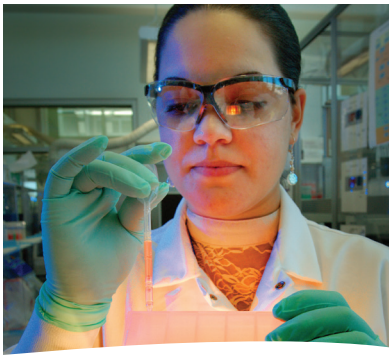

Fourth National Report on Human Exposure to Environmental Chemicals

Updated Tables, March 2021

Volume One: NHANES 1999-2010







U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

General Information

Overview of the Fourth National Report on Human Exposure to Environmental Chemicals: Updated Tables, March 2021

The *Fourth National Report on Human Exposure to Environmental Chemicals: Updated Tables, March 2021* (the *Updated Tables, March 2021*) presents nationally representative, cumulative biomonitoring data gathered from 1999–2000 through 2015–2016. It includes all the data from each of the previous *National Reports on Human Exposure to Environmental Chemicals* and each of the previous *Updated Tables* (collectively, the *Report* and *Updated Tables*).

In each survey period, the reported chemicals or their metabolites were measured in blood, serum, and urine samples from random subsamples of the National Health and Nutrition Examination Survey (NHANES). These subsamples typically consisted of about 2,500 participants – exact numbers are included in the tables. Survey data and samples are collected by the Centers for Disease Control and Prevention (CDC) National Center for Health Statistics. CDC's Environmental Health Laboratory (Division of Laboratory Sciences (DLS), National Center for Environmental Health) used mass spectrometry methods to obtain the blood, serum, and urine exposure measurements presented in the *Report* and *Updated Tables*.

The term *environmental chemical* refers to a chemical compound or chemical element present in air, water, food, soil, dust, or other environmental media (e.g., consumer products). Biomonitoring is the assessment of human exposure to chemicals by measuring the chemicals or their metabolites in human specimens such as blood or urine. A metabolite is a chemical alteration of the original compound produced by body tissues. Blood, serum, and urine levels reflect the amount of the chemical that gets into the body by all routes of exposure, including ingestion, inhalation, and dermal absorption. The measurement of an environmental chemical in a person's blood or urine is a measure of exposure; it does not by itself mean that the chemical causes disease or an adverse effect. Research studies, separate from these data, are required to determine which blood or urine levels are safe and which are associated with disease or an adverse effect.

The *Report* and *Updated Tables* provide geometric means and percentiles of environmental chemicals by age group, gender, and race/ethnicity for blood, serum, and urine levels measured in individual samples. For serum levels measured in pooled samples, weighted arithmetic means, and unadjusted standard errors are provided for categories defined by race/ethnicity, gender, age group, and survey years. More in-depth statistical analysis, including multivariate analysis incorporating health endpoints and other predictive variables, is beyond the scope of this document. We encourage scientists to examine the data further through analysis of the raw data available at https://www.cdc.gov/nchs/nhanes/.

The *Updated Tables* has been reorganized and expanded into four volumes. Data on the general U.S. population from NHANES 1999–2000 through 2015–2016 is now divided chronologically into Volumes One and Two.

- **Volume One: NHANES 1999-2010** provides data on the general U.S. population from NHANES 1999–2000, 2001–2002, 2003–2004, 2005–2006, 2007–2008, and 2009–2010.
- **Volume Two: NHANES 2011-2016** provides data on the general U.S. population from NHANES 2011-2012, 2013–2014, and 2015-2016.

The table titles include the survey periods for which data are displayed in that table. Of note, not all chemicals have data for all survey cycles.

Data for chemicals measured in pooled samples and data from special samples are now found Volumes Three and Four.

- **Volume Three: Analysis of Pooled Serum Samples for Select Chemicals, NHANES 2005-2016** provides data for chemicals measured in pooled samples from NHANES 2005–2006, 2007–2008, 2009–2010, 2011-2012, 2013–2014, and 2015-2016. Some of these chemicals were previously measured in individual samples from the general U.S. population; these data can be found in Volume One: NHANES 1999-2010.
- **Volume Four: Analysis of Chemicals Found in Cigarette Smoke in a Special Sample of U.S. Adults, NHANES 2011-2016** provides data for a sample of adult cigarette smokers and nonsmokers from NHANES 2011-2012, 2013–2014, and 2015-2016. The Special Sample was created to determine the effectiveness of tobacco product standards under The Family Smoking Prevention and Tobacco Control Act of 2009. Of note, the age for eligibility in the Special Sample decreased from 20 years and older in NHANES 2011–2012 to 18 years and older in NHANES 2013–2014 and 2015–2016 (NHANES lowered the age for asking the smoking questions in 2013).

The *Updated Tables, March 2021* provides data for more than 400 chemicals, of which 73 are reported for the first time or measured in a new matrix and 108 have been updated since the *Updated Tables, January 2019*. Hyperlinks to biomonitoring summaries that have information about a specific chemical or chemical group can be found in the footnotes for many data tables. Several tables also contain a link to a factsheet about the chemical or chemical group within the footnotes. Two appendices are updated to include information pertinent to the chemicals reported in the *Updated Tables, March 2021* (Appendix C. Limit of Detection Table; Appendix D. References for Biomonitoring Methods).

The National Report on Human Exposure to Environmental Chemicals website is the best resource for updates of available data. It includes the document, "Chemicals in the Fourth Report and Updated Tables," which is a complete list of the chemicals in *Updated Tables, March 2021.* The *Fourth National Report on Human Exposure to Environmental Chemicals, 2009*, can also be downloaded from this website.

Public Health Uses of the *Report* and *Updated Tables*

The overall purpose of the *Report* and *Updated Tables* is to provide specific information to scientists, physicians, and health officials to help prevent exposure to environmental chemicals. Some public health uses of the exposure information in the *Report* and *Updated Tables* include the following:

- To determine which chemicals are getting into U.S. residents and at what concentrations.
- To determine the prevalence of people with levels of chemicals above known toxicity levels (e.g., blood lead level greater than or equal to a specific concentration).
- To determine the prevalence of people with levels of chemicals that put them at increased risk for toxicity.
- To establish reference ranges that physicians and scientists can use to determine whether a person or group has an unusually high exposure. (This information is especially helpful to identify population groups that merit further assessment of exposure sources or health effects.)
- To assess the effectiveness of public health efforts to reduce exposure of U.S. residents to specific chemicals.
- To determine whether exposure levels are higher among potentially vulnerable groups, such as minorities and children.
- To track trends in levels of exposure of the population.
- To set priorities for research on human health effects.

What's New and Different?

The *Updated Tables, March 2021* includes chemicals that have results available from the NHANES survey periods 1999–2000 through 2015–2016.

Updated Tables in Four Volumes

The *Updated Tables, March 2021* has been reorganized and expanded into **four volumes**, each a separate document. Data for chemicals measured in individual samples from the general U.S. population are found in Volumes One and Two. Other types of data, such as measurements in pooled samples or from special subsets of the NHANES population, are in Volumes Three and Four. The format of each document is compliant with Section 508 Accessibility requirements to assist visually impaired users.

Volumes are organized chronologically, with **Volume One** containing data from NHANES 1999-2010 and **Volume Two** containing data from NHANES 2011-2016. Within each volume, chemical groups and their analytes are listed in a navigable table of contents on the left side pane.

As an example, if users are interested in blood lead data from NHANES 2013-2014, they would open Volume Two, scroll down to the "Metals and Metalloids" section within the navigable table of contents in the left side pane, expand the section, select "Lead," and then find the rows containing summary data for NHANES 2013-2014. Users interested in analyzing trends in biomonitoring data may wish to access tables in both volumes, which together contain all the years of available data for the general U.S. population.

Volume Three: Analysis of Pooled Serum Samples for Select Chemicals, NHANES 2005-2016 presents data tables for persistent organic pollutants and pesticides that were measured in pooled samples. Data tables for these chemicals that are based on individual samples can be found in Volume One: NHANES 1999-2010.

Volume Four: Analysis of Chemicals Found in Cigarette Smoke in a Special Sample of U.S. Adults, NHANES 2011-2016 presents data for a sample of adult cigarette smokers and nonsmokers from NHANES 2011-2012 through 2015-2016.

New Chemicals

Chemicals reported for the first time and those measured in a new matrix include:

- Adducts of hemoglobin in the general population and in a special sample of adult smokers and nonsmokers
    - Formaldehyde
- Urinary tobacco alkaloids and metabolites in the general population and in a special sample of adult smokers and nonsmokers
    - Anabasine
    - Anatabine
    - Cotinine
    - Cotinine-n-oxide
    - Hydroxycotinine
    - Trans-3'-hydroxycotinine
    - 1-(3-Pyridyl)-1-butanol-4-carboxylic acid
    - Nicotine
    - Nicotine-N'-oxide

    - Nornicotine
- Urinary tobacco-specific nitrosamines (TSNAs)
    - N'-Nitrosoanabasine (NAB)
    - N'-Nitrosoanatabine (NAT)
    - N'-Nitrosonornicotine (NNN)
- Urinary volatile N-nitrosamine compounds (VNAs) in the general population and in a special sample of adult smokers and nonsmokers
    - N-Nitrosodiethylamine (NDEA)
    - N-Nitrosoethylmethylamine (NMEA)
    - N-Nitrosomorpholine (NMOR)
    - N-Nitrosopiperidine (NPIP)
    - N-Nitrosopyrrolidine (NPYR)
- Urinary flame retardants
    - Dicresyl phosphates (DCPs)
- Urinary insect repellent and metabolites
    - 3-(Ethylcarbamoyl) benzoic acid (ECBA)
- Urinary neonicotinoids
    - Acetamiprid
    - Clothianidin
    - N-desmethylacetamiprid
    - 5-hydroxyimidacloprid
    - Imidacloprid
    - Thiacloprid
- Urinary per- and polyfluoroalkyl substances (PFAS)
    - Perfluorobutanoic acid (PFBA)
    - Perfluorobutane sulfonic acid (PFBS)
    - Perfluorodecanoic acid (PFDA)
    - Perfluoroheptane sulfonic acid (PFHpS)
    - Perfluoroheptanoic acid (PFHpA)
    - Perfluorohexane sulfonic acid (PFHxS)
    - Perfluorohexanoic acid (PFHxA)
    - Perfluorononanoic acid (PFNA)
    - N-perfluorooctanoic acid (n-PFOA)
    - Branched perfluorooctanoic acid isomers (Sb-PFOA)
    - N-perfluorooctane sulfonic acid (n-PFOS)
    - Branched perfluoromethylheptane sulfonic acid isomers (Sm-PFOS)
    - Perfluoropentanoic acid (PFPeA)
    - Perfluoroundecanoic acid (PFUnDA)
    - 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)
    - Adona (ammonium salt of 4,8-dioxa-3H-perfluorononanoic acid)
    - GenX (ammonium salt of 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (HFPO-DA))
- Serum sex steroid hormones
    - Estradiol
    - Sex hormone-binding globulin (SHBG)
    - Total testosterone
- Urinary volatile organic compound (VOC) metabolites

    - N-Acetyl-S-(1-cyano-2-hydroxyethyl)-L-cysteine
    - N-Acetyl-S-(2-hydroxy-3-methyl-3-buten-1-yl)-L-cysteine + N-Acetyl-S-[1-(hydroxymethyl)-2-methyl-2-propen-1-yl]-L-cysteine
    - N-Acetyl-S-(4-hydroxy-2-methyl-2 buten-1-yl)-L-cysteine
- Serum aldehydes in the general population and in a special sample of adult smokers and nonsmokers
    - Benzaldehyde
    - Butyraldehyde
    - Crotonaldehyde
    - Decanaldehyde
    - Heptanaldehyde
    - Hexanaldehyde
    - Isopentanaldehyde
    - Nonanaldehyde
    - Octanaldehyde
    - Pentanaldehyde
    - Propanaldehyde
    - O-Tolualdehyde
- Urinary aromatic amines in the general population and in a special sample of adult smokers and nonsmokers
    - 4-Aminobiphenyl
    - 1-Aminonaphthalene
    - 2-Aminonaphthalene
    - O-Anisidine
    - 2,6-Dimethylaniline
    - O-Toluidine
- Urinary aromatic diamines
    - 4,4'-Diaminodiphenylmethane (4MDA)
    - 1,5-Diaminonaphthalene (5NDA)
    - 2,4-Diaminotoluene (4TDA)
    - 2,6-Diaminotoluene (6TDA)
    - P-Phenylenediamine (PPDA)

Updated Data

Chemical groups with updated data in this release are:

- Adducts of Hemoglobin
- Tobacco Alkaloids and Metabolites
- Tobacco-Specific Nitrosamines
- Personal Care and Consumer Product Chemicals and Metabolites
- Flame Retardant Metabolites
- Herbicides and Metabolites
- Insect Repellent and Metabolites
- Organophosphorus Insecticides: Dialkyl Phosphate Metabolites
- Organochlorine Pesticides and Metabolites
- Polybrominated diphenyl ethers and PBB 153
- Dioxin-like Polychlorinated Biphenyls: mono-ortho-substituted PCBs

- Polychlorinated Biphenyls: Non-Dioxin-Like
- Metals and metalloids
- Perchlorate and Other Anions
- Phthalate and Phthalate Alternative Metabolites
- Volatile Organic Compound (VOC) Metabolites

Stratification by Cigarette Smoking Status

For the first time, summary statistics for chemicals within the following sections have been stratified by cigarette smoking status, which is defined as a serum cotinine concentration more than 10 ng/mL in adults participants from NHANES, excluding those who reported using other tobacco products.

- Tobacco alkaloids and metabolites
- TSNAs
- Aromatic amines

Change in the Population Sampled for Urinary Chemicals: NHANES 2015–2016

Beginning with the NHANES 2015–2016 survey period, the age for urine collection was lowered from age 6 years to age 3 years. This change was made to obtain data for younger children, a vulnerable population with limited urinary data. The urinary environmental chemicals are measured in a full sample (i.e., all children able to provide a urine specimen) of children 3 to 5 years old. For ages 6 years and older, the urinary environmental chemicals are measured in a representative one-third sample of participants.

The addition of ages 3 to 5 years to the survey population will mean that descriptive statistics (geometric mean, selected percentiles) for the total population and non-age-related demographic groups in NHANES 2015–2016 will not be directly comparable to descriptive statistics in earlier NHANES survey periods. This is because the populations sampled are not equivalent.

PFOS and PFOA Results for NHANES 2013–2014 and 2015–2016

Starting in 2013, we began measuring linear and branched isomers of both PFOS and PFOA and no longer measured total PFOS and total PFOA. Collectively, the isomers of each chemical represent more than 95% of what was previously reported as PFOS and PFOA. Data tables for each of the four isomers are also presented.

PFOS and PFOA are calculated by summing the linear and branched isomers for each participant before applying the appropriate sample weight. Because the 2013–2014 and 2015–2016 values are a calculated sum, there is no limit of detection (LOD) for PFOS and PFOA. See Calculation of PFOS and PFOA as the Sum of Isomers for more details. The calculated PFOS and PFOA results can be used to compare with previous measurements and to examine trends in the general U.S. population.

"What's New and Different" Archives

The "What's New and Different" sections from previous releases of *Updated Tables* are available in the archives from *Updated Tables* at: https://www.cdc.gov/exposurereport/.

Overview of Volume Three: Analysis of Pooled Serum Samples for Select Chemicals, NHANES 2005-2016

Background

In the National Biomonitoring Program, pooling samples to make chemical measurements is used to address:

- The need to improve the sensitivity of the measurement; that is, the chemical concentrations are so low that a larger sample volume is necessary to achieve lower limits of detection and greater likelihood of detectable results; and
- The need to reduce the number of samples analyzed, based on weighing the costs of the analysis against a low frequency of detectable results.

Pooled Samples in the *Updated Tables*

Volume Three of the *Updated Tables, March 2021* includes results for chemicals that were measured in samples created from pools of serum samples from NHANES 2005-2006, 2007-2008, 2009-2010, 2011-2012, 2013-2014, and 2015-2016. Some of these chemicals were previously measured in individual samples from the general U.S. population; these data can be found in Volume One: NHANES 1999-2010.

Overview of Sample Pooling

Beginning with NHANES 2005-2006, the CDC used a weighted pooled-sample design to measure serum concentrations of dioxins, furans, polychlorinated biphenyls (PCBs), organochlorine pesticides and metabolites, and the brominated flame retardants (polybrominated diphenyl ethers and the polybrominated diphenyl, PBB 153). In previous NHANES survey periods, measurements were made on individual serum samples from the U.S. population using stratified multistage selection.

Although NHANES sampling weights can be incorporated to make pooled sample estimates representative of the non-institutionalized U.S. population, there are statistical estimation challenges. Measurements of these chemicals in individuals tend to have a log-normal distribution with central tendency best estimated using a geometric mean. However, the measured value for a pooled sample is comparable to an arithmetic average of measurements in individuals. Consequently, the pooled sample result is expected to be higher than the geometric mean of multiple individual results. Another challenge is that direct calculation of the design effects required for accurate standard error and confidence interval estimation is not possible because samples are pooled across the design cells of the original survey. For these reasons, data tables showing the pooled sample results present only weighted arithmetic means and unadjusted standard errors for each category.

Interpreting the Data

The following cautions and suggestions apply to the pooled sample results and data tables:

a) Individual sample data, as explained above, tend to be log-normally distributed with central tendency best estimated using a geometric mean. Pooled data are comparable to an arithmetic mean of individual sample results and therefore, pooled data results are expected to be higher than the geometric mean of individual sample results. Therefore, the weighted arithmetic means from pooled samples are expected to be higher than the geometric means provided in the historical (companion) data tables or in other publications based on data provided on individual results.

b) The standard errors are unadjusted and therefore, do not reflect the design effects of the survey. In many cases, the standard errors are based on very few pooled sample measurements and cannot be expected to accurately reflect the true imprecision of the weighted arithmetic mean estimates. Therefore, when the unadjusted standard error was more than 30% of the weighted arithmetic mean, this is noted with a double asterisk (**) and footnoted.

Additional information about sample pooling is available from the following sources:

Geometric mean estimation from pooled samples (2007)

https://pubmed.ncbi.nlm.nih.gov/17618673/

Characterizing populations of individuals using pooled samples (2010)

https://pubmed.ncbi.nlm.nih.gov/19002216/

Use of pooled samples from the National Health and Nutrition Examination Survey (2012)

https://pubmed.ncbi.nlm.nih.gov/22492247/

Estimation of exposure distributions from pooled samples (2014)

https://pubmed.ncbi.nlm.nih.gov/25213192/

Overview of Volume Four: Analysis of Chemicals Found in Cigarette Smoke in a Special Sample of U.S. Adults, NHANES 2011-2016

Background

The Family Smoking Prevention and Tobacco Control Act of 2009 gave the Food and Drug Administration regulatory authority over tobacco products. In Section 907(a)[1], the Act states that the Secretary of Health and Human Services shall establish tobacco product standards. These product standards will include provisions for the testing of tobacco products. To determine the effectiveness of these product standards, surveillance systems need to be in place before the standards are enacted to determine their impact on exposure among people who continue to use tobacco products. NHANES is an ideal source of samples of clinical specimens from humans for assessing smokers in multiple locations around the country. NHANES will provide a robust dataset for identifying changes in exposure of smokers that follow enactment of tobacco product standards.

Special Sample in NHANES

Beginning with NHANES 2011-2012, a Special Sample was selected for measurement of certain groups of chemicals associated with tobacco smoke exposure. The Special Sample consists of: 1) a nationally representative sample of adults; and 2) all adults who reported being current cigarette smokers. For this sample, adults were defined as ages 20 years and older in 2011-2012 and 18 years and older beginning in 2013.

Cigarette smokers were defined by their responses to the Smoking-Cigarette Use (SMQ_G) questionnaire: "Have you smoked at least 100 cigarettes in your life?" (SMQ020=1), and then, confirmed that they smoke every day (SMQ040=1) or some days (SMQ040=2). The nonsmoker category was comprised of the remaining adults in the Special Sample who were not categorized as smokers of any tobacco products. Excluded from the nonsmoker category was any adult who reported that they used any of the following non-cigarette tobacco products: cigars; pipes; chewing tobacco; snuff; or nicotine patch, gum or other replacement product. This resulted in exclusion of 3.54% (weighted) from the total sample for NHANES 2011-2012, 4.85% (weighted) in NHANES 2013-2014, and 4.18% (weighted) in NHANES 2015-2016.

Too few adults reported use of non-cigarette tobacco products to allow separate categories for these products. We did not use serum cotinine concentrations to distinguish between smokers and nonsmokers because not all adults in the sample had results: for example, 4.17% (weighted) and 3.68% (weighted) of the 2011-2012 and 2013-2014 samples, respectively, were missing serum cotinine results. In 2013-2014 and 2015-2016 four additional non-cigarette tobacco products were included in the NHANES questionnaire, but in order to maintain consistency across surveys, users of these products were not included in the nonsmoker category in the later surveys. If these products had been included in the later surveys, the weighted percentages of subjects in the non-smoker category would have changed by only 1.3% and 2.0%, respectively, for the 2013-2014 and 2015-2016 surveys; and the smoker category would have changed by only 0.04% and 0.24%, respectively.

Results are displayed separately for adult cigarette smokers and nonsmokers. Each data table shows geometric mean and selected percentiles by three categories: total, age group (20-49 or 18-49 years, 50 years and older), and sex (male, female). Racial/ethnic categories are not presented because the sample sizes were too small to yield reliable estimates in one or more of the categories.

[1] https://www.fda.gov/tobacco-products/rules-regulations-and-guidance/section-907-federal-food-drug-and-cosmetic-act-tobacco-product-standards

Data Sources and Data Analysis

Blood, serum, and urine samples from NHANES

Biomonitoring measurements for CDC's *National Report on Human Exposure to Environmental Chemicals* and *Updated Tables* (referred to as the *Report* and *Updated Tables*, respectively) are made using samples from participants in the National Health and Nutrition Examination Survey (NHANES), conducted by CDC's National Center for Health Statistics (NCHS). NHANES is designed to collect data on the health and nutritional status of the U.S. population. NHANES collects information about a wide range of health-related behaviors, performs physical examinations, and collects clinical samples for laboratory tests. Beginning in 1999, NHANES became a continuous survey, sampling the U.S. population annually and releasing the data in 2-year cycles. The sampling plan follows a complex, stratified, multistage, probability-cluster design to select a representative sample of the civilian, noninstitutionalized population in the United States based on age, gender, and race/ethnicity.

The NHANES protocol includes a home interview, followed by a standardized physical examination in a mobile examination center. As part of the examination, blood is obtained by venipuncture from participants aged 1 year and older, and urine specimens are collected from participants aged 6 years and older. Starting with the 2015–2016 survey, urine specimens were collected from children ages 3–5 years. Additional detailed information on the design and conduct of the NHANES survey is available at https://www.cdc.gov/nchs/nhanes/.

NHANES measures environmental chemicals in blood, serum, or urine collected from participants. Most of the environmental chemicals are measured in randomly selected subsamples within specific age groups. Randomization of subsample selection is built into the NHANES design before sample collection begins. Different random subsamples include different participants. Subsampling is needed to ensure an adequate quantity of sample for analysis and the mass spectrometry analytical methods.

- Data tables in the *Report* and *Updated Tables* specify age groups and sample sizes for each exposure measurement.
- Blood measurements in children younger than 12 years are limited by the amount of blood that can be collected.
- Blood metals are measured in participants aged 1 year and older.
- Beginning in 2011, the blood mercury species methyl mercury and ethyl mercury were added.
- Most measurements of chemicals in serum are made in samples from participants ages 12 years and older.
- Urine was collected from participants ages 6 years and older until 2015, when it became possible to collect urine from children as young as 3 years.
- Most urine chemicals are measured in a representative one-third subsample, but a full sample is used for participants ages 3–5 years.

If a particular chemical or an entire chemical group has no detectable results for three survey periods, it is usually not measured in subsequent survey periods. Some examples include:

- The sulfonyl urea herbicide group was measured in NHANES 2003–2004, 2005–2006, and 2007–2008 with no detections, even at the 95th percentile, so this group is no longer measured in the ongoing survey.
- Mono-*n*-octyl phthalate (MOP), a phthalate urinary metabolite, was not detected above the 95th percentile for more than three survey cycles, so it was no longer reported after 2010.

- Several banned organophosphate and organochlorine pesticides have become largely undetectable and are no longer measured.
- Some chemicals are widely detected but have had unchanging levels in the population (e.g., phytoestrogens) and are no longer measured.

By discontinuing measurements of chemicals that are rarely or not detected, and well-characterized chemicals for which the source of exposure is consistent, CDC's Division of Laboratory Sciences can better focus its resources on assessing exposure to chemicals of highest priority. In addition to performing measurements on NHANES samples, these efforts include developing new and improving existing biomonitoring methods for chemicals of concern.

Beginning with NHANES 2005–2006, CDC used a weighted pooled-sample design to measure serum concentrations of dioxins, furans, polychlorinated biphenyls (PCBs), organochlorine pesticides and metabolites, and brominated flame retardants (polybrominated diphenyl ethers and polybrominated biphenyl [PBB] 153). Pooled samples are used when larger sample volumes are needed to improve the sensitivity of the measurements and to reduce the number of samples being analyzed, balancing the cost of the analysis against a low frequency of detectable results.

The following considerations guided the selection of chemicals in the *Report* and *Updated Tables*:

- Scientific data suggested exposure in the U.S. population.
- Health effects known or suspected to result from some levels of exposure were serious enough to cause concern.
- Data were needed to assess the effectiveness of public health actions to reduce exposure to a chemical.
- Biomonitoring analytical methods could provide results with adequate accuracy, precision, sensitivity, specificity, and throughput.
- Adequate blood or urine samples were available.
- Incremental analytical costs to perform the biomonitoring analysis for the chemical were reasonable.

The availability of biomonitoring methods with adequate performance and acceptable cost was a major consideration. Details on the prioritization process for scoring nominated chemicals and the resulting scores are available at: https://www.cdc.gov/exposurereport/chemical_selection.html.

Laboratory Analysis

CDC's Division of Laboratory Sciences made the blood, serum, and urine exposure measurements in the *Report* and *Updated Tables*. The following analytical techniques were used for measuring the environmental chemicals or their metabolites in blood, serum, and urine:

- Isotope dilution mass spectrometry
- Inductively coupled plasma mass spectrometry
- Graphite furnace atomic absorption spectrometry

Laboratory measurements underwent extensive quality control and quality assurance review:

- Tolerance limits for operational parameters were maintained.
- Quality control samples were measured in each analytical run to detect unacceptable performance in accuracy or precision.
- Traceable calibration materials were verified.

Appendix D lists references for the analytical methods used to measure the different chemicals.

Data Analysis

NHANES is a complex, stratified, multistage, probability-cluster design survey. This survey design requires sample weights to be used to adjust for the unequal probability of selection into the survey. Sample weights are also used to adjust for possible bias resulting from nonresponse and are post-stratified to U.S. Census Bureau estimates of the U.S. population. Data were analyzed using Statistical Analysis System (SAS) (SAS Institute Inc.) and the SUDAAN (RTI International, NC) statistical software packages. SUDAAN uses sample weights and calculates variance estimates that account for the complex survey design. The design does not permit straightforward analysis of exposure levels by non-targeted strata such as locality, state, or region; seasons of the year; proximity to sources of exposure; or by use of particular products. NCHS guidelines for analysis of NHANES data are available at https://wwwn.cdc.gov/nchs/nhanes/analyticguidelines.aspx.

The *Report* and *Updated Tables* present descriptive statistics on the blood, serum, or urine levels for each environmental chemical reported. Statistics include unadjusted geometric means and percentiles with confidence intervals. In each table, results are given for the total population and by age group, gender, and race/ethnicity, as defined in NHANES. For these analyses, based on the sample design, race/ethnicity is categorized as Mexican American, non-Hispanic black, and non-Hispanic white. Beginning in 2011–2012, two additional categories were added: all Hispanic and non-Hispanic Asian (referred to as Asian in the tables). Other racial/ethnic groups are sampled, but the proportion of the total U.S. population represented by other racial/ethnic groups is not large enough to produce valid estimates. Other racial/ethnic groups are included in estimates that are based on the entire population sample. Age groups are as described for each chemical in each data table. Gender is coded as male or female.

Units

For chemicals measured in urine, levels are presented per volume of urine and per gram of creatinine. Urinary levels are expressed both ways in the literature and used for different purposes. Levels per gram of creatinine (i.e., creatinine corrected) adjust for urine dilution. For example, a person who drinks more fluids than another person will likely have a higher, but more dilute, urine output. Interpretation of creatinine-corrected results should also recognize that creatinine correction can partially adjust for differences in lean body mass or renal function among persons. Children and young adolescents typically have less muscle mass than adults. Because muscle is an important source of creatinine in urine, children have lower urinary creatinine concentrations than do adults. The lower urine creatinine concentration can result in higher creatinine-corrected results in children in comparison with adults.

For dioxins, furans, PCBs, and organochlorine pesticides, serum levels are presented per gram of total lipid and per whole weight of serum. These compounds are lipophilic and concentrate in the body's lipid stores, including the lipid in serum. Serum levels reported per gram of total lipid reflect the amount of these compounds stored in body fat. Serum levels per whole weight of serum are also included for easier comparison with studies investigating exposure to these chemicals that reported levels in these units. Other, mostly non-lipophilic chemicals, measured in serum are expressed per liter of serum (e.g., micrograms per liter). Hemoglobin adducts are expressed in nanomoles or picomoles per gram of blood hemoglobin.

Results are reported in standard units, generally conforming to those most commonly used in biomonitoring measurements. The table below shows some useful unit conversions.

Table: Units of measurement and abbreviations

Unit	Abbreviation	Value
liter	L	--
deciliter	dL	10^{-1} liters
milliliter	mL	10^{-3} liters
gram	g	--
milligram	mg	10^{-3} grams
microgram	µg	10^{-6} grams
nanogram	ng	10^{-9} grams
picogram	pg	10^{-12} grams
femtogram	fg	10^{-15} grams

Geometric means

A geometric mean gives a better estimate of central tendency for data that are distributed with a long tail at the upper end of the distribution. This type of distribution is common when measuring environmental chemicals in blood or urine. The geometric mean is influenced less by high values than is the arithmetic mean. In the *Report* and *Updated Tables*, geometric means are calculated by taking the log of each concentration and then using SUDAAN software to compute the weighted mean of those log-transformed values. Ninety-five percent confidence intervals around the weighted mean are calculated by adding and subtracting an amount equal to the product of a Student's *t*-statistic and the standard error of the weighted mean estimate. The degrees of freedom of the *t*-statistic was determined by subtracting the number of strata from the number of primary sampling units, according to the data available from the complex survey design. The standard error was computed with SUDAAN's PROC DESCRIPT procedure and "with replacement" design option (design = WR), with Taylor series linearization used for variance estimation. The weighted geometric mean and its confidence limits were obtained by taking the antilog of this weighted mean and its upper and lower confidence limits.

The measured value for a pooled sample is comparable to an arithmetic average of measurements in individuals. Consequently, the pooled sample result is expected to be higher than the geometric mean of multiple individual results. In addition, direct calculation of the design effects required for accurate standard error and confidence interval estimation is not possible because samples are pooled across the design cells of the original survey. For these reasons, data tables showing the pooled sample results present only weighted arithmetic means and unadjusted standard errors for each category. The standard errors are unadjusted and therefore, do not reflect the design effects of the survey. In many cases, the standard errors are based on very few pooled sample measurements and cannot be expected to accurately reflect the true imprecision of the weighted arithmetic mean estimates. Therefore, when the unadjusted standard error was more than 30% of the weighted arithmetic mean, this is noted with a double asterisk (**) and footnoted.

Limit of detection

The limit of detection (LOD) is the level at which the measurement has a 95% probability of being greater than zero (Taylor, 1987). In the *Updated Tables*, the LODs for each chemical and survey period are provided in a footnote to each data table and collectively in Appendix C. Concentrations less than the LOD are assigned a value equal to the LOD divided by the square root of two for calculation of geometric means (Hornung and Reed, 1990). Assigning concentrations less than the LOD a value equal to the LOD divided by the square root of two made little difference in geometric mean estimates. If the proportion of results below the LOD was greater than 40%, geometric means were not calculated. For the same chemical, LOD values sometimes change over time as a result of improvements to analytical

methods. One possible consequence is that results reported as "< LOD" in the 1999–2000 data might be reported as a concentration value above the LOD in 2001–2002 or 2003–2004 because the analytical method had improved. Thus, for proper interpretation of LODs in the data tables, care must be taken to use the LOD that applies to the survey period. Percentile estimates (see below) that are less than the LOD for the chemical analysis were reported as "< LOD."

For most chemicals, the LOD is constant for each specimen analyzed. Dioxins, furans, PCBs, organochlorine pesticides, and a few other pesticides are different: these have an individual LOD for each sample, mostly because the sample volume used for each analysis was different. A higher volume of the specimen results in a lower LOD (i.e., a better ability to detect low levels). The maximum LOD values are given in each data table and in Appendix C. The maximum LOD was the highest LOD among all samples analyzed. Typically, the mean LOD is about 40%–50% of the maximum LOD. The same procedure for imputing values below the LOD in calculations of geometric means was used for chemicals with individual LODs for each sample. Concentrations less than the individual LOD were assigned a value equal to the individual LOD divided by the square root of two. When reporting percentiles for chemicals with individual sample LODs, if any sample LOD in the demographic group was above the percentile estimate, then the percentile estimate was not reported.

For chemicals measured in urine, separate tables are presented for the chemical concentration expressed per volume of urine (uncorrected table) and the chemical concentration expressed per gram of creatinine (creatinine corrected table). Geometric mean and percentile calculations were performed separately for each of these concentrations. LOD calculations were performed using the chemical concentration expressed per volume of urine, because this concentration determines the analytical sensitivity. For this reason, LOD results for urine measurements in each data table and in Appendix C are in units of weight per volume of urine. In the creatinine corrected tables, a result for a geometric mean or percentile was reported as < LOD if the corresponding geometric mean or percentile was < LOD in the table using weight per volume of urine. For example, if the 50th percentile for males was < LOD in the table using weight per volume of urine, it would also be < LOD in the creatinine corrected table.

For chemicals measured in serum lipid, separate tables are presented for the chemical concentration expressed per volume of serum (lipid unadjusted or whole weight table) and the chemical concentration expressed per amount of lipid (lipid adjusted table). Geometric mean and percentile calculations were performed separately for each of these concentrations. LOD calculations were performed using the chemical concentration expressed per amount of lipid, because this concentration determines the analytical sensitivity. For this reason, LOD results for chemicals measured in each data table and in Appendix C are expressed in units of weight per amount of lipid. In the lipid unadjusted tables, a result for a geometric mean or percentile was reported as < LOD if the corresponding geometric mean or percentile was < LOD in the lipid adjusted table.

Percentiles

Percentiles (50th, 75th, 90th, and 95th) provide additional information about the shape of the distribution. Percentile estimates and 95% confidence interval estimates less than the limit of detection in the data tables are indicated as <LOD. An explanation of the procedure for estimating percentiles is provided in Appendix A and an example using SAS-callable SUDAAN is provided on the website (see "SAS Code Example" at: https://www.cdc.gov/exposurereport/).

References

Taylor JK. 1987. Quality assurance of chemical measurements. Boca Raton, FL: Lewis Publishers.

Hornung RW, Reed LD. 1990. Estimation of average concentration in the presence of nondetectable values. Appl Occup Environ Hyg 5(1):46-51.

Interpretation of Report and Updated Tables Data: Important Considerations

Research studies, separate from the *Report* and *Updated Tables*, are required to determine whether blood or urine levels are safe or are associated with disease or adverse effects.

The measurement of an environmental chemical in a person's blood or urine does not mean, by itself, that the chemical causes disease. Advances in analytical methods allow us to measure low levels of environmental chemicals in people, but separate studies of varying exposure levels and health effects are needed to determine whether blood or urine levels result in disease. These studies must also consider other factors such as duration of exposure. The *Report* and *Updated Tables* do not present new data on health risks from different exposures.

For some environmental chemicals, such as lead, research studies have given us a good understanding of the health risks associated with different blood levels. However, for many environmental chemicals, we need more research to assess health risks from different blood or urine levels. The results shown in the *Report* and *Updated Tables* should help prioritize and foster research on human health risks that result from exposure to environmental chemicals. For more information about exposure to environmental chemicals, see the section in this document titled "Chemical and Toxicological Information," which includes Internet reference sites.

Persistent and non-persistent chemicals; Use of percentiles; Comparison of levels between groups

In the *Report* and *Updated Tables*, most measurements in urine quantify chemical metabolites of non-persistent chemicals (those that do not stay in the body a long time). Metals and some tobacco biomarkers (e.g., heterocyclic amines) measured in urine are exceptions for they are not metabolites. Persistent chemicals (those that stay in the body for a long time) are usually measured in serum as the parent chemical.

The higher percentiles (75th, 90th, 95th) provided for each chemical convey useful information about the upper distribution and range of levels in the population. The 95th percentile is helpful when determining whether levels observed in separate public health investigations or other studies are unusual.

Levels of chemicals are provided for the demographic groups as stratified by age, gender, and race/ethnicity. Demographic groups may not be equal in their composition with respect to other variables. Chemicals measured in pooled serum samples are stratified by combined demographic groups (e.g., non-Hispanic black females, ages 12-19 years). CDC scientists publish separate scientific papers that make detailed comparisons of levels of chemicals in different demographic groups. See https://www.cdc.gov/exposurereport/ for a list of peer-reviewed biomonitoring papers.

Not all the chemicals in the *Report* and *Updated Tables* are measured in the same individuals. Therefore, it is not possible to determine the fraction of all measured chemicals that were found at detectable levels in each person.

Blood, serum, and urine levels of a chemical should not be confused with levels of the chemical in air, water, food, soil, or dust.

Concentrations of environmental chemicals in blood or urine are not the same as those in air, water, food, soil, or dust. For example, a chemical concentration of 10 µg/L in water does not produce a level of 10 µg/L in blood or urine. Blood or urine levels may reflect exposure from one or more sources, including air, water, food, soil, and dust.

Levels of a chemical in blood, serum, and urine are determined by how much of the chemical has entered the body through all routes of exposure, including ingestion, inhalation, and dermal absorption, and how the chemical is distributed in body tissues, transformed into metabolites, and eliminated from the body. Although the levels in the blood, serum and urine are measures of the amount of a chemical that has entered the body by all routes of exposure, the blood or urine level alone does not indicate the specific exposure source or route of exposure.

Calculation of Inorganic-related Arsenic Species

We present data for the urinary inorganic-related arsenic species. The values are calculated using results for each NHANES survey period for the following four arsenic species: arsenic (V) acid, arsenous (III) acid, dimethylarsinic acid (DMA), and monomethylarsonic acid (MMA). The sum of the four species is calculated for each individual NHANES participant. If the value of a species is less than the limit of detection (LOD), then the imputed value is used. The imputed value is calculated as the LOD divided by the square root of two (Hornung and Reed, 1990) and imputed values are provided in the NHANES public release file. If all four arsenic species are reported as less than the LOD, then the sum will be the sum of the four imputed values.

The geometric means, selected percentiles, and confidence intervals are calculated using sums with detectable values of 60 percent or higher. If the detection frequency for a category is less than 60 percent, this is indicated by an asterisk (*). There is no LOD for the inorganic-related arsenic species because the values are calculated, rather than measured.

Reference

Hornung RW, Reed LD. 1990. Estimation of average concentration in the presence of nondetectable values. Appl Occup Environ Hyg 5(1):46-51.

Calculation of PFOS and PFOA as the Sum of Isomers

Whereas we directly measured and reported serum total PFOS and PFOA prior to 2013, beginning with NHANES 2013-14 we began measuring linear and branched isomers of serum PFOS and PFOA and summing them to arrive at total PFOS and PFOA. This calculated sum of PFOS (or PFOA) isomers is comparable to the total PFOS (or PFOA) that we reported previously.

The decision to measure linear and branched isomers relates to the processes historically used to produce PFOS and PFOA. From the early 1950s to the early 2000s, electrochemical fluorination (ECF) was the primary process used to synthesize these compounds; thereafter, fluorotelomerization became the primary method. While ECF yielded linear and branched isomers, fluorotelomerization produced almost exclusively linear compounds. Measurement of the two types of isomers is informative because branched isomers may be eliminated from the body more rapidly than linear isomers (Benskin et al, 2009a). In some cases, measurement of the two isomers provides information that is helpful for evaluating exposure source contributions (Benskin et al, 2010, 2009b).

The value of PFOS is calculated as the sum of branched PFOS isomers (perfluoromethylheptane sulfonate isomers, Sm-PFOS) plus the linear isomer (*n*-PFOS). PFOA is calculated as the sum of branched PFOA isomers (Sb-PFOA) plus the linear isomer (*n*-PFOA). For each chemical (PFOS and PFOA), the sum of the branched and linear isomers is calculated for each individual NHANES participant. If the value for any isomer is below the limit of detection (LOD), then the imputed value is used. The imputed value is calculated as the LOD divided by the square root of two (Hornung and Reed, 1990) and imputed values are provided in the NHANES public release file. If both isomers for calculating either PFOS or PFOA are reported as less than the LOD, then two imputed values are summed. These calculated PFOA and PFOS results can be used to compare with previous measurements and examine trends in the U.S. population.

The geometric means, selected percentiles, and confidence intervals are calculated using sums with detectable values of 60 percent or higher. If the detection frequency for a category is less than 60 percent, this is indicated by an asterisk (*). Because the 2013-2014 and 2015-2016 values for PFOA and PFOS are a calculated sum, there is no limit of detection (LOD) for either of these two chemicals.

The branched isomers of PFOS (Sm-PFOS) and PFOA (Sb-PFOA) are a mixture of isomers. The isomers known to be included in Sm-PFOS are perfluoro-3-methylheptane sulfonate, perfluoro-4-methylheptane sulfonate, perfluoro-5-methylheptane sulfonate, and perfluoro-6-methylheptane sulfonate. The isomers known to be included in Sb-PFOA are perfluoro-3-methylheptanoic acid, perfluoro-4-methyheptanoic acid, perfluoro-5-methyheptanoic acid, perfluoro-6-methyheptanoic acid, perfluoro-4,4-dimethylhexanoic acid, perfluoro-5,5-dimethylhexanoic acid, perfluoro-3,5-dimethylhexanoic acid, and perfluoro-4,5-dimethylhexanoic acid. The linear isomers of PFOS (*n*-PFOS) and PFOA (*n*-PFOA) are single chemicals. Data tables are also presented for each of the four isomers that were measured.

References

Benskin JP, Hold A, Martin JW. 2009a. Isomer-specific biotransformation rates of a perfluorooctane sulfonate (PFOS) precursor by cytochrome P450 isozymes and human liver microsomes. Environ Sci Technol 43:8566-8572.

Benskin JP, DeSilver AO, Martin LJ, Arsenault G, McCrindle R, Riddell N, et al. 2009b. Disposition of perfluorinated acid isomers in Sprague-Dawley rats: part 1: single dose. Environ Toxicol Chem 28:542-554.

Benskin JP, DeSilver AG, Martin JW. 2010. Isomer profiling of perfluorinated substances as a tool for source tracking: a review of early findings and future applications. Rev Environ Contamin Toxicol 208:111-160.

Hornung RW, Reed LD. 1990. Estimation of average concentration in the presence of nondetectable values. Appl Occup Environ Hyg 5(1):46-51.

Chemical and Toxicological Information

The *National Report on Human Exposure to Environmental Chemicals* and *Updated Tables (*referred to as the *Report* and *Updated Tables*, respectively*)* present biomonitoring data on the exposure of the U.S. population to environmental chemicals. The measurement of an environmental chemical in a person's blood or urine does not mean, by itself, that the chemical causes disease or adverse effects. Advances in analytical methods allow us to measure lower and lower levels of environmental chemicals in people. Separate studies of varying exposure levels and health effects associated with these levels are required to determine whether blood, serum, and urine levels result in disease or adverse effects. The data and information in the *Report* and *Updated Tables* do not establish health effects nor do they create guidelines.

Where can I find more information?

For more information about environmental chemicals, web links are provided below. Links to nonfederal organizations are provided solely as a service to our readers. These links do not constitute an endorsement of these organizations or their programs by CDC or the federal government. CDC is not responsible for the content of an individual organization's Web pages found at these links.

U.S. Governmental Sources

Centers for Disease Control and Prevention (CDC)

National Center for Health Statistics (NCHS)
https://www.cdc.gov/nchs/

National Health and Nutrition Examination Survey (NHANES)
https://www.cdc.gov/nchs/nhanes.htm

National Institute for Occupational Safety and Health (NIOSH)
https://www.cdc.gov/niosh/data/

- Registry of Toxic Effects of Chemical Substances (RTECS)
  https://www.cdc.gov/niosh/rtecs/

National Center for Environmental Health (NCEH)
https://www.cdc.gov/nceh/

National Biomonitoring Program
https://www.cdc.gov/biomonitoring/

Agency for Toxic Substances and Disease Registry (ATSDR)

Toxicological Profiles and ToxFAQs

- ToxFAQs
  https://www.atsdr.cdc.gov/toxfaqs/
- Toxicological Profiles
  https://www.atsdr.cdc.gov/ToxProfiles/

Toxic Substances Portal
https://www.atsdr.cdc.gov/substances/

U.S. Food and Drug Administration (FDA)

Center for Food Safety and Applied Nutrition
https://www.fda.gov/AboutFDA/CentersOffices/OfficeofFoods/CFSAN/

National Center for Toxicological Research
https://www.fda.gov/AboutFDA/CentersOffices/OC/OfficeofScientificandMedicalPrograms/NCTR/

U.S. Environmental Protection Agency (EPA)

Integrated Risk Information System (IRIS)
https://www.epa.gov/iris/

Office of Chemical Safety and Pollution Prevention (OCSPP)
https://www.epa.gov/aboutepa/about-office-chemical-safety-and-pollution-prevention-ocspp

Office of Drinking Water
https://www.epa.gov/ground-water-and-drinking-water

U.S. Geological Survey (USGS)
https://www.usgs.gov/

U.S. Department of Agriculture (USDA)

Food Safety and Inspection Service
https://www.fsis.usda.gov/wps/portal/fsis/home

National Institutes of Health (NIH)

National Institute for Environmental Health Sciences (NIEHS)
https://www.niehs.nih.gov/

National Toxicology Program (NTP)
http://ntp.niehs.nih.gov

14th Report on Carcinogens
https://ntp.niehs.nih.gov/pubhealth/roc/index-1.html

National Library of Medicine (NLM), Toxicology Data Network
https://toxnet.nlm.nih.gov/

National Library of Medicine (NLM); MedlinePlus Health Topics: Poisoning, Toxicology, and Environmental Health
https://medlineplus.gov/poisoningtoxicologyenvironmentalhealth.html

National Library of Medicine (NLM), Environmental Health and Toxicology, online Toxicology Tutorial
https://toxtutor.nlm.nih.gov/

Professional and Academic Organizations

American Conference of Governmental Industrial Hygienists
http://www.acgih.org/home

Association of Public Health Laboratories
http://www.aphl.org/

Pediatric Environmental Health Specialty Units (PEHSUs)
http://www.PEHSU.net/

International Labour Organization

- International Chemical Safety Cards
  http://www.ilo.org/safework/info/publications/WCMS_113134/lang--en/index.htm

The EXtension TOXicology NETwork (EXTOXNET)

- Pesticide Information Profiles
  http://extoxnet.orst.edu/pips/ghindex.html

World Health Organization

International Programme on Chemical Safety (IPCS)
https://www.who.int/health-topics/chemical-safety

- Monographs of the Joint FAO/WHO Meeting on Pesticide Residues
  http://www.inchem.org/pages/jmpr.html
- Environmental Health Criteria documents
  http://www.who.int/ipcs/publications/ehc/en/

International Agency for Research on Cancer (IARC)
https://www.iarc.fr/

- Monographs on the Evaluation of Carcinogenic Risks to Humans
  https://monographs.iarc.fr/

Adducts of Hemoglobin

Acrylamide (2003 – 2006)

CAS Number 79-06-1

Geometric mean and selected percentiles of hemoglobin adduct concentrations (in pmol/g hemoglobin) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	61.2 (58.1-64.4)	54.8 (52.8-57.7)	79.1 (73.5-85.6)	141 (124-155)	192 (168-217)	7101
Total population	05-06	61.6 (58.1-65.4)	54.8 (52.8-56.8)	79.1 (75.1-86.1)	165 (151-178)	221 (204-246)	7857
Age 3-5 years	03-04	59.4 (53.6-65.7)	58.6 (51.7-64.9)	75.7 (63.4-83.6)	90.6 (81.9-105)	108 (86.2-118)	350
Age 3-5 years	05-06	59.1 (55.8-62.6)	63.6 (58.6-66.4)	74.4 (73.2-76.3)	90.3 (80.8-100)	102 (87.3-121)	483
Age 6-11 years	03-04	58.6 (56.1-61.2)	57.3 (55.2-59.7)	71.0 (67.4-76.3)	86.8 (81.2-91.4)	98.8 (91.0-104)	769
Age 6-11 years	05-06	56.1 (53.9-58.5)	57.1 (54.8-59.9)	67.8 (65.3-69.8)	78.8 (74.9-86.8)	93.8 (81.1-103)	924
Age 12-19 years	03-04	57.4 (54.4-60.5)	54.5 (52.1-57.4)	70.7 (65.6-75.7)	100 (89.2-114)	132 (115-151)	1889
Age 12-19 years	05-06	56.4 (52.5-60.6)	53.1 (50.7-55.8)	69.5 (66.2-73.1)	112 (98.0-127)	162 (131-221)	1977
Age 20-59 years	03-04	66.2 (62.2-70.6)	57.9 (54.6-61.1)	96.1 (83.6-108)	163 (147-191)	223 (194-243)	2570
Age 20-59 years	05-06	66.8 (62.1-71.9)	56.4 (53.7-59.8)	101 (87.1-118)	196 (177-210)	257 (222-298)	3066
Age 60+ years	03-04	50.1 (47.9-52.3)	46.5 (44.0-49.2)	61.0 (57.6-66.0)	96.1 (88.0-108)	141 (120-152)	1523
Age 60+ years	05-06	52.5 (49.4-55.7)	47.8 (45.0-49.6)	65.9 (60.2-71.6)	136 (112-156)	184 (167-198)	1407
Males	03-04	63.9 (60.2-67.9)	57.0 (53.7-60.1)	85.5 (79.2-93.7)	152 (139-175)	220 (189-237)	3509
Males	05-06	65.7 (61.5-70.1)	57.5 (55.1-60.4)	91.5 (80.9-101)	183 (163-208)	246 (213-277)	3826
Females	03-04	58.7 (55.9-61.5)	53.4 (51.8-55.9)	73.9 (69.5-80.6)	126 (111-142)	164 (147-191)	3592
Females	05-06	58.1 (54.6-61.7)	52.8 (50.9-54.7)	73.1 (68.3-78.2)	146 (131-160)	199 (182-211)	4031
Mexican Americans	03-04	61.7 (58.7-64.9)	57.4 (54.4-60.4)	73.0 (69.2-77.3)	101 (95.0-115)	149 (125-179)	1792
Mexican Americans	05-06	57.2 (54.0-60.7)	54.8 (51.4-58.2)	70.2 (67.2-73.7)	94.0 (86.2-104)	130 (110-148)	2035
Non-Hispanic blacks	03-04	63.8 (57.3-71.1)	57.1 (52.1-64.1)	86.5 (74.6-104)	156 (120-203)	218 (172-271)	1874
Non-Hispanic blacks	05-06	58.1 (53.5-63.2)	54.2 (52.4-55.7)	82.3 (74.0-95.4)	170 (147-189)	226 (198-259)	2061
Non-Hispanic whites	03-04	62.4 (59.0-66.0)	55.3 (53.0-58.6)	82.2 (75.4-89.1)	146 (129-163)	197 (172-223)	2994
Non-Hispanic whites	05-06	63.9 (59.8-68.3)	55.4 (53.0-58.5)	83.8 (76.5-94.9)	177 (160-194)	228 (208-258)	3153

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 and 05-06 are 3.0 and 0.11, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html

Glycidamide (2003 – 2006)

CAS Number 486-56-6

Geometric mean and selected percentiles of hemoglobin adduct concentrations (in pmol/g hemoglobin) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	59.3 (56.7-62.1)	59.9 (57.6-62.5)	85.9 (81.6-90.5)	130 (120-141)	167 (153-181)	7278
Total population	05-06	50.4 (46.9-54.1)	49.4 (46.5-52.4)	71.3 (67.1-75.6)	109 (98.4-120)	142 (130-151)	7740
Age 3-5 years	03-04	71.6 (66.9-76.7)	71.1 (66.9-78.9)	94.7 (87.3-101)	118 (103-126)	126 (119-135)	411
Age 3-5 years	05-06	66.7 (61.5-72.2)	72.9 (65.9-76.3)	89.4 (82.8-96.8)	107 (104-113)	120 (109-129)	482
Age 6-11 years	03-04	74.1 (70.3-78.2)	75.0 (70.9-77.9)	95.6 (90.4-103)	121 (112-134)	141 (126-157)	784
Age 6-11 years	05-06	58.2 (55.4-61.2)	59.6 (57.3-61.8)	73.7 (70.0-77.5)	90.8 (81.3-99.8)	106 (93.8-113)	907
Age 12-19 years	03-04	55.4 (51.1-60.1)	59.2 (56.1-62.1)	79.2 (72.7-86.7)	113 (94.9-138)	146 (123-169)	1931
Age 12-19 years	05-06	48.2 (45.1-51.6)	47.3 (44.8-49.3)	64.1 (60.5-67.9)	92.0 (82.8-103)	123 (103-149)	1944
Age 20-59 years	03-04	62.5 (59.4-65.8)	60.9 (58.7-64.4)	90.7 (84.4-98.2)	143 (130-159)	187 (169-204)	2623
Age 20-59 years	05-06	52.3 (47.9-57.1)	50.1 (46.3-54.2)	74.5 (69.5-80.9)	121 (107-134)	154 (140-179)	3025
Age 60+ years	03-04	45.5 (42.8-48.3)	46.8 (44.8-49.3)	65.2 (63.5-66.9)	96.4 (90.0-103)	129 (111-141)	1529
Age 60+ years	05-06	40.9 (38.1-44.0)	39.5 (37.4-42.7)	56.7 (51.1-63.8)	88.7 (75.7-103)	118 (103-133)	1382
Males	03-04	59.5 (56.9-62.3)	59.4 (56.8-61.8)	87.1 (82.5-92.3)	136 (123-148)	174 (157-197)	3604
Males	05-06	50.8 (46.9-55.0)	49.4 (46.1-53.2)	74.5 (70.2-78.8)	113 (102-127)	148 (131-165)	3761
Females	03-04	59.1 (56.0-62.5)	60.4 (57.5-64.0)	85.0 (80.2-90.0)	125 (116-135)	159 (143-175)	3674
Females	05-06	50.0 (46.7-53.6)	49.2 (46.5-52.3)	68.3 (63.9-73.2)	101 (93.8-114)	136 (125-145)	3979
Mexican Americans	03-04	64.7 (61.2-68.4)	65.4 (61.1-70.1)	87.4 (81.5-94.4)	118 (110-129)	152 (135-170)	1841
Mexican Americans	05-06	50.3 (46.5-54.4)	50.7 (46.8-54.8)	66.1 (61.6-70.5)	86.6 (80.6-95.8)	106 (98.1-114)	2022
Non-Hispanic blacks	03-04	53.8 (51.1-56.7)	56.0 (52.4-59.7)	83.0 (75.2-91.5)	121 (108-140)	159 (129-204)	1954
Non-Hispanic blacks	05-06	42.3 (38.9-46.0)	44.1 (41.7-45.9)	64.0 (60.3-67.8)	99.9 (87.2-109)	129 (117-140)	2008
Non-Hispanic whites	03-04	61.1 (57.6-64.9)	60.7 (57.9-64.2)	87.5 (83.0-93.5)	136 (124-149)	172 (157-194)	3044
Non-Hispanic whites	05-06	52.5 (48.5-56.9)	50.7 (46.8-55.0)	74.5 (69.9-80.1)	115 (102-129)	147 (134-160)	3110

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 and 05-06 are 4.0 and 0.66, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html

Tobacco Alkaloids and Metabolites

Serum Cotinine (1999 – 2010)

CAS Number 486-56-6

Metabolite of nicotine

Geometric mean and selected percentiles of serum concentrations (in ng/mL) for the ***non-smoking U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	.060 (<LOD-.080)	.240 (.190-.302)	1.02 (.770-1.28)	1.96 (1.60-2.62)	5999
Total population	01-02**	.062 (.050-.077)	<LOD	.160 (.120-.220)	.930 (.740-1.17)	2.20 (1.83-2.44)	6819
Total population	03-04	.071 (.057-.089)	.050 (.040-.070)	.210 (.140-.310)	.990 (.740-1.30)	2.17 (1.81-2.54)	6320
Total population	05-06	.054 (.047-.061)	.040 (.030-.040)	.120 (.100-.150)	.630 (.460-.870)	1.47 (1.15-1.92)	6347
Total population	07-08	.057 (.048-.068)	.040 (.030-.040)	.130 (.100-.180)	.760 (.550-1.09)	1.81 (1.45-2.43)	6197
Total population	09-10	.041 (.037-.046)	.030 (.020-.030)	.070 (.070-.090)	.450 (.350-.580)	1.29 (1.04-1.61)	6678
Age 3-11 years	99-00	.164 (.115-.234)	.110 (.066-.188)	.500 (.260-1.16)	1.88 (.997-3.44)	3.44 (1.42-4.79)	1174
Age 3-11 years	01-02**	.110 (.076-.160)	.070 (<LOD-.130)	.570 (.310-1.00)	2.23 (1.63-2.78)	3.23 (2.53-4.01)	1415
Age 3-11 years	03-04	.137 (.088-.213)	.120 (.060-.220)	.620 (.310-1.20)	2.04 (1.38-2.94)	3.35 (2.12-4.68)	1252
Age 3-11 years	05-06	.078 (.062-.097)	.050 (.040-.070)	.220 (.160-.350)	1.22 (.880-1.82)	2.42 (1.63-3.46)	1296
Age 3-11 years	07-08	.095 (.067-.136)	.060 (.040-.100)	.380 (.170-.840)	1.67 (1.10-2.54)	2.81 (2.26-3.54)	1337
Age 3-11 years	09-10	.060 (.047-.075)	.040 (.030-.050)	.160 (.110-.250)	.920 (.560-1.58)	2.15 (1.35-3.00)	1355
Age 12-19 years	99-00	.163 (.142-.187)	.110 (.080-.163)	.540 (.428-.660)	1.66 (1.50-1.95)	2.62 (2.09-3.39)	1773
Age 12-19 years	01-02**	.086 (.059-.126)	.050 (<LOD-.110)	.350 (.190-.580)	1.53 (1.09-2.12)	3.12 (2.47-3.99)	1902
Age 12-19 years	03-04	.110 (.087-.139)	.080 (.060-.120)	.510 (.350-.670)	1.55 (1.21-1.93)	2.68 (1.96-4.02)	1783
Age 12-19 years	05-06	.074 (.060-.092)	.050 (.040-.060)	.230 (.150-.350)	1.16 (.860-1.69)	2.26 (1.69-2.72)	1714
Age 12-19 years	07-08	.081 (.061-.106)	.050 (.030-.070)	.350 (.170-.550)	1.25 (.930-1.99)	2.54 (2.04-2.94)	934
Age 12-19 years	09-10	.056 (.044-.072)	.030 (.020-.040)	.130 (.080-.230)	.980 (.510-1.80)	2.49 (1.31-3.65)	1042
Age 20+ years	99-00	*	.050 (<LOD-.061)	.167 (.140-.193)	.630 (.533-.820)	1.50 (1.28-1.66)	3052
Age 20+ years	01-02**	.052 (<LOD-.063)	<LOD	.110 (.090-.150)	.630 (.470-.790)	1.42 (1.14-1.89)	3502
Age 20+ years	03-04	.058 (.047-.071)	.040 (.030-.050)	.140 (.100-.200)	.630 (.480-.840)	1.54 (1.26-1.92)	3285
Age 20+ years	05-06	.047 (.042-.053)	.030 (.030-.040)	.100 (.080-.120)	.440 (.310-.620)	1.14 (.870-1.41)	3337
Age 20+ years	07-08	.049 (.043-.057)	.030 (.030-.040)	.100 (.080-.120)	.490 (.390-.640)	1.37 (.970-1.70)	3926
Age 20+ years	09-10	.037 (.034-.040)	.020 (.020-.030)	.070 (.060-.070)	.310 (.240-.390)	.990 (.700-1.24)	4281
Males	99-00	.124 (.106-.145)	.080 (.060-.110)	.308 (.220-.410)	1.20 (.950-1.49)	2.39 (1.66-3.22)	2789
Males	01-02**	.075 (.059-.094)	.050 (<LOD-.070)	.230 (.160-.320)	1.17 (.960-1.49)	2.44 (2.23-2.99)	3152
Males	03-04	.087 (.070-.108)	.060 (.040-.080)	.280 (.190-.360)	1.23 (.910-1.68)	2.63 (2.09-3.19)	2937
Males	05-06	.064 (.055-.074)	.040 (.040-.050)	.150 (.120-.190)	.720 (.550-1.07)	1.85 (1.42-2.24)	2922
Males	07-08	.068 (.056-.081)	.040 (.040-.050)	.170 (.120-.240)	1.07 (.690-1.39)	2.52 (1.84-2.92)	2948
Males	09-10	.046 (.042-.051)	.030 (.030-.030)	.080 (.070-.100)	.550 (.410-.700)	1.60 (1.19-2.38)	3181
Females	99-00	*	<LOD	.180 (.148-.230)	.850 (.600-1.14)	1.85 (1.33-2.45)	3210
Females	01-02**	.053 (<LOD-.066)	<LOD	.120 (.090-.180)	.710 (.540-.990)	1.77 (1.32-2.20)	3667
Females	03-04	.060 (.047-.077)	.040 (.030-.060)	.160 (.110-.260)	.860 (.580-1.15)	1.76 (1.32-2.22)	3383
Females	05-06	.047 (.040-.054)	.030 (.030-.040)	.100 (.070-.130)	.510 (.300-.830)	1.23 (1.04-1.52)	3425
Females	07-08	.050 (.042-.059)	.030 (.030-.040)	.110 (.080-.150)	.630 (.400-.900)	1.40 (1.09-1.87)	3249
Females	09-10	.037 (.033-.042)	.020 (.020-.030)	.070 (.050-.080)	.380 (.270-.570)	1.03 (.720-1.61)	3497

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.05, 0.05, 0.015, 0.015, 0.015, and 0.015, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**In the 2001-2002 survey period, 83% of measurements had an LOD of 0.015 ng/mL, and 17% had an LOD of 0.05 ng/mL.

***Non-smoking is defined as a serum cotinine concentration of 10 ng/mL or less.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cotinine_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Cotinine_FactSheet.html

Serum Cotinine (1999 – 2010)

CAS Number 486-56-6

Metabolite of nicotine

Geometric mean and selected percentiles of serum concentrations (in ng/mL) for the ***non-smoking U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	.140 (.110-.180)	.506 (.370-.726)	1.21 (.900-1.70)	2241
Mexican Americans	01-02**	.060 (<LOD-.084)	<LOD	.160 (.080-.310)	.730 (.480-1.19)	2.12 (1.19-2.96)	1878
Mexican Americans	03-04	.054 (.043-.068)	.030 (.020-.050)	.120 (.080-.180)	.690 (.430-1.00)	2.65 (1.87-3.57)	1707
Mexican Americans	05-06	.047 (.038-.059)	.030 (.020-.040)	.100 (.070-.150)	.500 (.370-.730)	1.54 (.830-2.49)	1807
Mexican Americans	07-08	.044 (.033-.057)	.030 (.020-.040)	.080 (.060-.120)	.480 (.290-.880)	1.59 (1.00-3.07)	1412
Mexican Americans	09-10	.038 (.032-.045)	.020 (.020-.030)	.060 (.050-.080)	.360 (.230-.640)	1.35 (.710-2.25)	1615
Non-Hispanic blacks	99-00	.175 (.153-.201)	.131 (.111-.150)	.505 (.400-.625)	1.43 (1.21-1.75)	2.34 (1.84-3.50)	1333
Non-Hispanic blacks	01-02**	.164 (.137-.197)	.130 (.110-.160)	.580 (.450-.770)	1.77 (1.55-2.05)	3.15 (2.50-4.30)	1602
Non-Hispanic blacks	03-04	.144 (.104-.198)	.120 (.080-.180)	.520 (.350-.770)	1.54 (1.20-2.14)	2.77 (2.18-3.54)	1704
Non-Hispanic blacks	05-06	.114 (.085-.153)	.080 (.060-.120)	.440 (.240-.690)	1.42 (.900-2.03)	2.45 (1.70-3.70)	1630
Non-Hispanic blacks	07-08	.094 (.079-.112)	.060 (.050-.090)	.320 (.250-.390)	1.19 (.980-1.46)	2.37 (1.75-2.88)	1244
Non-Hispanic blacks	09-10	.095 (.074-.122)	.070 (.050-.090)	.320 (.210-.540)	1.33 (.900-2.05)	2.85 (1.97-3.60)	1129
Non-Hispanic whites	99-00	*	.050 (<LOD-.073)	.216 (.154-.312)	.950 (.621-1.40)	1.92 (1.48-3.02)	1950
Non-Hispanic whites	01-02**	.052 (<LOD-.068)	<LOD	.120 (.090-.180)	.800 (.570-1.11)	1.88 (1.48-2.30)	2847
Non-Hispanic whites	03-04	.066 (.050-.087)	.040 (.030-.070)	.180 (.120-.300)	.920 (.620-1.32)	2.01 (1.70-2.49)	2500
Non-Hispanic whites	05-06	.049 (.042-.056)	.030 (.030-.040)	.100 (.080-.130)	.530 (.330-.800)	1.27 (.980-1.62)	2404
Non-Hispanic whites	07-08	.056 (.043-.073)	.040 (.030-.050)	.130 (.080-.240)	.750 (.440-1.27)	1.70 (1.24-2.54)	2485
Non-Hispanic whites	09-10	.037 (.033-.043)	.020 (.020-.030)	.070 (.050-.080)	.350 (.240-.560)	1.06 (.780-1.60)	2743

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.05, 0.05, 0.015, 0.015, 0.015, and 0.015, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**In the 2001-2002 survey period, 83% of measurements had an LOD of 0.015 ng/mL, and 17% had an LOD of 0.05 ng/mL.

***Non-smoking is defined as a serum cotinine concentration of 10 ng/mL or less.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cotinine_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Cotinine_FactSheet.html

Urinary NNAL (4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol) (2007 – 2010)

CAS Number 76014-81-8

Metabolite of (4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone) (NNK)

Geometric mean and selected percentiles of urine concentrations (in pg/mL) for the **non-smoking U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	2.80 (2.20-3.70)	11.1 (8.80-14.4)	24.5 (18.0-30.4)	5212
Total population	09-10	*	<LOD	1.90 (1.60-2.40)	7.30 (6.40-8.50)	16.7 (13.9-19.6)	6067
Age 6-11 years	07-08	*	1.30 (.600-2.60)	8.50 (4.70-13.8)	31.4 (17.5-49.8)	60.6 (37.1-75.7)	875
Age 6-11 years	09-10	*	.600 (<LOD-1.00)	3.10 (2.20-5.00)	15.5 (10.4-22.8)	29.3 (18.1-59.4)	937
Age 12-19 years	07-08	*	1.20 (.600-2.10)	5.00 (3.80-9.20)	20.0 (11.9-27.5)	39.1 (20.6-60.9)	843
Age 12-19 years	09-10	*	.900 (<LOD-1.50)	3.70 (2.70-5.20)	12.5 (6.90-25.5)	29.1 (13.9-51.4)	1004
Age 20+ years	07-08	*	<LOD	2.10 (1.70-2.50)	8.20 (6.90-9.80)	16.6 (13.9-21.5)	3494
Age 20+ years	09-10	*	<LOD	1.60 (1.30-1.90)	6.10 (5.10-6.90)	13.1 (10.7-15.8)	4126
Males	07-08	*	<LOD	3.80 (3.00-4.50)	12.6 (10.6-15.0)	27.5 (18.9-38.1)	2463
Males	09-10	*	<LOD	2.40 (1.90-3.00)	8.30 (7.20-9.90)	19.3 (15.2-22.5)	2903
Females	07-08	*	<LOD	2.10 (1.50-2.90)	9.70 (7.10-13.6)	21.6 (16.6-28.0)	2749
Females	09-10	*	<LOD	1.60 (1.30-1.90)	6.50 (4.70-8.80)	14.0 (10.7-19.0)	3164
Mexican Americans	07-08	*	<LOD	2.00 (1.20-3.10)	6.90 (4.90-9.00)	13.9 (10.8-17.3)	1206
Mexican Americans	09-10	*	<LOD	1.60 (1.20-2.20)	4.90 (3.70-7.00)	11.1 (5.70-18.4)	1476
Non-Hispanic blacks	07-08	*	.800 (<LOD-1.90)	4.90 (3.60-6.30)	14.0 (11.6-17.2)	26.1 (18.5-33.2)	1057
Non-Hispanic blacks	09-10	1.81 (1.30-2.54)	1.40 (<LOD-2.40)	5.90 (3.80-8.10)	18.9 (11.7-26.1)	34.0 (18.9-61.9)	1004
Non-Hispanic whites	07-08	*	<LOD	2.80 (1.90-4.10)	11.9 (8.20-17.7)	27.5 (19.6-35.4)	2047
Non-Hispanic whites	09-10	*	<LOD	1.80 (1.40-2.40)	6.80 (5.40-8.40)	15.2 (11.9-19.3)	2514

Limit of detection (LOD, see Data Analysis section) for Survey years 07-08 and 09-10 are 0.6 and 0.6 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**Non-smoking is defined as a serum cotinine concentration of 10 ng/mL or less.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NNAL_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/NNAL_FactSheet.html

Urinary NNAL (4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol) (creatinine corrected) (2007 – 2010)

CAS Number 76014-81-8

Metabolite of (4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone) (NNK)

Geometric mean and selected percentiles of urine concentrations (in pg/mg of creatinine) for the **non-smoking U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	2.79 (2.31-3.50)	10.3 (7.36-14.0)	20.5 (16.4-27.5)	5210
Total population	09-10	*	<LOD	2.05 (1.88-2.28)	6.40 (5.71-7.41)	14.6 (11.5-17.3)	6066
Age 6-11 years	07-08	*	2.15 (1.38-3.22)	10.7 (5.95-17.9)	38.3 (21.2-57.1)	60.9 (46.4-72.1)	875
Age 6-11 years	09-10	*	1.19 (<LOD-1.52)	4.25 (2.88-6.37)	19.2 (11.0-28.8)	37.2 (22.9-53.0)	936
Age 12-19 years	07-08	*	1.14 (.710-1.75)	4.40 (2.59-7.36)	14.2 (10.5-23.1)	29.2 (15.6-41.9)	841
Age 12-19 years	09-10	*	1.05 (<LOD-1.26)	3.08 (1.96-4.37)	10.0 (6.02-15.2)	20.7 (12.3-30.2)	1004
Age 20+ years	07-08	*	<LOD	2.34 (2.00-2.73)	6.82 (5.49-8.65)	15.1 (11.8-17.7)	3494
Age 20+ years	09-10	*	<LOD	1.84 (1.71-2.00)	5.21 (4.57-6.07)	11.4 (8.42-14.1)	4126
Males	07-08	*	<LOD	2.98 (2.39-3.71)	10.5 (7.57-12.9)	20.9 (15.7-29.0)	2462
Males	09-10	*	<LOD	2.00 (1.86-2.25)	6.61 (6.00-7.83)	15.1 (11.7-19.8)	2902
Females	07-08	*	<LOD	2.67 (2.14-3.37)	9.87 (6.79-14.9)	20.0 (15.7-27.9)	2748
Females	09-10	*	<LOD	2.09 (1.82-2.36)	6.15 (4.88-8.21)	12.7 (9.26-17.3)	3164
Mexican Americans	07-08	*	<LOD	2.16 (1.55-3.00)	5.91 (4.32-8.30)	13.3 (8.36-17.9)	1205
Mexican Americans	09-10	*	<LOD	1.73 (1.36-2.11)	5.00 (3.72-6.84)	10.0 (6.79-14.7)	1476
Non-Hispanic blacks	07-08	*	.960 (<LOD-1.42)	3.70 (2.50-5.31)	11.5 (9.18-14.2)	20.8 (14.5-28.8)	1056
Non-Hispanic blacks	09-10	1.40 (.982-2.01)	1.21 (<LOD-2.06)	3.96 (2.78-5.99)	12.2 (7.29-20.3)	23.4 (14.3-35.4)	1003
Non-Hispanic whites	07-08	*	<LOD	2.93 (2.22-4.00)	11.4 (7.22-17.1)	23.9 (17.1-32.0)	2047
Non-Hispanic whites	09-10	*	<LOD	1.96 (1.82-2.15)	6.09 (5.00-7.83)	14.7 (10.0-18.2)	2514

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**Non-smoking is defined as a serum cotinine concentration of 10 ng/mL or less.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NNAL_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/NNAL_FactSheet.html

Disinfection By-Products

Blood Bromodichloromethane (2001 – 2010)

CAS Number 75-27-4

Geometric mean and selected percentiles of whole blood concentrations (in pg/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	2.21 (1.65-2.97)	2.30 (1.56-3.21)	4.63 (3.24-6.20)	8.45 (5.86-12.0)	12.0 (7.68-19.2)	785
Total population	03-04	1.50 (1.20-1.86)	1.40 (1.10-1.90)	3.40 (2.60-4.20)	6.20 (5.30-7.00)	9.50 (7.00-12.0)	1322
Total population	05-06	1.41 (1.09-1.83)	1.30 (.880-1.80)	3.00 (2.10-4.40)	6.30 (4.30-9.70)	10.0 (6.80-14.0)	3139
Total population	07-08	1.52 (1.24-1.86)	1.42 (1.05-1.90)	3.13 (2.50-4.20)	6.42 (4.70-8.30)	9.59 (7.05-14.6)	2982
Total population	09-10	1.61 (1.23-2.10)	1.44 (.911-2.33)	3.84 (2.64-5.33)	7.89 (6.36-9.58)	12.0 (9.65-14.5)	3275
Age 12-19 years	05-06	1.23 (.954-1.58)	1.00 (.620-1.60)	2.80 (1.70-4.10)	5.50 (4.10-7.20)	8.20 (6.20-12.0)	932
Age 12-19 years	07-08	1.49 (1.19-1.86)	1.26 (.910-1.88)	3.10 (2.42-4.05)	6.20 (4.13-8.52)	9.02 (6.20-15.0)	482
Age 12-19 years	09-10	1.62 (1.21-2.18)	1.42 (.912-2.34)	3.84 (2.56-5.82)	8.41 (5.45-12.7)	13.0 (8.78-18.0)	558
Age 20-59 years	01-02	2.21 (1.65-2.97)	2.30 (1.56-3.21)	4.63 (3.24-6.20)	8.45 (5.86-12.0)	12.0 (7.68-19.2)	785
Age 20-59 years	03-04	1.50 (1.20-1.86)	1.40 (1.10-1.90)	3.40 (2.60-4.20)	6.20 (5.30-7.00)	9.50 (7.00-12.0)	1322
Age 20-59 years	05-06	1.45 (1.11-1.89)	1.30 (.900-1.90)	3.10 (2.10-4.60)	6.40 (4.30-10.0)	11.0 (6.90-14.0)	1537
Age 20-59 years	07-08	1.60 (1.28-2.01)	1.56 (1.13-2.04)	3.33 (2.61-4.43)	6.90 (4.94-9.29)	11.0 (7.39-15.6)	1607
Age 20-59 years	09-10	1.67 (1.24-2.26)	1.53 (.893-2.56)	4.07 (2.66-5.85)	8.47 (6.66-10.2)	13.0 (10.1-16.2)	1797
Age 60+ years	05-06	1.43 (.996-2.05)	1.40 (.850-2.00)	3.20 (1.60-5.90)	6.50 (3.20-15.0)	9.70 (5.00-18.0)	670
Age 60+ years	07-08	1.28 (1.07-1.53)	1.20 (.870-1.59)	2.60 (1.90-3.41)	4.88 (3.67-6.50)	7.39 (5.70-8.80)	893
Age 60+ years	09-10	1.41 (1.13-1.78)	1.33 (.851-1.86)	3.25 (2.39-4.25)	6.07 (5.07-7.59)	8.42 (6.95-11.6)	920
Males	01-02	2.19 (1.60-3.00)	2.31 (1.63-3.21)	4.64 (3.21-6.08)	7.96 (5.74-15.3)	13.0 (6.93-20.5)	382
Males	03-04	1.48 (1.18-1.85)	1.40 (.940-2.00)	3.40 (2.60-4.30)	6.60 (5.40-7.20)	11.0 (7.20-14.0)	650
Males	05-06	1.39 (1.07-1.80)	1.20 (.830-1.70)	3.00 (2.00-4.30)	6.50 (4.30-10.0)	11.0 (6.80-16.0)	1489
Males	07-08	1.52 (1.24-1.87)	1.50 (1.03-1.95)	3.23 (2.59-4.20)	6.72 (4.80-9.02)	11.0 (7.31-15.9)	1487
Males	09-10	1.58 (1.21-2.05)	1.41 (.861-2.23)	3.79 (2.46-5.62)	8.32 (6.36-10.6)	13.0 (10.1-17.2)	1616
Females	01-02	2.24 (1.66-3.01)	2.28 (1.49-3.24)	4.63 (3.09-7.01)	8.62 (5.26-12.9)	11.1 (7.68-25.0)	403
Females	03-04	1.51 (1.21-1.90)	1.50 (1.10-1.90)	3.30 (2.50-4.20)	6.10 (4.69-7.30)	7.80 (6.40-12.0)	672
Females	05-06	1.44 (1.10-1.88)	1.30 (.900-1.90)	3.10 (2.10-4.60)	6.20 (4.20-9.40)	9.40 (6.30-13.0)	1650
Females	07-08	1.51 (1.22-1.87)	1.40 (1.01-1.92)	3.03 (2.42-4.10)	6.20 (4.60-7.82)	8.31 (6.80-12.9)	1495
Females	09-10	1.64 (1.24-2.16)	1.53 (.946-2.46)	3.92 (2.79-5.19)	7.67 (6.22-9.28)	11.2 (8.99-13.9)	1659
Mexican Americans	01-02	3.28 (2.29-4.68)	3.32 (2.19-4.70)	6.81 (3.71-10.4)	10.8 (8.24-14.7)	14.7 (11.1-20.5)	227
Mexican Americans	03-04	1.65 (1.15-2.38)	1.60 (.820-2.80)	3.50 (2.60-4.90)	7.30 (4.50-10.0)	10.0 (7.30-11.0)	244
Mexican Americans	05-06	1.95 (1.19-3.18)	1.90 (1.00-3.70)	4.40 (2.10-9.10)	9.10 (4.80-17.0)	14.0 (7.50-22.0)	771
Mexican Americans	07-08	1.61 (1.27-2.03)	1.57 (1.08-2.20)	3.44 (2.42-4.50)	5.93 (4.70-8.15)	8.90 (6.80-13.2)	574
Mexican Americans	09-10	2.19 (1.37-3.49)	2.18 (1.10-4.16)	5.50 (3.20-8.98)	11.3 (6.59-19.5)	16.2 (11.2-22.5)	667
Non-Hispanic blacks	01-02	2.32 (1.82-2.94)	2.50 (1.56-3.55)	4.57 (3.60-5.56)	8.69 (5.63-9.49)	10.0 (5.89-13.5)	130
Non-Hispanic blacks	03-04	1.56 (1.15-2.13)	1.70 (1.10-2.20)	2.90 (2.15-3.80)	5.10 (3.80-6.60)	6.60 (4.90-13.0)	290
Non-Hispanic blacks	05-06	1.74 (1.27-2.37)	1.70 (1.00-2.70)	3.80 (2.70-4.80)	6.40 (4.50-8.90)	8.70 (6.60-11.0)	817
Non-Hispanic blacks	07-08	1.72 (1.42-2.08)	1.70 (1.30-2.21)	3.29 (2.80-4.01)	5.78 (4.70-7.30)	7.49 (6.03-9.70)	593
Non-Hispanic blacks	09-10	1.97 (1.50-2.58)	1.99 (1.41-2.53)	3.76 (2.55-5.82)	7.70 (5.35-10.2)	10.5 (8.52-13.4)	579
Non-Hispanic whites	01-02	2.02 (1.42-2.87)	2.16 (1.36-3.09)	4.34 (2.92-6.01)	7.33 (4.72-15.3)	11.1 (6.01-26.1)	365
Non-Hispanic whites	03-04	1.42 (1.11-1.81)	1.30 (.850-1.90)	3.30 (2.30-4.40)	6.20 (5.20-7.20)	9.80 (6.70-13.0)	684
Non-Hispanic whites	05-06	1.29 (.989-1.67)	1.10 (.710-1.70)	2.70 (1.80-4.10)	5.80 (4.00-8.60)	9.40 (6.20-14.0)	1318
Non-Hispanic whites	07-08	1.45 (1.11-1.87)	1.32 (.917-1.90)	3.03 (2.23-4.30)	6.50 (4.20-9.29)	9.59 (6.30-15.3)	1347
Non-Hispanic whites	09-10	1.46 (1.06-2.02)	1.25 (.673-2.30)	3.59 (2.22-5.37)	7.28 (5.51-9.28)	10.9 (8.50-14.3)	1470

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.233, 0.62, 0.62, 0.62, and 0.62, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/THM-DBP_BiomonitoringSummary.html

Blood Dibromochloromethane (Chlorodibromomethane) (2001 – 2010)

CAS Number 124-48-1

Geometric mean and selected percentiles of whole blood concentrations (in pg/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	.867 (.521-1.44)	.780 (.340-1.90)	2.61 (1.22-4.38)	5.46 (3.53-9.71)	8.96 (5.04-12.9)	781
Total population	03-04	*	<LOD	1.30 (1.00-1.80)	3.60 (2.70-4.80)	7.20 (4.80-8.60)	1333
Total population	05-06	*	<LOD	1.40 (.870-2.40)	4.30 (2.40-7.40)	7.80 (4.60-13.0)	3122
Total population	07-08	*	.775 (<LOD-1.05)	1.90 (1.36-2.73)	4.29 (3.20-6.13)	7.14 (5.54-9.52)	2998
Total population	09-10	*	.799 (<LOD-1.26)	2.14 (1.57-2.99)	4.50 (3.38-6.90)	8.47 (5.20-11.6)	3163
Age 12-19 years	05-06	*	<LOD	1.30 (.750-2.50)	4.10 (2.60-5.50)	6.50 (4.10-11.0)	925
Age 12-19 years	07-08	*	.760 (<LOD-1.06)	2.09 (1.30-3.05)	4.50 (3.09-7.22)	8.32 (5.39-14.4)	484
Age 12-19 years	09-10	*	.786 (<LOD-1.33)	2.23 (1.37-3.33)	4.63 (3.83-7.81)	9.52 (5.81-12.4)	548
Age 20-59 years	01-02	.867 (.521-1.44)	.780 (.340-1.90)	2.61 (1.22-4.38)	5.46 (3.53-9.71)	8.96 (5.04-12.9)	781
Age 20-59 years	03-04	*	<LOD	1.30 (1.00-1.80)	3.60 (2.70-4.80)	7.20 (4.80-8.60)	1333
Age 20-59 years	05-06	*	<LOD	1.40 (.860-2.30)	4.10 (2.40-7.10)	7.80 (4.20-14.0)	1526
Age 20-59 years	07-08	*	.846 (<LOD-1.15)	2.07 (1.50-2.92)	4.75 (3.40-6.60)	7.99 (5.80-10.5)	1617
Age 20-59 years	09-10	*	.827 (<LOD-1.33)	2.21 (1.63-3.04)	4.53 (3.35-7.58)	8.81 (5.09-13.0)	1747
Age 60+ years	05-06	*	<LOD	1.60 (.780-4.00)	5.10 (1.30-13.0)	7.90 (2.20-20.0)	671
Age 60+ years	07-08	*	.630 (<LOD-.874)	1.40 (.918-2.28)	3.40 (2.16-4.63)	4.86 (3.79-5.50)	897
Age 60+ years	09-10	*	.669 (<LOD-1.12)	1.92 (1.27-2.94)	4.18 (2.99-5.98)	7.52 (4.18-12.1)	868
Males	01-02	.850 (.481-1.50)	.730 (.300-2.25)	2.66 (.960-4.38)	4.77 (3.33-9.20)	8.06 (4.31-14.6)	371
Males	03-04	*	<LOD	1.30 (1.00-1.90)	3.70 (2.70-5.70)	7.20 (5.20-8.60)	657
Males	05-06	*	<LOD	1.40 (.830-2.30)	4.40 (2.30-7.80)	8.30 (4.30-14.0)	1487
Males	07-08	*	.762 (<LOD-1.10)	2.10 (1.38-2.87)	4.30 (3.30-6.50)	7.50 (5.66-10.5)	1496
Males	09-10	*	.734 (<LOD-1.23)	2.22 (1.62-3.11)	4.85 (3.52-7.70)	8.79 (5.19-13.4)	1563
Females	01-02	.884 (.550-1.42)	.820 (.340-1.69)	2.54 (1.37-4.31)	6.30 (3.28-10.1)	9.91 (5.02-13.0)	410
Females	03-04	*	<LOD	1.30 (1.00-1.80)	3.60 (2.50-4.80)	6.60 (3.80-9.20)	676
Females	05-06	*	<LOD	1.50 (.920-2.50)	4.20 (2.20-7.80)	7.20 (4.10-14.0)	1635
Females	07-08	*	.776 (<LOD-1.04)	1.80 (1.34-2.62)	4.25 (2.88-6.07)	6.40 (4.91-9.70)	1502
Females	09-10	*	.863 (<LOD-1.29)	2.09 (1.52-2.89)	4.14 (3.17-6.58)	7.95 (4.75-11.3)	1600

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.271, 0.62, 0.62, 0.62, and 0.62, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/THM-DBP_BiomonitoringSummary.html

Blood Dibromochloromethane (Chlorodibromomethane) (2001 – 2010)

CAS Number 124-48-1

Geometric mean and selected percentiles of whole blood concentrations (in pg/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Males	01-02	.850 (.481-1.50)	.730 (.300-2.25)	2.66 (.960-4.38)	4.77 (3.33-9.20)	8.06 (4.31-14.6)	371
Males	03-04	*	<LOD	1.30 (1.00-1.90)	3.70 (2.70-5.70)	7.20 (5.20-8.60)	657
Males	05-06	*	<LOD	1.40 (.830-2.30)	4.40 (2.30-7.80)	8.30 (4.30-14.0)	1487
Males	07-08	*	.762 (<LOD-1.10)	2.10 (1.38-2.87)	4.30 (3.30-6.50)	7.50 (5.66-10.5)	1496
Males	09-10	*	.734 (<LOD-1.23)	2.22 (1.62-3.11)	4.85 (3.52-7.70)	8.79 (5.19-13.4)	1563
Females	01-02	.884 (.550-1.42)	.820 (.340-1.69)	2.54 (1.37-4.31)	6.30 (3.28-10.1)	9.91 (5.02-13.0)	410
Females	03-04	*	<LOD	1.30 (1.00-1.80)	3.60 (2.50-4.80)	6.60 (3.80-9.20)	676
Females	05-06	*	<LOD	1.50 (.920-2.50)	4.20 (2.20-7.80)	7.20 (4.10-14.0)	1635
Females	07-08	*	.776 (<LOD-1.04)	1.80 (1.34-2.62)	4.25 (2.88-6.07)	6.40 (4.91-9.70)	1502
Females	09-10	*	.863 (<LOD-1.29)	2.09 (1.52-2.89)	4.14 (3.17-6.58)	7.95 (4.75-11.3)	1600
Mexican Americans	01-02	1.61 (.843-3.06)	1.49 (.670-3.99)	4.59 (1.93-8.89)	9.26 (5.21-12.1)	12.0 (9.63-16.1)	233
Mexican Americans	03-04	1.20 (.963-1.50)	1.10 (.810-1.40)	2.30 (1.50-4.10)	5.20 (3.80-6.90)	7.70 (5.20-11.0)	256
Mexican Americans	05-06	1.25 (.774-2.02)	.950 (<LOD-1.70)	2.50 (1.00-7.40)	7.40 (2.50-19.0)	13.0 (5.80-21.0)	759
Mexican Americans	07-08	1.54 (1.09-2.18)	1.38 (.864-2.10)	3.20 (1.79-5.80)	7.70 (3.35-13.0)	9.81 (7.10-18.2)	574
Mexican Americans	09-10	1.80 (1.17-2.76)	1.62 (.788-3.51)	4.71 (2.61-8.06)	9.21 (6.90-12.5)	13.7 (10.0-18.8)	632
Non-Hispanic blacks	01-02	1.03 (.505-2.09)	.930 (.530-2.03)	2.03 (.770-7.06)	4.22 (2.01-10.5)	8.09 (2.80-16.5)	128
Non-Hispanic blacks	03-04	*	<LOD	.970 (.650-1.60)	1.90 (1.20-3.20)	3.20 (1.80-5.20)	288
Non-Hispanic blacks	05-06	*	.620 (<LOD-.820)	1.30 (1.00-1.90)	3.40 (2.10-4.90)	5.50 (4.10-7.10)	822
Non-Hispanic blacks	07-08	.979 (.752-1.27)	.811 (<LOD-1.12)	1.60 (1.02-2.70)	3.28 (2.18-5.67)	5.67 (3.05-8.50)	593
Non-Hispanic blacks	09-10	*	.724 (<LOD-1.21)	1.62 (1.19-2.10)	3.21 (2.44-4.08)	5.04 (3.76-8.42)	556
Non-Hispanic whites	01-02	.736 (.413-1.31)	.640 (<LOD-1.93)	2.49 (.870-4.27)	4.57 (3.00-7.12)	6.98 (4.27-11.1)	357
Non-Hispanic whites	03-04	*	<LOD	1.30 (.950-1.80)	3.30 (2.50-4.60)	6.60 (3.70-9.20)	685
Non-Hispanic whites	05-06	*	<LOD	1.30 (.710-2.30)	4.10 (2.30-7.10)	7.70 (4.60-11.0)	1311
Non-Hispanic whites	07-08	*	.665 (<LOD-1.02)	1.79 (1.09-2.88)	3.95 (2.60-5.78)	6.03 (4.02-9.80)	1358
Non-Hispanic whites	09-10	*	.696 (<LOD-1.22)	1.92 (1.28-2.72)	3.89 (2.96-5.48)	6.53 (4.16-10.7)	1424

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.271, 0.62, 0.62, 0.62, and 0.62, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/THM-DBP_BiomonitoringSummary.html

Blood Tribromomethane (Bromoform) (2001 – 2010)

CAS Number 75-25-2

Geometric mean and selected percentiles of whole blood concentrations (in pg/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	1.57 (1.07-2.31)	1.39 (.960-2.02)	2.78 (1.76-4.63)	6.05 (2.92-29.2)	15.5 (3.68-85.4)	774
Total population	03-04	*	<LOD	1.80 (<LOD-2.80)	3.74 (2.30-7.10)	6.40 (3.60-14.0)	1310
Total population	05-06	*	<LOD	1.20 (<LOD-1.60)	2.70 (2.00-4.00)	5.20 (3.10-7.60)	3016
Total population	07-08	*	<LOD	<LOD	2.51 (1.90-3.34)	5.20 (3.54-7.44)	2994
Total population	09-10	*	<LOD	1.12 (<LOD-1.61)	2.55 (1.81-4.07)	4.76 (2.95-7.12)	3254
Age 12-19 years	05-06	*	<LOD	1.20 (<LOD-1.60)	2.40 (1.70-4.40)	4.80 (2.80-7.10)	892
Age 12-19 years	07-08	*	<LOD	1.11 (<LOD-1.29)	2.80 (1.90-4.77)	6.69 (3.50-7.88)	484
Age 12-19 years	09-10	*	<LOD	1.14 (<LOD-1.61)	2.41 (1.71-4.15)	5.23 (2.72-13.1)	559
Age 20-59 years	01-02	1.57 (1.07-2.31)	1.39 (.960-2.02)	2.78 (1.76-4.63)	6.05 (2.92-29.2)	15.5 (3.68-85.4)	774
Age 20-59 years	03-04	*	<LOD	1.80 (<LOD-2.80)	3.74 (2.30-7.10)	6.40 (3.60-14.0)	1310
Age 20-59 years	05-06	*	<LOD	1.20 (<LOD-1.60)	2.90 (1.90-4.20)	5.20 (3.10-8.80)	1478
Age 20-59 years	07-08	*	<LOD	<LOD	2.73 (1.93-3.74)	6.48 (3.74-7.98)	1614
Age 20-59 years	09-10	*	<LOD	1.12 (<LOD-1.63)	2.57 (1.81-4.34)	5.07 (2.94-7.35)	1793
Age 60+ years	05-06	*	<LOD	1.28 (<LOD-2.10)	2.60 (2.30-3.50)	4.70 (3.00-7.70)	646
Age 60+ years	07-08	*	<LOD	<LOD	1.78 (1.33-2.72)	3.24 (2.16-4.91)	896
Age 60+ years	09-10	*	<LOD	1.12 (<LOD-1.56)	2.49 (1.56-4.39)	4.26 (2.66-5.70)	902
Males	01-02	1.49 (.944-2.34)	1.29 (.850-1.98)	2.65 (1.49-5.05)	6.12 (2.26-33.9)	14.9 (2.79-69.9)	374
Males	03-04	*	<LOD	1.90 (<LOD-2.87)	4.00 (2.40-6.80)	6.50 (4.00-13.0)	645
Males	05-06	*	<LOD	1.16 (<LOD-1.60)	2.70 (1.90-4.00)	5.00 (3.10-7.60)	1424
Males	07-08	*	<LOD	<LOD	2.40 (1.71-3.51)	6.00 (3.23-8.49)	1494
Males	09-10	*	<LOD	1.15 (<LOD-1.66)	2.78 (1.83-4.47)	5.60 (3.42-8.62)	1604
Females	01-02	1.67 (1.17-2.39)	1.46 (1.05-2.21)	2.86 (1.89-4.57)	5.69 (3.30-27.5)	22.2 (5.09-49.6)	400
Females	03-04	*	<LOD	1.72 (<LOD-2.65)	3.20 (1.93-7.70)	6.10 (3.10-31.0)	665
Females	05-06	*	<LOD	1.23 (1.00-1.60)	2.70 (1.90-4.20)	5.20 (3.10-8.80)	1592
Females	07-08	*	<LOD	<LOD	2.57 (1.90-3.40)	4.88 (3.55-7.30)	1500
Females	09-10	*	<LOD	1.11 (<LOD-1.58)	2.38 (1.66-3.84)	4.40 (2.66-6.13)	1650

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.596, 1.5, 1.0, 1.0, and 1.0, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/THM-DBP_BiomonitoringSummary.html

Blood Tribromomethane (Bromoform) (2001 – 2010)

CAS Number 75-25-2

Geometric mean and selected percentiles of whole blood concentrations (in pg/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	2.34 (1.15-4.77)	1.66 (.990-3.38)	4.03 (1.42-36.5)	28.3 (4.39-49.2)	40.8 (31.5-57.9)	234
Mexican Americans	03-04	*	1.60 (<LOD-3.10)	3.30 (<LOD-9.40)	7.60 (3.60-14.0)	11.0 (5.60-210)	242
Mexican Americans	05-06	*	<LOD	1.60 (1.04-3.20)	4.00 (2.40-5.90)	5.90 (4.30-8.30)	721
Mexican Americans	07-08	*	<LOD	2.82 (1.23-6.70)	6.80 (2.93-11.0)	9.54 (6.10-15.7)	574
Mexican Americans	09-10	*	<LOD	1.93 (1.43-2.35)	4.23 (2.57-6.17)	6.32 (3.79-12.3)	642
Non-Hispanic blacks	01-02	1.51 (.857-2.67)	1.47 (.780-3.15)	2.58 (1.39-4.64)	4.34 (2.57-8.48)	6.27 (3.28-15.2)	121
Non-Hispanic blacks	03-04	*	<LOD	1.60 (<LOD-2.30)	2.50 (1.80-3.20)	3.20 (2.40-6.10)	289
Non-Hispanic blacks	05-06	*	<LOD	1.10 (<LOD-1.30)	2.00 (1.70-2.40)	3.40 (2.30-4.30)	796
Non-Hispanic blacks	07-08	*	<LOD	<LOD	1.54 (<LOD-3.54)	3.07 (1.47-7.20)	592
Non-Hispanic blacks	09-10	*	<LOD	<LOD	1.45 (<LOD-2.28)	2.74 (1.40-6.04)	581
Non-Hispanic whites	01-02	1.47 (.980-2.22)	1.29 (.840-2.06)	2.58 (1.51-4.91)	5.69 (2.84-21.2)	11.0 (3.30-69.9)	362
Non-Hispanic whites	03-04	*	<LOD	1.70 (<LOD-2.90)	3.50 (2.00-7.70)	5.90 (3.30-21.0)	680
Non-Hispanic whites	05-06	*	<LOD	1.20 (<LOD-1.60)	2.80 (2.00-3.90)	5.40 (3.10-9.90)	1271
Non-Hispanic whites	07-08	*	<LOD	<LOD	1.90 (1.33-2.97)	3.51 (1.93-7.81)	1355
Non-Hispanic whites	09-10	*	<LOD	1.02 (<LOD-1.50)	2.15 (1.64-3.59)	4.07 (2.46-6.17)	1474

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.596, 1.5, 1.0, 1.0, and 1.0, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/THM-DBP_BiomonitoringSummary.html

Blood Trichloromethane (Chloroform) (2001 – 2010)

CAS Number 67-66-3

Geometric mean and selected percentiles of whole blood concentrations (in pg/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	16.6 (13.0-21.1)	16.1 (11.9-22.2)	31.7 (23.9-40.4)	55.5 (44.5-68.6)	72.1 (57.3-105)	744
Total population	03-04	10.2 (8.56-12.2)	10.0 (8.50-13.0)	20.0 (17.0-24.0)	35.0 (29.0-40.0)	50.0 (37.0-65.0)	1222
Total population	05-06	10.1 (9.09-11.3)	9.90 (8.90-11.0)	19.0 (17.0-21.0)	36.0 (31.0-41.0)	54.0 (46.0-64.0)	3111
Total population	07-08	6.63 (5.30-8.30)	6.56 (4.87-8.83)	14.6 (11.0-19.4)	27.7 (22.0-37.0)	41.8 (33.0-54.1)	2754
Total population	09-10	8.60 (6.82-10.8)	8.29 (5.94-11.1)	17.1 (12.8-23.0)	32.1 (26.1-41.9)	47.2 (39.9-57.6)	3269
Age 12-19 years	05-06	9.22 (8.20-10.4)	9.10 (8.10-10.0)	17.0 (14.0-20.0)	33.0 (27.0-40.0)	46.0 (36.0-64.0)	913
Age 12-19 years	07-08	5.95 (4.69-7.53)	5.33 (3.92-7.98)	12.5 (8.56-19.0)	25.5 (17.6-48.3)	47.6 (26.0-56.8)	440
Age 12-19 years	09-10	8.60 (6.78-10.9)	8.05 (5.96-10.7)	17.7 (13.4-23.1)	33.9 (28.5-44.8)	46.7 (35.4-68.1)	561
Age 20-59 years	01-02	16.6 (13.0-21.1)	16.1 (11.9-22.2)	31.7 (23.9-40.4)	55.5 (44.5-68.6)	72.1 (57.3-105)	744
Age 20-59 years	03-04	10.2 (8.56-12.2)	10.0 (8.50-13.0)	20.0 (17.0-24.0)	35.0 (29.0-40.0)	50.0 (37.0-65.0)	1222
Age 20-59 years	05-06	10.5 (9.29-11.8)	10.0 (8.90-12.0)	20.0 (18.0-22.0)	37.0 (31.0-44.0)	55.0 (46.0-71.0)	1529
Age 20-59 years	07-08	6.89 (5.37-8.83)	6.78 (5.00-9.53)	15.1 (11.2-20.8)	29.0 (23.3-38.3)	42.0 (34.2-55.8)	1503
Age 20-59 years	09-10	8.82 (6.77-11.5)	8.67 (5.88-12.3)	17.7 (13.1-23.7)	33.8 (26.0-44.5)	49.6 (40.5-64.6)	1792
Age 60+ years	05-06	9.71 (8.25-11.4)	9.60 (8.20-11.0)	19.0 (14.0-22.0)	35.0 (27.0-40.0)	46.0 (39.0-59.0)	669
Age 60+ years	07-08	6.25 (5.24-7.46)	6.34 (4.64-8.30)	14.0 (11.0-17.2)	24.8 (19.5-33.0)	36.0 (25.4-48.6)	811
Age 60+ years	09-10	7.98 (6.53-9.76)	7.60 (5.79-10.1)	15.1 (11.6-19.5)	27.8 (20.5-32.9)	39.9 (30.4-49.3)	916
Males	01-02	16.8 (12.0-23.5)	16.1 (11.0-24.8)	34.3 (22.4-48.7)	57.0 (39.9-76.4)	75.2 (54.5-156)	358
Males	03-04	10.1 (8.43-12.1)	10.0 (7.90-14.0)	20.0 (17.0-25.0)	36.8 (29.0-49.0)	53.0 (36.8-69.0)	599
Males	05-06	9.94 (8.80-11.2)	9.80 (8.50-11.0)	19.0 (17.0-22.0)	38.0 (33.0-44.0)	54.0 (46.0-67.0)	1483
Males	07-08	6.54 (5.25-8.14)	6.32 (4.85-8.43)	14.2 (11.0-19.1)	29.0 (21.9-37.6)	41.8 (31.8-59.2)	1376
Males	09-10	8.38 (6.67-10.5)	8.13 (5.90-10.6)	17.0 (12.1-22.0)	32.0 (25.8-42.6)	50.7 (42.6-66.3)	1611
Females	01-02	16.4 (13.4-20.1)	16.6 (12.0-21.5)	29.2 (24.0-36.5)	53.5 (38.4-68.9)	69.5 (53.3-104)	386
Females	03-04	10.4 (8.41-12.7)	10.0 (8.40-13.0)	20.0 (16.0-23.9)	33.0 (26.0-40.0)	46.0 (35.0-65.0)	623
Females	05-06	10.4 (9.24-11.6)	10.0 (9.10-11.0)	19.0 (17.0-21.0)	32.0 (29.0-39.0)	52.0 (41.0-67.0)	1628
Females	07-08	6.73 (5.29-8.55)	6.73 (4.80-9.35)	15.0 (11.0-19.7)	26.9 (21.5-37.7)	42.0 (31.4-54.0)	1378
Females	09-10	8.81 (6.94-11.2)	8.66 (5.92-12.0)	17.3 (13.0-24.0)	32.1 (24.8-42.1)	46.2 (34.0-59.9)	1658
Mexican Americans	01-02	17.0 (10.5-27.6)	14.5 (10.0-32.7)	35.1 (18.6-57.6)	60.7 (41.5-100)	93.0 (49.7-243)	223
Mexican Americans	03-04	9.17 (7.45-11.3)	9.30 (7.60-11.0)	19.0 (15.0-24.0)	34.0 (24.0-44.4)	44.4 (30.0-59.0)	225
Mexican Americans	05-06	10.3 (8.59-12.5)	10.0 (7.60-14.0)	20.0 (17.0-22.0)	36.0 (30.0-41.0)	47.0 (41.0-64.0)	740
Mexican Americans	07-08	5.87 (4.20-8.19)	5.23 (3.50-7.80)	13.0 (7.76-20.0)	30.3 (15.8-49.2)	45.9 (23.4-89.7)	504
Mexican Americans	09-10	8.76 (6.82-11.3)	8.21 (6.02-11.6)	17.1 (12.0-22.0)	29.1 (21.9-44.7)	50.9 (33.6-70.9)	666
Non-Hispanic blacks	01-02	19.1 (12.9-28.1)	20.9 (9.28-37.4)	38.4 (27.7-46.0)	55.9 (45.5-69.8)	68.9 (51.9-74.0)	116
Non-Hispanic blacks	03-04	11.8 (9.54-14.6)	12.0 (8.90-15.0)	20.0 (15.0-30.0)	35.0 (28.0-59.0)	61.0 (34.0-100)	272
Non-Hispanic blacks	05-06	11.9 (9.78-14.4)	12.0 (9.10-15.0)	22.0 (19.0-26.0)	39.0 (31.0-47.0)	55.0 (46.0-70.0)	822
Non-Hispanic blacks	07-08	8.00 (6.22-10.3)	8.60 (6.20-11.0)	15.7 (12.0-20.0)	28.0 (22.3-37.0)	39.6 (34.5-46.6)	585
Non-Hispanic blacks	09-10	12.6 (9.41-16.9)	12.5 (9.03-18.8)	24.7 (18.4-31.5)	42.9 (32.0-52.7)	57.0 (45.0-71.9)	581
Non-Hispanic whites	01-02	15.6 (12.0-20.2)	15.2 (11.2-20.5)	26.8 (20.4-39.5)	53.5 (35.3-72.1)	69.5 (53.5-105)	348
Non-Hispanic whites	03-04	9.84 (8.09-12.0)	10.0 (8.10-13.0)	20.0 (16.0-23.0)	33.8 (27.0-40.0)	47.0 (35.0-67.0)	630
Non-Hispanic whites	05-06	9.87 (8.79-11.1)	9.70 (8.80-11.0)	19.0 (16.0-21.0)	34.0 (29.0-43.0)	53.0 (45.0-67.0)	1318
Non-Hispanic whites	07-08	6.45 (4.95-8.40)	6.30 (4.16-9.23)	14.9 (10.1-21.0)	27.7 (21.0-40.0)	41.8 (31.0-58.9)	1226
Non-Hispanic whites	09-10	7.89 (5.99-10.4)	7.17 (5.14-10.7)	15.7 (10.8-23.4)	30.0 (23.5-41.4)	44.6 (32.9-59.1)	1467

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 2.37, 2.11, 2.1, 2.1, and 2.1, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/THM-DBP_BiomonitoringSummary.html

Personal Care and Consumer Product Chemicals and Metabolites

Urinary Benzophenone-3 (2003 – 2010)

CAS Number 131-57-7

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	22.9 (18.1-28.9)	18.1 (15.5-23.2)	94.0 (67.5-123)	370 (225-570)	1040 (698-1390)	2517
Total population	05-06	19.4 (16.5-22.8)	14.1 (12.5-17.5)	68.8 (54.5-87.2)	433 (294-597)	1150 (936-1510)	2548
Total population	07-08	18.3 (13.7-24.3)	14.3 (10.7-19.8)	64.1 (42.8-116)	365 (223-524)	801 (471-2080)	2604
Total population	09-10	22.3 (18.0-27.7)	16.4 (12.7-20.5)	81.2 (55.0-126)	493 (320-742)	1750 (931-3120)	2749
Age 6-11 years	03-04	21.2 (16.4-27.3)	17.2 (14.9-25.9)	66.7 (38.7-102)	158 (106-246)	246 (154-618)	314
Age 6-11 years	05-06	21.2 (14.3-31.3)	19.4 (11.7-26.1)	58.8 (40.5-102)	259 (115-433)	852 (355-2200)	356
Age 6-11 years	07-08	24.1 (15.0-38.7)	17.2 (11.8-25.0)	79.9 (32.9-168)	392 (129-1610)	1410 (165-43600)	389
Age 6-11 years	09-10	21.7 (15.6-30.2)	14.6 (12.0-19.7)	52.7 (27.2-119)	470 (80.7-1900)	1570 (153-6440)	415
Age 12-19 years	03-04	22.9 (18.0-29.3)	20.1 (16.1-25.1)	67.1 (45.2-93.8)	170 (137-240)	407 (183-717)	715
Age 12-19 years	05-06	21.2 (15.8-28.4)	14.9 (12.1-21.4)	64.3 (39.7-95.3)	227 (130-382)	633 (252-1260)	702
Age 12-19 years	07-08	21.5 (16.0-28.8)	15.0 (11.9-21.3)	59.3 (36.7-111)	214 (113-613)	613 (206-1350)	401
Age 12-19 years	09-10	23.3 (16.6-32.5)	16.6 (13.1-19.7)	62.3 (35.1-129)	423 (184-843)	988 (550-2670)	420
Age 20+ years	03-04	23.1 (18.0-29.6)	18.1 (14.7-23.3)	109 (72.1-140)	450 (315-733)	1220 (769-1750)	1488
Age 20+ years	05-06	19.0 (16.5-21.8)	13.5 (12.0-16.3)	70.9 (55.2-87.2)	543 (390-638)	1200 (954-1690)	1490
Age 20+ years	07-08	17.3 (13.0-23.0)	13.7 (10.0-19.5)	64.1 (41.5-117)	371 (240-516)	801 (516-1790)	1814
Age 20+ years	09-10	22.3 (17.9-27.7)	16.5 (12.3-22.5)	86.7 (63.1-129)	505 (339-760)	1890 (1240-3170)	1914
Males	03-04	16.8 (13.2-21.3)	13.7 (11.4-16.8)	55.3 (33.2-86.6)	178 (134-324)	567 (238-1350)	1229
Males	05-06	14.6 (10.8-19.7)	11.8 (8.80-15.9)	43.4 (31.0-68.8)	227 (103-552)	909 (479-1190)	1270
Males	07-08	11.9 (8.84-16.0)	9.40 (7.70-12.3)	37.6 (22.6-54.7)	172 (79.9-376)	471 (208-1410)	1294
Males	09-10	15.3 (12.7-18.6)	12.2 (10.0-15.2)	52.8 (33.9-72.6)	223 (129-332)	610 (318-1270)	1399
Females	03-04	30.7 (23.7-39.8)	26.0 (20.2-34.1)	137 (106-172)	596 (403-769)	1340 (776-1790)	1288
Females	05-06	25.5 (21.7-29.9)	17.9 (14.3-23.1)	129 (82.9-166)	638 (478-900)	1410 (945-2620)	1278
Females	07-08	27.6 (20.4-37.3)	25.6 (17.5-33.9)	117 (72.6-211)	535 (361-757)	1260 (643-2280)	1310
Females	09-10	32.0 (23.7-43.3)	23.0 (16.4-29.8)	148 (73.3-260)	1020 (540-1800)	3200 (1760-4400)	1350
Mexican Americans	03-04	16.5 (10.9-25.1)	11.9 (8.50-18.3)	45.5 (25.9-78.2)	178 (76.4-412)	412 (178-2180)	613
Mexican Americans	05-06	14.3 (10.7-19.1)	10.2 (7.40-14.1)	45.6 (24.1-75.7)	214 (166-313)	635 (337-1090)	637
Mexican Americans	07-08	12.1 (9.49-15.3)	9.90 (7.70-12.4)	32.6 (25.0-48.3)	142 (85.0-268)	409 (214-778)	531
Mexican Americans	09-10	17.2 (13.7-21.6)	12.5 (10.5-14.5)	41.9 (30.2-57.4)	351 (248-546)	1130 (493-2140)	566
Non-Hispanic blacks	03-04	12.8 (9.38-17.4)	10.2 (7.40-14.4)	34.3 (22.8-50.6)	127 (90.8-176)	247 (143-499)	652
Non-Hispanic blacks	05-06	12.4 (9.77-15.6)	9.40 (7.30-11.8)	33.0 (22.3-46.5)	208 (115-291)	556 (269-1060)	678
Non-Hispanic blacks	07-08	8.55 (6.75-10.8)	7.40 (5.00-9.70)	25.5 (17.5-34.5)	117 (66.8-217)	422 (195-786)	597
Non-Hispanic blacks	09-10	14.0 (10.9-18.1)	8.90 (7.30-10.5)	30.9 (21.9-50.5)	276 (143-437)	705 (320-3000)	516
Non-Hispanic whites	03-04	27.7 (20.3-37.8)	24.4 (16.8-32.0)	121 (83.6-162)	507 (316-769)	1340 (733-2070)	1092
Non-Hispanic whites	05-06	21.6 (18.5-25.2)	16.0 (13.5-19.0)	82.4 (64.2-114)	552 (392-754)	1370 (945-2050)	1038
Non-Hispanic whites	07-08	23.1 (15.0-35.5)	18.7 (11.0-33.7)	101 (47.4-206)	459 (241-749)	1160 (487-2620)	1077
Non-Hispanic whites	09-10	26.1 (19.0-35.9)	21.1 (14.6-29.7)	94.9 (59.8-186)	610 (325-1240)	2130 (934-3820)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.3, 0.4, 0.4, and 0.4 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Benzophenone-3_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Benzophenone-3_FactSheet.html

Urinary Benzophenone-3 (creatinine corrected) (2003 – 2010)

CAS Number 131-57-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	22.2 (17.6-28.0)	16.2 (12.7-21.6)	82.0 (58.7-108)	415 (283-577)	1080 (686-1600)	2514
Total population	05-06	18.9 (15.8-22.6)	13.5 (11.2-16.8)	60.4 (47.6-81.4)	445 (346-553)	1210 (794-1970)	2548
Total population	07-08	18.4 (13.9-24.4)	13.5 (10.2-17.8)	67.9 (45.2-117)	338 (215-584)	935 (525-1800)	2604
Total population	09-10	23.3 (18.7-29.1)	16.1 (12.8-19.8)	79.1 (52.2-124)	579 (355-1040)	2340 (1380-3010)	2749
Age 6-11 years	03-04	25.8 (19.5-34.1)	22.4 (14.4-33.7)	84.6 (41.0-131)	171 (132-365)	427 (171-710)	314
Age 6-11 years	05-06	23.3 (15.9-34.1)	17.5 (11.6-28.3)	67.7 (39.7-105)	249 (106-631)	868 (264-2080)	356
Age 6-11 years	07-08	29.7 (19.0-46.6)	19.3 (12.4-32.3)	103 (51.1-159)	442 (133-1550)	1430 (187-29100)	389
Age 6-11 years	09-10	28.3 (20.4-39.4)	18.8 (14.7-21.1)	53.9 (33.2-132)	565 (104-3410)	1780 (253-8230)	415
Age 12-19 years	03-04	17.2 (13.7-21.5)	12.9 (10.4-16.5)	43.6 (29.5-57.7)	136 (91.7-239)	350 (173-646)	713
Age 12-19 years	05-06	15.8 (11.6-21.6)	12.1 (9.16-17.0)	42.5 (28.6-58.7)	164 (101-438)	625 (225-956)	702
Age 12-19 years	07-08	16.7 (12.4-22.4)	12.1 (8.57-17.6)	55.7 (30.4-74.8)	211 (88.2-505)	505 (163-902)	401
Age 12-19 years	09-10	18.7 (13.4-26.1)	13.6 (10.1-19.7)	39.9 (25.5-91.6)	412 (89.8-750)	1240 (629-2540)	420
Age 20+ years	03-04	22.8 (17.8-29.1)	16.2 (12.7-21.9)	93.2 (66.0-130)	491 (361-700)	1330 (880-1880)	1487
Age 20+ years	05-06	19.0 (16.3-22.2)	13.4 (11.2-16.2)	64.2 (49.3-87.0)	509 (406-628)	1480 (816-2200)	1490
Age 20+ years	07-08	17.7 (13.3-23.6)	12.6 (9.93-17.5)	67.7 (44.1-127)	362 (249-584)	960 (581-1970)	1814
Age 20+ years	09-10	23.6 (18.8-29.5)	16.3 (12.7-20.2)	83.6 (58.3-146)	602 (364-1230)	2470 (1350-3080)	1914
Males	03-04	13.6 (10.8-17.1)	10.3 (8.36-12.9)	40.0 (24.9-62.5)	169 (93.3-316)	381 (229-685)	1228
Males	05-06	11.7 (8.74-15.8)	9.43 (6.72-12.5)	31.9 (19.7-49.4)	176 (77.1-406)	553 (317-948)	1270
Males	07-08	10.0 (7.37-13.7)	7.50 (5.74-10.0)	28.7 (18.5-47.3)	142 (65.8-225)	332 (181-960)	1294
Males	09-10	13.7 (11.4-16.6)	10.7 (8.53-12.7)	44.6 (29.7-57.4)	186 (123-287)	420 (287-1230)	1399
Females	03-04	35.5 (27.1-46.4)	28.2 (20.2-37.0)	144 (101-224)	686 (491-1130)	1850 (1220-2580)	1286
Females	05-06	30.0 (25.3-35.6)	20.9 (17.0-29.0)	129 (88.0-175)	707 (527-912)	1880 (1150-2770)	1278
Females	07-08	33.0 (25.0-43.7)	26.2 (19.1-41.1)	156 (90.2-235)	617 (385-935)	1500 (746-2710)	1310
Females	09-10	38.6 (28.1-53.0)	25.7 (17.5-35.2)	161 (76.3-378)	1580 (955-2410)	3250 (2540-4640)	1350
Mexican Americans	03-04	15.1 (9.44-24.0)	11.1 (6.95-16.0)	40.7 (18.3-85.8)	158 (87.4-362)	595 (118-1860)	612
Mexican Americans	05-06	12.9 (10.2-16.2)	8.63 (6.16-12.5)	32.1 (23.1-51.8)	216 (135-408)	948 (441-1220)	637
Mexican Americans	07-08	11.8 (8.87-15.6)	8.97 (7.00-12.4)	33.6 (26.0-43.2)	154 (93.4-249)	413 (217-932)	531
Mexican Americans	09-10	17.1 (13.4-21.7)	12.2 (9.64-14.5)	40.4 (26.4-60.3)	288 (155-603)	1310 (441-2180)	566
Non-Hispanic blacks	03-04	8.78 (6.49-11.9)	6.80 (5.27-9.00)	19.7 (13.5-33.4)	79.8 (46.8-139)	185 (79.8-536)	651
Non-Hispanic blacks	05-06	8.69 (7.02-10.8)	6.29 (5.52-7.78)	21.2 (14.5-34.5)	118 (74.9-245)	448 (208-876)	678
Non-Hispanic blacks	07-08	6.65 (5.24-8.42)	5.09 (4.15-6.10)	17.8 (13.2-24.2)	86.6 (57.5-122)	297 (113-903)	597
Non-Hispanic blacks	09-10	10.2 (8.12-12.7)	6.46 (5.40-7.67)	23.1 (15.5-38.2)	160 (79.9-396)	653 (305-1580)	516
Non-Hispanic whites	03-04	28.3 (20.6-38.8)	22.0 (14.6-32.7)	116 (73.5-175)	510 (380-760)	1330 (852-2410)	1091
Non-Hispanic whites	05-06	22.7 (19.4-26.7)	16.2 (13.0-19.7)	77.3 (56.5-106)	538 (406-679)	1500 (828-2430)	1038
Non-Hispanic whites	07-08	24.1 (15.6-37.2)	18.1 (11.0-30.0)	103 (53.6-198)	494 (227-960)	1170 (522-2710)	1077
Non-Hispanic whites	09-10	29.3 (20.7-41.5)	22.1 (14.6-33.1)	99.2 (54.3-241)	767 (412-1550)	2590 (1510-3250)	1206

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Benzophenone-3_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Benzophenone-3_FactSheet.html

Urinary Bisphenol A (2003 – 2010)

CAS Number 80-05-7

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	2.64 (2.38-2.94)	2.80 (2.50-3.10)	5.50 (5.00-6.20)	10.6 (9.40-12.0)	16.0 (14.4-17.2)	2517
Total population	05-06	1.90 (1.79-2.02)	2.00 (1.90-2.00)	3.70 (3.50-3.90)	7.00 (6.40-7.60)	11.5 (10.0-13.6)	2548
Total population	07-08	2.08 (1.92-2.26)	2.10 (1.90-2.30)	4.10 (3.60-4.60)	7.70 (6.80-8.70)	13.0 (10.0-15.6)	2604
Total population	09-10	1.83 (1.72-1.94)	1.90 (1.70-2.00)	3.50 (3.30-3.80)	6.60 (6.00-7.20)	9.60 (8.50-11.3)	2749
Age 6-11 years	03-04	3.55 (2.95-4.29)	3.80 (2.70-5.00)	6.90 (6.00-8.30)	12.6 (9.50-15.1)	16.0 (11.5-23.3)	314
Age 6-11 years	05-06	2.86 (2.52-3.24)	2.70 (2.30-2.90)	5.00 (4.40-5.80)	13.5 (9.30-16.8)	22.8 (13.6-34.6)	356
Age 6-11 years	07-08	2.48 (2.21-2.77)	2.40 (1.90-3.00)	4.50 (3.70-5.50)	7.60 (6.30-9.50)	13.4 (8.80-17.8)	389
Age 6-11 years	09-10	1.81 (1.55-2.10)	1.70 (1.50-2.00)	3.40 (3.00-4.00)	6.50 (4.30-9.70)	9.20 (6.50-15.1)	415
Age 12-19 years	03-04	3.74 (3.31-4.22)	4.30 (3.60-4.60)	7.80 (6.50-9.00)	13.5 (11.8-15.2)	16.5 (15.2-20.9)	715
Age 12-19 years	05-06	2.42 (2.18-2.68)	2.40 (2.10-2.70)	4.30 (3.90-5.20)	8.40 (6.50-10.8)	11.9 (10.7-14.8)	702
Age 12-19 years	07-08	2.45 (2.14-2.80)	2.40 (2.10-2.60)	4.40 (3.60-5.50)	9.70 (7.30-11.9)	12.2 (9.70-19.0)	401
Age 12-19 years	09-10	2.11 (1.86-2.40)	2.20 (1.90-2.40)	3.80 (3.20-4.50)	6.90 (4.70-10.8)	11.1 (6.90-21.0)	420
Age 20+ years	03-04	2.41 (2.15-2.72)	2.60 (2.30-2.80)	5.10 (4.50-5.70)	9.50 (8.10-11.3)	15.2 (12.4-18.1)	1488
Age 20+ years	05-06	1.75 (1.62-1.89)	1.80 (1.70-2.00)	3.40 (3.10-3.70)	6.40 (5.80-7.50)	10.7 (8.80-12.1)	1490
Age 20+ years	07-08	1.99 (1.82-2.18)	2.00 (1.80-2.30)	3.90 (3.40-4.60)	7.40 (6.60-8.50)	13.2 (9.10-15.7)	1814
Age 20+ years	09-10	1.79 (1.67-1.93)	1.80 (1.60-2.00)	3.50 (3.30-3.70)	6.50 (6.00-7.20)	9.60 (8.30-11.3)	1914
Males	03-04	2.92 (2.63-3.24)	3.20 (2.70-3.60)	6.10 (5.40-6.60)	10.4 (9.50-11.6)	16.0 (12.7-17.6)	1229
Males	05-06	2.09 (1.92-2.28)	2.10 (2.00-2.30)	3.70 (3.40-4.20)	7.70 (6.80-9.30)	12.8 (10.1-15.8)	1270
Males	07-08	2.20 (2.01-2.41)	2.10 (1.90-2.40)	4.00 (3.60-4.70)	8.10 (6.70-9.70)	14.0 (8.70-20.8)	1294
Males	09-10	1.94 (1.82-2.07)	1.90 (1.70-2.00)	3.70 (3.40-4.10)	6.90 (5.90-7.90)	10.9 (8.40-13.5)	1399
Females	03-04	2.41 (2.11-2.75)	2.50 (2.20-2.80)	5.00 (4.20-6.20)	10.6 (8.70-12.5)	15.9 (13.5-20.1)	1288
Females	05-06	1.74 (1.55-1.95)	1.80 (1.60-2.00)	3.70 (3.10-4.00)	6.20 (5.80-7.60)	10.4 (7.70-14.7)	1278
Females	07-08	1.97 (1.80-2.16)	2.00 (1.80-2.20)	4.10 (3.60-4.60)	7.40 (6.80-8.20)	12.0 (9.60-14.1)	1310
Females	09-10	1.73 (1.60-1.87)	1.80 (1.60-2.00)	3.40 (3.20-3.70)	6.50 (5.60-7.10)	9.20 (8.00-11.2)	1350
Mexican Americans	03-04	2.58 (2.15-3.08)	2.60 (2.10-3.20)	5.20 (4.40-6.50)	9.90 (7.30-13.9)	15.4 (10.2-19.7)	613
Mexican Americans	05-06	2.05 (1.75-2.40)	2.00 (1.70-2.40)	3.60 (3.00-4.20)	6.90 (5.40-10.1)	12.2 (8.00-15.6)	637
Mexican Americans	07-08	2.09 (1.94-2.26)	2.00 (1.80-2.30)	3.80 (3.30-4.30)	7.10 (6.10-8.60)	11.7 (7.70-14.6)	531
Mexican Americans	09-10	1.92 (1.69-2.19)	2.10 (1.80-2.30)	3.50 (3.10-4.10)	6.50 (5.20-7.50)	9.00 (6.90-16.2)	566
Non-Hispanic blacks	03-04	4.24 (3.73-4.82)	4.30 (3.80-5.10)	8.20 (7.10-9.80)	14.2 (11.7-16.9)	20.6 (14.9-25.2)	652
Non-Hispanic blacks	05-06	2.50 (2.25-2.77)	2.70 (2.30-3.00)	4.60 (4.00-5.00)	8.00 (6.80-9.30)	11.3 (8.90-14.2)	678
Non-Hispanic blacks	07-08	2.66 (2.38-2.97)	2.80 (2.60-3.10)	5.40 (4.40-6.40)	9.10 (7.50-10.4)	13.3 (10.0-15.1)	597
Non-Hispanic blacks	09-10	2.51 (2.22-2.83)	2.60 (2.30-3.00)	4.40 (3.80-5.00)	7.30 (6.10-8.80)	10.3 (7.90-13.6)	516
Non-Hispanic whites	03-04	2.51 (2.26-2.79)	2.70 (2.50-3.00)	5.20 (4.70-5.80)	9.60 (8.30-10.9)	15.1 (12.6-16.7)	1092
Non-Hispanic whites	05-06	1.76 (1.62-1.91)	1.80 (1.60-2.00)	3.50 (3.20-3.80)	6.80 (5.90-7.60)	11.0 (8.80-13.7)	1038
Non-Hispanic whites	07-08	2.06 (1.87-2.27)	2.00 (1.80-2.30)	4.00 (3.40-4.70)	7.80 (6.70-8.90)	13.7 (9.80-16.1)	1077
Non-Hispanic whites	09-10	1.73 (1.60-1.87)	1.70 (1.60-1.90)	3.40 (3.10-3.70)	6.40 (5.40-7.60)	9.20 (8.20-11.2)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.4, 0.4, 0.4, and 0.4 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/BisphenolA_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/BisphenolA_FactSheet.html

Urinary Bisphenol A (creatinine corrected) (2003 – 2010)

CAS Number 80-05-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	2.58 (2.36-2.82)	2.50 (2.31-2.80)	4.29 (3.88-4.75)	7.67 (6.62-8.66)	11.2 (9.78-12.4)	2514
Total population	05-06	1.86 (1.79-1.92)	1.71 (1.64-1.79)	3.01 (2.86-3.20)	5.73 (5.29-6.36)	9.70 (8.31-10.9)	2548
Total population	07-08	2.10 (1.95-2.25)	1.95 (1.84-2.03)	3.45 (3.02-3.83)	6.09 (5.10-7.45)	10.0 (7.48-13.2)	2604
Total population	09-10	1.91 (1.79-2.04)	1.76 (1.67-1.84)	3.06 (2.80-3.33)	5.33 (4.68-6.06)	8.03 (6.94-10.0)	2749
Age 6-11 years	03-04	4.32 (3.63-5.14)	4.29 (3.63-5.23)	7.14 (5.83-9.56)	12.2 (9.84-14.8)	15.7 (12.2-23.2)	314
Age 6-11 years	05-06	3.14 (2.79-3.54)	2.80 (2.55-3.06)	5.04 (4.46-5.71)	15.6 (8.15-22.4)	24.6 (19.9-48.5)	356
Age 6-11 years	07-08	3.05 (2.73-3.41)	2.69 (2.38-3.12)	5.06 (4.33-5.60)	11.9 (6.30-17.4)	20.8 (12.7-26.3)	389
Age 6-11 years	09-10	2.36 (2.09-2.65)	2.18 (2.00-2.53)	3.70 (3.14-4.29)	5.97 (4.57-9.15)	9.57 (6.52-13.7)	415
Age 12-19 years	03-04	2.80 (2.52-3.11)	2.74 (2.35-3.22)	4.74 (4.21-5.09)	7.79 (6.41-8.87)	11.8 (8.05-14.2)	713
Age 12-19 years	05-06	1.80 (1.67-1.95)	1.65 (1.50-1.76)	2.73 (2.41-2.98)	5.71 (4.07-7.50)	8.52 (6.94-12.2)	702
Age 12-19 years	07-08	1.90 (1.72-2.10)	1.69 (1.50-2.00)	2.94 (2.38-3.60)	5.10 (4.17-6.82)	7.72 (5.32-13.9)	401
Age 12-19 years	09-10	1.70 (1.47-1.95)	1.60 (1.34-1.88)	2.63 (2.11-3.58)	4.47 (3.76-6.19)	6.71 (4.40-17.8)	420
Age 20+ years	03-04	2.39 (2.17-2.64)	2.36 (2.15-2.59)	3.93 (3.44-4.33)	6.64 (5.97-7.74)	10.0 (9.01-11.4)	1487
Age 20+ years	05-06	1.75 (1.67-1.84)	1.64 (1.56-1.75)	2.84 (2.67-3.08)	5.38 (4.89-5.87)	8.54 (7.58-9.77)	1490
Age 20+ years	07-08	2.04 (1.90-2.20)	1.92 (1.79-2.03)	3.36 (2.91-3.78)	6.02 (4.88-7.48)	9.32 (7.48-12.1)	1814
Age 20+ years	09-10	1.90 (1.76-2.05)	1.76 (1.66-1.84)	3.04 (2.76-3.24)	5.33 (4.67-6.11)	8.00 (6.97-10.0)	1914
Males	03-04	2.38 (2.15-2.63)	2.31 (2.08-2.70)	4.19 (3.81-4.64)	7.10 (6.41-8.28)	9.94 (9.06-11.7)	1228
Males	05-06	1.68 (1.57-1.80)	1.56 (1.45-1.64)	2.73 (2.43-3.14)	5.27 (4.64-6.04)	8.40 (6.81-11.4)	1270
Males	07-08	1.85 (1.71-2.01)	1.77 (1.57-1.91)	2.97 (2.59-3.33)	5.41 (4.47-7.51)	9.52 (6.29-13.4)	1294
Males	09-10	1.74 (1.62-1.87)	1.60 (1.48-1.72)	2.76 (2.53-2.96)	5.00 (4.16-5.86)	7.50 (6.22-9.00)	1399
Females	03-04	2.78 (2.50-3.08)	2.68 (2.40-2.94)	4.41 (3.81-5.15)	7.93 (6.48-10.2)	12.4 (9.29-18.2)	1286
Females	05-06	2.04 (1.95-2.14)	1.85 (1.76-2.02)	3.21 (2.98-3.39)	6.47 (5.51-7.50)	9.86 (8.62-11.8)	1278
Females	07-08	2.36 (2.17-2.57)	2.14 (1.98-2.33)	3.77 (3.43-4.31)	6.67 (5.41-7.83)	10.5 (7.45-15.2)	1310
Females	09-10	2.09 (1.92-2.27)	1.93 (1.80-2.15)	3.33 (2.94-3.84)	5.49 (4.87-6.74)	8.80 (6.47-12.5)	1350
Mexican Americans	03-04	2.34 (2.02-2.71)	2.38 (2.00-2.65)	3.85 (3.24-4.55)	7.09 (5.00-9.04)	10.9 (8.50-14.3)	612
Mexican Americans	05-06	1.84 (1.66-2.04)	1.62 (1.45-1.84)	2.99 (2.56-3.60)	6.00 (4.51-8.00)	10.3 (6.84-14.9)	637
Mexican Americans	07-08	2.04 (1.86-2.24)	1.88 (1.72-2.11)	3.33 (2.96-3.95)	5.68 (5.05-6.59)	8.90 (6.30-11.8)	531
Mexican Americans	09-10	1.91 (1.71-2.13)	1.76 (1.67-1.87)	3.13 (2.63-3.57)	5.51 (4.72-6.97)	8.71 (5.86-14.4)	566
Non-Hispanic blacks	03-04	2.92 (2.58-3.32)	2.95 (2.51-3.27)	4.90 (4.07-6.13)	8.64 (7.53-9.63)	11.9 (10.2-13.3)	651
Non-Hispanic blacks	05-06	1.76 (1.62-1.90)	1.68 (1.53-1.92)	2.82 (2.67-3.04)	4.56 (3.85-5.43)	6.81 (5.00-9.27)	678
Non-Hispanic blacks	07-08	2.06 (1.91-2.23)	2.03 (1.83-2.25)	3.24 (2.86-3.78)	5.71 (5.15-6.54)	8.59 (6.54-10.9)	597
Non-Hispanic blacks	09-10	1.82 (1.65-2.01)	1.70 (1.56-1.89)	2.90 (2.39-3.17)	4.94 (4.02-6.03)	6.74 (5.95-8.09)	516
Non-Hispanic whites	03-04	2.58 (2.37-2.81)	2.55 (2.32-2.80)	4.30 (3.93-4.67)	7.58 (6.32-8.87)	11.0 (9.34-12.4)	1091
Non-Hispanic whites	05-06	1.85 (1.75-1.96)	1.70 (1.60-1.82)	3.08 (2.78-3.31)	5.80 (5.13-6.72)	9.77 (7.87-11.5)	1038
Non-Hispanic whites	07-08	2.15 (1.97-2.35)	1.97 (1.84-2.11)	3.50 (3.04-3.95)	6.44 (5.04-8.00)	10.9 (7.47-14.5)	1077
Non-Hispanic whites	09-10	1.94 (1.79-2.10)	1.78 (1.67-1.92)	3.16 (2.80-3.59)	5.45 (4.67-6.94)	8.55 (6.73-10.0)	1206

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/BisphenolA_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/BisphenolA_FactSheet.html

Urinary 4-tert-Octylphenol (2005 – 2010)‡

CAS Number 140-66-9

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	<LOD	.200 (<LOD-.300)	2548
Total population	07-08	*	<LOD	<LOD	<LOD	.300 (.200-.300)	2604
Total population	09-10	*	<LOD	<LOD	.200 (<LOD-.300)	.300 (.300-.400)	2749
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	.300 (.200-.300)	356
Age 6-11 years	07-08	*	<LOD	<LOD	.200 (<LOD-.300)	.300 (.200-.400)	389
Age 6-11 years	09-10	*	<LOD	<LOD	.300 (<LOD-.400)	.400 (.300-.600)	415
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	.200 (<LOD-.400)	702
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	.300 (<LOD-.400)	401
Age 12-19 years	09-10	*	<LOD	<LOD	.300 (.200-.300)	.300 (.300-.400)	420
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	.200 (<LOD-.300)	1490
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	.300 (.200-.400)	1814
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	.300 (.200-.400)	1914
Males	05-06	*	<LOD	<LOD	<LOD	.200 (<LOD-.300)	1270
Males	07-08	*	<LOD	<LOD	<LOD	.300 (.200-.400)	1294
Males	09-10	*	<LOD	<LOD	.200 (<LOD-.300)	.300 (.300-.400)	1399
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1278
Females	07-08	*	<LOD	<LOD	<LOD	.300 (.200-.300)	1310
Females	09-10	*	<LOD	<LOD	.200 (<LOD-.300)	.300 (.200-.400)	1350
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	.300 (<LOD-.800)	637
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	.300 (.200-.300)	531
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	.300 (<LOD-.500)	566
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	.200 (<LOD-.400)	678
Non-Hispanic blacks	07-08	*	<LOD	<LOD	.200 (<LOD-.300)	.300 (.200-.500)	597
Non-Hispanic blacks	09-10	*	<LOD	<LOD	.300 (.200-.400)	.500 (.400-.600)	516
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	.200 (<LOD-.300)	1038
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	.200 (.200-.300)	1077
Non-Hispanic whites	09-10	*	<LOD	<LOD	.200 (<LOD-.300)	.300 (.300-.400)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.2, 0.2, and 0.2 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡The 2003-2004 data were removed due to potential for contamination that may have occurred during sampling. Not measured after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Octylphenol_BiomonitoringSummary.html

Urinary 4-tert-Octylphenol (creatinine corrected) (2005 – 2010)‡

CAS Number 140-66-9

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	<LOD	.560 (<LOD-.620)	2548
Total population	07-08	*	<LOD	<LOD	<LOD	.670 (.560-.880)	2604
Total population	09-10	*	<LOD	<LOD	.470 (<LOD-.500)	.640 (.580-.680)	2749
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	.410 (.350-.610)	356
Age 6-11 years	07-08	*	<LOD	<LOD	.440 (<LOD-.540)	.600 (.420-.930)	389
Age 6-11 years	09-10	*	<LOD	<LOD	.560 (<LOD-.670)	.740 (.640-.830)	415
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	.450 (<LOD-.560)	702
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	.420 (<LOD-.540)	401
Age 12-19 years	09-10	*	<LOD	<LOD	.360 (.270-.440)	.450 (.340-.560)	420
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	.580 (<LOD-.670)	1490
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	.700 (.580-.930)	1814
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	.640 (.580-.700)	1914
Males	05-06	*	<LOD	<LOD	<LOD	.390 (<LOD-.440)	1270
Males	07-08	*	<LOD	<LOD	<LOD	.510 (.390-.600)	1294
Males	09-10	*	<LOD	<LOD	.380 (<LOD-.420)	.480 (.450-.610)	1399
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1278
Females	07-08	*	<LOD	<LOD	<LOD	.880 (.670-1.08)	1310
Females	09-10	*	<LOD	<LOD	.540 (<LOD-.580)	.700 (.640-.880)	1350
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	.480 (<LOD-.740)	637
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	.520 (.440-.610)	531
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	.560 (<LOD-.750)	566
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	.320 (<LOD-.400)	678
Non-Hispanic blacks	07-08	*	<LOD	<LOD	.320 (<LOD-.410)	.460 (.340-.610)	597
Non-Hispanic blacks	09-10	*	<LOD	<LOD	.300 (.250-.330)	.440 (.320-.560)	516
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	.610 (<LOD-.670)	1038
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	.700 (.560-.930)	1077
Non-Hispanic whites	09-10	*	<LOD	<LOD	.500 (<LOD-.560)	.670 (.580-.740)	1206

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡The 2003-2004 data were removed due to potential for contamination that may have occurred during sampling. Not measured after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Octylphenol_BiomonitoringSummary.html

Urinary Triclosan (2003 – 2010)

CAS Number 3380-34-5

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	13.0 (11.6-14.6)	9.20 (7.90-10.9)	47.4 (38.2-58.4)	249 (188-304)	461 (383-522)	2517
Total population	05-06	18.5 (16.1-21.3)	15.1 (11.8-18.5)	76.2 (57.9-97.6)	334 (279-402)	655 (573-739)	2548
Total population	07-08	15.3 (13.5-17.4)	12.1 (10.2-13.8)	57.2 (46.1-65.9)	225 (176-288)	494 (371-615)	2604
Total population	09-10	14.5 (12.6-16.6)	10.7 (8.80-12.6)	51.2 (39.4-67.7)	238 (200-284)	483 (398-569)	2749
Age 6-11 years	03-04	8.16 (6.20-10.8)	6.00 (4.00-8.50)	20.7 (14.3-31.6)	123 (36.4-163)	157 (113-380)	314
Age 6-11 years	05-06	12.8 (9.89-16.7)	10.3 (8.30-17.2)	35.4 (23.9-65.8)	97.6 (67.4-181)	246 (99.5-462)	356
Age 6-11 years	07-08	11.8 (7.57-18.2)	9.80 (6.70-13.9)	27.7 (14.8-52.2)	98.5 (40.5-364)	296 (67.4-826)	389
Age 6-11 years	09-10	10.9 (9.35-12.8)	9.90 (7.10-11.9)	28.3 (22.1-35.5)	95.5 (71.5-117)	200 (114-474)	415
Age 12-19 years	03-04	14.5 (11.0-19.1)	10.3 (8.20-13.1)	39.0 (26.5-86.4)	304 (134-566)	655 (310-890)	715
Age 12-19 years	05-06	18.8 (14.9-23.8)	15.4 (11.0-21.0)	67.5 (45.3-100)	330 (174-461)	566 (389-707)	702
Age 12-19 years	07-08	18.2 (13.8-23.8)	13.8 (9.40-20.1)	63.2 (38.7-110)	296 (144-395)	401 (308-853)	401
Age 12-19 years	09-10	11.7 (9.89-13.8)	8.80 (7.30-10.9)	30.2 (24.3-40.6)	165 (56.7-289)	301 (220-431)	420
Age 20+ years	03-04	13.6 (12.0-15.3)	9.60 (8.20-11.5)	51.7 (39.6-65.7)	261 (198-317)	472 (406-522)	1488
Age 20+ years	05-06	19.3 (16.4-22.6)	15.5 (11.8-19.4)	84.3 (61.0-114)	366 (289-462)	738 (583-864)	1490
Age 20+ years	07-08	15.4 (13.7-17.3)	12.3 (10.1-14.4)	60.1 (48.5-69.0)	225 (185-286)	504 (378-573)	1814
Age 20+ years	09-10	15.5 (12.9-18.5)	11.1 (8.60-14.2)	61.8 (41.8-86.0)	262 (214-327)	544 (415-621)	1914
Males	03-04	16.2 (13.4-19.6)	11.7 (9.30-14.8)	84.9 (50.6-111)	317 (231-433)	574 (461-716)	1229
Males	05-06	21.3 (17.6-25.7)	17.6 (11.9-23.2)	103 (69.9-143)	446 (366-488)	738 (601-873)	1270
Males	07-08	15.2 (12.9-17.9)	12.3 (9.50-15.3)	60.6 (45.8-72.8)	236 (159-338)	467 (367-636)	1294
Males	09-10	14.8 (12.7-17.4)	10.9 (8.60-13.3)	55.1 (40.4-77.5)	243 (214-295)	455 (327-600)	1399
Females	03-04	10.6 (9.29-12.1)	7.60 (6.10-9.10)	33.2 (27.1-39.4)	144 (96.5-250)	380 (258-430)	1288
Females	05-06	16.2 (13.9-18.8)	12.6 (10.1-15.6)	58.7 (41.5-81.9)	226 (169-304)	513 (310-773)	1278
Females	07-08	15.5 (12.6-18.9)	12.0 (9.90-14.1)	52.1 (37.1-74.4)	210 (133-367)	504 (285-648)	1310
Females	09-10	14.2 (12.0-16.8)	10.5 (8.70-12.6)	50.0 (34.4-63.8)	235 (149-302)	488 (332-661)	1350
Mexican Americans	03-04	14.6 (10.6-20.1)	8.80 (5.40-17.5)	65.4 (32.8-127)	357 (225-456)	597 (372-992)	613
Mexican Americans	05-06	26.7 (21.2-33.7)	18.7 (13.5-25.5)	196 (99.4-269)	668 (475-759)	866 (750-1180)	637
Mexican Americans	07-08	17.1 (12.9-22.6)	11.8 (8.40-17.8)	67.4 (42.5-106)	358 (208-474)	556 (363-856)	531
Mexican Americans	09-10	14.9 (12.2-18.3)	10.2 (8.20-12.8)	54.7 (33.3-86.5)	345 (260-494)	691 (443-1180)	566
Non-Hispanic blacks	03-04	14.4 (11.4-18.2)	11.1 (8.70-16.1)	37.6 (30.2-58.0)	203 (87.5-341)	450 (254-750)	652
Non-Hispanic blacks	05-06	17.3 (13.3-22.4)	14.0 (10.4-19.0)	59.2 (37.7-98.3)	258 (138-460)	541 (273-1190)	678
Non-Hispanic blacks	07-08	13.7 (11.7-16.1)	11.3 (8.80-13.9)	41.4 (28.9-49.6)	150 (93.5-265)	480 (190-757)	597
Non-Hispanic blacks	09-10	12.8 (10.8-15.0)	9.30 (7.70-11.7)	34.3 (24.0-44.6)	168 (88.4-263)	451 (202-959)	516
Non-Hispanic whites	03-04	12.9 (11.2-14.9)	9.20 (7.40-11.0)	49.2 (37.8-63.4)	245 (163-334)	461 (383-527)	1092
Non-Hispanic whites	05-06	17.5 (14.9-20.6)	15.1 (10.9-19.0)	74.3 (54.1-90.3)	288 (231-366)	569 (462-693)	1038
Non-Hispanic whites	07-08	15.0 (12.6-17.7)	12.3 (9.80-14.5)	59.6 (41.9-73.4)	197 (147-266)	408 (296-537)	1077
Non-Hispanic whites	09-10	14.0 (11.8-16.7)	10.5 (8.30-12.9)	51.7 (33.1-79.2)	216 (174-266)	431 (301-565)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 2.3, 2.3, 2.3, and 2.3 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Triclosan_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Triclosan_FactSheet.html

Urinary Triclosan (creatinine corrected) (2003 – 2010)

CAS Number 3380-34-5

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	12.7 (11.5-14.1)	9.48 (8.22-10.4)	43.9 (33.8-60.6)	212 (172-241)	368 (294-463)	2514
Total population	05-06	18.0 (16.0-20.3)	13.0 (11.5-16.1)	73.2 (57.3-91.6)	304 (240-364)	532 (434-674)	2548
Total population	07-08	15.5 (13.7-17.5)	12.4 (10.6-14.2)	50.4 (40.2-59.8)	233 (171-300)	443 (330-559)	2604
Total population	09-10	15.1 (13.2-17.4)	10.9 (9.41-12.4)	49.4 (37.0-67.3)	256 (191-322)	454 (352-557)	2749
Age 6-11 years	03-04	9.93 (7.43-13.3)	7.55 (4.72-13.4)	25.1 (15.3-35.6)	116 (39.9-236)	236 (115-336)	314
Age 6-11 years	05-06	14.1 (10.8-18.5)	13.5 (7.97-18.5)	38.6 (26.0-54.1)	108 (62.4-169)	241 (108-598)	356
Age 6-11 years	07-08	14.5 (9.47-22.1)	13.0 (8.00-17.5)	33.1 (17.5-72.4)	132 (52.7-331)	331 (131-599)	389
Age 6-11 years	09-10	14.2 (12.4-16.4)	12.0 (8.84-15.0)	37.1 (27.0-47.3)	129 (89.1-155)	300 (148-469)	415
Age 12-19 years	03-04	10.9 (8.32-14.2)	7.45 (5.48-10.7)	31.8 (21.9-61.1)	193 (90.7-318)	356 (169-580)	713
Age 12-19 years	05-06	14.0 (11.0-17.8)	11.1 (8.68-13.6)	51.0 (33.0-73.4)	193 (125-306)	385 (203-739)	702
Age 12-19 years	07-08	14.1 (11.0-18.1)	11.0 (7.87-14.4)	50.2 (27.1-78.8)	206 (95.3-293)	378 (238-571)	401
Age 12-19 years	09-10	9.38 (7.86-11.2)	7.71 (5.71-9.21)	23.2 (17.3-29.3)	153 (63.0-201)	247 (166-379)	420
Age 20+ years	03-04	13.4 (12.0-15.1)	10.0 (8.89-11.4)	50.0 (36.0-73.8)	224 (186-272)	385 (308-506)	1487
Age 20+ years	05-06	19.3 (16.9-22.0)	13.7 (11.6-17.0)	86.1 (64.0-109)	343 (262-411)	581 (440-718)	1490
Age 20+ years	07-08	15.8 (14.0-17.8)	12.6 (10.7-14.5)	52.3 (43.8-64.6)	244 (186-309)	484 (336-568)	1814
Age 20+ years	09-10	16.4 (13.7-19.6)	11.5 (9.63-14.8)	57.1 (38.4-80.2)	279 (202-364)	504 (372-601)	1914
Males	03-04	13.2 (11.3-15.6)	9.21 (6.86-12.1)	73.1 (45.8-85.9)	237 (175-294)	384 (294-506)	1228
Males	05-06	17.1 (14.1-20.7)	12.4 (10.0-18.5)	82.6 (58.2-109)	308 (232-368)	472 (355-721)	1270
Males	07-08	12.8 (10.9-15.0)	10.0 (8.12-13.0)	45.7 (32.1-57.3)	191 (132-241)	330 (253-456)	1294
Males	09-10	13.3 (11.3-15.7)	9.21 (7.40-11.7)	43.9 (33.5-67.4)	230 (178-276)	345 (276-429)	1399
Females	03-04	12.2 (10.6-14.2)	9.54 (8.45-10.4)	32.3 (26.2-46.6)	182 (138-217)	336 (225-480)	1286
Females	05-06	19.0 (16.1-22.6)	13.8 (11.7-16.7)	64.0 (47.6-89.8)	301 (209-434)	619 (418-898)	1278
Females	07-08	18.5 (15.6-22.0)	14.4 (12.4-16.8)	55.3 (38.5-77.0)	300 (182-435)	571 (359-729)	1310
Females	09-10	17.1 (14.6-20.1)	12.3 (10.7-14.8)	50.6 (37.0-71.3)	300 (187-422)	556 (422-668)	1350
Mexican Americans	03-04	13.3 (9.38-18.8)	9.18 (5.45-13.9)	66.7 (28.8-112)	292 (151-432)	453 (263-1150)	612
Mexican Americans	05-06	24.1 (19.3-29.9)	17.6 (13.3-22.8)	154 (96.4-242)	440 (379-601)	736 (601-818)	637
Mexican Americans	07-08	16.6 (12.2-22.6)	12.6 (8.51-16.5)	60.1 (39.6-80.3)	325 (182-475)	637 (368-828)	531
Mexican Americans	09-10	14.8 (12.1-18.2)	9.38 (7.63-12.4)	45.4 (32.2-110)	352 (244-458)	578 (402-737)	566
Non-Hispanic blacks	03-04	9.94 (7.92-12.5)	7.74 (5.50-10.0)	30.2 (25.6-37.3)	132 (78.0-213)	260 (127-513)	651
Non-Hispanic blacks	05-06	12.2 (9.47-15.6)	9.50 (7.64-11.8)	41.0 (23.3-77.4)	179 (106-243)	352 (203-674)	678
Non-Hispanic blacks	07-08	10.6 (8.91-12.7)	8.34 (6.47-10.1)	28.6 (22.3-36.7)	120 (71.0-203)	266 (151-407)	597
Non-Hispanic blacks	09-10	9.23 (7.62-11.2)	6.62 (5.63-8.18)	22.7 (16.9-29.1)	136 (63.6-240)	356 (180-689)	516
Non-Hispanic whites	03-04	13.3 (11.6-15.1)	9.82 (8.11-11.5)	47.0 (34.3-67.7)	213 (160-272)	358 (276-480)	1091
Non-Hispanic whites	05-06	18.4 (16.0-21.2)	13.5 (11.6-17.0)	73.4 (56.8-97.0)	282 (231-343)	472 (367-699)	1038
Non-Hispanic whites	07-08	15.6 (13.1-18.7)	13.0 (10.7-14.8)	50.4 (35.9-65.9)	222 (129-303)	418 (262-586)	1077
Non-Hispanic whites	09-10	15.8 (13.1-19.0)	11.4 (9.41-14.8)	52.0 (37.0-71.3)	242 (159-323)	410 (317-547)	1206

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Triclosan_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Triclosan_FactSheet.html

Urinary Butyl paraben (2005 – 2010)

CAS Number 94-26-8

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	1.30 (.800-1.80)	6.60 (4.80-10.7)	19.6 (16.4-26.7)	2548
Total population	07-08	*	<LOD	1.10 (.900-1.50)	9.00 (6.20-11.4)	20.9 (15.2-30.1)	2604
Total population	09-10	*	<LOD	.600 (.500-.800)	5.10 (3.40-8.10)	17.1 (10.5-29.4)	2749
Age 6-11 years	05-06	*	<LOD	.400 (.200-.600)	1.90 (.800-5.80)	7.50 (1.70-18.5)	356
Age 6-11 years	07-08	*	<LOD	.300 (.200-.500)	1.30 (.900-1.70)	3.80 (1.00-114)	389
Age 6-11 years	09-10	*	<LOD	.300 (<LOD-.400)	.900 (.500-1.70)	2.20 (1.30-5.10)	415
Age 12-19 years	05-06	*	.200 (<LOD-.400)	.900 (.600-1.80)	9.60 (4.10-16.1)	24.6 (14.5-33.4)	702
Age 12-19 years	07-08	*	<LOD	.800 (.600-1.40)	6.20 (2.50-11.5)	15.8 (6.20-33.2)	401
Age 12-19 years	09-10	*	<LOD	.500 (.400-.900)	5.70 (1.40-15.7)	18.6 (5.70-39.0)	420
Age 20+ years	05-06	*	<LOD	1.70 (1.00-2.20)	6.80 (4.80-11.7)	20.5 (15.8-28.3)	1490
Age 20+ years	07-08	*	<LOD	1.50 (1.00-1.90)	9.80 (6.70-13.4)	24.6 (16.5-32.0)	1814
Age 20+ years	09-10	*	<LOD	.700 (.500-1.00)	6.00 (3.70-10.0)	18.7 (11.9-35.1)	1914
Males	05-06	*	<LOD	.300 (<LOD-.300)	1.10 (.600-2.00)	3.20 (1.90-5.50)	1270
Males	07-08	*	<LOD	.200 (.200-.300)	1.00 (.700-1.50)	3.60 (2.00-7.20)	1294
Males	09-10	*	<LOD	<LOD	.800 (.500-1.20)	2.70 (1.50-12.0)	1399
Females	05-06	.904 (.760-1.07)	.500 (.400-.700)	3.70 (2.90-4.80)	17.4 (11.7-20.8)	34.9 (28.2-41.1)	1278
Females	07-08	.926 (.825-1.04)	.500 (.400-.700)	3.90 (3.00-4.70)	17.9 (12.1-20.5)	34.8 (25.2-52.1)	1310
Females	09-10	*	.300 (.200-.400)	1.80 (1.30-2.30)	11.3 (6.60-18.8)	31.8 (17.7-49.4)	1350
Mexican Americans	05-06	*	.200 (<LOD-.300)	1.10 (.700-2.30)	11.3 (6.40-15.6)	27.3 (16.5-35.9)	637
Mexican Americans	07-08	*	<LOD	.900 (.500-1.30)	6.80 (3.50-13.2)	22.7 (13.2-30.7)	531
Mexican Americans	09-10	*	<LOD	.900 (.400-1.30)	8.30 (4.50-13.8)	18.8 (13.8-35.1)	566
Non-Hispanic blacks	05-06	*	.300 (.200-.400)	2.10 (1.00-3.50)	9.10 (4.40-25.0)	31.8 (10.1-82.6)	678
Non-Hispanic blacks	07-08	*	.200 (<LOD-.300)	1.10 (.700-1.70)	7.10 (4.20-9.90)	20.0 (8.90-31.3)	597
Non-Hispanic blacks	09-10	*	<LOD	.500 (.300-.900)	3.10 (1.40-7.30)	9.00 (5.60-16.7)	516
Non-Hispanic whites	05-06	*	<LOD	1.00 (.700-1.80)	5.80 (4.00-9.00)	17.7 (11.7-25.9)	1038
Non-Hispanic whites	07-08	*	<LOD	1.20 (.800-1.60)	9.10 (5.00-13.3)	19.6 (12.1-32.0)	1077
Non-Hispanic whites	09-10	*	<LOD	.700 (.500-.900)	4.90 (2.70-9.20)	17.7 (9.20-34.5)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.2, 0.2, and 0.2 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Parabens_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Parabens_FactSheet.html

Urinary Butyl paraben (creatinine corrected) (2005 – 2010)

CAS Number 94-26-8

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	1.16 (.910-1.62)	7.82 (6.26-11.2)	21.2 (16.8-27.3)	2548
Total population	07-08	*	<LOD	1.16 (.880-1.59)	9.83 (6.51-13.5)	23.1 (18.1-30.4)	2604
Total population	09-10	*	<LOD	.710 (.610-.930)	5.58 (3.55-10.0)	18.0 (10.2-27.6)	2749
Age 6-11 years	05-06	*	<LOD	.440 (.370-.660)	1.65 (1.00-5.29)	7.92 (1.64-30.5)	356
Age 6-11 years	07-08	*	<LOD	.540 (.410-.720)	1.24 (.920-2.80)	5.91 (.930-76.0)	389
Age 6-11 years	09-10	*	<LOD	.530 (<LOD-.630)	1.36 (.740-1.89)	2.74 (1.56-6.58)	415
Age 12-19 years	05-06	*	.190 (<LOD-.250)	.690 (.490-1.20)	6.67 (3.60-11.2)	18.7 (9.52-28.9)	702
Age 12-19 years	07-08	*	<LOD	.670 (.450-.930)	3.70 (1.80-7.41)	9.64 (6.00-18.7)	401
Age 12-19 years	09-10	*	<LOD	.550 (.420-.790)	3.75 (1.21-11.9)	13.8 (3.75-23.7)	420
Age 20+ years	05-06	*	<LOD	1.49 (1.06-1.96)	9.07 (6.55-14.8)	25.5 (17.9-30.4)	1490
Age 20+ years	07-08	*	<LOD	1.52 (1.04-2.21)	12.4 (8.35-15.1)	27.5 (21.2-36.8)	1814
Age 20+ years	09-10	*	<LOD	.830 (.640-1.19)	7.06 (3.79-11.9)	22.0 (13.1-31.2)	1914
Males	05-06	*	<LOD	.290 (<LOD-.350)	.830 (.570-1.16)	2.28 (1.43-2.91)	1270
Males	07-08	*	<LOD	.290 (.260-.340)	.830 (.620-1.36)	2.40 (1.56-4.85)	1294
Males	09-10	*	<LOD	<LOD	.700 (.560-1.09)	2.50 (1.18-5.87)	1399
Females	05-06	1.06 (.914-1.24)	.750 (.600-.860)	4.44 (3.01-6.26)	19.8 (13.5-25.7)	34.7 (26.9-42.7)	1278
Females	07-08	1.11 (.984-1.25)	.670 (.550-.920)	4.44 (3.02-6.12)	20.6 (14.6-25.9)	39.4 (28.1-77.7)	1310
Females	09-10	*	.450 (.420-.520)	2.17 (1.67-3.10)	13.5 (8.75-22.5)	28.2 (18.4-45.7)	1350
Mexican Americans	05-06	*	.240 (<LOD-.290)	1.20 (.760-1.68)	9.15 (5.36-15.2)	20.3 (15.8-29.2)	637
Mexican Americans	07-08	*	<LOD	.810 (.610-1.07)	8.57 (3.28-12.0)	23.0 (12.7-29.5)	531
Mexican Americans	09-10	*	<LOD	.930 (.570-1.76)	8.01 (4.77-10.5)	17.0 (10.5-27.1)	566
Non-Hispanic blacks	05-06	*	.220 (.180-.270)	1.46 (.750-2.64)	8.18 (3.65-17.9)	21.0 (10.9-51.3)	678
Non-Hispanic blacks	07-08	*	.220 (<LOD-.280)	.900 (.570-1.27)	5.21 (3.13-6.18)	12.1 (6.14-21.4)	597
Non-Hispanic blacks	09-10	*	<LOD	.390 (.270-.590)	2.63 (.890-4.71)	7.00 (3.26-11.9)	516
Non-Hispanic whites	05-06	*	<LOD	1.12 (.850-1.65)	6.93 (5.21-9.91)	20.9 (15.4-27.3)	1038
Non-Hispanic whites	07-08	*	<LOD	1.18 (.810-2.09)	10.7 (6.32-14.8)	26.8 (15.1-40.4)	1077
Non-Hispanic whites	09-10	*	<LOD	.780 (.620-1.13)	6.34 (3.44-12.6)	20.8 (9.12-33.2)	1206

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Parabens_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Parabens_FactSheet.html

Urinary Ethyl paraben (2005 – 2010)

CAS Number 120-47-8

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	4.80 (3.40-6.00)	26.2 (19.4-31.9)	57.2 (40.3-83.4)	2548
Total population	07-08	*	<LOD	5.40 (3.80-6.90)	29.3 (21.9-42.4)	72.1 (54.6-91.8)	2604
Total population	09-10	*	1.10 (<LOD-1.20)	6.60 (4.90-8.30)	37.6 (24.4-51.3)	82.6 (60.3-119)	2749
Age 6-11 years	05-06	*	<LOD	<LOD	2.60 (1.70-4.70)	9.90 (2.80-30.7)	356
Age 6-11 years	07-08	*	<LOD	1.70 (1.10-2.60)	4.60 (2.30-36.7)	35.6 (2.60-282)	389
Age 6-11 years	09-10	*	<LOD	1.50 (1.20-1.80)	3.70 (2.50-5.30)	11.5 (4.50-18.4)	415
Age 12-19 years	05-06	*	<LOD	2.30 (1.30-3.20)	11.3 (7.90-24.1)	38.0 (17.7-122)	702
Age 12-19 years	07-08	*	<LOD	3.00 (2.30-4.90)	23.0 (7.30-60.3)	60.3 (12.5-159)	401
Age 12-19 years	09-10	*	<LOD	3.50 (2.10-5.90)	33.8 (19.4-49.6)	83.2 (34.5-284)	420
Age 20+ years	05-06	*	<LOD	5.90 (4.60-8.10)	30.4 (22.3-38.6)	69.5 (48.1-89.5)	1490
Age 20+ years	07-08	*	1.10 (<LOD-1.40)	6.20 (4.60-9.20)	34.7 (22.8-50.4)	77.4 (51.4-120)	1814
Age 20+ years	09-10	*	1.30 (1.10-1.50)	8.40 (6.00-10.6)	45.0 (29.1-60.3)	91.4 (62.6-129)	1914
Males	05-06	*	<LOD	1.90 (1.20-3.00)	8.90 (5.80-13.7)	25.2 (15.7-29.2)	1270
Males	07-08	*	<LOD	2.40 (1.50-3.00)	11.2 (6.60-15.3)	28.3 (15.3-42.8)	1294
Males	09-10	*	<LOD	2.20 (1.90-2.70)	10.4 (7.40-19.1)	36.4 (19.1-61.3)	1399
Females	05-06	*	1.30 (<LOD-2.20)	10.0 (7.50-13.2)	42.7 (32.3-62.8)	98.7 (74.7-147)	1278
Females	07-08	*	1.80 (1.40-2.50)	10.1 (6.90-16.5)	62.0 (38.2-80.8)	123 (78.5-259)	1310
Females	09-10	3.84 (3.35-4.41)	2.00 (1.60-2.40)	15.4 (12.5-18.4)	62.4 (45.7-78.7)	138 (92.2-211)	1350
Mexican Americans	05-06	*	<LOD	3.70 (1.90-6.10)	24.0 (11.6-37.7)	55.6 (40.3-120)	637
Mexican Americans	07-08	*	<LOD	4.10 (2.90-5.90)	23.6 (12.8-30.1)	48.3 (31.0-65.2)	531
Mexican Americans	09-10	*	<LOD	4.30 (2.60-7.70)	31.0 (21.5-46.3)	65.5 (46.3-92.2)	566
Non-Hispanic blacks	05-06	*	1.00 (<LOD-1.50)	5.70 (3.70-9.80)	31.3 (20.4-52.1)	92.3 (41.5-166)	678
Non-Hispanic blacks	07-08	*	1.00 (<LOD-1.50)	7.90 (3.90-15.8)	39.9 (24.0-63.4)	97.2 (58.3-256)	597
Non-Hispanic blacks	09-10	3.62 (3.11-4.22)	1.90 (1.60-2.40)	11.1 (8.10-17.5)	58.6 (33.8-93.7)	166 (66.0-297)	516
Non-Hispanic whites	05-06	*	<LOD	4.80 (3.10-6.10)	24.0 (15.5-32.3)	54.7 (36.4-86.8)	1038
Non-Hispanic whites	07-08	*	1.00 (<LOD-1.30)	5.20 (3.50-7.10)	27.2 (18.0-40.8)	67.1 (42.8-98.1)	1077
Non-Hispanic whites	09-10	*	1.10 (<LOD-1.20)	6.50 (4.50-8.50)	37.5 (22.7-52.7)	78.7 (49.7-138)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.0, 1.0, and 1.0 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Parabens_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Parabens_FactSheet.html

Urinary Ethyl paraben (creatinine corrected) (2005 – 2010)

CAS Number 120-47-8

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	4.61 (3.39-6.30)	27.1 (19.1-34.0)	66.5 (46.5-84.2)	2548
Total population	07-08	*	<LOD	5.56 (4.31-7.56)	32.7 (22.5-50.2)	80.0 (53.2-117)	2604
Total population	09-10	*	1.65 (<LOD-1.82)	6.11 (4.90-7.96)	36.6 (28.0-47.2)	94.6 (67.3-127)	2749
Age 6-11 years	05-06	*	<LOD	<LOD	4.18 (1.91-10.2)	13.5 (4.18-29.0)	356
Age 6-11 years	07-08	*	<LOD	2.54 (1.82-3.30)	6.13 (3.26-34.3)	34.3 (3.30-207)	389
Age 6-11 years	09-10	*	<LOD	2.37 (1.97-3.09)	5.00 (3.74-6.67)	10.1 (6.11-27.3)	415
Age 12-19 years	05-06	*	<LOD	1.94 (1.29-2.65)	10.9 (3.57-20.2)	32.0 (14.1-57.8)	702
Age 12-19 years	07-08	*	<LOD	2.93 (1.93-3.97)	12.9 (4.60-37.9)	37.9 (8.79-110)	401
Age 12-19 years	09-10	*	<LOD	3.11 (2.22-5.94)	26.2 (13.0-33.9)	52.4 (28.8-177)	420
Age 20+ years	05-06	*	<LOD	6.36 (4.63-7.92)	32.4 (23.7-46.0)	76.8 (57.3-97.9)	1490
Age 20+ years	07-08	*	1.58 (<LOD-1.97)	6.97 (4.94-10.9)	38.5 (24.8-61.9)	94.1 (53.6-146)	1814
Age 20+ years	09-10	*	1.82 (1.61-2.13)	8.08 (5.92-10.7)	43.7 (33.1-56.0)	106 (78.1-137)	1914
Males	05-06	*	<LOD	1.82 (1.48-2.15)	6.38 (3.55-9.95)	15.5 (10.2-22.3)	1270
Males	07-08	*	<LOD	2.14 (1.67-3.03)	8.61 (5.54-12.4)	21.7 (11.7-32.7)	1294
Males	09-10	*	<LOD	2.45 (2.22-2.92)	8.63 (6.14-13.7)	28.8 (14.4-43.2)	1399
Females	05-06	*	2.09 (<LOD-2.60)	12.7 (8.45-16.2)	57.3 (40.7-75.2)	107 (82.9-141)	1278
Females	07-08	*	2.63 (2.09-3.55)	13.9 (9.09-22.5)	66.1 (40.9-95.1)	130 (78.8-203)	1310
Females	09-10	4.63 (4.13-5.19)	2.90 (2.47-3.43)	16.8 (13.7-22.0)	71.9 (53.4-98.8)	173 (121-227)	1350
Mexican Americans	05-06	*	<LOD	3.49 (2.09-5.23)	23.6 (11.8-33.2)	68.5 (32.1-107)	637
Mexican Americans	07-08	*	<LOD	4.44 (2.86-5.81)	22.5 (15.9-27.2)	47.7 (26.7-74.2)	531
Mexican Americans	09-10	*	<LOD	4.40 (3.09-6.31)	30.0 (16.0-36.9)	59.1 (36.9-87.2)	566
Non-Hispanic blacks	05-06	*	.970 (<LOD-1.14)	4.48 (2.90-6.07)	22.0 (14.1-36.8)	47.5 (33.7-106)	678
Non-Hispanic blacks	07-08	*	1.18 (<LOD-1.47)	6.37 (3.20-10.9)	38.8 (16.5-53.1)	90.7 (42.6-172)	597
Non-Hispanic blacks	09-10	2.62 (2.14-3.21)	1.57 (1.20-2.05)	7.35 (5.15-9.97)	44.9 (22.0-75.0)	98.8 (60.0-162)	516
Non-Hispanic whites	05-06	*	<LOD	4.73 (3.38-6.58)	27.5 (16.2-38.4)	70.6 (46.0-91.2)	1038
Non-Hispanic whites	07-08	*	1.48 (<LOD-1.82)	5.71 (3.74-8.97)	32.3 (20.0-53.6)	75.7 (40.5-121)	1077
Non-Hispanic whites	09-10	*	1.79 (<LOD-2.03)	6.63 (4.84-9.18)	37.7 (27.7-53.4)	114 (62.8-164)	1206

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Parabens_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Parabens_FactSheet.html

Urinary Methyl paraben (2005 – 2010)

CAS Number 99-76-3

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	56.4 (46.9-67.9)	63.5 (47.9-74.5)	216 (168-282)	560 (432-777)	974 (827-1110)	2548
Total population	07-08	60.1 (49.6-72.8)	59.8 (47.5-73.3)	204 (171-253)	544 (444-675)	902 (746-1100)	2604
Total population	09-10	57.1 (51.0-63.9)	55.1 (46.7-62.6)	213 (179-259)	621 (546-716)	1010 (919-1170)	2749
Age 6-11 years	05-06	33.5 (25.6-43.8)	25.0 (19.4-35.3)	86.7 (61.5-153)	289 (238-868)	1560 (389-2090)	356
Age 6-11 years	07-08	35.2 (25.0-49.6)	30.1 (19.6-38.5)	94.0 (46.6-214)	340 (218-527)	651 (430-995)	389
Age 6-11 years	09-10	33.9 (27.4-41.9)	26.5 (20.4-33.3)	79.4 (59.0-126)	415 (163-849)	873 (477-1230)	415
Age 12-19 years	05-06	53.8 (43.9-66.0)	53.5 (39.4-65.7)	192 (163-264)	491 (380-720)	901 (571-1210)	702
Age 12-19 years	07-08	64.9 (50.3-83.8)	66.3 (48.0-96.7)	221 (180-276)	521 (424-789)	971 (574-1390)	401
Age 12-19 years	09-10	53.9 (40.9-70.9)	56.5 (39.4-75.6)	176 (122-291)	716 (399-934)	984 (805-1210)	420
Age 20+ years	05-06	60.3 (48.7-74.7)	70.0 (57.1-85.3)	225 (177-322)	602 (439-814)	974 (827-1110)	1490
Age 20+ years	07-08	63.0 (51.8-76.7)	64.0 (51.4-79.8)	210 (172-267)	558 (447-678)	916 (743-1190)	1814
Age 20+ years	09-10	61.0 (53.5-69.6)	59.1 (50.6-72.6)	239 (188-276)	625 (566-711)	1010 (909-1270)	1914
Males	05-06	29.8 (24.8-35.8)	23.7 (19.5-29.4)	97.6 (78.1-121)	299 (229-355)	491 (385-743)	1270
Males	07-08	33.6 (27.3-41.3)	27.4 (20.8-39.9)	93.5 (71.0-137)	312 (260-407)	598 (460-734)	1294
Males	09-10	31.7 (27.6-36.4)	25.3 (20.6-30.6)	94.0 (76.8-122)	366 (275-482)	727 (569-919)	1399
Females	05-06	104 (80.8-135)	137 (93.0-168)	356 (279-427)	842 (660-974)	1110 (956-1330)	1278
Females	07-08	105 (90.2-123)	116 (95.2-139)	315 (248-424)	683 (558-901)	1140 (917-1420)	1310
Females	09-10	100 (87.9-114)	106 (90.9-125)	349 (271-405)	812 (696-931)	1230 (1010-1550)	1350
Mexican Americans	05-06	78.2 (61.0-100)	86.3 (64.7-121)	301 (233-349)	742 (474-896)	1100 (896-1170)	637
Mexican Americans	07-08	80.5 (66.0-98.2)	87.0 (63.4-117)	283 (222-348)	630 (533-791)	1030 (773-1240)	531
Mexican Americans	09-10	82.9 (68.6-100)	85.5 (73.0-99.8)	293 (231-385)	821 (536-1120)	1580 (855-2360)	566
Non-Hispanic blacks	05-06	174 (133-229)	216 (150-306)	616 (465-789)	1180 (1010-1480)	1690 (1210-2880)	678
Non-Hispanic blacks	07-08	152 (135-171)	159 (135-194)	483 (421-552)	1080 (938-1350)	1720 (1210-2700)	597
Non-Hispanic blacks	09-10	191 (171-213)	223 (170-288)	678 (533-849)	1470 (1220-2010)	2340 (1650-2750)	516
Non-Hispanic whites	05-06	43.8 (36.7-52.3)	44.3 (36.7-58.2)	165 (132-209)	412 (320-520)	806 (485-974)	1038
Non-Hispanic whites	07-08	48.9 (39.9-59.9)	47.6 (37.8-62.0)	158 (129-198)	430 (301-557)	671 (524-921)	1077
Non-Hispanic whites	09-10	43.5 (39.4-48.1)	41.3 (33.5-47.7)	150 (127-176)	463 (361-557)	757 (619-888)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.0, 1.0, and 1.0 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Parabens_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Parabens_FactSheet.html

Urinary Methyl paraben (creatinine corrected) (2005 – 2010)

CAS Number 99-76-3

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	55.0 (46.8-64.6)	58.8 (47.0-73.4)	221 (170-264)	527 (426-685)	902 (753-995)	2548
Total population	07-08	60.6 (49.8-73.8)	61.0 (45.3-83.2)	228 (188-288)	538 (439-645)	820 (694-1000)	2604
Total population	09-10	59.6 (53.5-66.3)	57.7 (52.3-68.5)	232 (195-262)	544 (468-632)	887 (734-1020)	2749
Age 6-11 years	05-06	36.8 (27.9-48.7)	26.9 (21.0-36.6)	108 (55.9-164)	259 (195-753)	1540 (313-2510)	356
Age 6-11 years	07-08	43.4 (31.3-60.2)	33.1 (21.8-55.0)	118 (62.3-197)	424 (218-668)	817 (558-1020)	389
Age 6-11 years	09-10	44.2 (35.7-54.6)	32.3 (26.5-42.9)	110 (67.6-158)	483 (258-722)	849 (535-1080)	415
Age 12-19 years	05-06	40.1 (33.7-47.8)	41.7 (31.5-56.3)	160 (129-178)	362 (280-428)	549 (434-656)	702
Age 12-19 years	07-08	50.5 (40.1-63.7)	52.8 (36.6-78.1)	167 (111-245)	336 (292-395)	475 (376-623)	401
Age 12-19 years	09-10	43.3 (33.5-55.9)	43.5 (27.5-68.6)	168 (123-221)	399 (292-558)	632 (425-890)	420
Age 20+ years	05-06	60.5 (50.5-72.5)	69.6 (51.5-90.9)	251 (189-320)	602 (462-729)	930 (788-1010)	1490
Age 20+ years	07-08	64.7 (52.9-79.2)	69.7 (51.1-92.5)	256 (209-316)	576 (450-710)	865 (697-1130)	1814
Age 20+ years	09-10	64.6 (57.0-73.3)	71.2 (56.6-84.7)	251 (217-287)	566 (495-673)	924 (753-1060)	1914
Males	05-06	23.9 (20.6-27.8)	21.1 (17.4-25.3)	72.1 (58.0-89.5)	209 (160-260)	368 (262-498)	1270
Males	07-08	28.3 (22.8-35.0)	23.5 (17.2-33.2)	80.7 (56.9-111)	257 (181-318)	444 (386-558)	1294
Males	09-10	28.4 (25.1-32.2)	23.3 (19.3-26.9)	77.7 (59.6-105)	260 (212-370)	516 (412-633)	1399
Females	05-06	123 (99.3-152)	147 (111-196)	377 (319-445)	788 (676-910)	1050 (937-1290)	1278
Females	07-08	126 (109-145)	160 (134-182)	374 (325-422)	734 (576-879)	1040 (835-1260)	1310
Females	09-10	121 (107-137)	146 (125-162)	359 (307-426)	745 (606-890)	1080 (924-1390)	1350
Mexican Americans	05-06	70.3 (57.1-86.7)	85.8 (67.2-106)	249 (191-303)	515 (431-656)	870 (656-1080)	637
Mexican Americans	07-08	78.5 (63.6-97.0)	96.2 (59.4-127)	293 (245-370)	627 (541-728)	831 (729-963)	531
Mexican Americans	09-10	82.3 (71.1-95.2)	95.2 (76.0-113)	284 (237-337)	623 (459-899)	1130 (657-2120)	566
Non-Hispanic blacks	05-06	122 (93.0-161)	161 (98.2-225)	377 (334-462)	792 (581-1100)	1220 (916-1590)	678
Non-Hispanic blacks	07-08	118 (105-133)	134 (111-155)	356 (311-403)	757 (573-882)	1030 (847-1290)	597
Non-Hispanic blacks	09-10	138 (118-163)	165 (127-203)	403 (356-498)	928 (729-1120)	1350 (1080-1680)	516
Non-Hispanic whites	05-06	46.1 (39.0-54.4)	45.6 (34.5-59.7)	170 (142-234)	447 (339-706)	814 (640-995)	1038
Non-Hispanic whites	07-08	51.0 (40.5-64.2)	46.7 (35.8-66.3)	191 (154-230)	481 (383-614)	747 (574-966)	1077
Non-Hispanic whites	09-10	48.9 (44.5-53.7)	45.9 (39.5-51.9)	184 (154-215)	468 (388-560)	734 (631-924)	1206

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Parabens_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Parabens_FactSheet.html

Urinary n-Propyl paraben (2005 – 2010)

CAS Number 94-13-3

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	7.91 (6.41-9.77)	8.70 (5.90-12.4)	48.9 (36.6-64.8)	160 (129-200)	299 (237-354)	2548
Total population	07-08	7.59 (6.22-9.26)	7.60 (5.70-10.6)	44.1 (34.1-55.6)	144 (115-196)	268 (231-290)	2604
Total population	09-10	6.97 (5.96-8.16)	6.40 (5.10-8.00)	44.3 (38.6-50.3)	153 (133-183)	297 (233-334)	2749
Age 6-11 years	05-06	3.41 (2.43-4.77)	2.50 (1.60-4.30)	11.1 (7.10-21.0)	47.5 (30.0-91.9)	125 (55.8-383)	356
Age 6-11 years	07-08	3.61 (2.39-5.44)	3.50 (1.90-6.00)	13.7 (7.60-22.8)	49.1 (21.7-99.6)	99.6 (80.4-120)	389
Age 6-11 years	09-10	3.28 (2.58-4.17)	2.70 (2.00-4.00)	10.2 (7.00-14.0)	42.9 (28.2-61.6)	114 (56.8-239)	415
Age 12-19 years	05-06	8.16 (5.70-11.7)	8.40 (5.00-13.9)	46.4 (24.1-68.5)	165 (96.7-222)	310 (201-361)	702
Age 12-19 years	07-08	8.85 (6.73-11.6)	7.90 (5.30-12.0)	49.2 (31.1-62.2)	193 (100-234)	271 (195-314)	401
Age 12-19 years	09-10	7.01 (5.13-9.58)	7.90 (4.40-11.0)	39.7 (24.8-57.8)	153 (78.1-299)	367 (136-694)	420
Age 20+ years	05-06	8.67 (6.83-11.0)	11.2 (7.70-14.4)	55.6 (41.2-75.6)	172 (130-233)	302 (237-367)	1490
Age 20+ years	07-08	8.04 (6.56-9.84)	8.40 (6.10-11.9)	48.8 (38.3-61.1)	152 (118-202)	272 (232-312)	1814
Age 20+ years	09-10	7.58 (6.28-9.15)	7.50 (5.30-9.90)	48.9 (42.6-58.0)	166 (139-199)	298 (251-334)	1914
Males	05-06	2.96 (2.33-3.77)	2.30 (1.60-3.10)	13.8 (9.00-18.0)	51.7 (39.7-70.9)	125 (77.2-185)	1270
Males	07-08	3.02 (2.47-3.71)	2.30 (1.70-3.30)	12.6 (8.40-17.4)	56.4 (38.9-89.5)	140 (98.1-209)	1294
Males	09-10	2.77 (2.26-3.40)	2.00 (1.40-2.60)	11.4 (7.70-15.4)	57.3 (44.6-67.8)	134 (86.1-184)	1399
Females	05-06	20.4 (16.0-25.9)	29.1 (21.6-37.5)	93.0 (75.7-129)	254 (193-318)	357 (318-395)	1278
Females	07-08	18.4 (15.7-21.5)	23.3 (20.5-26.1)	76.3 (62.9-100)	210 (164-269)	312 (271-363)	1310
Females	09-10	16.9 (14.6-19.4)	20.2 (17.0-25.9)	83.3 (70.0-92.4)	227 (171-295)	361 (297-502)	1350
Mexican Americans	05-06	10.6 (8.08-13.8)	12.1 (7.00-17.5)	65.9 (43.5-93.3)	247 (174-293)	389 (293-453)	637
Mexican Americans	07-08	7.82 (5.98-10.2)	7.00 (4.20-12.9)	52.1 (36.9-64.1)	146 (105-201)	217 (161-401)	531
Mexican Americans	09-10	8.94 (7.25-11.0)	8.70 (5.70-13.3)	58.9 (45.7-68.5)	182 (117-299)	451 (269-911)	566
Non-Hispanic blacks	05-06	26.8 (21.5-33.3)	34.7 (28.3-44.2)	125 (89.5-165)	331 (236-411)	531 (367-730)	678
Non-Hispanic blacks	07-08	21.3 (18.4-24.7)	28.6 (21.8-34.8)	85.4 (70.8-96.9)	222 (176-282)	410 (277-506)	597
Non-Hispanic blacks	09-10	26.1 (21.8-31.3)	29.9 (23.4-39.5)	129 (87.4-167)	322 (229-503)	572 (369-654)	516
Non-Hispanic whites	05-06	6.21 (5.02-7.68)	6.00 (4.60-9.10)	35.7 (28.4-49.6)	130 (92.1-157)	229 (156-318)	1038
Non-Hispanic whites	07-08	6.49 (5.05-8.33)	6.10 (4.50-9.20)	36.8 (26.9-47.5)	129 (91.3-196)	251 (190-290)	1077
Non-Hispanic whites	09-10	5.34 (4.55-6.27)	4.40 (3.60-5.70)	35.6 (26.1-44.3)	128 (92.4-141)	235 (170-300)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.2, 0.2, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Parabens_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Parabens_FactSheet.html

Urinary n-Propyl paraben (creatinine corrected) (2005 – 2010)

CAS Number 94-13-3

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	7.71 (6.40-9.30)	8.27 (5.87-11.3)	52.9 (41.6-66.1)	161 (140-178)	263 (226-288)	2548
Total population	07-08	7.65 (6.22-9.40)	8.00 (5.34-11.6)	50.0 (39.5-59.8)	138 (115-168)	235 (199-293)	2604
Total population	09-10	7.28 (6.30-8.41)	6.67 (5.35-8.50)	45.1 (37.3-53.5)	155 (128-187)	253 (223-300)	2749
Age 6-11 years	05-06	3.75 (2.67-5.26)	2.70 (1.89-4.43)	11.5 (8.07-16.0)	52.1 (22.9-100)	121 (55.5-352)	356
Age 6-11 years	07-08	4.45 (3.03-6.53)	3.50 (1.79-6.85)	16.5 (8.82-28.8)	59.1 (28.6-94.4)	98.4 (65.0-139)	389
Age 6-11 years	09-10	4.27 (3.34-5.47)	3.33 (2.41-4.62)	12.0 (8.52-16.6)	46.1 (27.5-108)	143 (72.5-243)	415
Age 12-19 years	05-06	6.08 (4.36-8.49)	5.44 (3.03-10.5)	33.0 (20.7-48.7)	116 (81.9-161)	175 (140-239)	702
Age 12-19 years	07-08	6.88 (5.30-8.94)	5.68 (3.51-9.90)	33.2 (26.7-46.5)	103 (87.2-112)	132 (105-235)	401
Age 12-19 years	09-10	5.64 (4.17-7.62)	5.19 (3.53-9.03)	32.9 (20.4-42.4)	107 (57.6-217)	218 (101-397)	420
Age 20+ years	05-06	8.70 (7.08-10.7)	10.8 (7.39-15.2)	63.2 (49.7-80.5)	178 (152-198)	270 (236-293)	1490
Age 20+ years	07-08	8.26 (6.70-10.2)	9.91 (6.15-12.6)	57.9 (47.3-69.1)	161 (127-199)	273 (212-312)	1814
Age 20+ years	09-10	8.03 (6.74-9.56)	8.27 (6.10-10.8)	55.5 (43.5-66.0)	164 (136-200)	270 (232-314)	1914
Males	05-06	2.38 (1.92-2.95)	1.84 (1.42-2.46)	9.52 (6.79-12.8)	40.5 (31.1-51.5)	90.8 (56.8-125)	1270
Males	07-08	2.55 (2.06-3.15)	1.74 (1.40-2.53)	10.7 (5.99-15.4)	44.7 (29.0-66.1)	112 (77.4-144)	1294
Males	09-10	2.48 (2.05-3.00)	1.71 (1.35-2.25)	8.85 (6.12-14.2)	40.3 (33.8-57.6)	105 (74.5-143)	1399
Females	05-06	23.9 (19.9-28.8)	34.9 (26.9-46.6)	114 (101-132)	235 (193-263)	306 (277-342)	1278
Females	07-08	22.0 (18.7-25.8)	30.4 (25.2-36.3)	93.3 (80.8-110)	199 (161-245)	302 (271-370)	1310
Females	09-10	20.4 (17.8-23.3)	25.7 (21.8-30.7)	97.1 (81.8-115)	223 (191-248)	334 (295-389)	1350
Mexican Americans	05-06	9.49 (7.29-12.4)	11.0 (6.69-16.4)	55.2 (44.9-79.6)	186 (147-271)	329 (194-441)	637
Mexican Americans	07-08	7.63 (5.72-10.2)	6.60 (4.10-13.4)	47.9 (39.5-66.7)	162 (123-187)	273 (187-304)	531
Mexican Americans	09-10	8.87 (7.42-10.6)	7.97 (5.87-12.8)	54.7 (42.3-73.8)	184 (140-269)	325 (221-575)	566
Non-Hispanic blacks	05-06	18.8 (15.2-23.3)	23.6 (19.0-30.8)	83.7 (61.8-105)	217 (169-255)	318 (242-377)	678
Non-Hispanic blacks	07-08	16.6 (14.1-19.5)	22.9 (18.0-27.2)	64.2 (51.4-73.3)	141 (117-172)	254 (169-311)	597
Non-Hispanic blacks	09-10	18.9 (15.2-23.5)	21.1 (18.2-27.7)	80.9 (59.5-109)	200 (151-249)	301 (223-376)	516
Non-Hispanic whites	05-06	6.53 (5.32-8.02)	6.45 (3.96-9.11)	47.4 (32.6-65.3)	146 (119-184)	241 (184-278)	1038
Non-Hispanic whites	07-08	6.77 (5.14-8.93)	5.81 (3.94-10.5)	45.4 (32.2-61.4)	132 (105-172)	215 (169-295)	1077
Non-Hispanic whites	09-10	6.00 (5.19-6.94)	5.12 (4.05-6.25)	37.8 (32.1-49.2)	148 (115-183)	242 (215-272)	1206

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Parabens_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Parabens_FactSheet.html

Urinary 2,4-Dichlorophenol (2003 – 2010)

CAS Number 120-83-2

Metabolite of other chlorophenols

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	1.04 (.895-1.21)	.900 (.800-1.10)	2.70 (2.30-3.10)	8.80 (6.60-11.9)	21.3 (14.1-29.5)	2525
Total population	05-06	.945 (.791-1.13)	.800 (.700-1.00)	2.00 (1.60-2.40)	4.90 (3.90-6.30)	11.9 (7.00-20.4)	2548
Total population	07-08	.970 (.852-1.11)	.800 (.700-.900)	1.80 (1.50-2.30)	5.10 (3.80-7.60)	12.6 (9.00-18.1)	2604
Total population	09-10	.803 (.729-.885)	.700 (.700-.800)	1.50 (1.40-1.70)	4.00 (3.30-5.00)	8.80 (6.40-15.7)	2749
Age 6-11 years	03-04	1.01 (.796-1.28)	.800 (.600-1.20)	2.30 (1.70-3.20)	7.70 (3.80-20.1)	23.5 (9.40-31.0)	314
Age 6-11 years	05-06	1.01 (.879-1.15)	.800 (.800-1.10)	2.00 (1.60-2.30)	4.90 (3.30-6.60)	9.80 (6.30-17.6)	356
Age 6-11 years	07-08	1.04 (.778-1.39)	.900 (.700-1.20)	1.80 (1.20-2.80)	5.90 (2.90-10.1)	11.4 (6.60-20.7)	389
Age 6-11 years	09-10	.975 (.768-1.24)	.700 (.600-.900)	1.80 (1.40-2.30)	5.00 (3.20-8.40)	14.2 (4.40-90.9)	415
Age 12-19 years	03-04	1.27 (.971-1.67)	1.10 (.800-1.50)	3.40 (2.50-5.00)	13.6 (6.10-25.5)	31.5 (14.5-85.0)	722
Age 12-19 years	05-06	1.18 (.997-1.39)	1.00 (.900-1.20)	2.50 (2.00-3.10)	5.50 (4.00-8.30)	13.9 (7.10-33.6)	702
Age 12-19 years	07-08	1.19 (.989-1.44)	1.10 (.800-1.40)	2.60 (2.00-3.00)	5.60 (3.10-10.8)	11.6 (5.70-36.5)	401
Age 12-19 years	09-10	.967 (.794-1.18)	.800 (.700-.900)	1.60 (1.40-2.70)	5.80 (3.70-10.1)	14.4 (7.10-24.8)	420
Age 20+ years	03-04	1.01 (.874-1.17)	.900 (.700-1.10)	2.60 (2.20-3.00)	8.50 (6.60-10.4)	19.4 (12.2-27.0)	1489
Age 20+ years	05-06	.907 (.737-1.12)	.800 (.600-1.00)	2.00 (1.50-2.40)	4.90 (3.70-6.40)	11.1 (6.50-20.9)	1490
Age 20+ years	07-08	.932 (.820-1.06)	.800 (.700-.900)	1.70 (1.40-2.20)	5.00 (3.80-7.60)	13.2 (9.20-18.1)	1814
Age 20+ years	09-10	.764 (.699-.836)	.700 (.600-.700)	1.40 (1.30-1.60)	3.60 (3.10-4.50)	8.00 (5.60-13.9)	1914
Males	03-04	1.22 (1.02-1.45)	1.10 (.800-1.50)	3.00 (2.50-3.50)	9.40 (6.80-13.9)	22.7 (13.6-40.9)	1231
Males	05-06	1.16 (.973-1.37)	1.00 (.900-1.20)	2.40 (2.00-2.80)	5.50 (4.40-7.90)	12.9 (7.30-25.3)	1270
Males	07-08	1.06 (.943-1.19)	.900 (.800-1.00)	1.90 (1.60-2.20)	5.40 (3.90-8.20)	13.6 (10.1-18.1)	1294
Males	09-10	.879 (.789-.979)	.800 (.700-.800)	1.60 (1.40-1.80)	4.00 (3.20-5.70)	10.4 (5.20-18.4)	1399
Females	03-04	.896 (.754-1.07)	.800 (.600-.900)	2.30 (2.00-2.70)	8.10 (5.70-11.1)	19.8 (12.0-27.5)	1294
Females	05-06	.779 (.637-.954)	.700 (.500-.800)	1.50 (1.30-2.10)	4.30 (2.80-6.20)	9.40 (5.40-19.6)	1278
Females	07-08	.893 (.750-1.06)	.700 (.600-.800)	1.80 (1.20-2.50)	4.70 (3.10-8.00)	11.9 (7.60-18.6)	1310
Females	09-10	.737 (.659-.824)	.600 (.600-.700)	1.40 (1.30-1.70)	4.00 (3.00-5.50)	7.80 (5.80-15.8)	1350
Mexican Americans	03-04	1.94 (1.46-2.56)	1.70 (1.20-2.10)	4.50 (2.80-9.30)	26.9 (12.7-52.1)	66.0 (47.5-84.2)	617
Mexican Americans	05-06	1.97 (1.49-2.59)	1.60 (1.20-2.10)	5.00 (3.30-6.60)	20.9 (8.80-39.7)	46.5 (21.9-79.5)	637
Mexican Americans	07-08	1.59 (.969-2.60)	1.20 (.600-2.60)	4.20 (2.10-9.50)	13.4 (7.90-29.6)	38.0 (16.4-74.0)	531
Mexican Americans	09-10	1.25 (.860-1.81)	.900 (.700-1.30)	2.70 (1.60-4.30)	11.3 (4.30-26.3)	29.1 (7.60-76.3)	566
Non-Hispanic blacks	03-04	2.42 (1.92-3.06)	2.20 (1.70-2.70)	7.40 (4.00-9.60)	20.8 (11.2-38.3)	49.2 (24.0-69.7)	636
Non-Hispanic blacks	05-06	2.45 (1.93-3.12)	2.10 (1.70-2.40)	5.20 (3.90-7.40)	20.3 (10.6-36.9)	42.6 (21.3-129)	678
Non-Hispanic blacks	07-08	1.73 (1.49-2.01)	1.40 (1.10-1.60)	3.70 (2.90-4.90)	17.8 (9.70-25.8)	37.7 (24.6-56.8)	597
Non-Hispanic blacks	09-10	1.54 (1.06-2.23)	1.20 (.800-2.00)	3.10 (2.10-4.80)	12.4 (4.30-46.4)	35.2 (7.80-107)	516
Non-Hispanic whites	03-04	.837 (.698-1.00)	.700 (.600-.900)	2.10 (1.70-2.60)	6.20 (4.00-8.80)	13.4 (8.60-22.0)	1077
Non-Hispanic whites	05-06	.734 (.610-.883)	.700 (.500-.900)	1.40 (1.20-1.80)	3.10 (2.70-3.90)	5.30 (4.30-7.90)	1038
Non-Hispanic whites	07-08	.817 (.732-.911)	.700 (.600-.800)	1.50 (1.20-1.80)	3.10 (2.60-4.40)	6.40 (4.60-8.80)	1077
Non-Hispanic whites	09-10	.651 (.594-.712)	.600 (.500-.700)	1.30 (1.10-1.40)	2.80 (2.20-3.50)	5.60 (3.80-7.40)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.17, 0.2, 0.2, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/24D_BiomonitoringSummary.html

Urinary 2,4-Dichlorophenol (creatinine corrected) (2003 – 2010)

CAS Number 120-83-2

Metabolite of other chlorophenols

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	1.02 (.873-1.18)	.880 (.770-1.00)	2.19 (1.84-2.73)	7.39 (5.00-9.83)	15.4 (11.1-20.9)	2522
Total population	05-06	.922 (.798-1.06)	.750 (.660-.880)	1.58 (1.33-1.86)	4.00 (3.00-5.71)	8.90 (5.98-16.6)	2548
Total population	07-08	.978 (.867-1.10)	.790 (.700-.880)	1.63 (1.36-1.89)	4.00 (3.14-5.63)	11.7 (6.82-18.9)	2604
Total population	09-10	.838 (.757-.929)	.680 (.630-.740)	1.33 (1.18-1.58)	3.48 (2.77-4.55)	8.17 (5.44-14.3)	2749
Age 6-11 years	03-04	1.23 (.965-1.56)	1.03 (.750-1.45)	2.39 (1.82-3.36)	9.29 (3.98-16.5)	20.9 (12.9-38.1)	314
Age 6-11 years	05-06	1.11 (.950-1.29)	.970 (.800-1.08)	1.74 (1.38-2.19)	4.38 (3.33-7.80)	10.9 (5.12-23.3)	356
Age 6-11 years	07-08	1.28 (1.00-1.63)	1.06 (.750-1.40)	2.06 (1.44-3.21)	4.49 (3.13-9.27)	11.2 (5.70-24.4)	389
Age 6-11 years	09-10	1.27 (.986-1.64)	.930 (.820-1.20)	2.03 (1.54-2.94)	5.89 (3.50-11.0)	15.9 (5.71-121)	415
Age 12-19 years	03-04	.954 (.725-1.26)	.790 (.660-1.00)	2.08 (1.44-3.75)	8.02 (4.72-12.5)	14.8 (8.02-40.0)	720
Age 12-19 years	05-06	.878 (.765-1.01)	.700 (.600-.800)	1.65 (1.22-1.93)	3.92 (2.90-4.82)	8.28 (4.82-15.9)	702
Age 12-19 years	07-08	.927 (.776-1.11)	.790 (.640-1.00)	1.51 (1.14-2.22)	3.81 (2.38-5.92)	10.3 (4.28-21.8)	401
Age 12-19 years	09-10	.778 (.656-.921)	.580 (.510-.690)	1.18 (.970-1.40)	3.38 (2.11-6.27)	7.38 (3.39-19.4)	420
Age 20+ years	03-04	1.00 (.863-1.16)	.870 (.770-1.00)	2.17 (1.80-2.69)	7.16 (4.88-9.01)	15.0 (10.6-20.8)	1488
Age 20+ years	05-06	.909 (.774-1.07)	.740 (.650-.870)	1.55 (1.25-1.89)	4.00 (2.84-6.19)	8.80 (5.71-16.8)	1490
Age 20+ years	07-08	.958 (.847-1.08)	.770 (.670-.880)	1.60 (1.32-1.85)	3.98 (3.14-5.59)	12.1 (8.15-18.9)	1814
Age 20+ years	09-10	.810 (.735-.892)	.670 (.620-.730)	1.27 (1.11-1.56)	3.33 (2.65-4.23)	7.64 (5.16-12.3)	1914
Males	03-04	.995 (.850-1.17)	.900 (.730-1.06)	2.23 (1.82-2.82)	6.84 (4.54-9.01)	13.7 (9.29-21.8)	1230
Males	05-06	.927 (.814-1.06)	.770 (.670-.880)	1.60 (1.36-1.86)	4.12 (3.08-5.45)	8.90 (5.19-16.6)	1270
Males	07-08	.891 (.808-.984)	.720 (.660-.790)	1.44 (1.29-1.67)	4.00 (2.97-5.30)	9.96 (6.82-13.4)	1294
Males	09-10	.788 (.706-.879)	.620 (.580-.660)	1.25 (1.06-1.48)	3.66 (2.52-5.47)	7.69 (4.84-16.9)	1399
Females	03-04	1.03 (.845-1.27)	.870 (.770-1.00)	2.17 (1.73-2.73)	8.00 (4.57-12.1)	17.2 (11.1-23.7)	1292
Females	05-06	.916 (.770-1.09)	.740 (.640-.880)	1.56 (1.19-1.96)	3.91 (2.66-6.50)	8.93 (5.53-23.7)	1278
Females	07-08	1.07 (.910-1.26)	.850 (.720-1.00)	1.75 (1.43-2.29)	4.07 (3.13-7.65)	14.4 (6.50-26.8)	1310
Females	09-10	.890 (.789-1.00)	.740 (.660-.850)	1.41 (1.24-1.67)	3.39 (2.76-4.52)	8.79 (5.16-14.8)	1350
Mexican Americans	03-04	1.76 (1.30-2.38)	1.33 (1.04-1.74)	3.85 (2.29-8.81)	23.8 (10.6-51.6)	71.4 (30.8-88.8)	616
Mexican Americans	05-06	1.77 (1.38-2.27)	1.25 (.990-1.73)	3.79 (2.70-5.35)	16.6 (6.75-31.8)	38.1 (23.8-55.3)	637
Mexican Americans	07-08	1.55 (.925-2.60)	1.18 (.630-2.28)	3.33 (1.93-6.50)	14.2 (5.65-30.6)	33.1 (16.6-60.0)	531
Mexican Americans	09-10	1.24 (.860-1.78)	.910 (.630-1.28)	2.03 (1.43-3.90)	11.0 (3.54-26.4)	26.4 (10.2-93.5)	566
Non-Hispanic blacks	03-04	1.66 (1.28-2.16)	1.47 (1.06-1.96)	4.14 (2.46-7.31)	14.9 (7.93-20.1)	22.9 (16.7-45.0)	635
Non-Hispanic blacks	05-06	1.72 (1.39-2.14)	1.32 (1.11-1.56)	3.28 (2.33-5.35)	14.9 (7.40-28.1)	37.0 (15.0-83.4)	678
Non-Hispanic blacks	07-08	1.34 (1.14-1.59)	.990 (.800-1.17)	2.36 (1.85-3.12)	13.1 (5.70-23.3)	33.8 (22.7-41.1)	597
Non-Hispanic blacks	09-10	1.11 (.739-1.67)	.890 (.630-1.19)	2.07 (1.25-3.87)	8.37 (2.99-22.0)	22.0 (7.05-83.1)	516
Non-Hispanic whites	03-04	.864 (.721-1.03)	.780 (.690-.890)	1.86 (1.54-2.23)	5.08 (3.58-8.00)	10.8 (6.84-18.2)	1076
Non-Hispanic whites	05-06	.772 (.660-.904)	.670 (.580-.790)	1.25 (1.07-1.56)	2.78 (2.11-3.52)	4.82 (3.33-8.62)	1038
Non-Hispanic whites	07-08	.853 (.765-.950)	.730 (.660-.810)	1.36 (1.14-1.67)	2.97 (2.53-3.33)	5.16 (3.84-9.38)	1077
Non-Hispanic whites	09-10	.731 (.674-.793)	.630 (.580-.690)	1.13 (1.01-1.25)	2.76 (2.29-3.30)	5.16 (3.79-6.46)	1206

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/24D_BiomonitoringSummary.html

Urinary 2,5-Dichlorophenol (2003 – 2010)

CAS Number 583-78-8

Metabolite of 1,4-Dichlorobenzene (Paradichlorobenzene) and other chlorophenols

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	12.9 (10.1-16.3)	10.5 (8.00-14.2)	40.9 (29.8-54.7)	190 (133-282)	705 (342-1330)	2525
Total population	05-06	9.55 (6.67-13.7)	8.10 (5.60-11.5)	26.4 (19.0-36.6)	111 (69.9-166)	332 (175-794)	2548
Total population	07-08	9.04 (7.22-11.3)	6.60 (5.50-8.30)	25.7 (19.2-34.7)	131 (90.2-222)	473 (296-753)	2604
Total population	09-10	6.10 (4.94-7.53)	4.70 (3.70-5.90)	18.4 (13.3-26.0)	101 (68.0-146)	301 (168-618)	2749
Age 6-11 years	03-04	12.5 (8.22-18.9)	9.10 (5.60-17.4)	42.1 (21.7-83.9)	161 (111-626)	928 (249-1640)	314
Age 6-11 years	05-06	10.5 (8.29-13.4)	7.80 (5.90-10.6)	28.1 (17.8-40.2)	104 (55.4-226)	336 (189-785)	356
Age 6-11 years	07-08	9.31 (6.20-14.0)	6.50 (4.60-10.9)	23.3 (12.2-45.6)	151 (61.1-306)	464 (222-934)	389
Age 6-11 years	09-10	7.19 (4.36-11.8)	4.80 (2.70-9.90)	30.4 (12.4-50.7)	146 (63.7-368)	503 (103-4940)	415
Age 12-19 years	03-04	16.9 (11.1-26.0)	11.5 (8.20-20.6)	49.9 (26.8-94.0)	233 (94.5-1060)	1080 (287-3970)	722
Age 12-19 years	05-06	11.9 (8.47-16.8)	9.60 (6.40-16.7)	36.0 (22.3-54.4)	127 (89.9-160)	459 (160-894)	702
Age 12-19 years	07-08	11.3 (8.78-14.5)	7.40 (6.20-9.10)	30.1 (18.5-52.6)	193 (66.7-448)	611 (254-1560)	401
Age 12-19 years	09-10	8.01 (5.53-11.6)	4.80 (3.50-8.80)	24.9 (19.1-42.7)	191 (61.2-368)	526 (243-1140)	420
Age 20+ years	03-04	12.3 (9.97-15.3)	10.4 (8.00-14.0)	40.5 (30.1-49.2)	181 (141-250)	583 (316-924)	1489
Age 20+ years	05-06	9.12 (6.15-13.5)	7.80 (5.20-11.5)	24.9 (17.3-35.3)	110 (62.9-183)	327 (159-852)	1490
Age 20+ years	07-08	8.71 (6.83-11.1)	6.60 (5.10-8.70)	24.6 (18.8-34.5)	124 (95.9-186)	452 (286-672)	1814
Age 20+ years	09-10	5.75 (4.77-6.92)	4.60 (3.70-5.70)	16.9 (12.7-23.1)	88.4 (66.4-117)	266 (156-450)	1914
Males	03-04	14.9 (11.8-18.8)	12.5 (9.00-16.5)	40.5 (30.7-54.5)	152 (120-259)	631 (259-1950)	1231
Males	05-06	12.0 (8.55-16.7)	9.90 (7.80-13.8)	29.0 (21.8-40.5)	114 (71.7-200)	396 (175-916)	1270
Males	07-08	10.9 (8.86-13.4)	8.30 (6.30-9.90)	29.4 (23.2-39.6)	139 (100-248)	546 (311-727)	1294
Males	09-10	7.09 (5.68-8.85)	5.30 (4.40-6.70)	21.9 (15.2-33.5)	103 (63.3-191)	311 (133-736)	1399
Females	03-04	11.2 (8.51-14.7)	8.50 (6.30-12.0)	42.8 (26.0-64.2)	212 (141-364)	732 (371-1100)	1294
Females	05-06	7.69 (5.17-11.4)	5.90 (3.90-9.40)	21.1 (14.3-35.7)	110 (60.5-183)	317 (141-794)	1278
Females	07-08	7.57 (5.70-10.1)	5.50 (4.40-7.30)	20.6 (13.9-31.8)	118 (57.4-268)	442 (213-838)	1310
Females	09-10	5.28 (4.17-6.69)	3.90 (3.00-5.10)	16.7 (12.1-22.1)	99.5 (58.2-156)	287 (158-591)	1350
Mexican Americans	03-04	30.1 (19.2-47.2)	23.7 (14.7-39.8)	103 (57.4-156)	841 (282-2040)	2370 (2040-3710)	617
Mexican Americans	05-06	32.2 (22.2-46.7)	23.0 (14.9-37.1)	120 (69.6-228)	867 (298-1320)	1630 (916-3650)	637
Mexican Americans	07-08	22.2 (9.88-49.8)	16.4 (5.40-60.7)	104 (35.2-364)	566 (313-1710)	1920 (672-3460)	531
Mexican Americans	09-10	13.0 (5.80-29.1)	10.3 (3.30-26.2)	53.6 (19.4-199)	361 (124-900)	998 (247-3700)	566
Non-Hispanic blacks	03-04	54.0 (35.9-81.2)	43.9 (26.2-65.6)	159 (97.0-338)	817 (342-2330)	2330 (887-3730)	636
Non-Hispanic blacks	05-06	43.9 (33.2-58.1)	33.2 (25.3-47.6)	161 (79.9-255)	722 (360-1370)	1700 (886-6440)	678
Non-Hispanic blacks	07-08	27.4 (21.3-35.2)	18.5 (13.2-26.7)	102 (61.9-147)	682 (364-943)	1490 (933-1870)	597
Non-Hispanic blacks	09-10	23.0 (13.0-40.8)	17.3 (8.00-42.7)	82.7 (38.6-168)	443 (119-2180)	1240 (273-4940)	516
Non-Hispanic whites	03-04	8.94 (7.15-11.2)	7.80 (6.30-9.40)	25.9 (19.3-36.6)	115 (61.8-171)	255 (148-522)	1077
Non-Hispanic whites	05-06	6.19 (4.18-9.17)	5.90 (3.80-9.20)	15.7 (11.4-21.9)	43.7 (31.2-73.1)	105 (62.2-166)	1038
Non-Hispanic whites	07-08	6.24 (5.04-7.74)	5.10 (4.20-6.20)	15.4 (12.2-19.9)	49.8 (37.0-90.2)	142 (103-294)	1077
Non-Hispanic whites	09-10	4.10 (3.22-5.21)	3.30 (2.60-4.40)	10.9 (8.10-15.5)	45.5 (29.0-82.7)	124 (79.3-215)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.12, 0.2, 0.2, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/25D_BiomonitoringSummary.html

Urinary 2,5-Dichlorophenol (creatinine corrected) (2003 – 2010)

CAS Number 583-78-8

Metabolite of 1,4-Dichlorobenzene (Paradichlorobenzene) and other chlorophenols

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	12.5 (10.1-15.6)	9.29 (7.25-12.5)	34.4 (26.8-45.4)	141 (100-251)	578 (313-851)	2522
Total population	05-06	9.31 (6.70-12.9)	7.32 (5.33-10.2)	20.4 (14.8-30.5)	89.3 (54.9-176)	292 (176-640)	2548
Total population	07-08	9.12 (7.35-11.3)	6.24 (5.00-7.77)	24.2 (17.2-30.3)	109 (70.8-175)	409 (234-745)	2604
Total population	09-10	6.36 (5.07-7.99)	4.12 (3.31-5.16)	16.2 (11.7-22.8)	80.2 (59.5-127)	269 (144-505)	2749
Age 6-11 years	03-04	15.2 (9.93-23.1)	10.6 (5.87-26.7)	44.7 (28.9-80.0)	183 (95.3-617)	830 (330-2150)	314
Age 6-11 years	05-06	11.6 (8.90-15.1)	8.00 (5.95-12.6)	24.7 (16.8-37.8)	129 (55.8-242)	419 (151-709)	356
Age 6-11 years	07-08	11.5 (7.95-16.5)	7.70 (5.41-11.7)	29.5 (19.6-50.9)	131 (59.9-239)	420 (170-1110)	389
Age 6-11 years	09-10	9.36 (5.65-15.5)	6.25 (4.09-9.60)	33.9 (12.6-65.0)	177 (66.1-496)	536 (111-5950)	415
Age 12-19 years	03-04	12.7 (8.50-18.9)	9.05 (6.17-13.3)	34.8 (18.6-67.0)	177 (67.0-516)	549 (187-2120)	720
Age 12-19 years	05-06	8.88 (6.34-12.4)	6.91 (4.15-11.1)	23.4 (17.7-30.0)	78.0 (58.5-112)	279 (112-659)	702
Age 12-19 years	07-08	8.79 (6.81-11.4)	5.56 (4.42-7.50)	20.9 (13.8-34.9)	130 (41.8-251)	353 (158-799)	401
Age 12-19 years	09-10	6.44 (4.40-9.42)	4.05 (2.34-8.69)	19.4 (11.6-37.7)	121 (49.3-218)	257 (119-1180)	420
Age 20+ years	03-04	12.2 (10.1-14.8)	9.13 (7.25-12.4)	32.7 (26.7-42.9)	140 (103-203)	552 (283-838)	1488
Age 20+ years	05-06	9.15 (6.43-13.0)	7.29 (5.29-10.0)	19.6 (14.2-30.4)	90.7 (48.5-197)	274 (163-701)	1490
Age 20+ years	07-08	8.94 (7.07-11.3)	6.15 (4.93-8.00)	24.3 (16.6-30.6)	101 (70.0-162)	422 (234-729)	1814
Age 20+ years	09-10	6.09 (4.97-7.45)	3.97 (3.27-4.78)	14.7 (11.0-20.5)	72.5 (56.6-97.2)	261 (141-446)	1914
Males	03-04	12.2 (9.73-15.3)	9.65 (7.23-12.7)	32.7 (25.3-39.1)	108 (79.0-183)	358 (161-1080)	1230
Males	05-06	9.60 (7.17-12.9)	8.11 (5.95-10.5)	20.5 (15.9-28.2)	74.9 (50.5-141)	249 (137-534)	1270
Males	07-08	9.17 (7.63-11.0)	6.24 (5.22-7.81)	25.5 (19.7-32.4)	110 (70.7-167)	353 (234-572)	1294
Males	09-10	6.36 (5.04-8.02)	4.21 (3.36-4.97)	16.7 (11.7-24.0)	83.2 (53.7-141)	280 (111-727)	1399
Females	03-04	12.9 (9.91-16.8)	8.95 (6.98-13.2)	37.1 (26.7-56.9)	209 (124-362)	660 (408-940)	1292
Females	05-06	9.04 (6.18-13.2)	6.60 (4.56-10.4)	20.4 (14.1-33.8)	104 (55.8-199)	309 (149-933)	1278
Females	07-08	9.07 (6.91-11.9)	6.08 (4.71-8.04)	22.4 (14.7-30.6)	107 (59.2-216)	509 (185-908)	1310
Females	09-10	6.37 (4.92-8.25)	4.10 (3.09-5.69)	15.6 (11.3-22.1)	77.1 (53.3-148)	267 (151-481)	1350
Mexican Americans	03-04	27.3 (17.4-42.9)	17.8 (9.86-36.3)	79.8 (45.8-138)	809 (196-2110)	2200 (1250-2480)	616
Mexican Americans	05-06	29.0 (20.5-41.0)	18.6 (12.9-27.3)	99.4 (61.6-165)	675 (296-1400)	1680 (718-2720)	637
Mexican Americans	07-08	21.6 (9.44-49.6)	16.4 (5.09-58.9)	83.9 (30.8-281)	572 (182-1490)	1490 (700-2220)	531
Mexican Americans	09-10	12.9 (5.78-28.8)	9.12 (3.38-26.7)	45.0 (17.3-236)	460 (105-1000)	1000 (380-2800)	566
Non-Hispanic blacks	03-04	37.1 (24.3-56.7)	27.4 (17.5-47.7)	103 (63.8-216)	609 (248-1210)	1240 (627-2430)	635
Non-Hispanic blacks	05-06	30.9 (23.6-40.3)	20.5 (17.3-29.1)	104 (57.7-180)	480 (294-1080)	1480 (515-3100)	678
Non-Hispanic blacks	07-08	21.3 (16.2-27.9)	14.6 (10.2-19.7)	64.6 (48.0-101)	529 (217-884)	1130 (793-1560)	597
Non-Hispanic blacks	09-10	16.7 (9.19-30.2)	12.5 (6.74-22.0)	58.9 (22.3-106)	349 (92.6-878)	878 (277-3890)	516
Non-Hispanic whites	03-04	9.24 (7.48-11.4)	7.14 (5.67-8.76)	24.8 (18.7-31.7)	79.7 (50.2-141)	216 (124-516)	1076
Non-Hispanic whites	05-06	6.52 (4.51-9.43)	5.60 (3.86-8.51)	14.1 (10.7-19.7)	40.2 (28.4-61.6)	110 (47.3-224)	1038
Non-Hispanic whites	07-08	6.52 (5.26-8.07)	4.89 (3.95-6.20)	14.4 (11.4-19.2)	53.2 (40.1-75.9)	131 (82.5-249)	1077
Non-Hispanic whites	09-10	4.60 (3.59-5.90)	3.27 (2.77-4.10)	10.4 (7.22-15.2)	41.3 (25.0-69.1)	130 (73.4-180)	1206

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/25D_BiomonitoringSummary.html

Fungicides and Metabolites

Urinary ortho-Phenylphenol (2003 – 2010)‡

CAS Number 90-43-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	.100 (<LOD-.200)	.300 (.200-.400)	.500 (.400-.700)	.800 (.600-1.10)	2525
Total population	05-06	*	<LOD	<LOD	.300 (.200-.400)	.500 (.400-.800)	2548
Total population	07-08	*	<LOD	<LOD	.100 (.100-.200)	.300 (.200-.400)	2604
Total population	09-10	*	<LOD	<LOD	.300 (.300-.400)	.500 (.500-.600)	2749
Age 6-11 years	03-04	.180 (.158-.206)	.200 (.200-.200)	.300 (.300-.400)	.600 (.500-.800)	.800 (.500-1.30)	314
Age 6-11 years	05-06	*	<LOD	.100 (<LOD-.200)	.500 (.300-1.10)	1.30 (.700-1.90)	356
Age 6-11 years	07-08	*	<LOD	<LOD	.300 (.200-.500)	.600 (.300-1.00)	389
Age 6-11 years	09-10	*	<LOD	.200 (<LOD-.300)	.400 (.300-.700)	.600 (.400-1.20)	415
Age 12-19 years	03-04	.175 (.149-.206)	.200 (.100-.200)	.400 (.300-.500)	.600 (.500-.800)	.900 (.700-1.30)	722
Age 12-19 years	05-06	*	<LOD	<LOD	.300 (.200-.500)	.600 (.500-.800)	702
Age 12-19 years	07-08	*	<LOD	<LOD	.100 (.100-.200)	.300 (.200-.600)	401
Age 12-19 years	09-10	*	<LOD	.200 (<LOD-.300)	.400 (.300-.500)	.600 (.500-.900)	420
Age 20+ years	03-04	*	.100 (<LOD-.100)	.300 (.200-.400)	.500 (.400-.700)	.800 (.600-1.10)	1489
Age 20+ years	05-06	*	<LOD	<LOD	.300 (.100-.400)	.500 (.400-.800)	1490
Age 20+ years	07-08	*	<LOD	<LOD	.100 (<LOD-.200)	.300 (.200-.400)	1814
Age 20+ years	09-10	*	<LOD	<LOD	.300 (.300-.400)	.500 (.400-.500)	1914
Males	03-04	*	.100 (<LOD-.200)	.400 (.300-.400)	.600 (.500-.700)	.800 (.600-1.00)	1231
Males	05-06	*	<LOD	<LOD	.300 (.200-.400)	.500 (.400-.900)	1270
Males	07-08	*	<LOD	<LOD	.100 (<LOD-.200)	.300 (.200-.500)	1294
Males	09-10	*	<LOD	<LOD	.300 (.300-.400)	.500 (.500-.700)	1399
Females	03-04	*	.100 (<LOD-.200)	.300 (.200-.400)	.500 (.400-.700)	.800 (.600-1.20)	1294
Females	05-06	*	<LOD	<LOD	.300 (.200-.400)	.500 (.400-.800)	1278
Females	07-08	*	<LOD	<LOD	.100 (<LOD-.200)	.300 (.200-.500)	1310
Females	09-10	*	<LOD	<LOD	.300 (.300-.400)	.500 (.400-.500)	1350
Mexican Americans	03-04	.191 (.150-.245)	.200 (.100-.300)	.400 (.300-.600)	.700 (.500-1.10)	1.10 (.600-1.60)	617
Mexican Americans	05-06	*	<LOD	<LOD	.400 (.100-.900)	.800 (.400-3.20)	637
Mexican Americans	07-08	*	<LOD	<LOD	.100 (<LOD-.300)	.400 (.200-1.10)	531
Mexican Americans	09-10	*	<LOD	<LOD	.300 (.200-.400)	.400 (.300-.900)	566
Non-Hispanic blacks	03-04	*	.100 (<LOD-.200)	.400 (.300-.400)	.600 (.500-.800)	1.00 (.600-1.40)	636
Non-Hispanic blacks	05-06	*	<LOD	<LOD	.400 (.300-.500)	.500 (.400-.700)	678
Non-Hispanic blacks	07-08	*	<LOD	<LOD	.200 (<LOD-.300)	.400 (.200-.600)	597
Non-Hispanic blacks	09-10	*	<LOD	.200 (<LOD-.300)	.400 (.300-.600)	.700 (.500-.800)	516
Non-Hispanic whites	03-04	*	.100 (<LOD-.100)	.300 (.200-.400)	.500 (.400-.700)	.800 (.600-1.00)	1077
Non-Hispanic whites	05-06	*	<LOD	<LOD	.300 (.100-.400)	.500 (.300-1.10)	1038
Non-Hispanic whites	07-08	*	<LOD	<LOD	.100 (<LOD-.200)	.300 (.200-.500)	1077
Non-Hispanic whites	09-10	*	<LOD	<LOD	.300 (.300-.400)	.500 (.400-.600)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.1, 0.1, 0.1, and 0.2 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Orthophenylphenol_BiomonitoringSummary.html

Urinary ortho-Phenylphenol (creatinine corrected) (2003 – 2010)‡

CAS Number 90-43-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	.150 (<LOD-.170)	.320 (.270-.380)	.670 (.500-.800)	.950 (.750-1.31)	2522
Total population	05-06	*	<LOD	<LOD	.370 (.310-.410)	.600 (.470-.750)	2548
Total population	07-08	*	<LOD	<LOD	.290 (.250-.330)	.470 (.400-.520)	2604
Total population	09-10	*	<LOD	<LOD	.560 (.480-.640)	.820 (.700-.910)	2749
Age 6-11 years	03-04	.219 (.189-.255)	.230 (.170-.280)	.400 (.330-.540)	.760 (.530-.860)	.880 (.760-1.90)	314
Age 6-11 years	05-06	*	<LOD	.180 (<LOD-.240)	.590 (.430-.930)	1.94 (.710-2.94)	356
Age 6-11 years	07-08	*	<LOD	<LOD	.390 (.240-.660)	.660 (.390-1.31)	389
Age 6-11 years	09-10	*	<LOD	.410 (<LOD-.480)	.820 (.560-1.06)	1.22 (.850-1.56)	415
Age 12-19 years	03-04	.131 (.110-.156)	.140 (.100-.160)	.270 (.230-.340)	.490 (.400-.690)	.790 (.550-1.30)	720
Age 12-19 years	05-06	*	<LOD	<LOD	.280 (.220-.320)	.410 (.330-.710)	702
Age 12-19 years	07-08	*	<LOD	<LOD	.190 (.170-.250)	.330 (.240-.470)	401
Age 12-19 years	09-10	*	<LOD	.250 (<LOD-.300)	.420 (.300-.550)	.550 (.390-1.20)	420
Age 20+ years	03-04	*	.140 (<LOD-.170)	.320 (.260-.370)	.670 (.500-.800)	1.00 (.740-1.38)	1488
Age 20+ years	05-06	*	<LOD	<LOD	.370 (.300-.410)	.540 (.430-.710)	1490
Age 20+ years	07-08	*	<LOD	<LOD	.300 (<LOD-.330)	.470 (.390-.520)	1814
Age 20+ years	09-10	*	<LOD	<LOD	.560 (.480-.640)	.820 (.700-.880)	1914
Males	03-04	*	.130 (<LOD-.150)	.290 (.240-.340)	.570 (.430-.740)	.880 (.720-1.06)	1230
Males	05-06	*	<LOD	<LOD	.280 (.200-.350)	.470 (.350-.670)	1270
Males	07-08	*	<LOD	<LOD	.220 (<LOD-.250)	.350 (.300-.440)	1294
Males	09-10	*	<LOD	<LOD	.440 (.360-.540)	.670 (.510-.850)	1399
Females	03-04	*	.170 (<LOD-.200)	.350 (.280-.440)	.700 (.500-.940)	1.07 (.730-1.57)	1292
Females	05-06	*	<LOD	<LOD	.430 (.370-.500)	.700 (.500-1.03)	1278
Females	07-08	*	<LOD	<LOD	.350 (<LOD-.440)	.500 (.440-.580)	1310
Females	09-10	*	<LOD	<LOD	.640 (.570-.700)	.930 (.780-1.17)	1350
Mexican Americans	03-04	.174 (.132-.229)	.170 (.120-.240)	.440 (.280-.590)	.770 (.560-1.09)	1.11 (.770-1.72)	616
Mexican Americans	05-06	*	<LOD	<LOD	.370 (.210-.670)	.740 (.390-1.71)	637
Mexican Americans	07-08	*	<LOD	<LOD	.250 (<LOD-.290)	.430 (.320-.910)	531
Mexican Americans	09-10	*	<LOD	<LOD	.420 (.370-.560)	.680 (.560-.880)	566
Non-Hispanic blacks	03-04	*	.110 (<LOD-.130)	.250 (.200-.310)	.530 (.380-.650)	.770 (.600-1.02)	635
Non-Hispanic blacks	05-06	*	<LOD	<LOD	.290 (.220-.370)	.440 (.380-.540)	678
Non-Hispanic blacks	07-08	*	<LOD	<LOD	.210 (<LOD-.250)	.330 (.250-.640)	597
Non-Hispanic blacks	09-10	*	<LOD	.220 (<LOD-.240)	.370 (.310-.450)	.570 (.440-.860)	516
Non-Hispanic whites	03-04	*	.150 (<LOD-.180)	.330 (.260-.390)	.690 (.470-.830)	1.00 (.740-1.38)	1076
Non-Hispanic whites	05-06	*	<LOD	<LOD	.390 (.320-.430)	.610 (.470-.880)	1038
Non-Hispanic whites	07-08	*	<LOD	<LOD	.300 (<LOD-.370)	.470 (.390-.580)	1077
Non-Hispanic whites	09-10	*	<LOD	<LOD	.610 (.520-.700)	.870 (.700-.940)	1206

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Orthophenylphenol_BiomonitoringSummary.html

Urinary Ethylene thiourea (2003 – 2008)

CAS Number 96-45-7

Metabolite of Several Dithiocarbamate Fungicides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	.310 (<LOD-.560)	2169
Total population	05-06	*	<LOD	<LOD	.600 (<LOD-1.08)	1.34 (.900-1.75)	2585
Total population	07-08	*	<LOD	<LOD	<LOD	.430 (<LOD-.960)	2571
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	280
Age 6-11 years	05-06	*	<LOD	<LOD	.830 (<LOD-1.53)	1.55 (.960-3.11)	342
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	.610 (<LOD-1.17)	382
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	.600 (<LOD-.920)	622
Age 12-19 years	05-06	*	<LOD	<LOD	.580 (<LOD-1.11)	1.34 (.660-2.23)	698
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	.440 (<LOD-.970)	387
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	.310 (<LOD-.580)	827
Age 20-59 years	05-06	*	<LOD	<LOD	.750 (.500-1.18)	1.42 (1.05-1.75)	1072
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	.510 (<LOD-1.19)	1169
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	440
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	.360 (<LOD-.780)	473
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	633
Males	03-04	*	<LOD	<LOD	<LOD	.360 (<LOD-.530)	1056
Males	05-06	*	<LOD	<LOD	.940 (.530-1.19)	1.51 (1.08-2.09)	1219
Males	07-08	*	<LOD	<LOD	<LOD	.430 (<LOD-1.05)	1289
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1113
Females	05-06	*	<LOD	<LOD	.370 (<LOD-.890)	.950 (.500-1.58)	1366
Females	07-08	*	<LOD	<LOD	<LOD	.410 (<LOD-.960)	1282
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	495
Mexican Americans	05-06	*	<LOD	<LOD	.440 (<LOD-.960)	1.12 (.650-1.76)	686
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	.340 (<LOD-.630)	491
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	.480 (<LOD-1.06)	607
Non-Hispanic blacks	05-06	*	<LOD	<LOD	1.37 (.790-2.05)	2.22 (1.37-3.77)	695
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	.630 (<LOD-2.42)	570
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	.330 (<LOD-.560)	925
Non-Hispanic whites	05-06	*	<LOD	<LOD	.570 (<LOD-1.02)	1.18 (.940-1.42)	998
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	.300 (<LOD-.750)	1084

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.1, 0.24, and 0.21 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ETUPTU_BiomonitoringSummary.html

Urinary Ethylene thiourea (creatinine corrected) (2003 – 2008)

CAS Number 96-45-7

Metabolite of Several Dithiocarbamate Fungicides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	.434 (<LOD-.538)	2167
Total population	05-06	*	<LOD	<LOD	.792 (<LOD-1.06)	1.32 (1.06-1.58)	2585
Total population	07-08	*	<LOD	<LOD	<LOD	.789 (<LOD-1.00)	2569
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	280
Age 6-11 years	05-06	*	<LOD	<LOD	1.04 (<LOD-1.36)	2.36 (1.16-3.12)	342
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	.974 (<LOD-1.50)	382
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	.423 (<LOD-.700)	621
Age 12-19 years	05-06	*	<LOD	<LOD	.582 (<LOD-.893)	.967 (.680-1.58)	698
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	.417 (<LOD-.652)	385
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	.425 (<LOD-.506)	826
Age 20-59 years	05-06	*	<LOD	<LOD	.892 (.708-1.21)	1.36 (1.21-1.78)	1072
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	.789 (<LOD-1.31)	1169
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	440
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	1.00 (<LOD-1.21)	473
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	633
Males	03-04	*	<LOD	<LOD	<LOD	.350 (<LOD-.467)	1055
Males	05-06	*	<LOD	<LOD	.783 (.634-1.04)	1.28 (1.05-1.45)	1219
Males	07-08	*	<LOD	<LOD	<LOD	.529 (<LOD-.652)	1288
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1112
Females	05-06	*	<LOD	<LOD	.827 (<LOD-1.21)	1.33 (1.00-2.01)	1366
Females	07-08	*	<LOD	<LOD	<LOD	.938 (<LOD-1.25)	1281
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	494
Mexican Americans	05-06	*	<LOD	<LOD	.748 (<LOD-1.17)	1.33 (.837-1.89)	686
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	.714 (<LOD-1.10)	490
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	.368 (<LOD-.619)	607
Non-Hispanic blacks	05-06	*	<LOD	<LOD	1.02 (.649-1.74)	1.84 (1.04-2.50)	695
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	.652 (<LOD-1.34)	569
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	.434 (<LOD-.583)	924
Non-Hispanic whites	05-06	*	<LOD	<LOD	.773 (<LOD-1.04)	1.25 (.968-1.48)	998
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	.750 (<LOD-.882)	1084

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ETUPTU_BiomonitoringSummary.html

Urinary Pentachlorophenol (2003 – 2004)

CAS Number 87-86-5

Metabolite of Several Organochlorine Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	1.12 (.570-1.58)	2.57 (2.08-2.99)	3.63 (2.98-4.61)	2354
Age 6-11 years	03-04	*	<LOD	1.57 (.970-2.25)	3.23 (2.12-5.67)	5.67 (2.94-6.38)	290
Age 12-19 years	03-04	*	<LOD	1.36 (.760-1.99)	2.88 (2.08-3.53)	3.80 (3.06-6.38)	674
Age 20-59 years	03-04	*	<LOD	.980 (<LOD-1.50)	2.40 (1.73-2.79)	3.11 (2.75-3.65)	889
Age 60+ years	03-04	*	<LOD	1.14 (.540-1.74)	2.76 (2.17-3.60)	4.77 (3.29-5.88)	501
Males	03-04	*	<LOD	1.32 (.720-2.05)	2.79 (2.46-3.40)	4.58 (3.50-5.49)	1147
Females	03-04	*	<LOD	.880 (<LOD-1.41)	2.12 (1.71-2.74)	3.20 (2.44-3.84)	1207
Mexican Americans	03-04	*	<LOD	<LOD	1.73 (.640-3.38)	2.44 (1.73-3.84)	550
Non-Hispanic blacks	03-04	*	<LOD	1.46 (1.11-1.93)	2.79 (2.22-3.65)	4.06 (3.20-4.77)	610
Non-Hispanic whites	03-04	*	<LOD	1.17 (.580-1.74)	2.66 (2.06-3.23)	3.69 (2.99-5.17)	1039

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.5.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Pentachlorophenol_BiomonitoringSummary.html

Urinary Pentachlorophenol (creatinine corrected) (2003 – 2004)

CAS Number 87-86-5

Metabolite of Several Organochlorine Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	1.22 (1.01-1.52)	2.30 (1.84-2.77)	3.44 (2.69-3.96)	2352
Age 6-11 years	03-04	*	<LOD	1.75 (1.38-2.69)	3.72 (2.50-4.96)	4.96 (3.59-10.6)	290
Age 12-19 years	03-04	*	<LOD	1.11 (.800-1.28)	1.67 (1.31-2.65)	2.76 (1.64-3.89)	673
Age 20-59 years	03-04	*	<LOD	1.10 (<LOD-1.31)	1.99 (1.66-2.59)	2.92 (2.20-3.81)	888
Age 60+ years	03-04	*	<LOD	1.65 (1.30-1.99)	2.64 (2.14-3.50)	4.15 (2.92-4.90)	501
Males	03-04	*	<LOD	1.10 (.825-1.38)	1.93 (1.62-2.65)	3.23 (2.06-4.94)	1146
Females	03-04	*	<LOD	1.37 (<LOD-1.74)	2.50 (2.13-2.98)	3.50 (2.79-4.07)	1206
Mexican Americans	03-04	*	<LOD	<LOD	1.54 (1.01-2.69)	2.33 (1.40-4.62)	549
Non-Hispanic blacks	03-04	*	<LOD	.919 (.679-1.25)	1.88 (1.42-2.77)	2.94 (2.21-3.76)	610
Non-Hispanic whites	03-04	*	<LOD	1.35 (1.08-1.64)	2.42 (1.94-3.18)	3.54 (2.77-4.78)	1038

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Pentachlorophenol_BiomonitoringSummary.html

Urinary Propylene thiourea (2003 – 2008)

CAS Number 2122-19-2

Metabolite of Propineb

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2456
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2628
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2573
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	305
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	349
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	382
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	702
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	387
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	926
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1086
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1170
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	523
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	475
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	634
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1209
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1246
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1289
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1247
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1382
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1284
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	598
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	693
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	493
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	637
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	720
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	570
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1062
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1006
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1084

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.1, 0.37, and 0.36 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ETUPTU_BiomonitoringSummary.html

Urinary Propylene thiourea (creatinine corrected) (2003 – 2008)

CAS Number 2122-19-2

Metabolite of Propineb

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2454
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2628
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2571
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	305
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	349
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	382
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	701
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	385
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	925
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1086
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1170
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	523
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	475
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	634
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1208
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1246
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1288
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1246
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1382
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1283
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	597
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	693
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	492
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	637
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	720
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	569
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1061
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1006
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1084

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ETUPTU_BiomonitoringSummary.html

Herbicides and Metabolites

Urinary Atrazine (2007 – 2008)‡

CAS Number 1912-24-9

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2588
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	384
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	390
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1179
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	635
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1294
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1294
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	501
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	573
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1085

Limit of detection (LOD, see Data Analysis section) for Survey year 07-08 is 0.5.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Only measured in Survey years 2007-2008.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Atrazine_BiomonitoringSummary.html

Urinary Atrazine (creatinine corrected) (2007 – 2008)‡

CAS Number 1912-24-9

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2586
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	384
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	388
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1179
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	635
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1293
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1293
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	500
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	572
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1085

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Only measured in Survey years 2007-2008.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Atrazine_BiomonitoringSummary.html

Urinary Atrazine mercapturate (2007 – 2008)‡

CAS Number 138722-96-0

Metabolite of Atrazine

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2588
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	384
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	390
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1179
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	635
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1294
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1294
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	501
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	573
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1085

Limit of detection (LOD, see Data Analysis section) for Survey year 07-08 is 0.5.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Only measured in Survey years 2007-2008.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Atrazine_BiomonitoringSummary.html

Urinary Atrazine mercapturate (creatinine corrected) (2007 – 2008)‡

CAS Number 138722-96-0

Metabolite of Atrazine

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2586
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	384
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	388
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1179
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	635
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1293
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1293
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	500
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	572
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1085

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Only measured in Survey years 2007-2008.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Atrazine_BiomonitoringSummary.html

Urinary Desethyl atrazine (2007 – 2008)‡

CAS Number 6190-65-4

Metabolite of Atrazine

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2482
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	360
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	382
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1129
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	611
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1234
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1248
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	462
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	563
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1048

Limit of detection (LOD, see Data Analysis section) for Survey year 07-08 is 0.25.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Only measured in Survey years 2007-2008.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Atrazine_BiomonitoringSummary.html

Urinary Desethyl atrazine (creatinine corrected) (2007 – 2008)‡

CAS Number 6190-65-4

Metabolite of Atrazine

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2480
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	360
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	380
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1129
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	611
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1233
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1247
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	461
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	562
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1048

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Only measured in Survey years 2007-2008.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Atrazine_BiomonitoringSummary.html

Urinary Desisopropyl atrazine (2007 – 2008)‡

CAS Number 1007-28-9

Metabolite of Atrazine

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2445
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	367
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	361
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1113
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	604
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1224
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1221
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	493
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	537
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1010

Limit of detection (LOD, see Data Analysis section) for Survey year 07-08 is 0.25.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Only measured in Survey years 2007-2008.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Atrazine_BiomonitoringSummary.html

Urinary Desisopropyl atrazine (creatinine corrected) (2007 – 2008)‡

CAS Number 1007-28-9

Metabolite of Atrazine

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2444
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	367
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	360
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1113
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	604
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1223
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1221
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	492
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	537
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1010

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Only measured in Survey years 2007-2008.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Atrazine_BiomonitoringSummary.html

Urinary Desisopropyl atrazine mercapturate (2007 – 2008)‡

CAS Number 1007-28-9

Metabolite of Atrazine

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2480
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	366
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	372
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1135
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	607
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1233
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1247
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	486
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	531
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1039

Limit of detection (LOD, see Data Analysis section) for Survey year 07-08 is 0.1.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Only measured in Survey years 2007-2008.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Atrazine_BiomonitoringSummary.html

Urinary Desisopropyl atrazine mercapturate (creatinine corrected) (2007 – 2008)‡

CAS Number 1007-28-9

Metabolite of Atrazine

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2478
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	366
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	370
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1135
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	607
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1232
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1246
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	485
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	530
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1039

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Only measured in Survey years 2007-2008.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Atrazine_BiomonitoringSummary.html

Urinary Diaminochloroatrazine (2007 – 2008)‡

CAS Number 1007-28-9

Metabolite of Atrazine

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2588
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	384
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	390
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1179
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	635
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1294
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1294
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	501
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	573
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1085

Limit of detection (LOD, see Data Analysis section) for Survey year 07-08 is 0.5.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Only measured in Survey years 2007-2008.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Atrazine_BiomonitoringSummary.html

Urinary Diaminochloroatrazine (creatinine corrected) (2007 – 2008)‡

CAS Number 1007-28-9

Metabolite of Atrazine

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2586
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	384
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	388
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1179
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	635
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1293
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1293
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	500
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	572
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1085

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Only measured in Survey years 2007-2008.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Atrazine_BiomonitoringSummary.html

Urinary 2,4-Dichlorophenoxyacetic acid (1999 – 2010)‡

CAS Number 94-75-7

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1977
Total population	01-02	*	<LOD	.220 (<LOD-.310)	.690 (.560-.880)	1.26 (1.01-1.36)	2903
Total population	03-04	.245 (.210-.286)	.230 (.180-.320)	.580 (.490-.660)	1.10 (.910-1.34)	1.71 (1.41-2.37)	2488
Total population	07-08	*	<LOD	.550 (.530-.590)	1.06 (.940-1.19)	1.60 (1.38-1.79)	2587
Total population	09-10	.308 (.275-.345)	.280 (.250-.320)	.530 (.470-.600)	.930 (.810-1.08)	1.43 (1.12-2.02)	2747
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	1.30 (<LOD-2.40)	477
Age 6-11 years	01-02	*	<LOD	.310 (.210-.400)	.740 (.550-1.13)	1.55 (1.00-2.21)	546
Age 6-11 years	03-04	.266 (.214-.332)	.290 (.200-.390)	.670 (.440-.920)	1.03 (.890-1.40)	1.88 (1.01-2.54)	309
Age 6-11 years	07-08	*	<LOD	.720 (.630-.860)	1.44 (1.15-1.64)	1.93 (1.62-2.84)	385
Age 6-11 years	09-10	.385 (.330-.449)	.350 (.290-.440)	.670 (.510-.780)	1.20 (.860-1.58)	1.59 (1.36-2.77)	386
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	1.10 (<LOD-1.60)	677
Age 12-19 years	01-02	*	<LOD	.250 (<LOD-.420)	.690 (.440-1.16)	1.24 (.690-1.66)	797
Age 12-19 years	03-04	.256 (.212-.310)	.260 (.180-.380)	.580 (.470-.710)	1.04 (.890-1.31)	1.66 (1.20-2.97)	714
Age 12-19 years	07-08	*	<LOD	.590 (.530-.670)	1.29 (.790-1.97)	2.38 (1.46-2.73)	390
Age 12-19 years	09-10	.301 (.248-.366)	.280 (.240-.330)	.490 (.420-.620)	.900 (.660-1.05)	1.12 (.880-2.88)	401
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	<LOD	823
Age 20-59 years	01-02	*	<LOD	.210 (<LOD-.310)	.690 (.540-.910)	1.27 (.930-1.49)	1070
Age 20-59 years	03-04	.239 (.205-.279)	.220 (.170-.300)	.570 (.480-.640)	.980 (.840-1.35)	1.55 (1.25-2.50)	937
Age 20-59 years	07-08	*	<LOD	.530 (.490-.570)	.970 (.800-1.17)	1.36 (1.22-1.78)	1179
Age 20-59 years	09-10	.288 (.259-.319)	.270 (.230-.310)	.500 (.440-.560)	.870 (.740-1.04)	1.33 (1.05-1.69)	1309
Age 60+ years	01-02	*	<LOD	<LOD	.560 (.390-.870)	1.26 (.690-1.78)	490
Age 60+ years	03-04	.248 (.205-.301)	.210 (.130-.320)	.560 (.470-.680)	1.36 (1.07-1.90)	2.42 (1.66-3.67)	528
Age 60+ years	07-08	*	<LOD	.560 (.530-.640)	1.02 (.840-1.12)	1.46 (1.10-2.11)	633
Age 60+ years	09-10	.349 (.294-.414)	.300 (.230-.390)	.590 (.510-.720)	1.11 (.810-1.57)	2.08 (1.16-5.40)	651
Males	99-00	*	<LOD	<LOD	<LOD	1.10 (<LOD-1.80)	962
Males	01-02	*	<LOD	.330 (.220-.490)	.890 (.690-1.17)	1.49 (1.26-2.03)	1364
Males	03-04	.276 (.240-.317)	.290 (.210-.370)	.630 (.540-.740)	1.22 (.960-1.42)	2.12 (1.42-2.73)	1218
Males	07-08	*	<LOD	.610 (.580-.650)	1.26 (1.05-1.38)	2.11 (1.68-2.41)	1292
Males	09-10	.347 (.298-.404)	.320 (.270-.370)	.580 (.500-.690)	1.05 (.810-1.47)	1.82 (1.12-4.14)	1343
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1015
Females	01-02	*	<LOD	<LOD	.470 (.360-.620)	.890 (.670-1.21)	1539
Females	03-04	.219 (.181-.264)	.190 (.110-.280)	.490 (.400-.630)	.980 (.860-1.33)	1.48 (1.31-2.27)	1270
Females	07-08	*	<LOD	.500 (.460-.540)	.870 (.790-1.01)	1.28 (1.12-1.42)	1295
Females	09-10	.275 (.250-.303)	.260 (.220-.300)	.480 (.440-.540)	.860 (.740-.950)	1.14 (.970-1.39)	1404

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 07-08 and 09-10 are 0.952, 0.2, and 0.1, 0.4 and 0.15 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured in Survey years 2005-2006

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/24-DichlorophenoxyaceticAcid_BiomonitoringSummary.html

Urinary 2,4-Dichlorophenoxyacetic acid (1999 – 2010)‡

CAS Number 94-75-7

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	695
Mexican Americans	01-02	*	<LOD	.250 (<LOD-.330)	.730 (.610-.890)	1.20 (.960-1.36)	743
Mexican Americans	03-04	.313 (.256-.383)	.340 (.260-.440)	.730 (.610-.840)	1.42 (1.02-1.52)	1.81 (1.23-3.53)	606
Mexican Americans	07-08	*	<LOD	.520 (.470-.590)	.860 (.790-1.00)	1.46 (.950-2.22)	500
Mexican Americans	09-10	.276 (.240-.318)	.250 (.210-.300)	.470 (.410-.570)	.840 (.680-1.08)	1.23 (.830-2.02)	602
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	1.20 (<LOD-1.70)	520
Non-Hispanic blacks	01-02	*	<LOD	<LOD	.560 (.420-.890)	1.06 (.790-1.48)	743
Non-Hispanic blacks	03-04	*	.190 (<LOD-.290)	.510 (.380-.630)	.910 (.750-1.22)	1.31 (.990-1.98)	648
Non-Hispanic blacks	07-08	*	<LOD	.580 (.530-.630)	1.05 (.910-1.20)	1.49 (1.23-1.97)	574
Non-Hispanic blacks	09-10	.284 (.251-.321)	.260 (.240-.290)	.460 (.390-.540)	.790 (.620-1.03)	1.11 (.790-1.81)	504
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	589
Non-Hispanic whites	01-02	*	<LOD	.240 (<LOD-.360)	.730 (.560-.980)	1.30 (1.01-1.66)	1201
Non-Hispanic whites	03-04	.254 (.211-.306)	.240 (.180-.360)	.590 (.470-.720)	1.17 (.930-1.41)	2.00 (1.40-2.51)	1076
Non-Hispanic whites	07-08	*	<LOD	.560 (.540-.600)	1.12 (.940-1.29)	1.61 (1.36-2.16)	1083
Non-Hispanic whites	09-10	.328 (.281-.382)	.300 (.250-.370)	.570 (.480-.680)	.980 (.830-1.20)	1.57 (1.14-2.77)	1200

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 07-08 and 07-08 are 0.952, 0.2, and 0.1, 0.4 and 0.15 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured in Survey years 2005-2006

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/24-DichlorophenoxyaceticAcid_BiomonitoringSummary.html

Urinary 2,4-Dichlorophenoxyacetic acid (creatinine corrected) (1999 – 2010)‡

CAS Number 94-75-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1977
Total population	01-02	*	<LOD	.378 (<LOD-.412)	.700 (.635-.778)	1.12 (1.03-1.26)	2901
Total population	03-04	.241 (.203-.287)	.253 (.206-.290)	.500 (.423-.610)	1.03 (.855-1.28)	1.85 (1.42-2.50)	2486
Total population	07-08	*	<LOD	.737 (.667-.779)	1.28 (1.17-1.40)	1.84 (1.65-2.12)	2585
Total population	09-10	.321 (.286-.360)	.301 (.272-.329)	.500 (.458-.573)	.983 (.846-1.19)	1.55 (1.30-2.12)	2747
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	1.32 (<LOD-2.24)	477
Age 6-11 years	01-02	*	<LOD	.485 (.378-.679)	1.13 (.825-1.35)	1.41 (1.27-1.73)	546
Age 6-11 years	03-04	.323 (.249-.421)	.320 (.250-.440)	.744 (.500-1.06)	1.30 (.990-2.55)	2.55 (1.23-5.16)	309
Age 6-11 years	07-08	*	<LOD	.970 (.817-1.24)	1.65 (1.47-1.85)	2.96 (1.65-6.18)	385
Age 6-11 years	09-10	.521 (.444-.610)	.478 (.411-.531)	.792 (.674-1.06)	1.52 (1.21-1.74)	2.20 (1.53-3.02)	386
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	.593 (<LOD-1.05)	677
Age 12-19 years	01-02	*	<LOD	.275 (<LOD-.376)	.483 (.328-.662)	.662 (.517-.918)	796
Age 12-19 years	03-04	.193 (.160-.232)	.205 (.157-.250)	.419 (.328-.460)	.709 (.540-.925)	1.23 (.837-2.35)	713
Age 12-19 years	07-08	*	<LOD	.555 (.475-.651)	.908 (.778-1.05)	1.56 (.950-2.79)	388
Age 12-19 years	09-10	.258 (.212-.314)	.256 (.200-.299)	.358 (.320-.439)	.706 (.439-1.05)	1.05 (.579-3.27)	401
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	<LOD	823
Age 20-59 years	01-02	*	<LOD	.378 (<LOD-.412)	.667 (.593-.778)	1.08 (.806-1.29)	1070
Age 20-59 years	03-04	.227 (.188-.274)	.242 (.196-.278)	.452 (.397-.545)	.923 (.708-1.20)	1.48 (1.14-2.43)	936
Age 20-59 years	07-08	*	<LOD	.667 (.588-.769)	1.17 (1.04-1.34)	1.65 (1.43-2.33)	1179
Age 20-59 years	09-10	.288 (.259-.321)	.276 (.250-.309)	.458 (.418-.507)	.860 (.750-.962)	1.36 (1.00-1.88)	1309
Age 60+ years	01-02	*	<LOD	<LOD	.824 (.583-1.10)	1.34 (1.00-2.16)	489
Age 60+ years	03-04	.301 (.248-.366)	.310 (.237-.385)	.657 (.510-.866)	1.54 (1.16-1.95)	3.00 (1.95-6.36)	528
Age 60+ years	07-08	*	<LOD	.860 (.781-.903)	1.53 (1.27-1.72)	1.96 (1.60-2.33)	633
Age 60+ years	09-10	.414 (.356-.480)	.354 (.306-.407)	.667 (.548-.812)	1.41 (.983-1.99)	2.87 (1.49-4.49)	651
Males	99-00	*	<LOD	<LOD	<LOD	.667 (<LOD-1.16)	962
Males	01-02	*	<LOD	.336 (.272-.412)	.652 (.560-.825)	1.14 (.979-1.39)	1364
Males	03-04	.227 (.189-.271)	.238 (.194-.276)	.473 (.412-.564)	.941 (.767-1.23)	1.80 (1.09-2.79)	1217
Males	07-08	*	<LOD	.596 (.538-.670)	1.14 (.980-1.24)	1.63 (1.47-2.15)	1291
Males	09-10	.309 (.266-.359)	.282 (.242-.323)	.481 (.413-.554)	1.01 (.707-1.57)	1.80 (1.06-3.88)	1343
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1015
Females	01-02	*	<LOD	<LOD	.711 (.631-.809)	1.10 (.933-1.26)	1537
Females	03-04	.256 (.213-.308)	.263 (.212-.311)	.522 (.435-.645)	1.14 (.900-1.42)	1.85 (1.42-2.64)	1269
Females	07-08	*	<LOD	.854 (.757-.903)	1.47 (1.23-1.58)	1.91 (1.65-2.33)	1294
Females	09-10	.334 (.302-.369)	.319 (.288-.355)	.533 (.475-.611)	.953 (.862-1.10)	1.40 (1.21-1.55)	1404

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

*Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured in Survey years 2005-2006

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/24-DichlorophenoxyaceticAcid_BiomonitoringSummary.html

Urinary 2,4-Dichlorophenoxyacetic acid (creatinine corrected) (1999 – 2010)‡

CAS Number 94-75-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	695
Mexican Americans	01-02	*	<LOD	.350 (<LOD-.386)	.720 (.583-.840)	1.08 (.778-1.56)	743
Mexican Americans	03-04	.287 (.223-.371)	.309 (.194-.459)	.593 (.463-.771)	1.08 (.833-1.36)	1.54 (1.17-3.19)	605
Mexican Americans	07-08	*	<LOD	.622 (.571-.691)	1.15 (.903-1.43)	1.74 (1.37-2.33)	499
Mexican Americans	09-10	.289 (.255-.326)	.282 (.255-.300)	.434 (.392-.495)	.781 (.565-1.11)	1.30 (.733-2.63)	602
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	.593 (<LOD-1.19)	520
Non-Hispanic blacks	01-02	*	<LOD	<LOD	.467 (.349-.583)	.778 (.552-.975)	742
Non-Hispanic blacks	03-04	*	.140 (<LOD-.194)	.304 (.264-.356)	.629 (.461-.815)	.970 (.719-1.50)	648
Non-Hispanic blacks	07-08	*	<LOD	.509 (.457-.596)	.966 (.875-1.07)	1.33 (1.12-1.75)	573
Non-Hispanic blacks	09-10	.215 (.192-.240)	.195 (.180-.218)	.344 (.314-.400)	.628 (.489-.822)	1.06 (.714-1.38)	504
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	589
Non-Hispanic whites	01-02	*	<LOD	.412 (<LOD-.455)	.769 (.667-.894)	1.25 (1.05-1.40)	1200
Non-Hispanic whites	03-04	.263 (.213-.326)	.269 (.226-.318)	.539 (.434-.665)	1.13 (.941-1.46)	2.34 (1.54-2.73)	1075
Non-Hispanic whites	07-08	*	<LOD	.780 (.737-.871)	1.36 (1.17-1.55)	2.00 (1.60-2.49)	1083
Non-Hispanic whites	09-10	.357 (.308-.414)	.328 (.288-.384)	.547 (.485-.644)	1.10 (.897-1.40)	1.79 (1.35-3.02)	1200

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured in Survey years 2005-2006

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/24-DichlorophenoxyaceticAcid_BiomonitoringSummary.html

Urinary 2,4,5-Trichlorophenoxyacetic acid (1999 – 2010)‡

CAS Number 93-76-5

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1814
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	3047
Total population	03-04	*	<LOD	<LOD	<LOD	.140 (<LOD-.210)	2416
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2588
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2747
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	<LOD	430
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	580
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	.110 (<LOD-.160)	303
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	385
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	386
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	618
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	831
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	.140 (<LOD-.190)	701
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	390
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	401
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	<LOD	766
Age 20-59 years	01-02	*	<LOD	<LOD	<LOD	<LOD	1127
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	.160 (<LOD-.250)	908
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1180
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1309
Age 60+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	509
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	.140 (<LOD-.230)	504
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	633
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	651
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	891
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1428
Males	03-04	*	<LOD	<LOD	<LOD	.140 (<LOD-.210)	1184
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1293
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1343
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	923
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1619
Females	03-04	*	<LOD	<LOD	<LOD	.150 (<LOD-.230)	1232
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1295
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1404

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 07-08 and 09-10 are 1.2, 0.1, and 0.1, 0.1 and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured in Survey years 2005-2006 or after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/245-TrichlorophenoxyaceticAcid_BiomonitoringSummary.html

Urinary 2,4,5-Trichlorophenoxyacetic acid (1999 – 2010)‡

CAS Number 93-76-5

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	652
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	766
Mexican Americans	03-04	*	<LOD	<LOD	.120 (<LOD-.340)	.200 (<LOD-.390)	605
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	500
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	602
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	483
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	776
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	641
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	574
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	504
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	531
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1281
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	.150 (<LOD-.230)	1013
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1084
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1200

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 07-08 and 07-08 are 1.2, 0.1, and 0.1, 0.1 and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured in Survey years 2005-2006 or after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/245-TrichlorophenoxyaceticAcid_BiomonitoringSummary.html

Urinary 2,4,5-Trichlorophenoxyacetic acid (creatinine corrected) (1999 – 2010)‡

CAS Number 93-76-5

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1814
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	3045
Total population	03-04	*	<LOD	<LOD	<LOD	.333 (<LOD-.412)	2414
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2586
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2747
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	<LOD	430
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	580
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	.318 (<LOD-.368)	303
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	385
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	386
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	618
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	830
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	.226 (<LOD-.269)	700
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	388
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	401
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	<LOD	766
Age 20-59 years	01-02	*	<LOD	<LOD	<LOD	<LOD	1127
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	.350 (<LOD-.438)	907
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1180
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1309
Age 60+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	508
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	.368 (<LOD-.538)	504
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	633
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	651
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	891
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1428
Males	03-04	*	<LOD	<LOD	<LOD	.253 (<LOD-.350)	1183
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1292
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1343
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	923
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1617
Females	03-04	*	<LOD	<LOD	<LOD	.432 (<LOD-.500)	1231
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1294
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1404

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured in Survey years 2005-2006 or after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/245-TrichlorophenoxyaceticAcid_BiomonitoringSummary.html

Urinary 2,4,5-Trichlorophenoxyacetic acid (creatinine corrected) (1999 – 2010)‡

CAS Number 93-76-5

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	652
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	766
Mexican Americans	03-04	*	<LOD	<LOD	.200 (<LOD-.333)	.333 (<LOD-.467)	604
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	499
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	602
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	483
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	775
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	641
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	573
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	504
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	531
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1280
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	.350 (<LOD-.438)	1012
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1084
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1200

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured in Survey years 2005-2006 or after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/245-TrichlorophenoxyaceticAcid_BiomonitoringSummary.html

Sulfonyl Urea Herbicides

Urinary Bensulfuron-methyl (2003 – 2008)

CAS Number 83055-99-6

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2355
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2634
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2494
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	286
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	350
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	374
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	671
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	381
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1398
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1566
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1739
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1150
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1247
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1240
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1205
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1387
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1254
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	567
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	697
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	477
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	617
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	720
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	558
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1018
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1053

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.05, 0.05, and 0.05 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Bensulfuron-methyl (creatinine corrected) (2003 – 2008)

CAS Number 83055-99-6

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2353
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2634
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2492
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	286
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	350
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	374
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	670
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	379
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1397
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1566
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1739
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1149
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1247
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1239
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1204
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1387
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1253
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	566
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	697
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	476
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	617
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	720
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	557
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1017
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1053

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Chlorsulfuron (2003 – 2008)

CAS Number 64902-72-3

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2100
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2419
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2566
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	259
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	314
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	380
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	601
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	653
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	386
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1240
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1452
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1800
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1031
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1151
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1285
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1069
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1268
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1281
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	506
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	633
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	491
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	568
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	658
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	570
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	894
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	940
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1081

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.06, 0.06, and 0.06 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Chlorsulfuron (creatinine corrected) (2003 – 2008)

CAS Number 64902-72-3

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2098
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2419
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2564
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	259
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	314
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	380
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	600
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	653
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	384
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1239
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1452
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1800
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1030
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1151
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1284
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1068
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1268
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1280
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	505
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	633
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	490
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	568
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	658
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	569
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	893
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	940
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1081

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Ethametsulfuron-methyl (2003 – 2008)

CAS Number 97780-06-8

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2321
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2634
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2458
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	294
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	350
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	366
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	671
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	381
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1356
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1566
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1711
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1132
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1247
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1218
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1189
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1387
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1240
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	590
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	697
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	468
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	608
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	720
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	534
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	974
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1052

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04, 05-06, and 07-08 are 0.1, 0.1, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Ethametsulfuron-methyl (creatinine corrected) (2003 – 2008)

CAS Number 97780-06-8

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2319
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2634
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2456
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	294
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	350
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	366
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	670
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	379
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1355
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1566
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1711
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1131
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1247
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1217
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1188
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1387
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1239
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	589
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	697
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	467
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	608
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	720
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	533
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	973
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1052

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Foramsulfuron (2003 – 2008)

CAS Number 173159-57-4

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2255
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2534
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2423
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	283
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	334
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	364
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	653
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	688
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	364
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1319
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1512
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1695
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1097
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1203
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1205
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1158
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1331
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1218
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	587
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	632
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	487
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	584
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	711
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	523
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	935
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	990
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1004

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.05, 0.05, and 0.05 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Foramsulfuron (creatinine corrected) (2003 – 2008)

CAS Number 173159-57-4

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2253
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2534
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2421
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	283
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	334
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	364
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	652
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	688
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	362
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1318
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1512
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1695
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1096
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1203
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1204
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1157
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1331
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1217
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	586
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	632
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	486
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	584
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	711
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	522
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	934
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	990
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1004

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Halosulfuron (2003 – 2008)

CAS Number 135397-30-7

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2356
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2485
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2530
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	291
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	331
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	377
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	672
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	679
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	385
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1393
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1475
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1768
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1148
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1184
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1261
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1208
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1301
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1269
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	592
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	650
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	485
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	609
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	694
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	565
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1005
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	950
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1068

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.1, 0.1, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Halosulfuron (creatinine corrected) (2003 – 2008)

CAS Number 135397-30-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2354
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2485
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2528
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	291
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	331
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	377
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	671
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	679
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	383
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1392
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1475
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1768
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1147
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1184
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1260
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1207
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1301
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1268
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	591
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	650
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	484
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	609
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	694
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	564
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1004
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	950
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1068

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Mesosulfuron-methyl (2003 – 2008)

CAS Number 208465-21-8

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2427
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2634
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2494
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	302
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	350
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	372
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	694
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	371
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1431
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1566
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1751
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1189
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1247
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1245
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1238
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1387
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1249
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	596
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	697
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	465
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	634
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	720
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	554
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1039
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1059

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.06, 0.06, and 0.06 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Mesosulfuron-methyl (creatinine corrected) (2003 – 2008)

CAS Number 208465-21-8

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2425
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2634
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2492
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	302
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	350
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	372
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	693
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	369
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1430
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1566
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1751
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1188
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1247
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1244
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1237
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1387
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1248
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	595
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	697
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	464
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	634
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	720
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	553
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1038
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1059

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Metsulfuron-methyl (2003 – 2008)

CAS Number 74223-64-6

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2360
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2634
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2494
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	297
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	350
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	373
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	675
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	374
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1388
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1566
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1747
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1152
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1247
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1246
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1208
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1387
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1248
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	595
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	697
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	470
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	596
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	720
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	538
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1013
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1066

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.05, 0.05, and 0.05 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Metsulfuron-methyl (creatinine corrected) (2003 – 2008)

CAS Number 74223-64-6

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2358
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2634
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2492
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	297
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	350
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	373
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	674
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	372
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1387
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1566
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1747
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1151
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1247
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1245
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1207
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1387
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1247
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	594
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	697
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	469
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	596
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	720
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	537
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1012
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1066

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Nicosulfuron (2003 – 2008)

CAS Number 111991-09-4

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2322
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2570
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2422
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	296
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	341
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	363
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	666
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	699
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	364
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1360
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1530
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1695
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1131
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1222
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1210
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1191
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1348
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1212
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	589
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	656
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	486
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	601
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	719
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	524
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	980
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	993
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1007

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.1, 0.1, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Nicosulfuron (creatinine corrected) (2003 – 2008)

CAS Number 111991-09-4

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2320
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2570
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2420
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	296
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	341
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	363
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	665
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	699
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	362
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1359
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1530
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1695
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1130
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1222
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1209
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1190
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1348
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1211
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	588
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	656
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	485
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	601
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	719
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	523
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	979
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	993
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1007

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Oxasulfuron (2003 – 2008)

CAS Number 144651-06-9

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2355
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2634
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2540
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	290
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	350
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	379
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	672
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	381
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1393
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1566
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1780
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1150
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1247
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1269
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1205
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1387
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1271
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	579
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	697
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	487
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	616
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	720
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	567
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1018
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1076

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.06, 0.06, and 0.06 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Oxasulfuron (creatinine corrected) (2003 – 2008)

CAS Number 144651-06-9

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2353
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2634
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2538
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	290
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	350
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	379
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	671
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	379
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1392
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1566
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1780
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1149
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1247
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1268
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1204
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1387
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1270
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	578
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	697
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	486
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	616
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	720
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	566
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1017
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1076

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Primisulfuron-methyl (2003 – 2008)

CAS Number 86209-51-0

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2250
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2455
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2422
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	285
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	327
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	356
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	627
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	665
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	376
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1338
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1463
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1690
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1107
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1160
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1207
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1143
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1295
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1215
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	574
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	667
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	456
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	556
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	661
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	549
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	975
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	938
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1030

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.07, 0.07, and 0.07 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Primisulfuron-methyl (creatinine corrected) (2003 – 2008)

CAS Number 86209-51-0

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2249
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2455
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2420
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	285
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	327
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	356
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	626
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	665
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	374
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1338
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1463
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1690
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1107
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1160
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1206
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1142
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1295
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1214
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	573
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	667
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	455
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	556
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	661
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	548
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	975
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	938
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1030

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Prosulfuron (2003 – 2008)

CAS Number 94125-34-5

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2247
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2461
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2566
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	284
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	326
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	380
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	640
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	676
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	386
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1323
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1459
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1800
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1100
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1165
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1285
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1147
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1296
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1281
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	589
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	673
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	491
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	565
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	677
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	570
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	940
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	924
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1081

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.05, 0.05, and 0.05 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Prosulfuron (creatinine corrected) (2003 – 2008)

CAS Number 94125-34-5

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2245
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2461
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2564
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	284
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	326
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	380
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	639
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	676
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	384
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1322
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1459
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1800
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1099
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1165
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1284
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1146
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1296
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1280
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	588
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	673
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	490
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	565
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	677
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	569
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	939
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	924
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1081

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Rimsulfuron (2003 – 2008)

CAS Number 122931-48-0

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2284
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2593
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2530
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	279
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	346
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	376
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	654
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	706
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	383
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1351
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1541
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1771
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1110
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1224
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1271
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1174
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1369
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1259
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	561
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	675
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	463
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	592
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	715
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	568
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	985
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	998
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1080

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.05, 0.05, and 0.05 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Rimsulfuron (creatinine corrected) (2003 – 2008)

CAS Number 122931-48-0

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2282
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2593
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2528
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	279
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	346
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	376
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	653
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	706
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	381
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1350
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1541
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1771
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1109
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1224
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1270
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1173
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1369
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1258
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	560
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	675
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	462
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	592
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	715
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	567
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	984
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	998
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1080

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Sulfometuron-methyl (2003 – 2008)

CAS Number 74222-97-2

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2067
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2598
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2458
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	252
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	345
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	352
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	587
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	710
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	373
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1228
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1543
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1733
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1007
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1233
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1226
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1060
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1365
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1232
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	441
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	697
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	454
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	569
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	698
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	557
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	916
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	996
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1045

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.05, 0.05, and 0.05 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Sulfometuron-methyl (creatinine corrected) (2003 – 2008)

CAS Number 74222-97-2

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2065
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2598
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2456
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	252
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	345
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	352
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	586
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	710
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	371
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1227
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1543
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1733
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1006
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1233
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1225
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1059
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1365
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1231
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	440
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	697
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	453
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	569
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	698
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	556
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	915
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	996
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1045

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Sulfosulfuron (2003 – 2008)

CAS Number 141776-32-1

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2391
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2593
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2530
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	294
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	344
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	377
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	681
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	708
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	385
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1416
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1541
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1768
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1170
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1230
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1261
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1221
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1363
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1269
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	594
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	673
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	485
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	617
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	719
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	565
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1026
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	997
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1068

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.1, 0.1, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Sulfosulfuron (creatinine corrected) (2003 – 2008)

CAS Number 141776-32-1

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2389
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2593
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2528
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	294
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	344
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	377
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	680
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	708
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	383
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1415
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1541
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1768
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1169
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1230
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1260
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1220
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1363
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1268
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	593
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	673
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	484
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	617
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	719
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	564
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1025
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	997
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1068

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Thifensulfuron-methyl (2003 – 2008)

CAS Number 79277-27-3

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2355
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2634
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2495
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	291
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	350
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	370
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	677
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	375
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1387
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1566
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1750
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1145
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1247
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1252
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1210
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1387
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1243
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	566
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	697
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	479
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	616
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	720
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	542
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1022
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1056

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.08, 0.08, and 0.08 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Thifensulfuron-methyl (creatinine corrected) (2003 – 2008)

CAS Number 79277-27-3

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2353
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2634
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2493
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	291
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	350
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	370
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	676
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	373
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1386
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1566
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1750
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1144
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1247
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1251
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1209
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1387
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1242
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	565
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	697
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	478
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	616
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	720
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	541
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1021
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1056

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Triasulfuron (2003 – 2008)

CAS Number 82097-50-5

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2250
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2557
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2530
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	278
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	341
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	378
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	643
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	695
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	385
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1329
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1521
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1767
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1101
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1210
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1265
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1149
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1347
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1265
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	549
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	677
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	488
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	580
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	713
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	547
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	973
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	968
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1073

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.07, 0.07, and 0.07 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Triasulfuron (creatinine corrected) (2003 – 2008)

CAS Number 82097-50-5

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2248
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2557
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2528
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	278
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	341
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	378
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	642
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	695
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	383
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1328
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1521
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1767
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1100
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1210
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1264
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1148
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1347
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1264
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	548
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	677
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	487
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	580
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	713
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	546
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	972
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	968
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1073

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Triflusulfuron-methyl (2003 – 2008)

CAS Number 126535-15-7

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2427
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2562
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2494
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	302
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	340
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	374
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	694
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	702
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	381
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1431
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1520
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1739
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1189
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1216
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1240
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1238
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1346
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1254
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	596
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	693
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	477
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	634
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	699
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	558
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1039
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	972
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1053

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.05, 0.05, and 0.05 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Urinary Triflusulfuron-methyl (creatinine corrected) (2003 – 2008)

CAS Number 126535-15-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2425
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2562
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2492
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	302
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	340
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	374
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	693
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	702
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	379
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1430
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1520
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1739
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1188
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1216
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1239
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1237
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1346
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1253
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	595
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	693
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	476
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	634
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	699
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	557
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1038
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	972
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1053

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/SulfonylureaHerbicides_BiomonitoringSummary.html

Insect Repellent and Metabolites

Urinary N,N-diethyl-meta-toluamide (DEET) (2007 – 2010)

CAS Number 134-62-3

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2565
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2744
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	380
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	386
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	386
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	400
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1169
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1307
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	630
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	651
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1286
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1343
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1279
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1401
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	499
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	600
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	570
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	504
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1071
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1199

Limit of detection (LOD, see Data Analysis section) for Survey year 07-08 and 09-10 are 0.083 and 0.083.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEET_BiomonitoringSummary.html

Urinary N,N-diethyl-meta-toluamide (DEET) (creatinine corrected) (2007 – 2010)

CAS Number 134-62-3

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2563
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2744
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	380
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	386
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	384
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	400
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1169
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1307
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	630
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	651
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1285
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1343
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1278
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1401
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	498
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	600
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	569
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	504
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1071
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1199

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEET_BiomonitoringSummary.html

Urinary 3-(Diethylcarbamoyl) benzoic acid (DCBA) (2007 – 2010)

CAS Number 858981-15-4

Metabolite of DEET

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	3.50 (2.64-4.64)	2.37 (1.88-3.10)	9.14 (5.61-14.5)	33.9 (20.5-53.1)	79.2 (37.9-145)	2538
Total population	09-10	4.54 (3.35-6.15)	3.40 (2.31-4.95)	13.8 (8.63-20.6)	51.9 (31.1-108)	165 (57.8-464)	2735
Age 6-11 years	07-08	4.44 (3.73-5.29)	3.44 (2.70-5.87)	12.7 (9.54-15.9)	42.0 (24.2-70.4)	79.7 (44.9-114)	378
Age 6-11 years	09-10	6.44 (3.72-11.1)	5.35 (2.58-8.86)	18.5 (8.15-37.9)	83.8 (28.4-439)	316 (41.2-3970)	385
Age 12-19 years	07-08	5.26 (3.47-7.98)	4.37 (2.68-5.98)	13.1 (6.81-25.8)	35.4 (20.4-71.2)	71.2 (30.7-700)	380
Age 12-19 years	09-10	6.58 (4.49-9.66)	4.63 (2.82-8.64)	18.9 (10.7-33.6)	87.8 (32.9-186)	186 (31.1-1130)	398
Age 20-59 years	07-08	3.33 (2.56-4.35)	2.23 (1.83-2.90)	7.95 (5.05-14.5)	30.8 (17.4-53.1)	75.6 (39.3-131)	1157
Age 20-59 years	09-10	4.39 (3.29-5.86)	3.33 (2.23-4.95)	14.0 (8.36-20.9)	51.4 (32.6-95.8)	138 (52.9-280)	1300
Age 60+ years	07-08	2.78 (1.75-4.42)	1.64 (.936-3.06)	6.15 (3.08-16.9)	34.7 (16.3-75.4)	103 (32.4-200)	623
Age 60+ years	09-10	3.42 (2.39-4.91)	2.13 (1.45-4.00)	9.63 (5.33-17.1)	35.4 (19.7-63.8)	103 (43.2-346)	652
Males	07-08	4.15 (2.88-6.00)	2.90 (2.13-4.34)	11.3 (6.63-19.7)	37.7 (20.7-82.0)	112 (34.7-556)	1269
Males	09-10	5.58 (3.94-7.90)	4.39 (2.67-6.24)	18.7 (10.8-30.6)	78.3 (37.3-174)	199 (96.2-525)	1340
Females	07-08	2.97 (2.32-3.80)	2.06 (1.64-2.59)	6.84 (4.41-10.8)	30.8 (15.0-40.8)	52.6 (36.4-103)	1269
Females	09-10	3.73 (2.79-4.98)	2.76 (1.87-4.24)	9.91 (6.35-15.9)	36.2 (22.4-70.4)	94.9 (40.2-278)	1395
Mexican Americans	07-08	3.70 (2.57-5.33)	3.26 (1.87-5.17)	9.63 (5.93-17.6)	28.0 (14.7-69.1)	69.1 (27.5-133)	490
Mexican Americans	09-10	2.63 (1.61-4.28)	2.03 (.932-4.71)	7.35 (4.22-14.5)	23.1 (12.5-48.2)	48.9 (26.0-94.3)	599
Non-Hispanic blacks	07-08	4.36 (3.18-5.96)	3.54 (2.24-6.04)	10.3 (6.78-17.4)	31.9 (19.3-51.6)	62.4 (40.4-103)	562
Non-Hispanic blacks	09-10	3.91 (2.85-5.35)	3.22 (2.24-4.75)	9.53 (5.88-14.4)	23.4 (18.0-33.4)	38.4 (29.1-60.5)	497
Non-Hispanic whites	07-08	3.47 (2.35-5.14)	2.22 (1.65-3.19)	9.12 (4.82-17.0)	36.5 (17.7-82.0)	86.9 (32.9-356)	1064
Non-Hispanic whites	09-10	5.48 (3.83-7.84)	4.31 (2.64-6.25)	17.7 (10.5-28.4)	67.9 (32.6-195)	200 (63.8-832)	1199

Limit of detection (LOD, see Data Analysis section) for Survey year 07-08 and 09-10 are 0.93 and 0.475.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEET_BiomonitoringSummary.html

Urinary 3-(Diethylcarbamoyl) benzoic acid (DCBA) (creatinine corrected) (2007 – 2010)

CAS Number 858981-15-4

Metabolite of DEET

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	3.60 (2.79-4.65)	2.79 (2.14-3.55)	8.55 (5.49-13.2)	27.3 (17.8-47.9)	70.8 (34.1-170)	2537
Total population	09-10	4.74 (3.48-6.46)	3.35 (2.30-5.26)	12.9 (8.53-20.6)	44.6 (28.3-86.3)	131 (47.0-405)	2735
Age 6-11 years	07-08	5.64 (4.72-6.75)	4.84 (3.65-5.78)	14.2 (10.7-19.8)	47.7 (34.2-55.1)	88.6 (47.9-182)	378
Age 6-11 years	09-10	8.72 (5.03-15.1)	6.42 (4.02-11.6)	23.5 (13.2-36.7)	75.4 (28.6-673)	365 (46.2-4980)	385
Age 12-19 years	07-08	4.08 (2.81-5.93)	2.96 (2.14-5.36)	11.0 (6.38-16.0)	24.3 (14.8-53.4)	53.4 (19.3-345)	379
Age 12-19 years	09-10	5.65 (3.76-8.50)	3.76 (2.56-6.22)	16.5 (7.29-31.7)	68.6 (25.3-182)	154 (25.3-1270)	398
Age 20-59 years	07-08	3.34 (2.61-4.27)	2.73 (1.99-3.46)	7.57 (4.92-12.1)	24.8 (14.9-44.7)	57.8 (30.9-117)	1157
Age 20-59 years	09-10	4.41 (3.25-5.97)	2.98 (2.11-5.32)	11.7 (7.71-19.6)	39.1 (24.7-82.6)	112 (51.3-228)	1300
Age 60+ years	07-08	3.42 (2.33-5.02)	2.47 (1.45-3.64)	7.33 (4.25-16.8)	33.8 (15.9-86.0)	93.3 (34.2-244)	623
Age 60+ years	09-10	4.06 (2.95-5.59)	2.68 (2.10-3.96)	10.8 (6.79-15.9)	37.7 (22.2-51.1)	108 (42.7-393)	652
Males	07-08	3.46 (2.46-4.87)	2.72 (1.76-3.73)	8.68 (5.34-14.4)	27.8 (16.9-69.4)	87.0 (27.8-403)	1269
Males	09-10	4.97 (3.49-7.08)	3.29 (2.14-5.94)	14.7 (9.13-24.0)	60.0 (28.5-134)	185 (74.8-433)	1340
Females	07-08	3.74 (2.99-4.68)	2.88 (2.27-3.63)	8.55 (5.36-13.2)	27.2 (16.2-46.3)	54.8 (34.2-117)	1268
Females	09-10	4.54 (3.40-6.05)	3.35 (2.39-4.67)	11.8 (7.55-18.4)	35.3 (24.2-53.4)	77.6 (36.7-252)	1395
Mexican Americans	07-08	3.79 (2.57-5.58)	3.60 (1.99-5.96)	9.91 (6.55-16.9)	27.8 (15.0-60.6)	60.6 (24.4-107)	490
Mexican Americans	09-10	2.74 (1.75-4.28)	2.03 (1.12-5.18)	7.57 (3.92-14.0)	23.3 (13.6-31.8)	37.4 (23.6-90.5)	599
Non-Hispanic blacks	07-08	3.33 (2.46-4.49)	2.74 (1.91-3.76)	7.07 (4.88-11.9)	22.5 (12.6-45.1)	53.9 (28.7-103)	561
Non-Hispanic blacks	09-10	2.98 (2.26-3.94)	2.41 (1.70-3.37)	6.73 (4.34-9.46)	16.5 (13.0-20.4)	30.6 (19.4-51.1)	497
Non-Hispanic whites	07-08	3.78 (2.69-5.32)	2.82 (2.05-4.02)	8.70 (5.23-14.9)	30.7 (16.7-57.2)	76.9 (26.7-432)	1064
Non-Hispanic whites	09-10	5.97 (4.13-8.64)	4.41 (2.61-7.43)	17.4 (10.7-26.7)	61.1 (29.0-189)	189 (56.4-849)	1199

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEET_BiomonitoringSummary.html

Urinary N,N-Diethyl-3-(hydroxymethyl) benzamide (DHMB) (2007 – 2010)

CAS Number 72236-22-7

Metabolite of DEET

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	.229 (<LOD-.525)	.780 (.326-1.51)	2562
Total population	09-10	*	<LOD	<LOD	.455 (.162-.956)	1.34 (.644-3.10)	2736
Age 6-11 years	07-08	*	<LOD	<LOD	.275 (.168-.433)	.640 (.264-2.64)	380
Age 6-11 years	09-10	*	<LOD	<LOD	.655 (<LOD-2.93)	2.82 (.205-24.6)	385
Age 12-19 years	07-08	*	<LOD	<LOD	.356 (<LOD-.879)	.665 (.165-8.14)	386
Age 12-19 years	09-10	*	<LOD	<LOD	.472 (<LOD-1.59)	1.20 (.201-4.11)	398
Age 20-59 years	07-08	*	<LOD	<LOD	.188 (<LOD-.413)	.767 (.335-1.30)	1167
Age 20-59 years	09-10	*	<LOD	<LOD	.498 (.172-.956)	1.34 (.729-2.29)	1304
Age 60+ years	07-08	*	<LOD	<LOD	.256 (<LOD-.787)	.787 (.194-1.81)	629
Age 60+ years	09-10	*	<LOD	<LOD	.257 (.106-.512)	.840 (.521-2.46)	649
Males	07-08	*	<LOD	<LOD	.325 (.091-.909)	1.05 (.249-4.86)	1283
Males	09-10	*	<LOD	<LOD	.744 (.323-1.43)	1.81 (.946-3.94)	1339
Females	07-08	*	<LOD	<LOD	.165 (<LOD-.326)	.512 (.256-.968)	1279
Females	09-10	*	<LOD	<LOD	.220 (<LOD-.521)	.796 (.329-2.05)	1397
Mexican Americans	07-08	*	<LOD	<LOD	.216 (.092-.509)	.509 (.207-.989)	499
Mexican Americans	09-10	*	<LOD	<LOD	.228 (<LOD-.504)	.507 (.223-.866)	598
Non-Hispanic blacks	07-08	*	<LOD	<LOD	.310 (.091-.470)	.640 (.378-1.29)	567
Non-Hispanic blacks	09-10	*	<LOD	<LOD	.135 (<LOD-.292)	.449 (.212-.884)	503
Non-Hispanic whites	07-08	*	<LOD	<LOD	.255 (<LOD-.861)	.884 (.225-4.84)	1071
Non-Hispanic whites	09-10	*	<LOD	<LOD	.644 (.182-1.34)	1.89 (.770-5.34)	1195

Limit of detection (LOD, see Data Analysis section) for Survey year 07-08 and 09-10 are 0.089 and 0.089.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEET_BiomonitoringSummary.html

Urinary N,N-Diethyl-3-(hydroxymethyl) benzamide (DHMB) (creatinine corrected) (2007 – 2010)

CAS Number 72236-22-7

Metabolite of DEET

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	.331 (<LOD-.452)	.628 (.393-1.32)	2560
Total population	09-10	*	<LOD	<LOD	.449 (.300-.720)	1.13 (.548-2.41)	2736
Age 6-11 years	07-08	*	<LOD	<LOD	.370 (.289-.524)	.831 (.347-1.37)	380
Age 6-11 years	09-10	*	<LOD	<LOD	.572 (<LOD-3.40)	3.12 (.370-18.4)	385
Age 12-19 years	07-08	*	<LOD	<LOD	.253 (<LOD-.555)	.544 (.191-1.76)	384
Age 12-19 years	09-10	*	<LOD	<LOD	.436 (<LOD-.869)	.869 (.246-8.42)	398
Age 20-59 years	07-08	*	<LOD	<LOD	.331 (<LOD-.441)	.582 (.441-.866)	1167
Age 20-59 years	09-10	*	<LOD	<LOD	.468 (.300-.702)	1.10 (.572-1.79)	1304
Age 60+ years	07-08	*	<LOD	<LOD	.394 (<LOD-.701)	1.01 (.389-2.48)	629
Age 60+ years	09-10	*	<LOD	<LOD	.395 (.315-.489)	.875 (.548-2.41)	649
Males	07-08	*	<LOD	<LOD	.300 (.176-.826)	.866 (.304-3.33)	1282
Males	09-10	*	<LOD	<LOD	.524 (.280-1.39)	1.45 (.718-3.16)	1339
Females	07-08	*	<LOD	<LOD	.341 (<LOD-.393)	.572 (.419-.734)	1278
Females	09-10	*	<LOD	<LOD	.419 (<LOD-.488)	.723 (.458-1.85)	1397
Mexican Americans	07-08	*	<LOD	<LOD	.315 (.203-.446)	.467 (.337-.720)	498
Mexican Americans	09-10	*	<LOD	<LOD	.297 (<LOD-.401)	.415 (.299-.718)	598
Non-Hispanic blacks	07-08	*	<LOD	<LOD	.234 (.175-.411)	.487 (.315-1.05)	566
Non-Hispanic blacks	09-10	*	<LOD	<LOD	.221 (<LOD-.262)	.362 (.246-.648)	503
Non-Hispanic whites	07-08	*	<LOD	<LOD	.343 (<LOD-.583)	.826 (.349-2.99)	1071
Non-Hispanic whites	09-10	*	<LOD	<LOD	.531 (.305-1.36)	1.59 (.524-5.83)	1195

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEET_BiomonitoringSummary.html

Carbamate Pesticide Metabolites

Urinary Carbofuranphenol (1999 – 2004)

CAS Number 1563-38-8

Metabolite of Benfuracarb, Carbofuran, Carbosulfan, and Furathiocar

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	.770 (<LOD-1.30)	1994
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	3030
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2390
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	.450 (<LOD-2.20)	482
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	578
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	293
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	.570 (<LOD-1.20)	681
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	827
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	684
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	.840 (<LOD-1.50)	831
Age 20-59 years	01-02	*	<LOD	<LOD	<LOD	<LOD	1125
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	902
Age 60+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	500
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	511
Males	99-00	*	<LOD	<LOD	<LOD	.740 (<LOD-1.50)	973
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1423
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1164
Females	99-00	*	<LOD	<LOD	<LOD	.840 (<LOD-1.50)	1021
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1607
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1226
Mexican Americans	99-00	*	<LOD	<LOD	.590 (<LOD-2.00)	1.90 (<LOD-5.10)	696
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	765
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	568
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	.550 (<LOD-1.60)	521
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	770
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	613
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	.740 (<LOD-1.50)	603
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1272
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1054

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 0.4, 0.4, and 0.4 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Carbofuran_BiomonitoringSummary.html

Urinary Carbofuranphenol (creatinine corrected) (1999 – 2004)

CAS Number 1563-38-8

Metabolite of Benfuracarb, Carbofuran, Carbosulfan, and Furathiocar

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	.778 (<LOD-1.00)	1994
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	3029
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2388
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	.988 (<LOD-2.80)	482
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	578
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	293
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	.482 (<LOD-.853)	681
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	826
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	683
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	.875 (<LOD-1.06)	831
Age 20-59 years	01-02	*	<LOD	<LOD	<LOD	<LOD	1125
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	901
Age 60+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	500
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	511
Males	99-00	*	<LOD	<LOD	<LOD	.667 (<LOD-1.08)	973
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1423
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1163
Females	99-00	*	<LOD	<LOD	<LOD	.881 (<LOD-1.13)	1021
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1606
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1225
Mexican Americans	99-00	*	<LOD	<LOD	.778 (<LOD-1.94)	1.83 (<LOD-4.16)	696
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	765
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	567
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	.700 (<LOD-1.08)	521
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	769
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	613
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	.737 (<LOD-.929)	603
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1272
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1053

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Carbofuran_BiomonitoringSummary.html

Urinary 2-Isopropoxyphenol (1999 – 2004)

CAS Number 4812-20-8

Metabolite of Propoxur

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1917
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2994
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2387
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	<LOD	456
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	574
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	295
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	655
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	820
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	686
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	<LOD	806
Age 20-59 years	01-02	*	<LOD	<LOD	<LOD	<LOD	1109
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	900
Age 60+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	491
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	506
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	936
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1406
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1161
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	981
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1588
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1226
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	664
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	762
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	594
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	500
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	770
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	601
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	585
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1241
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1041

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 1.1, 0.4, and 0.4 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Propoxur_BiomonitoringSummary.html

Urinary 2-Isopropoxyphenol (creatinine corrected) (1999 – 2004)

CAS Number 4812-20-8

Metabolite of Propoxur

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1917
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2993
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2385
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	<LOD	456
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	574
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	295
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	655
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	819
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	685
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	<LOD	806
Age 20-59 years	01-02	*	<LOD	<LOD	<LOD	<LOD	1109
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	899
Age 60+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	491
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	506
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	936
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1406
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1160
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	981
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1587
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1225
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	664
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	762
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	593
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	500
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	769
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	601
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	585
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1241
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1040

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Propoxur_BiomonitoringSummary.html

Organophosphorus Insecticides: Specific Metabolites

Urinary Acephate (2003 – 2008)

CAS Number 30560-19-1

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2491
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2546
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2505
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	309
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	343
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	374
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	715
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	696
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	375
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	939
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1050
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1134
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	528
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	457
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	622
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1221
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1205
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1250
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1270
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1341
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1255
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	608
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	666
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	476
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	647
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	698
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	551
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1077
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	979
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1062

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.1, 0.25, and 0.27 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Acephate_BiomonitoringSummary.html

Urinary Acephate (creatinine corrected) (2003 – 2008)

CAS Number 30560-19-1

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2489
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2546
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2503
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	309
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	343
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	374
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	714
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	696
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	373
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	938
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1050
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1134
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	528
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	457
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	622
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1220
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1205
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1249
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1269
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1341
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1254
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	607
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	666
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	475
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	647
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	698
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	550
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1076
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	979
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1062

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Acephate_BiomonitoringSummary.html

Urinary Dimethoate (2003 – 2008)

CAS Number 60-51-5

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2455
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2628
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2573
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	306
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	349
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	382
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	708
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	388
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	922
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1087
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1170
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	519
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	474
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	633
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1197
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1245
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1290
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1258
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1383
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1283
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	605
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	693
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	493
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	629
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	719
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	570
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1068
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1084

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.1, 0.25, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DimethoateOmethoate_BiomonitoringSummary.html

Urinary Dimethoate (creatinine corrected) (2003 – 2008)

CAS Number 60-51-5

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2453
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2628
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2571
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	306
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	349
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	382
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	707
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	386
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	921
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1087
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1170
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	519
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	474
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	633
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1196
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1245
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1289
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1257
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1383
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1282
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	604
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	693
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	492
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	629
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	719
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	569
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1067
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1084

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DimethoateOmethoate_BiomonitoringSummary.html

Urinary Methamidophos (2003 – 2008)

CAS Number 10265-92-6

Metabolite of Acephate

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2379
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2591
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2573
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	295
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	346
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	382
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	683
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	710
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	388
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	893
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1070
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1169
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	508
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	465
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	634
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1171
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1232
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1290
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1208
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1359
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1283
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	564
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	688
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	492
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	631
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	717
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	571
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1034
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	979
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1084

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.1, 0.37, and 0.41 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Methamidophos_BiomonitoringSummary.html

Urinary Methamidophos (creatinine corrected) (2003 – 2008)

CAS Number 10265-92-6

Metabolite of Acephate

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2377
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2591
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2571
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	295
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	346
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	382
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	682
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	710
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	386
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	892
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1070
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1169
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	508
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	465
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	634
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1170
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1232
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1289
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1207
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1359
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1282
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	563
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	688
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	491
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	631
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	717
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	570
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1033
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	979
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1084

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Methamidophos_BiomonitoringSummary.html

Urinary Omethoate (2003 – 2008)

CAS Number 1113-02-6

Metabolite of Dimethoate

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2455
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2628
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2574
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	303
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	349
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	382
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	707
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	388
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	923
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1086
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1170
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	522
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	475
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	634
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1207
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1245
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1290
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1248
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1383
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1284
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	606
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	693
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	493
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	637
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	719
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	571
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1055
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1084

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.1, 0.14, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DimethoateOmethoate_BiomonitoringSummary.html

Urinary Omethoate (creatinine corrected) (2003 – 2008)

CAS Number 1113-02-6

Metabolite of Dimethoate

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2453
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2628
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2572
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	303
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	349
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	382
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	706
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	718
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	386
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	922
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1086
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1170
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	522
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	475
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	634
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1206
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1245
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1289
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1247
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1383
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1283
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	605
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	693
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	492
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	637
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	719
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	570
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1054
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1084

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DimethoateOmethoate_BiomonitoringSummary.html

Urinary Malathion dicarboxylic acid (1999 – 2010)

CAS Number 1190-28-9

Metabolite of Malathion

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1920
Total population	07-08	*	<LOD	<LOD	.980 (.900-1.08)	1.65 (1.44-1.94)	2581
Total population	09-10	*	<LOD	<LOD	.990 (.830-1.09)	2.05 (1.64-2.33)	2742
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	2.80 (<LOD-5.50)	453
Age 6-11 years	07-08	*	<LOD	.510 (<LOD-.640)	1.26 (.810-2.13)	2.32 (1.43-3.55)	383
Age 6-11 years	09-10	*	<LOD	<LOD	1.10 (.580-1.59)	1.80 (1.15-3.73)	385
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	660
Age 12-19 years	07-08	*	<LOD	<LOD	1.09 (.740-1.40)	1.59 (1.14-1.94)	390
Age 12-19 years	09-10	*	<LOD	<LOD	1.08 (.520-1.41)	1.60 (1.00-3.37)	400
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	<LOD	807
Age 20-59 years	07-08	*	<LOD	<LOD	.900 (.770-1.01)	1.41 (1.14-1.65)	1177
Age 20-59 years	09-10	*	<LOD	<LOD	.910 (.710-1.10)	2.23 (1.65-2.57)	1307
Age 60+ years	07-08	*	<LOD	.500 (<LOD-.580)	1.37 (.980-1.73)	3.29 (1.48-7.45)	631
Age 60+ years	09-10	*	<LOD	<LOD	1.03 (.830-1.25)	1.63 (1.34-3.34)	650
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	937
Males	07-08	*	<LOD	<LOD	1.05 (.930-1.23)	1.90 (1.55-2.46)	1290
Males	09-10	*	<LOD	<LOD	.950 (.720-1.19)	1.85 (1.22-2.86)	1341
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	983
Females	07-08	*	<LOD	<LOD	.860 (.660-1.13)	1.52 (1.13-1.91)	1291
Females	09-10	*	<LOD	<LOD	1.00 (.720-1.29)	2.19 (1.64-2.63)	1401
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	680
Mexican Americans	07-08	*	<LOD	<LOD	.740 (.550-1.01)	1.12 (.900-1.52)	500
Mexican Americans	09-10	*	<LOD	<LOD	.790 (.540-1.05)	1.29 (.920-1.94)	600
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	498
Non-Hispanic blacks	07-08	*	<LOD	<LOD	.670 (.540-.810)	1.06 (.860-1.34)	573
Non-Hispanic blacks	09-10	*	<LOD	<LOD	.630 (<LOD-.880)	1.33 (.880-1.80)	504
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	580
Non-Hispanic whites	07-08	*	<LOD	<LOD	1.08 (.900-1.29)	1.84 (1.55-2.47)	1079
Non-Hispanic whites	09-10	*	<LOD	<LOD	1.09 (.910-1.30)	2.33 (1.81-2.87)	1197

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 07-08, and 09-10 are 2.64, 0.5, and 0.5 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Malathion_BiomonitoringSummary.html

Urinary Malathion dicarboxylic acid (creatinine corrected) (1999 – 2010)

CAS Number 1190-28-9

Metabolite of Malathion

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1920
Total population	07-08	*	<LOD	<LOD	1.46 (1.30-1.71)	2.19 (1.85-2.72)	2579
Total population	09-10	*	<LOD	<LOD	1.52 (1.40-1.65)	2.50 (2.13-2.94)	2742
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	3.74 (<LOD-5.50)	453
Age 6-11 years	07-08	*	<LOD	.946 (<LOD-1.14)	1.85 (1.55-2.27)	2.84 (1.85-5.11)	383
Age 6-11 years	09-10	*	<LOD	<LOD	1.75 (1.25-2.19)	2.25 (1.94-6.25)	385
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	660
Age 12-19 years	07-08	*	<LOD	<LOD	.982 (.761-1.21)	1.46 (1.06-1.80)	388
Age 12-19 years	09-10	*	<LOD	<LOD	.946 (.833-1.25)	1.49 (.946-3.41)	400
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	<LOD	807
Age 20-59 years	07-08	*	<LOD	<LOD	1.35 (1.21-1.52)	1.96 (1.71-2.69)	1177
Age 20-59 years	09-10	*	<LOD	<LOD	1.53 (1.40-1.67)	2.56 (2.06-3.26)	1307
Age 60+ years	07-08	*	<LOD	1.06 (<LOD-1.17)	2.06 (1.64-2.72)	3.58 (2.19-8.63)	631
Age 60+ years	09-10	*	<LOD	<LOD	1.62 (1.40-1.94)	2.52 (2.19-3.28)	650
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	937
Males	07-08	*	<LOD	<LOD	1.13 (1.00-1.31)	1.73 (1.40-2.09)	1289
Males	09-10	*	<LOD	<LOD	1.25 (1.06-1.52)	2.06 (1.59-2.52)	1341
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	983
Females	07-08	*	<LOD	<LOD	1.82 (1.46-2.06)	2.72 (2.19-3.08)	1290
Females	09-10	*	<LOD	<LOD	1.67 (1.46-2.06)	2.94 (2.33-3.97)	1401
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	680
Mexican Americans	07-08	*	<LOD	<LOD	1.13 (.946-1.46)	1.84 (1.21-2.69)	499
Mexican Americans	09-10	*	<LOD	<LOD	1.30 (1.13-1.56)	1.84 (1.52-2.10)	600
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	498
Non-Hispanic blacks	07-08	*	<LOD	<LOD	.946 (.756-1.09)	1.35 (1.03-1.67)	572
Non-Hispanic blacks	09-10	*	<LOD	<LOD	.875 (<LOD-1.06)	1.46 (1.09-1.75)	504
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	580
Non-Hispanic whites	07-08	*	<LOD	<LOD	1.63 (1.32-1.84)	2.47 (1.94-3.06)	1079
Non-Hispanic whites	09-10	*	<LOD	<LOD	1.63 (1.46-1.89)	2.99 (2.33-3.69)	1197

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Malathion_BiomonitoringSummary.html

Urinary 2-Isopropyl-4-methyl-6-hydroxypyrimidine (IMPY) (1999 – 2010)

CAS Number 2814-20-2

Metabolite of Diazinon

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1842
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	3044
Total population	07-08	*	<LOD	<LOD	.350 (.260-.470)	.720 (.530-.890)	2588
Total population	09-10	*	<LOD	<LOD	.180 (.100-.280)	.440 (.310-.660)	2747
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	<LOD	454
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	1.45 (<LOD-3.11)	580
Age 6-11 years	07-08	*	<LOD	<LOD	.260 (.160-.510)	.580 (.380-1.29)	385
Age 6-11 years	09-10	*	<LOD	<LOD	.180 (<LOD-.260)	.410 (.210-.480)	386
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	632
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	829
Age 12-19 years	07-08	*	<LOD	<LOD	.320 (.180-.510)	.660 (.350-1.24)	390
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	.260 (<LOD-.390)	401
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	<LOD	756
Age 20-59 years	01-02	*	<LOD	<LOD	<LOD	<LOD	1126
Age 20-59 years	07-08	*	<LOD	<LOD	.310 (.220-.500)	.670 (.490-.890)	1180
Age 20-59 years	09-10	*	<LOD	<LOD	.160 (<LOD-.280)	.450 (.280-.810)	1309
Age 60+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	509
Age 60+ years	07-08	*	<LOD	<LOD	.470 (.320-.670)	1.02 (.600-1.27)	633
Age 60+ years	09-10	*	<LOD	<LOD	.290 (.200-.430)	.640 (.350-.860)	651
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	894
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1427
Males	07-08	*	<LOD	<LOD	.390 (.300-.500)	.760 (.530-1.02)	1293
Males	09-10	*	<LOD	<LOD	.160 (<LOD-.240)	.450 (.270-.710)	1343
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	948
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1617
Females	07-08	*	<LOD	<LOD	.300 (.210-.450)	.670 (.510-.830)	1295
Females	09-10	*	<LOD	<LOD	.210 (.130-.290)	.440 (.310-.600)	1404
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	644
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	765
Mexican Americans	07-08	*	<LOD	.110 (<LOD-.160)	.350 (.260-.440)	.540 (.400-.790)	500
Mexican Americans	09-10	*	<LOD	<LOD	.140 (<LOD-.210)	.360 (.210-.570)	602
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	484
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	1.49 (<LOD-2.36)	775
Non-Hispanic blacks	07-08	*	<LOD	.230 (.140-.300)	.680 (.460-.990)	1.26 (.880-1.77)	574
Non-Hispanic blacks	09-10	*	<LOD	<LOD	.430 (.310-.510)	.760 (.460-1.21)	504
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	554
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1280
Non-Hispanic whites	07-08	*	<LOD	<LOD	.270 (.190-.400)	.650 (.440-.880)	1084
Non-Hispanic whites	09-10	*	<LOD	<LOD	.120 (<LOD-.260)	.410 (.280-.660)	1200

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 07-08, and 09-10 are 7.2, 0.7, 0.1, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Diazinon_BiomonitoringSummary.html

Urinary 2-Isopropyl-4-methyl-6-hydroxypyrimidine (IMPY) (creatinine corrected) (1999 – 2010)

CAS Number 2814-20-2

Metabolite of Diazinon

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1842
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	3042
Total population	07-08	*	<LOD	<LOD	.412 (.333-.508)	.731 (.538-1.00)	2586
Total population	09-10	*	<LOD	<LOD	.313 (.269-.350)	.526 (.429-.636)	2747
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	<LOD	454
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	2.72 (<LOD-4.46)	580
Age 6-11 years	07-08	*	<LOD	<LOD	.412 (.304-.658)	1.00 (.412-1.59)	385
Age 6-11 years	09-10	*	<LOD	<LOD	.333 (<LOD-.438)	.438 (.323-.900)	386
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	632
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	828
Age 12-19 years	07-08	*	<LOD	<LOD	.278 (.175-.452)	.460 (.276-1.17)	388
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	.228 (<LOD-.365)	401
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	<LOD	756
Age 20-59 years	01-02	*	<LOD	<LOD	<LOD	<LOD	1126
Age 20-59 years	07-08	*	<LOD	<LOD	.383 (.304-.508)	.645 (.500-.846)	1180
Age 20-59 years	09-10	*	<LOD	<LOD	.304 (<LOD-.350)	.526 (.364-.700)	1309
Age 60+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	508
Age 60+ years	07-08	*	<LOD	<LOD	.594 (.414-.822)	1.05 (.708-1.80)	633
Age 60+ years	09-10	*	<LOD	<LOD	.438 (.333-.551)	.773 (.550-1.09)	651
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	894
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1427
Males	07-08	*	<LOD	<LOD	.333 (.286-.457)	.677 (.500-.795)	1292
Males	09-10	*	<LOD	<LOD	.259 (<LOD-.318)	.438 (.318-.613)	1343
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	948
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1615
Females	07-08	*	<LOD	<LOD	.438 (.368-.632)	.822 (.562-1.35)	1294
Females	09-10	*	<LOD	<LOD	.347 (.304-.407)	.583 (.500-.710)	1404
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	644
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	765
Mexican Americans	07-08	*	<LOD	.172 (<LOD-.203)	.385 (.260-.483)	.636 (.401-.990)	499
Mexican Americans	09-10	*	<LOD	<LOD	.271 (<LOD-.333)	.412 (.350-.538)	602
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	484
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	1.89 (<LOD-3.06)	774
Non-Hispanic blacks	07-08	*	<LOD	.202 (.152-.256)	.571 (.333-.800)	1.01 (.728-1.47)	573
Non-Hispanic blacks	09-10	*	<LOD	<LOD	.318 (.269-.374)	.619 (.352-.933)	504
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	554
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1279
Non-Hispanic whites	07-08	*	<LOD	<LOD	.368 (.292-.484)	.700 (.418-1.06)	1084
Non-Hispanic whites	09-10	*	<LOD	<LOD	.304 (<LOD-.368)	.525 (.412-.691)	1200

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Diazinon_BiomonitoringSummary.html

Urinary para-Nitrophenol (1999 – 2010)

CAS Number 100-02-7

Metabolite of Ethyl Parathion, Methyl Parathion, and Nitrobenzene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	2.50 (1.40-4.50)	5.00 (2.90-11.0)	1989
Total population	01-02	*	<LOD	1.33 (1.20-1.46)	2.69 (2.39-3.01)	3.72 (3.46-4.15)	2975
Total population	07-08	.673 (.595-.761)	.740 (.660-.830)	1.49 (1.32-1.66)	2.77 (2.19-3.45)	4.50 (3.50-5.42)	2564
Total population	09-10	.454 (.407-.506)	.510 (.440-.580)	1.09 (1.00-1.19)	2.18 (1.99-2.34)	3.14 (2.85-3.55)	2744
Age 6-11 years	99-00	*	<LOD	.940 (<LOD-2.40)	2.67 (1.70-3.80)	4.30 (2.70-6.40)	479
Age 6-11 years	01-02	*	.790 (<LOD-.910)	1.49 (1.36-1.61)	2.89 (2.22-3.58)	4.10 (3.01-4.74)	565
Age 6-11 years	07-08	.803 (.678-.952)	.890 (.760-1.01)	1.66 (1.26-1.99)	2.85 (2.10-3.94)	4.37 (2.91-6.75)	383
Age 6-11 years	09-10	.506 (.426-.601)	.600 (.500-.720)	1.20 (.980-1.43)	2.21 (1.74-2.73)	2.85 (2.28-3.81)	386
Age 12-19 years	99-00	*	<LOD	<LOD	3.40 (1.60-5.70)	5.70 (2.60-19.0)	680
Age 12-19 years	01-02	*	.730 (<LOD-.910)	1.45 (1.32-1.61)	2.66 (2.15-3.11)	3.34 (3.11-4.01)	813
Age 12-19 years	07-08	.769 (.614-.962)	.850 (.680-1.02)	1.49 (1.28-1.74)	2.79 (1.94-3.45)	3.47 (2.97-4.48)	387
Age 12-19 years	09-10	.430 (.375-.493)	.520 (.460-.590)	.950 (.870-1.09)	1.84 (1.43-2.03)	2.37 (1.84-2.98)	401
Age 20-59 years	99-00	*	<LOD	<LOD	2.30 (1.20-5.70)	4.50 (2.30-16.0)	830
Age 20-59 years	01-02	*	<LOD	1.28 (1.09-1.47)	2.69 (2.32-3.10)	3.72 (3.37-4.24)	1099
Age 20-59 years	07-08	.658 (.574-.754)	.720 (.640-.840)	1.49 (1.31-1.65)	2.77 (2.10-3.70)	4.68 (3.37-5.56)	1173
Age 20-59 years	09-10	.452 (.400-.511)	.510 (.420-.590)	1.12 (1.00-1.24)	2.16 (1.91-2.39)	3.27 (2.84-3.58)	1308
Age 60+ years	01-02	*	<LOD	1.29 (1.07-1.49)	2.66 (2.11-3.39)	4.01 (3.17-7.19)	498
Age 60+ years	07-08	.607 (.512-.720)	.610 (.550-.710)	1.41 (1.14-1.76)	2.81 (2.19-3.90)	4.70 (2.90-6.91)	621
Age 60+ years	09-10	.453 (.386-.530)	.460 (.380-.580)	1.06 (.970-1.33)	2.42 (1.87-3.00)	3.65 (3.00-4.36)	649
Males	99-00	*	<LOD	<LOD	2.50 (1.40-4.50)	4.50 (2.50-14.0)	971
Males	01-02	*	.760 (.450-.880)	1.49 (1.32-1.63)	3.01 (2.66-3.33)	4.13 (3.61-4.92)	1395
Males	07-08	.782 (.690-.887)	.850 (.740-.980)	1.59 (1.43-1.73)	2.85 (2.19-3.53)	4.52 (3.47-5.01)	1282
Males	09-10	.524 (.472-.581)	.590 (.490-.670)	1.30 (1.14-1.42)	2.29 (2.07-2.54)	3.29 (2.90-3.73)	1342
Females	99-00	*	<LOD	<LOD	2.50 (1.30-5.70)	5.70 (2.90-9.50)	1018
Females	01-02	*	<LOD	1.18 (1.01-1.37)	2.29 (1.95-2.69)	3.52 (3.16-3.77)	1580
Females	07-08	.582 (.510-.664)	.640 (.550-.720)	1.32 (1.10-1.59)	2.72 (2.16-3.35)	4.37 (3.09-5.64)	1282
Females	09-10	.396 (.352-.446)	.440 (.380-.510)	.960 (.860-1.06)	2.01 (1.70-2.26)	3.07 (2.62-3.55)	1402
Mexican Americans	99-00	*	<LOD	1.70 (<LOD-3.50)	5.80 (2.60-24.0)	22.0 (3.60-36.0)	695
Mexican Americans	01-02	*	.680 (<LOD-.840)	1.33 (1.08-1.58)	2.61 (1.91-3.41)	3.64 (2.70-5.73)	744
Mexican Americans	07-08	.624 (.542-.720)	.700 (.560-.810)	1.37 (1.16-1.52)	2.58 (2.03-3.33)	4.46 (2.79-6.91)	494
Mexican Americans	09-10	.484 (.392-.599)	.560 (.440-.710)	1.30 (1.03-1.46)	2.21 (1.78-2.46)	3.07 (2.39-3.73)	602
Non-Hispanic blacks	99-00	*	<LOD	1.20 (<LOD-2.60)	2.90 (1.70-6.00)	4.80 (2.50-9.20)	518
Non-Hispanic blacks	01-02	*	.850 (<LOD-1.10)	1.76 (1.36-2.15)	3.13 (2.47-4.26)	4.92 (3.75-6.36)	752
Non-Hispanic blacks	07-08	.826 (.716-.952)	.860 (.760-1.01)	1.71 (1.45-1.92)	3.15 (2.56-3.90)	4.72 (3.91-5.68)	568
Non-Hispanic blacks	09-10	.505 (.381-.670)	.570 (.400-.820)	1.30 (1.01-1.50)	2.19 (1.80-2.63)	3.49 (2.57-4.28)	504
Non-Hispanic whites	99-00	*	<LOD	<LOD	2.10 (<LOD-6.33)	4.20 (2.10-11.0)	603
Non-Hispanic whites	01-02	*	<LOD	1.29 (1.14-1.42)	2.70 (2.38-3.10)	3.71 (3.38-4.00)	1259
Non-Hispanic whites	07-08	.623 (.531-.730)	.690 (.610-.790)	1.36 (1.19-1.59)	2.51 (1.89-3.08)	3.63 (2.82-5.48)	1075
Non-Hispanic whites	09-10	.440 (.388-.499)	.490 (.410-.580)	1.03 (.930-1.12)	2.18 (1.89-2.48)	3.14 (2.67-3.62)	1197

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 07-08, and 09-10 are 0.8, 0.1, 0.1, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Nitrobenzene_BiomonitoringSummary.html

Urinary para-Nitrophenol (creatinine corrected) (1999 – 2010)

CAS Number 100-02-7

Metabolite of Ethyl Parathion, Methyl Parathion, and Nitrobenzene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	2.08 (1.33-3.91)	4.25 (2.15-10.2)	1989
Total population	01-02	*	<LOD	.987 (.868-1.10)	1.97 (1.86-2.13)	2.98 (2.60-3.33)	2973
Total population	07-08	.692 (.632-.757)	.673 (.624-.737)	1.28 (1.15-1.40)	2.38 (2.11-2.66)	3.57 (2.94-4.39)	2562
Total population	09-10	.473 (.430-.521)	.490 (.438-.531)	.923 (.851-1.01)	1.87 (1.60-2.06)	2.62 (2.32-2.91)	2744
Age 6-11 years	99-00	*	<LOD	.938 (<LOD-1.95)	2.80 (1.94-4.00)	4.20 (3.33-6.70)	479
Age 6-11 years	01-02	*	.715 (<LOD-.870)	1.60 (1.30-1.82)	2.78 (2.31-3.11)	3.67 (3.11-4.61)	565
Age 6-11 years	07-08	1.02 (.892-1.17)	1.02 (.920-1.12)	1.67 (1.46-1.90)	3.13 (2.51-3.64)	3.76 (3.31-4.89)	383
Age 6-11 years	09-10	.684 (.598-.784)	.717 (.650-.826)	1.30 (1.10-1.54)	2.19 (2.00-2.59)	3.16 (2.33-3.67)	386
Age 12-19 years	99-00	*	<LOD	<LOD	1.80 (1.08-3.04)	4.00 (1.57-7.29)	680
Age 12-19 years	01-02	*	.373 (<LOD-.503)	.840 (.790-.951)	1.59 (1.37-1.78)	2.10 (1.78-2.43)	812
Age 12-19 years	07-08	.597 (.511-.698)	.581 (.497-.697)	1.02 (.891-1.14)	1.64 (1.29-2.17)	2.92 (1.55-4.54)	385
Age 12-19 years	09-10	.368 (.319-.426)	.413 (.350-.488)	.684 (.615-.732)	1.09 (.930-1.48)	1.73 (1.47-2.09)	401
Age 20-59 years	99-00	*	<LOD	<LOD	2.00 (1.17-4.25)	4.29 (2.13-12.3)	830
Age 20-59 years	01-02	*	<LOD	.875 (.693-1.07)	1.79 (1.56-2.05)	2.89 (2.35-3.33)	1099
Age 20-59 years	07-08	.656 (.595-.724)	.635 (.585-.706)	1.22 (1.09-1.34)	2.19 (1.94-2.51)	3.04 (2.56-4.07)	1173
Age 20-59 years	09-10	.452 (.410-.498)	.453 (.405-.521)	.868 (.805-.981)	1.61 (1.48-1.87)	2.34 (2.08-2.67)	1308
Age 60+ years	01-02	*	<LOD	1.21 (.920-1.56)	2.29 (1.99-2.83)	4.29 (2.51-5.67)	497
Age 60+ years	07-08	.755 (.643-.886)	.763 (.638-.909)	1.59 (1.40-1.73)	3.26 (2.46-4.47)	5.43 (3.33-7.09)	621
Age 60+ years	09-10	.537 (.450-.641)	.520 (.451-.636)	1.15 (.899-1.59)	2.53 (2.03-3.39)	4.27 (2.98-5.26)	649
Males	99-00	*	<LOD	<LOD	1.90 (1.01-3.39)	3.39 (1.77-7.55)	971
Males	01-02	*	.433 (.333-.534)	.984 (.869-1.07)	1.89 (1.66-2.09)	2.98 (2.29-3.57)	1395
Males	07-08	.650 (.595-.712)	.641 (.594-.697)	1.20 (1.08-1.33)	2.11 (1.63-2.49)	3.02 (2.51-3.71)	1281
Males	09-10	.466 (.424-.512)	.495 (.432-.538)	.922 (.843-.985)	1.84 (1.48-2.05)	2.36 (2.21-2.68)	1342
Females	99-00	*	<LOD	<LOD	2.26 (1.48-4.88)	6.92 (2.76-14.1)	1018
Females	01-02	*	<LOD	.995 (.801-1.23)	2.08 (1.85-2.32)	3.04 (2.58-3.44)	1578
Females	07-08	.735 (.660-.818)	.707 (.644-.779)	1.37 (1.21-1.63)	2.67 (2.20-3.25)	4.11 (3.11-5.06)	1281
Females	09-10	.480 (.430-.536)	.488 (.426-.538)	.923 (.824-1.08)	1.93 (1.62-2.17)	2.72 (2.32-3.46)	1402
Mexican Americans	99-00	*	<LOD	1.55 (<LOD-3.17)	4.86 (2.21-21.9)	17.4 (3.94-47.7)	695
Mexican Americans	01-02	*	.389 (<LOD-.546)	.935 (.716-1.22)	1.89 (1.43-2.63)	3.23 (2.49-3.84)	744
Mexican Americans	07-08	.638 (.538-.757)	.604 (.554-.708)	1.14 (.938-1.40)	2.03 (1.45-3.57)	3.63 (2.05-4.71)	493
Mexican Americans	09-10	.506 (.419-.612)	.541 (.480-.621)	1.02 (.854-1.19)	1.73 (1.39-2.15)	2.35 (1.84-3.02)	602
Non-Hispanic blacks	99-00	*	<LOD	.683 (<LOD-1.79)	2.07 (1.33-3.71)	3.71 (1.98-7.20)	518
Non-Hispanic blacks	01-02	*	.438 (<LOD-.640)	1.04 (.847-1.27)	1.84 (1.59-2.30)	2.81 (2.14-4.30)	751
Non-Hispanic blacks	07-08	.633 (.565-.708)	.634 (.553-.743)	1.07 (.973-1.23)	2.04 (1.64-2.32)	2.66 (2.11-3.54)	567
Non-Hispanic blacks	09-10	.382 (.289-.505)	.431 (.312-.554)	.785 (.671-.874)	1.36 (1.03-1.99)	2.52 (1.73-3.22)	504
Non-Hispanic whites	99-00	*	<LOD	<LOD	1.97 (<LOD-4.29)	3.83 (1.97-10.2)	603
Non-Hispanic whites	01-02	*	<LOD	.984 (.827-1.16)	2.06 (1.89-2.29)	3.11 (2.49-3.57)	1258
Non-Hispanic whites	07-08	.677 (.604-.759)	.664 (.604-.761)	1.25 (1.10-1.38)	2.28 (2.00-2.56)	3.23 (2.60-4.00)	1075
Non-Hispanic whites	09-10	.479 (.433-.530)	.490 (.433-.538)	.923 (.849-1.03)	1.92 (1.60-2.13)	2.62 (2.24-3.04)	1197

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Nitrobenzene_BiomonitoringSummary.html

Urinary 3,5,6-Trichloro-2-pyridinol (1999 – 2010)

CAS Number 6515-38-4

Metabolite of Chlorpyrifos and Chlorpyrifos-methyl

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	1.77 (1.46-2.14)	1.70 (1.40-2.20)	3.50 (2.50-5.20)	7.30 (4.80-10.0)	10.0 (7.70-15.0)	1994
Total population	01-02	1.72 (1.50-1.97)	2.17 (1.81-2.51)	4.87 (4.45-5.24)	8.80 (7.80-9.77)	12.4 (10.7-15.2)	3011
Total population	07-08	1.29 (1.20-1.39)	1.48 (1.31-1.65)	2.63 (2.39-2.94)	4.55 (4.03-5.14)	6.11 (5.60-6.93)	2588
Total population	09-10	.779 (.706-.859)	1.03 (.920-1.16)	1.96 (1.80-2.20)	3.34 (2.96-3.68)	4.47 (4.04-5.15)	2747
Age 6-11 years	99-00	2.88 (1.99-4.16)	2.80 (1.60-4.90)	7.09 (3.40-10.0)	12.0 (7.70-17.0)	16.0 (10.0-28.0)	481
Age 6-11 years	01-02	2.67 (2.13-3.35)	3.09 (2.50-4.22)	6.36 (4.97-7.97)	10.9 (7.98-15.3)	15.3 (11.5-24.0)	573
Age 6-11 years	07-08	1.72 (1.48-2.01)	1.85 (1.49-2.22)	3.18 (2.58-3.68)	4.69 (3.90-5.74)	6.04 (5.12-7.63)	385
Age 6-11 years	09-10	1.12 (.899-1.39)	1.46 (1.27-1.64)	2.38 (1.96-2.75)	4.29 (2.67-6.07)	5.81 (4.14-7.16)	386
Age 12-19 years	99-00	2.37 (1.89-2.97)	2.10 (1.60-3.00)	4.50 (2.90-7.10)	8.10 (5.50-14.0)	12.5 (8.00-24.0)	681
Age 12-19 years	01-02	2.71 (2.19-3.35)	3.57 (2.66-4.34)	6.60 (5.61-7.59)	11.3 (8.66-15.1)	18.0 (13.7-23.7)	823
Age 12-19 years	07-08	1.54 (1.27-1.86)	1.81 (1.39-2.20)	2.75 (2.34-3.29)	4.70 (3.66-5.72)	6.33 (4.98-7.96)	390
Age 12-19 years	09-10	.884 (.793-.985)	1.08 (.960-1.30)	1.89 (1.64-2.28)	3.04 (2.28-4.21)	4.30 (3.14-5.60)	401
Age 20-59 years	99-00	1.53 (1.29-1.83)	1.50 (1.30-1.80)	2.90 (2.20-4.30)	5.90 (3.90-8.90)	8.90 (6.70-11.0)	832
Age 20-59 years	01-02	1.51 (1.32-1.72)	1.91 (1.44-2.26)	4.44 (3.90-4.80)	7.78 (7.00-8.91)	10.9 (9.52-12.4)	1113
Age 20-59 years	07-08	1.19 (1.07-1.33)	1.36 (1.22-1.53)	2.55 (2.21-2.98)	4.46 (3.82-5.30)	5.85 (5.40-6.93)	1180
Age 20-59 years	09-10	.710 (.634-.795)	.970 (.860-1.12)	1.89 (1.70-2.07)	3.14 (2.81-3.49)	4.18 (3.66-4.73)	1309
Age 60+ years	01-02	1.51 (1.21-1.89)	1.76 (1.22-2.33)	4.36 (3.54-5.08)	9.11 (6.67-13.0)	13.5 (11.2-15.5)	502
Age 60+ years	07-08	1.31 (1.17-1.47)	1.51 (1.27-1.70)	2.51 (2.34-2.78)	4.64 (3.97-5.81)	6.69 (5.14-8.14)	633
Age 60+ years	09-10	.812 (.710-.929)	.990 (.870-1.15)	2.30 (1.73-2.58)	3.90 (3.16-4.67)	5.32 (4.23-6.85)	651
Males	99-00	1.92 (1.60-2.32)	1.90 (1.50-2.40)	3.60 (2.70-5.60)	7.40 (5.04-10.0)	10.0 (7.70-16.0)	972
Males	01-02	2.13 (1.82-2.49)	2.67 (2.24-3.16)	5.33 (4.81-6.05)	9.69 (8.45-11.5)	15.0 (11.7-17.7)	1416
Males	07-08	1.49 (1.36-1.64)	1.70 (1.49-1.92)	2.85 (2.50-3.17)	4.87 (4.17-5.52)	6.01 (5.56-6.67)	1293
Males	09-10	.865 (.775-.965)	1.16 (1.03-1.27)	2.10 (1.87-2.35)	3.50 (2.97-3.93)	4.66 (3.96-5.84)	1343
Females	99-00	1.63 (1.31-2.02)	1.50 (1.20-2.00)	3.30 (2.30-5.30)	7.20 (4.30-12.0)	11.0 (7.20-16.0)	1022
Females	01-02	1.40 (1.21-1.62)	1.63 (1.32-2.01)	4.31 (3.57-4.84)	7.78 (6.52-9.20)	10.9 (8.62-13.2)	1595
Females	07-08	1.13 (1.04-1.22)	1.26 (1.13-1.40)	2.41 (2.15-2.79)	4.32 (3.76-4.98)	6.30 (5.27-7.59)	1295
Females	09-10	.704 (.631-.786)	.940 (.830-1.04)	1.88 (1.63-2.11)	3.22 (2.78-3.72)	4.40 (4.09-4.73)	1404
Mexican Americans	99-00	1.61 (1.31-2.00)	1.67 (1.30-2.20)	3.20 (2.60-3.80)	5.10 (3.80-8.40)	7.40 (5.10-17.0)	697
Mexican Americans	01-02	1.98 (1.77-2.21)	2.54 (2.21-2.89)	4.55 (4.09-5.22)	8.94 (7.06-10.4)	11.9 (10.0-15.7)	744
Mexican Americans	07-08	1.13 (.926-1.38)	1.26 (1.06-1.53)	2.34 (1.89-2.94)	4.04 (3.13-4.92)	5.36 (4.37-7.16)	500
Mexican Americans	09-10	.761 (.650-.892)	.950 (.850-1.18)	1.90 (1.66-2.11)	3.31 (2.76-4.19)	4.64 (4.19-5.46)	602
Non-Hispanic blacks	99-00	2.17 (1.59-2.97)	1.90 (1.43-2.80)	4.30 (2.50-8.30)	9.40 (6.40-13.7)	13.0 (9.40-26.0)	521
Non-Hispanic blacks	01-02	2.14 (1.61-2.84)	2.85 (2.16-3.38)	5.45 (4.57-6.96)	9.27 (7.21-11.7)	12.9 (9.57-17.5)	776
Non-Hispanic blacks	07-08	1.64 (1.36-1.97)	1.86 (1.47-2.24)	3.22 (2.65-4.17)	5.79 (4.85-7.17)	7.97 (6.49-9.58)	574
Non-Hispanic blacks	09-10	.918 (.823-1.02)	1.22 (1.06-1.38)	2.24 (2.00-2.52)	3.49 (2.99-4.14)	4.99 (3.93-6.17)	504
Non-Hispanic whites	99-00	1.76 (1.51-2.05)	1.70 (1.50-2.10)	3.50 (2.50-4.86)	7.10 (4.30-11.0)	10.0 (7.20-14.0)	602
Non-Hispanic whites	01-02	1.67 (1.44-1.94)	2.11 (1.64-2.47)	4.85 (4.38-5.29)	8.91 (7.63-9.97)	12.9 (10.4-15.7)	1267
Non-Hispanic whites	07-08	1.23 (1.16-1.30)	1.44 (1.27-1.58)	2.57 (2.35-2.83)	4.41 (3.89-4.87)	5.69 (5.40-6.14)	1084
Non-Hispanic whites	09-10	.768 (.667-.885)	1.03 (.890-1.18)	1.96 (1.71-2.31)	3.42 (2.93-3.86)	4.46 (3.93-5.32)	1200

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 07-08, and 09-10 are 0.4, 0.4, 0.1, and 0.1 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Chlorpyrifos_BiomonitoringSummary.html

Urinary 3,5,6-Trichloro-2-pyridinol (creatinine corrected) (1999 – 2010)

CAS Number 6515-38-4

Metabolite of Chlorpyrifos and Chlorpyrifos-methyl

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	1.58 (1.35-1.85)	1.47 (1.24-1.74)	2.85 (2.12-3.59)	5.43 (4.22-6.68)	8.42 (6.25-11.6)	1994
Total population	01-02	1.75 (1.53-2.00)	1.94 (1.66-2.25)	3.80 (3.13-4.48)	6.53 (5.24-8.23)	9.27 (7.46-12.1)	3009
Total population	07-08	1.33 (1.22-1.44)	1.34 (1.25-1.48)	2.29 (2.06-2.48)	3.80 (3.44-4.15)	4.91 (4.47-5.83)	2586
Total population	09-10	.812 (.748-.881)	.979 (.917-1.05)	1.66 (1.52-1.80)	2.67 (2.40-2.94)	3.53 (3.15-4.02)	2747
Age 6-11 years	99-00	3.11 (2.31-4.19)	3.20 (2.05-4.80)	6.39 (4.14-8.19)	10.1 (7.26-14.0)	14.1 (10.1-21.0)	481
Age 6-11 years	01-02	3.48 (2.80-4.32)	3.76 (3.17-4.36)	6.22 (4.88-8.57)	12.2 (7.24-24.4)	16.9 (12.1-38.0)	573
Age 6-11 years	07-08	2.18 (1.89-2.53)	2.21 (1.86-2.66)	3.23 (2.86-3.89)	4.67 (4.23-5.00)	5.94 (4.76-6.58)	385
Age 6-11 years	09-10	1.51 (1.28-1.78)	1.77 (1.49-1.95)	2.62 (2.26-2.90)	3.67 (2.93-4.42)	4.42 (3.76-5.95)	386
Age 12-19 years	99-00	1.60 (1.34-1.91)	1.45 (1.21-1.81)	2.58 (1.98-3.92)	4.83 (3.44-6.16)	6.16 (4.43-10.6)	681
Age 12-19 years	01-02	2.09 (1.72-2.55)	2.24 (1.92-2.66)	3.97 (3.30-4.72)	6.33 (5.62-7.89)	10.3 (7.65-15.2)	822
Age 12-19 years	07-08	1.19 (1.05-1.34)	1.20 (1.05-1.33)	1.85 (1.61-2.22)	2.66 (2.32-3.62)	4.00 (2.70-5.77)	388
Age 12-19 years	09-10	.757 (.675-.850)	.861 (.766-.935)	1.34 (1.15-1.55)	2.27 (1.55-2.68)	2.67 (2.13-4.21)	401
Age 20-59 years	99-00	1.41 (1.23-1.62)	1.33 (1.12-1.58)	2.37 (1.87-3.01)	4.29 (3.53-5.56)	6.42 (5.11-9.02)	832
Age 20-59 years	01-02	1.49 (1.30-1.71)	1.64 (1.39-1.88)	3.11 (2.60-3.91)	5.51 (4.33-7.23)	7.44 (5.80-11.0)	1113
Age 20-59 years	07-08	1.19 (1.09-1.30)	1.22 (1.10-1.33)	2.04 (1.78-2.32)	3.42 (2.93-3.96)	4.84 (3.96-6.31)	1180
Age 20-59 years	09-10	.710 (.644-.784)	.875 (.813-.943)	1.47 (1.35-1.62)	2.27 (1.99-2.66)	3.20 (2.75-3.64)	1309
Age 60+ years	01-02	1.84 (1.55-2.18)	2.15 (1.71-2.60)	4.08 (3.61-4.84)	7.43 (6.50-8.50)	11.2 (7.95-13.5)	501
Age 60+ years	07-08	1.61 (1.43-1.81)	1.68 (1.48-1.92)	2.88 (2.38-3.46)	4.46 (3.87-4.91)	5.59 (4.64-7.03)	633
Age 60+ years	09-10	.963 (.838-1.11)	1.18 (1.01-1.34)	2.03 (1.87-2.19)	3.14 (2.73-4.02)	4.36 (3.47-5.36)	651
Males	99-00	1.48 (1.27-1.72)	1.44 (1.19-1.68)	2.54 (2.05-3.38)	4.95 (3.84-6.54)	7.63 (5.65-11.0)	972
Males	01-02	1.75 (1.51-2.02)	1.93 (1.66-2.24)	3.61 (3.01-4.22)	6.33 (5.08-8.88)	11.3 (7.54-13.5)	1416
Males	07-08	1.24 (1.13-1.35)	1.29 (1.15-1.46)	2.12 (1.87-2.34)	3.44 (3.03-3.78)	4.41 (3.82-4.97)	1292
Males	09-10	.769 (.712-.831)	.930 (.863-.988)	1.55 (1.39-1.70)	2.54 (2.18-2.80)	3.41 (3.01-3.93)	1343
Females	99-00	1.69 (1.42-2.01)	1.51 (1.25-1.85)	2.97 (2.25-4.02)	5.63 (4.27-7.39)	8.44 (5.79-13.3)	1022
Females	01-02	1.75 (1.52-2.02)	1.96 (1.61-2.30)	3.96 (3.16-4.78)	6.58 (5.37-7.95)	8.98 (7.07-11.8)	1593
Females	07-08	1.42 (1.30-1.55)	1.40 (1.29-1.53)	2.43 (2.22-2.70)	4.18 (3.73-4.74)	5.77 (4.76-7.03)	1294
Females	09-10	.855 (.765-.954)	1.04 (.951-1.14)	1.76 (1.60-1.96)	2.79 (2.40-3.18)	3.68 (3.18-4.10)	1404
Mexican Americans	99-00	1.46 (1.20-1.77)	1.44 (1.05-1.93)	2.39 (2.09-2.96)	3.86 (3.24-5.09)	5.85 (3.88-9.57)	697
Mexican Americans	01-02	1.86 (1.64-2.10)	2.06 (1.85-2.30)	3.79 (3.23-4.46)	6.52 (5.73-7.58)	8.71 (7.68-11.0)	744
Mexican Americans	07-08	1.15 (.895-1.46)	1.18 (.941-1.50)	1.97 (1.55-2.38)	3.04 (2.31-4.41)	4.41 (2.92-7.11)	499
Mexican Americans	09-10	.796 (.680-.930)	.959 (.821-1.07)	1.58 (1.39-1.76)	2.61 (2.25-2.99)	3.46 (3.16-4.01)	602
Non-Hispanic blacks	99-00	1.47 (1.09-1.99)	1.33 (.936-1.94)	2.86 (1.58-5.05)	5.91 (4.05-8.93)	9.02 (5.91-13.7)	521
Non-Hispanic blacks	01-02	1.58 (1.19-2.08)	1.95 (1.56-2.48)	3.53 (2.84-4.28)	5.60 (4.68-6.40)	7.21 (5.83-9.11)	775
Non-Hispanic blacks	07-08	1.25 (1.05-1.49)	1.24 (1.03-1.47)	2.25 (1.86-2.86)	3.91 (3.13-4.68)	5.39 (4.12-8.30)	573
Non-Hispanic blacks	09-10	.694 (.613-.786)	.813 (.698-.981)	1.41 (1.28-1.62)	2.28 (2.00-2.55)	2.93 (2.55-3.50)	504
Non-Hispanic whites	99-00	1.66 (1.45-1.91)	1.55 (1.31-1.83)	2.93 (2.09-3.97)	5.56 (4.21-6.75)	8.44 (6.25-12.3)	602
Non-Hispanic whites	01-02	1.81 (1.55-2.11)	2.00 (1.65-2.35)	3.91 (3.03-4.91)	6.94 (5.24-9.22)	10.6 (7.76-12.6)	1266
Non-Hispanic whites	07-08	1.33 (1.22-1.45)	1.37 (1.26-1.53)	2.31 (2.02-2.54)	3.76 (3.40-4.03)	4.73 (4.35-5.68)	1084
Non-Hispanic whites	09-10	.837 (.750-.934)	1.01 (.919-1.12)	1.73 (1.55-1.93)	2.75 (2.40-3.14)	3.64 (3.10-4.36)	1200

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Chlorpyrifos_BiomonitoringSummary.html

Organophosphorus Insecticides: Dialkyl Phosphate Metabolites

Urinary Diethylphosphate (DEP) (1999 – 2008)

CAS Number 598-02-7

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	1.03 (.670-1.58)	1.20 (.750-1.70)	3.20 (2.30-4.80)	7.60 (5.00-12.0)	13.0 (7.70-23.0)	1949
Total population	01-02	*	<LOD	2.90 (2.50-3.26)	6.68 (5.78-7.52)	10.6 (9.14-12.0)	3018
Total population	03-04	*	<LOD	4.56 (3.57-5.83)	10.2 (9.00-11.5)	15.5 (13.5-16.8)	2453
Total population	05-06	*	<LOD	1.46 (.780-2.17)	7.01 (5.67-8.94)	13.3 (10.2-16.0)	2635
Total population	07-08	*	<LOD	2.48 (1.44-3.33)	8.74 (7.51-10.3)	15.3 (13.1-17.8)	2591
Age 6-11 years	99-00	1.32 (.757-2.29)	1.50 (.860-2.60)	4.50 (2.10-7.90)	11.0 (4.80-24.0)	16.0 (8.50-36.0)	471
Age 6-11 years	01-02	*	.290 (<LOD-1.04)	3.45 (2.36-4.47)	9.56 (6.33-18.0)	20.0 (9.44-38.2)	576
Age 6-11 years	03-04	*	<LOD	5.13 (2.48-7.94)	10.9 (8.08-15.9)	16.1 (10.9-18.5)	308
Age 6-11 years	05-06	*	<LOD	1.45 (<LOD-4.51)	8.21 (4.85-13.4)	13.5 (8.36-20.4)	350
Age 6-11 years	07-08	*	<LOD	4.31 (.420-6.49)	12.9 (9.14-17.7)	20.2 (11.9-37.5)	385
Age 12-19 years	99-00	1.21 (.758-1.94)	1.40 (.970-2.10)	3.70 (2.40-5.50)	8.00 (4.70-19.0)	20.0 (8.00-27.0)	664
Age 12-19 years	01-02	*	<LOD	2.86 (1.96-3.95)	7.58 (5.71-9.15)	11.0 (9.35-12.4)	822
Age 12-19 years	03-04	*	.530 (<LOD-2.32)	5.80 (4.34-7.67)	14.8 (9.12-19.8)	20.8 (14.8-32.7)	701
Age 12-19 years	05-06	*	<LOD	.460 (<LOD-3.69)	9.47 (4.67-14.1)	14.4 (10.2-22.4)	718
Age 12-19 years	07-08	*	<LOD	3.81 (<LOD-5.42)	10.7 (7.76-14.2)	23.3 (11.3-35.6)	391
Age 20-59 years	99-00	.955 (.623-1.47)	1.10 (.700-1.60)	3.00 (1.80-4.80)	7.30 (4.70-11.0)	11.0 (6.80-22.0)	814
Age 20-59 years	01-02	*	<LOD	2.71 (2.34-3.12)	5.79 (5.05-7.21)	10.4 (7.43-12.3)	1122
Age 20-59 years	03-04	*	<LOD	4.37 (3.02-5.81)	9.74 (8.35-11.3)	14.2 (11.5-16.2)	922
Age 20-59 years	05-06	*	<LOD	1.13 (<LOD-2.17)	6.15 (4.51-8.24)	11.5 (8.23-15.5)	1092
Age 20-59 years	07-08	*	<LOD	1.55 (.470-2.48)	7.54 (6.10-8.98)	14.0 (9.62-15.7)	1178
Age 60+ years	01-02	*	.440 (<LOD-1.63)	3.30 (2.63-4.51)	7.06 (5.17-8.69)	9.41 (8.31-10.6)	498
Age 60+ years	03-04	*	1.80 (<LOD-2.98)	4.73 (3.98-5.91)	10.0 (8.09-11.3)	13.6 (10.6-16.7)	522
Age 60+ years	05-06	*	<LOD	2.69 (1.71-3.95)	8.33 (6.60-12.0)	16.3 (12.0-18.7)	475
Age 60+ years	07-08	*	<LOD	3.55 (2.80-5.31)	9.86 (7.53-14.2)	17.1 (12.6-22.1)	637
Males	99-00	1.11 (.717-1.73)	1.20 (.810-1.70)	3.80 (2.50-5.00)	8.00 (5.00-19.0)	19.0 (7.20-30.0)	952
Males	01-02	*	<LOD	3.21 (2.72-3.56)	6.99 (5.83-7.71)	11.5 (9.36-12.1)	1420
Males	03-04	*	<LOD	5.01 (3.90-6.50)	11.0 (10.1-12.7)	16.2 (14.3-18.8)	1198
Males	05-06	*	<LOD	.770 (<LOD-1.71)	6.82 (5.14-9.54)	13.4 (9.36-16.1)	1246
Males	07-08	*	<LOD	1.95 (<LOD-3.34)	9.39 (7.90-11.8)	17.0 (13.7-21.5)	1295
Females	99-00	.954 (.599-1.52)	1.20 (.620-1.70)	2.90 (1.90-4.80)	7.50 (4.60-11.0)	11.0 (7.40-16.0)	997
Females	01-02	*	.290 (<LOD-.790)	2.63 (2.22-3.03)	6.21 (4.59-8.64)	10.2 (7.52-14.7)	1598
Females	03-04	*	.110 (<LOD-2.29)	4.29 (3.21-5.80)	9.38 (7.95-10.7)	13.3 (11.2-15.9)	1255
Females	05-06	*	<LOD	2.15 (1.27-2.76)	7.23 (5.79-9.32)	12.9 (9.64-16.0)	1389
Females	07-08	*	<LOD	2.76 (1.69-3.62)	7.76 (6.23-10.7)	14.5 (10.7-18.8)	1296

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.2, 0.2, 0.1, 0.37,and 0.37 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Diethylphosphate (DEP) (1999 – 2008)

CAS Number 598-02-7

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	1.22 (.740-2.01)	1.20 (.840-1.80)	4.10 (2.20-7.00)	11.0 (6.40-19.0)	18.0 (12.0-27.0)	672
Mexican Americans	01-02	*	.600 (<LOD-1.49)	3.07 (2.22-3.83)	6.26 (5.00-7.82)	11.2 (7.82-12.3)	763
Mexican Americans	03-04	*	1.18 (<LOD-2.97)	5.81 (3.99-7.59)	11.0 (8.48-16.1)	16.9 (12.1-24.0)	581
Mexican Americans	05-06	*	<LOD	<LOD	6.30 (1.57-11.6)	14.9 (5.72-33.5)	695
Mexican Americans	07-08	*	<LOD	1.63 (<LOD-3.88)	8.36 (6.44-9.61)	14.8 (8.85-25.1)	501
Non-Hispanic blacks	99-00	1.56 (1.13-2.14)	1.60 (1.40-1.80)	4.30 (2.90-5.80)	10.0 (5.60-18.0)	18.0 (8.00-27.0)	509
Non-Hispanic blacks	01-02	*	1.03 (<LOD-2.33)	4.81 (3.48-6.52)	9.98 (7.39-13.3)	15.1 (9.81-23.4)	756
Non-Hispanic blacks	03-04	*	1.04 (<LOD-3.28)	6.29 (5.05-8.44)	11.9 (9.92-15.5)	16.2 (14.1-22.5)	628
Non-Hispanic blacks	05-06	*	<LOD	2.10 (<LOD-4.57)	8.87 (6.52-12.0)	14.3 (11.2-19.1)	723
Non-Hispanic blacks	07-08	*	<LOD	3.92 (2.67-5.19)	11.3 (9.44-14.0)	19.5 (14.1-22.0)	574
Non-Hispanic whites	99-00	.981 (.579-1.66)	1.10 (.490-2.10)	3.30 (2.20-4.90)	7.70 (4.70-14.0)	14.0 (7.60-25.0)	595
Non-Hispanic whites	01-02	*	<LOD	2.63 (2.21-3.13)	5.79 (5.05-7.35)	9.90 (8.38-11.7)	1253
Non-Hispanic whites	03-04	*	<LOD	4.25 (3.12-5.77)	9.74 (8.37-11.3)	14.4 (12.4-16.0)	1055
Non-Hispanic whites	05-06	*	<LOD	1.50 (.900-2.27)	6.82 (5.08-9.74)	13.3 (8.37-16.9)	1007
Non-Hispanic whites	07-08	*	<LOD	2.14 (1.27-3.03)	7.57 (6.57-8.97)	14.5 (11.4-16.5)	1086

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.2, 0.2, 0.1, 0.37,and 0.37 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Diethylphosphate (DEP) (creatinine corrected) (1999 – 2008)

CAS Number 598-02-7

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.924 (.608-1.41)	.920 (.570-1.40)	2.73 (1.68-4.60)	7.94 (4.40-12.2)	12.2 (8.00-19.6)	1949
Total population	01-02	*	<LOD	2.56 (2.17-2.85)	5.36 (4.75-6.06)	8.72 (7.19-10.3)	3017
Total population	03-04	*	<LOD	4.64 (3.82-5.79)	9.18 (7.85-10.8)	13.1 (10.5-16.1)	2450
Total population	05-06	*	<LOD	2.23 (1.49-3.09)	7.72 (6.26-9.36)	13.5 (11.0-19.0)	2634
Total population	07-08	*	<LOD	3.20 (2.37-4.12)	8.86 (7.52-10.7)	15.7 (11.9-19.8)	2589
Age 6-11 years	99-00	1.43 (.870-2.34)	1.47 (1.02-2.41)	3.94 (2.20-8.57)	10.5 (4.55-20.8)	16.6 (10.5-32.7)	471
Age 6-11 years	01-02	*	.886 (<LOD-1.76)	4.02 (2.87-5.25)	8.85 (6.88-15.6)	18.4 (9.40-28.8)	576
Age 6-11 years	03-04	*	<LOD	6.10 (3.79-9.03)	11.9 (9.54-15.2)	16.1 (11.9-28.3)	308
Age 6-11 years	05-06	*	<LOD	3.09 (<LOD-6.77)	9.50 (5.67-17.6)	20.7 (9.50-26.5)	350
Age 6-11 years	07-08	*	<LOD	4.67 (2.01-6.96)	17.2 (13.1-20.3)	28.2 (19.3-34.8)	385
Age 12-19 years	99-00	.818 (.533-1.26)	.790 (.560-1.25)	2.35 (1.37-3.75)	5.44 (2.82-14.4)	12.4 (4.66-34.2)	664
Age 12-19 years	01-02	*	<LOD	2.05 (1.54-2.67)	4.40 (3.40-5.28)	7.28 (5.28-9.75)	821
Age 12-19 years	03-04	*	.438 (<LOD-2.05)	4.47 (3.90-5.43)	10.1 (7.10-13.5)	14.7 (9.82-26.4)	699
Age 12-19 years	05-06	*	<LOD	1.27 (<LOD-2.81)	6.74 (4.24-9.87)	11.7 (6.98-16.6)	718
Age 12-19 years	07-08	*	<LOD	2.86 (<LOD-4.53)	8.56 (5.70-17.0)	17.0 (8.05-23.0)	389
Age 20-59 years	99-00	.883 (.574-1.36)	.860 (.500-1.35)	2.66 (1.54-4.95)	7.37 (4.32-12.1)	12.1 (8.00-17.5)	814
Age 20-59 years	01-02	*	<LOD	2.28 (2.01-2.56)	4.75 (3.92-5.83)	7.37 (5.93-9.72)	1122
Age 20-59 years	03-04	*	<LOD	4.29 (2.98-5.71)	8.35 (6.09-11.3)	11.9 (9.02-14.7)	921
Age 20-59 years	05-06	*	<LOD	1.92 (<LOD-2.95)	6.64 (5.22-9.25)	12.3 (9.25-19.4)	1091
Age 20-59 years	07-08	*	<LOD	2.38 (1.81-3.27)	7.45 (6.11-9.43)	11.4 (9.22-15.8)	1178
Age 60+ years	01-02	*	1.00 (<LOD-1.88)	3.29 (2.74-4.14)	6.52 (4.92-8.21)	9.82 (7.05-14.4)	498
Age 60+ years	03-04	*	2.39 (<LOD-3.35)	5.65 (4.36-7.50)	9.44 (8.38-10.5)	13.3 (10.5-18.2)	522
Age 60+ years	05-06	*	<LOD	3.75 (2.30-5.14)	9.88 (7.72-12.6)	19.3 (12.6-26.6)	475
Age 60+ years	07-08	*	<LOD	5.28 (4.03-6.23)	11.8 (9.36-14.4)	17.7 (13.2-21.9)	637
Males	99-00	.855 (.566-1.29)	.820 (.510-1.34)	2.61 (1.76-4.03)	7.69 (4.41-12.1)	12.2 (6.94-23.8)	952
Males	01-02	*	<LOD	2.20 (1.86-2.64)	4.49 (3.92-5.31)	7.50 (5.79-9.10)	1420
Males	03-04	*	<LOD	4.20 (3.28-5.30)	8.35 (7.10-10.1)	12.0 (9.33-14.7)	1197
Males	05-06	*	<LOD	1.16 (<LOD-2.25)	6.24 (4.58-7.63)	10.0 (7.60-17.8)	1246
Males	07-08	*	<LOD	2.17 (<LOD-3.23)	8.14 (6.35-10.7)	13.6 (9.79-18.6)	1294
Females	99-00	.996 (.620-1.60)	.960 (.540-1.62)	2.81 (1.45-5.85)	8.00 (4.00-13.0)	12.1 (6.67-19.6)	997
Females	01-02	*	.778 (<LOD-1.31)	2.81 (2.44-3.33)	6.49 (4.95-7.76)	9.61 (7.12-13.6)	1597
Females	03-04	*	.636 (<LOD-2.84)	5.06 (4.03-6.86)	9.85 (8.25-11.8)	13.8 (10.9-20.3)	1253
Females	05-06	*	<LOD	3.50 (2.43-4.11)	9.36 (6.91-11.8)	16.5 (12.4-22.3)	1388
Females	07-08	*	<LOD	4.09 (2.80-4.91)	9.46 (8.43-11.5)	16.5 (13.1-20.9)	1295

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Diethylphosphate (DEP) (creatinine corrected) (1999 – 2008)

CAS Number 598-02-7

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	1.09 (.633-1.89)	1.05 (.650-1.98)	3.78 (2.11-6.46)	9.84 (5.66-15.7)	15.7 (8.61-29.0)	672
Mexican Americans	01-02	*	.891 (<LOD-1.41)	2.39 (1.77-3.14)	5.17 (4.10-6.53)	8.04 (6.40-10.9)	763
Mexican Americans	03-04	*	1.07 (<LOD-2.79)	4.94 (3.30-7.01)	9.94 (7.89-13.3)	16.6 (10.1-22.4)	580
Mexican Americans	05-06	*	<LOD	<LOD	6.26 (3.71-10.1)	14.9 (5.75-37.3)	695
Mexican Americans	07-08	*	<LOD	3.19 (<LOD-4.27)	8.56 (6.00-10.3)	13.3 (9.77-15.9)	500
Non-Hispanic blacks	99-00	1.07 (.773-1.47)	1.18 (.830-1.54)	2.61 (1.89-3.47)	5.98 (3.94-9.56)	11.9 (5.98-22.2)	509
Non-Hispanic blacks	01-02	*	.797 (<LOD-1.62)	2.98 (2.57-3.61)	6.91 (5.17-8.69)	9.58 (7.82-12.1)	755
Non-Hispanic blacks	03-04	*	.741 (<LOD-2.21)	4.25 (3.46-5.36)	8.30 (6.57-10.7)	11.7 (10.5-13.2)	627
Non-Hispanic blacks	05-06	*	<LOD	1.92 (<LOD-3.58)	7.08 (5.16-9.35)	11.4 (8.91-12.3)	722
Non-Hispanic blacks	07-08	*	<LOD	3.33 (2.33-4.15)	8.72 (7.27-10.2)	16.7 (11.5-19.4)	573
Non-Hispanic whites	99-00	.932 (.549-1.58)	.900 (.430-1.68)	2.87 (1.51-5.88)	8.57 (4.40-14.4)	13.0 (8.21-23.8)	595
Non-Hispanic whites	01-02	*	<LOD	2.52 (2.08-2.95)	5.26 (4.57-5.93)	8.26 (6.61-10.8)	1253
Non-Hispanic whites	03-04	*	<LOD	4.65 (3.73-5.87)	9.12 (7.79-11.2)	12.7 (10.1-15.7)	1054
Non-Hispanic whites	05-06	*	<LOD	2.50 (1.74-3.30)	7.72 (6.24-9.25)	13.9 (10.0-19.5)	1007
Non-Hispanic whites	07-08	*	<LOD	3.10 (2.19-4.18)	8.44 (6.84-9.74)	13.6 (10.9-17.5)	1086

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Dimethylphosphate (DMP) (1999 – 2008)

CAS Number 813-78-5

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	.740 (<LOD-1.40)	2.90 (2.10-4.00)	7.90 (6.20-8.90)	14.0 (10.0-19.0)	1949
Total population	01-02	*	<LOD	3.32 (2.90-3.74)	8.40 (7.11-9.23)	13.4 (11.4-14.9)	3017
Total population	03-04	*	<LOD	4.15 (3.39-4.94)	9.54 (7.46-11.9)	15.1 (12.8-18.2)	2494
Total population	05-06	*	<LOD	5.21 (4.15-6.56)	17.2 (13.8-20.5)	29.6 (24.3-35.2)	2635
Total population	07-08	*	<LOD	7.91 (6.64-9.07)	20.8 (18.2-24.4)	35.6 (30.3-39.4)	2593
Age 6-11 years	99-00	1.58 (1.15-2.18)	1.10 (.580-2.20)	4.40 (2.80-6.80)	10.0 (7.80-21.0)	22.0 (15.0-33.0)	471
Age 6-11 years	01-02	*	.970 (<LOD-2.00)	5.04 (3.31-7.66)	12.2 (9.10-15.1)	18.3 (12.6-41.7)	576
Age 6-11 years	03-04	*	<LOD	4.53 (3.34-5.96)	11.0 (5.62-17.9)	16.2 (7.46-28.3)	310
Age 6-11 years	05-06	*	<LOD	9.92 (3.24-20.0)	27.1 (16.5-46.6)	46.6 (27.1-63.0)	350
Age 6-11 years	07-08	*	<LOD	12.5 (7.22-16.4)	29.7 (20.3-39.1)	43.3 (29.7-62.7)	385
Age 12-19 years	99-00	*	.670 (<LOD-1.80)	3.80 (2.50-4.90)	9.90 (6.20-18.0)	22.0 (13.0-29.0)	664
Age 12-19 years	01-02	*	.670 (<LOD-1.31)	4.27 (3.41-5.35)	9.27 (7.80-12.3)	14.7 (11.8-21.3)	822
Age 12-19 years	03-04	*	1.20 (<LOD-2.27)	4.61 (3.47-6.72)	10.9 (7.90-15.0)	20.9 (12.5-26.8)	717
Age 12-19 years	05-06	*	<LOD	7.32 (1.35-12.4)	22.6 (16.1-36.1)	44.0 (27.6-54.0)	718
Age 12-19 years	07-08	*	<LOD	10.0 (7.22-14.5)	25.5 (16.8-35.6)	36.2 (25.5-49.6)	391
Age 20-59 years	99-00	*	.680 (<LOD-1.30)	2.70 (1.80-3.70)	6.60 (5.70-8.10)	9.70 (8.80-14.0)	814
Age 20-59 years	01-02	*	<LOD	2.95 (2.35-3.41)	6.95 (5.80-8.82)	11.5 (9.66-13.7)	1121
Age 20-59 years	03-04	*	<LOD	3.75 (2.84-4.88)	8.52 (6.86-10.7)	14.1 (10.8-17.5)	938
Age 20-59 years	05-06	*	<LOD	4.09 (2.45-6.03)	13.8 (9.82-19.8)	24.6 (19.8-32.8)	1092
Age 20-59 years	07-08	*	<LOD	6.07 (4.26-7.69)	18.0 (13.6-22.6)	30.3 (23.2-37.9)	1180
Age 60+ years	01-02	*	.700 (<LOD-1.50)	3.68 (2.91-4.56)	8.93 (6.79-10.7)	14.4 (9.60-19.1)	498
Age 60+ years	03-04	*	2.04 (<LOD-2.63)	4.60 (3.83-5.15)	11.3 (7.68-13.4)	16.3 (12.4-19.4)	529
Age 60+ years	05-06	*	<LOD	6.75 (4.75-9.32)	16.8 (11.7-22.1)	26.3 (18.9-38.8)	475
Age 60+ years	07-08	*	<LOD	10.8 (8.64-13.0)	24.9 (19.2-32.4)	40.5 (32.5-47.4)	637
Males	99-00	*	.670 (<LOD-1.30)	2.90 (2.20-4.00)	7.90 (6.00-9.30)	18.0 (10.0-24.0)	952
Males	01-02	*	<LOD	3.49 (2.90-4.15)	8.40 (6.95-10.3)	12.8 (11.3-14.7)	1420
Males	03-04	*	<LOD	4.03 (3.30-4.91)	8.49 (6.82-11.9)	15.1 (11.3-20.0)	1221
Males	05-06	*	<LOD	4.10 (2.37-6.40)	15.9 (12.4-20.9)	28.1 (22.3-36.7)	1246
Males	07-08	*	<LOD	7.75 (6.50-9.63)	20.8 (17.6-26.6)	36.1 (27.0-47.4)	1295
Females	99-00	*	.790 (<LOD-1.60)	2.90 (2.00-4.20)	7.80 (5.70-9.00)	11.0 (9.00-18.0)	997
Females	01-02	*	<LOD	3.06 (2.63-3.63)	8.38 (6.56-9.63)	13.7 (10.9-17.6)	1597
Females	03-04	*	1.08 (<LOD-1.92)	4.29 (3.31-5.28)	10.4 (7.64-12.9)	14.8 (13.3-18.0)	1273
Females	05-06	*	<LOD	6.40 (5.04-7.21)	18.7 (14.6-20.8)	30.9 (24.6-41.1)	1389
Females	07-08	*	<LOD	7.91 (6.18-9.36)	20.6 (16.5-25.5)	34.2 (26.6-41.5)	1298

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.58, 0.5, 0.5, 0.47,and 0.47 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Dimethylphosphate (DMP) (1999 – 2008)

CAS Number 813-78-5

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	1.10 (<LOD-1.80)	3.80 (2.70-5.30)	9.60 (6.00-16.0)	16.0 (8.90-31.0)	672
Mexican Americans	01-02	*	.710 (<LOD-1.52)	3.34 (2.45-4.42)	9.13 (7.29-10.7)	14.4 (11.0-20.6)	763
Mexican Americans	03-04	*	<LOD	4.37 (3.12-6.86)	10.3 (7.85-17.4)	22.3 (9.61-31.6)	610
Mexican Americans	05-06	*	<LOD	2.65 (<LOD-6.47)	18.9 (13.3-27.9)	39.0 (30.0-47.2)	695
Mexican Americans	07-08	*	<LOD	6.85 (3.69-8.82)	20.9 (14.1-26.4)	35.6 (26.3-49.4)	501
Non-Hispanic blacks	99-00	1.42 (1.16-1.74)	1.00 (.650-1.50)	3.60 (2.50-5.50)	8.90 (6.90-15.0)	21.0 (14.0-24.0)	509
Non-Hispanic blacks	01-02	*	.890 (<LOD-2.20)	4.71 (3.68-6.62)	10.7 (8.54-13.9)	19.4 (14.7-22.8)	755
Non-Hispanic blacks	03-04	*	<LOD	5.28 (4.18-6.37)	10.8 (8.33-12.5)	15.8 (12.2-23.4)	631
Non-Hispanic blacks	05-06	*	<LOD	9.16 (2.74-15.1)	22.7 (18.2-33.7)	42.5 (27.3-61.9)	723
Non-Hispanic blacks	07-08	*	<LOD	8.67 (6.43-11.1)	23.7 (18.3-28.6)	38.0 (27.7-48.1)	574
Non-Hispanic whites	99-00	*	<LOD	2.90 (1.80-4.20)	7.90 (5.90-9.00)	11.0 (9.00-18.0)	595
Non-Hispanic whites	01-02	*	<LOD	3.13 (2.49-3.58)	7.79 (6.67-9.22)	12.5 (10.3-14.7)	1253
Non-Hispanic whites	03-04	*	<LOD	3.95 (3.23-4.91)	8.83 (6.56-12.5)	14.8 (11.9-20.0)	1061
Non-Hispanic whites	05-06	*	<LOD	5.04 (3.60-6.75)	15.3 (11.8-20.5)	27.8 (20.8-36.7)	1007
Non-Hispanic whites	07-08	*	<LOD	7.46 (6.27-9.03)	20.7 (17.5-25.5)	35.6 (28.7-39.1)	1088

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.58, 0.5, 0.5, 0.47,and 0.47 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Dimethylphosphate (DMP) (creatinine corrected) (1999 – 2008)

CAS Number 813-78-5

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	.810 (<LOD-1.15)	2.93 (2.11-3.92)	8.50 (6.96-10.4)	16.1 (13.3-17.6)	1949
Total population	01-02	*	<LOD	3.16 (2.69-3.59)	8.00 (7.12-9.28)	12.9 (11.5-15.0)	3016
Total population	03-04	*	<LOD	4.05 (3.50-5.15)	9.96 (8.78-11.2)	15.0 (13.0-18.1)	2491
Total population	05-06	*	<LOD	5.97 (4.75-7.43)	18.0 (15.9-20.5)	27.9 (24.0-32.7)	2634
Total population	07-08	*	<LOD	9.10 (8.08-10.2)	20.0 (18.0-24.2)	33.6 (28.8-40.2)	2591
Age 6-11 years	99-00	1.71 (1.29-2.27)	1.38 (.890-2.38)	4.48 (2.88-7.89)	16.7 (8.21-21.2)	22.1 (19.2-30.1)	471
Age 6-11 years	01-02	*	1.93 (<LOD-2.97)	5.99 (4.32-8.28)	12.9 (9.34-18.5)	20.6 (13.3-34.8)	576
Age 6-11 years	03-04	*	<LOD	6.87 (3.80-9.00)	13.9 (9.68-19.3)	19.6 (13.9-25.9)	310
Age 6-11 years	05-06	*	<LOD	12.4 (6.71-21.9)	41.2 (23.4-62.2)	71.5 (37.9-107)	350
Age 6-11 years	07-08	*	<LOD	15.6 (10.8-21.6)	35.3 (27.6-39.2)	54.3 (36.5-67.1)	385
Age 12-19 years	99-00	*	.590 (<LOD-.950)	2.28 (1.70-2.80)	7.78 (4.16-14.4)	16.0 (8.70-35.3)	664
Age 12-19 years	01-02	*	.913 (<LOD-1.27)	3.29 (2.76-3.78)	6.29 (5.51-7.30)	9.83 (7.94-14.2)	821
Age 12-19 years	03-04	*	1.00 (<LOD-1.68)	4.16 (3.37-5.07)	8.81 (7.78-10.2)	12.7 (10.3-17.7)	715
Age 12-19 years	05-06	*	<LOD	5.89 (2.00-10.1)	18.1 (13.9-24.0)	28.9 (19.9-37.9)	718
Age 12-19 years	07-08	*	<LOD	9.10 (5.62-10.9)	19.9 (15.5-22.5)	26.1 (19.8-27.2)	389
Age 20-59 years	99-00	*	.760 (<LOD-1.12)	2.88 (1.89-3.99)	8.11 (5.89-10.3)	14.6 (10.4-16.8)	814
Age 20-59 years	01-02	*	<LOD	2.55 (2.05-3.03)	6.92 (5.85-8.00)	11.5 (9.38-13.6)	1121
Age 20-59 years	03-04	*	<LOD	3.77 (2.72-4.55)	8.78 (6.68-10.5)	13.5 (11.2-15.6)	937
Age 20-59 years	05-06	*	<LOD	4.71 (3.22-6.50)	16.3 (13.3-18.7)	24.0 (19.9-27.6)	1091
Age 20-59 years	07-08	*	<LOD	7.32 (6.02-8.62)	17.2 (13.0-20.0)	28.2 (19.3-40.7)	1180
Age 60+ years	01-02	*	1.46 (<LOD-2.00)	4.31 (3.44-5.39)	10.6 (7.92-12.0)	14.3 (11.8-18.5)	498
Age 60+ years	03-04	*	2.19 (<LOD-2.69)	5.88 (4.65-7.51)	12.3 (9.79-14.8)	17.4 (13.0-24.2)	529
Age 60+ years	05-06	*	<LOD	9.16 (6.36-11.1)	19.7 (13.7-26.4)	30.5 (22.0-46.2)	475
Age 60+ years	07-08	*	<LOD	12.9 (10.5-15.3)	29.9 (20.9-38.5)	45.5 (30.5-80.3)	637
Males	99-00	*	.620 (<LOD-.940)	2.38 (1.86-3.18)	7.58 (4.64-11.6)	15.2 (9.74-19.5)	952
Males	01-02	*	<LOD	2.77 (2.32-3.19)	7.06 (5.44-8.80)	11.2 (9.70-12.7)	1420
Males	03-04	*	<LOD	3.27 (2.55-3.94)	8.58 (6.79-10.4)	12.5 (10.5-15.4)	1220
Males	05-06	*	<LOD	4.15 (2.16-5.95)	14.7 (11.1-18.0)	21.9 (18.9-26.9)	1246
Males	07-08	*	<LOD	7.08 (5.54-8.54)	17.5 (15.1-20.4)	28.0 (21.2-35.4)	1294
Females	99-00	*	1.00 (<LOD-1.71)	3.63 (2.30-5.19)	9.12 (7.82-11.7)	16.4 (11.7-19.7)	997
Females	01-02	*	<LOD	3.50 (2.86-4.49)	9.09 (7.83-10.8)	15.0 (12.5-17.8)	1596
Females	03-04	*	1.67 (<LOD-2.25)	5.28 (4.05-6.49)	11.2 (9.65-13.8)	18.1 (14.8-20.6)	1271
Females	05-06	*	<LOD	8.22 (6.99-9.20)	22.0 (17.7-24.9)	37.9 (27.0-47.2)	1388
Females	07-08	*	<LOD	10.7 (9.10-12.4)	24.3 (19.5-28.2)	38.6 (27.2-54.6)	1297

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Dimethylphosphate (DMP) (creatinine corrected) (1999 – 2008)

CAS Number 813-78-5

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	1.06 (<LOD-1.55)	3.89 (2.54-5.45)	9.41 (7.69-11.5)	16.7 (11.7-23.6)	672
Mexican Americans	01-02	*	.947 (<LOD-1.35)	3.18 (2.54-3.80)	8.44 (6.24-10.9)	14.3 (11.4-16.2)	763
Mexican Americans	03-04	*	<LOD	4.16 (2.57-6.30)	12.3 (7.50-16.5)	18.8 (15.3-21.5)	609
Mexican Americans	05-06	*	<LOD	4.27 (<LOD-8.50)	19.1 (14.9-22.7)	29.9 (23.8-39.0)	695
Mexican Americans	07-08	*	<LOD	7.47 (5.57-9.46)	19.9 (16.8-24.7)	29.8 (24.7-33.4)	500
Non-Hispanic blacks	99-00	.973 (.780-1.21)	.690 (.530-1.06)	2.67 (1.89-3.77)	7.07 (5.09-11.4)	14.0 (10.6-19.1)	509
Non-Hispanic blacks	01-02	*	.851 (<LOD-1.34)	3.36 (2.68-4.22)	7.63 (6.35-9.18)	13.2 (10.1-14.9)	754
Non-Hispanic blacks	03-04	*	<LOD	3.70 (2.84-4.48)	7.52 (6.59-8.89)	12.7 (8.89-19.3)	630
Non-Hispanic blacks	05-06	*	<LOD	5.89 (2.56-8.89)	18.7 (13.1-26.4)	29.9 (24.0-38.7)	722
Non-Hispanic blacks	07-08	*	<LOD	6.75 (4.80-8.65)	20.1 (15.5-25.1)	30.7 (24.2-37.7)	573
Non-Hispanic whites	99-00	*	<LOD	3.15 (1.97-4.32)	8.73 (5.89-13.3)	15.8 (10.0-21.2)	595
Non-Hispanic whites	01-02	*	<LOD	3.12 (2.50-3.76)	8.30 (6.91-10.0)	13.6 (11.2-16.9)	1253
Non-Hispanic whites	03-04	*	<LOD	4.05 (3.49-5.64)	10.2 (8.83-11.8)	14.8 (12.1-19.2)	1060
Non-Hispanic whites	05-06	*	<LOD	5.97 (4.53-8.08)	17.7 (15.2-20.6)	26.3 (23.3-29.3)	1007
Non-Hispanic whites	07-08	*	<LOD	9.33 (7.92-10.8)	20.0 (17.5-24.2)	35.1 (27.2-43.9)	1088

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Diethylthiophosphate (DETP) (1999 – 2008)

CAS Number 5871-17-0

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	.500 (<LOD-.690)	.760 (.620-1.10)	1.40 (1.10-1.80)	2.20 (1.70-2.80)	1949
Total population	01-02	.484 (.381-.615)	.630 (.450-.930)	1.53 (1.33-1.80)	2.57 (2.28-3.01)	3.94 (3.26-4.94)	3016
Total population	03-04	*	<LOD	.830 (.710-.960)	1.83 (1.51-2.30)	3.00 (2.39-3.78)	2422
Total population	05-06	*	<LOD	.620 (<LOD-.710)	1.43 (1.17-1.84)	2.55 (1.94-3.37)	2634
Total population	07-08	*	<LOD	1.00 (.880-1.16)	2.18 (1.75-2.75)	4.35 (2.95-6.01)	2590
Age 6-11 years	99-00	*	.600 (<LOD-.810)	.910 (.720-1.30)	1.70 (1.20-3.20)	3.20 (1.70-7.30)	471
Age 6-11 years	01-02	.453 (.350-.585)	.550 (.350-.850)	1.58 (1.33-2.04)	2.75 (2.22-3.38)	4.08 (2.95-5.16)	575
Age 6-11 years	03-04	*	<LOD	.820 (.580-.970)	1.45 (1.05-2.16)	2.18 (1.45-4.13)	296
Age 6-11 years	05-06	*	<LOD	.700 (<LOD-.950)	1.38 (1.03-2.05)	2.15 (1.37-4.06)	350
Age 6-11 years	07-08	*	<LOD	1.18 (.990-1.42)	2.93 (2.06-5.58)	6.44 (2.87-13.2)	385
Age 12-19 years	99-00	*	.210 (<LOD-.710)	.780 (.600-1.20)	1.50 (1.20-2.30)	2.30 (1.60-4.30)	664
Age 12-19 years	01-02	.505 (.388-.657)	.690 (.440-.960)	1.61 (1.32-1.94)	2.57 (2.23-3.39)	4.08 (2.73-5.86)	822
Age 12-19 years	03-04	*	.260 (<LOD-.400)	.930 (.750-1.13)	2.14 (1.75-2.89)	3.27 (2.69-4.83)	690
Age 12-19 years	05-06	*	<LOD	.700 (<LOD-.920)	1.42 (1.07-1.94)	2.46 (1.47-4.42)	717
Age 12-19 years	07-08	*	<LOD	1.04 (.880-1.45)	2.20 (1.58-3.11)	4.02 (2.16-7.07)	390
Age 20-59 years	99-00	*	.490 (<LOD-.670)	.740 (.600-.930)	1.30 (.990-1.80)	2.00 (1.50-2.60)	814
Age 20-59 years	01-02	.449 (.340-.592)	.540 (.380-.880)	1.45 (1.19-1.79)	2.46 (2.11-3.17)	3.83 (2.96-5.34)	1122
Age 20-59 years	03-04	*	<LOD	.800 (.650-.960)	1.76 (1.37-2.32)	2.65 (2.31-3.89)	919
Age 20-59 years	05-06	*	<LOD	.600 (<LOD-.680)	1.42 (1.12-1.77)	2.45 (1.82-3.31)	1092
Age 20-59 years	07-08	*	<LOD	.930 (.780-1.22)	2.16 (1.68-2.76)	4.20 (2.76-5.92)	1179
Age 60+ years	01-02	.662 (.571-.768)	1.00 (.740-1.14)	1.77 (1.50-2.10)	2.81 (2.44-3.46)	4.45 (2.93-8.31)	497
Age 60+ years	03-04	*	.310 (<LOD-.520)	.890 (.740-1.05)	1.99 (1.52-2.67)	3.72 (2.19-6.81)	517
Age 60+ years	05-06	*	<LOD	.660 (<LOD-.840)	1.62 (1.25-2.31)	3.20 (2.04-4.18)	475
Age 60+ years	07-08	*	<LOD	.980 (.860-1.16)	2.04 (1.60-3.01)	4.25 (2.76-5.40)	636
Males	99-00	*	.510 (<LOD-.700)	.790 (.680-1.10)	1.50 (1.20-2.20)	2.70 (1.90-4.10)	952
Males	01-02	.495 (.393-.623)	.660 (.470-.900)	1.53 (1.37-1.82)	2.68 (2.28-3.34)	3.96 (3.07-5.85)	1419
Males	03-04	*	.250 (<LOD-.380)	.890 (.780-1.04)	2.20 (1.65-2.41)	3.15 (2.42-4.29)	1174
Males	05-06	*	<LOD	.590 (<LOD-.720)	1.48 (1.15-1.97)	2.61 (1.89-3.58)	1246
Males	07-08	*	<LOD	1.03 (.890-1.25)	2.49 (1.82-3.29)	4.79 (3.44-5.92)	1293
Females	99-00	*	<LOD	.720 (.570-1.00)	1.30 (.910-1.60)	1.70 (1.30-3.20)	997
Females	01-02	.474 (.360-.624)	.620 (.410-.960)	1.51 (1.22-1.86)	2.49 (2.15-3.04)	3.94 (2.82-5.27)	1597
Females	03-04	*	<LOD	.770 (.600-.930)	1.59 (1.24-2.08)	2.67 (2.07-3.81)	1248
Females	05-06	*	<LOD	.630 (.580-.710)	1.43 (1.14-1.77)	2.42 (1.78-3.52)	1388
Females	07-08	*	<LOD	.960 (.840-1.14)	2.00 (1.60-2.50)	4.01 (2.41-6.59)	1297

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.09, 0.1, 0.2, 0.56,and 0.56 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Diethylthiophosphate (DETP) (1999 – 2008)

CAS Number 5871-17-0

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	.570 (<LOD-.780)	.840 (.740-.980)	1.50 (1.20-1.90)	2.20 (2.00-2.90)	672
Mexican Americans	01-02	.549 (.403-.749)	.710 (.470-.960)	1.40 (1.04-1.97)	2.63 (2.06-3.14)	3.98 (2.75-5.21)	763
Mexican Americans	03-04	*	.250 (<LOD-.380)	.970 (.720-1.52)	2.35 (1.69-3.83)	4.19 (2.38-8.80)	584
Mexican Americans	05-06	*	<LOD	.700 (<LOD-.900)	1.42 (.980-2.48)	2.72 (1.42-4.48)	695
Mexican Americans	07-08	*	<LOD	.970 (.830-1.15)	1.98 (1.60-2.65)	3.46 (2.78-4.46)	500
Non-Hispanic blacks	99-00	.343 (.201-.584)	.570 (<LOD-.750)	.820 (.690-1.20)	1.80 (1.30-3.20)	3.60 (2.00-4.80)	509
Non-Hispanic blacks	01-02	.755 (.589-.966)	1.17 (.740-1.46)	1.85 (1.73-1.99)	3.54 (2.95-3.87)	5.27 (3.89-6.74)	755
Non-Hispanic blacks	03-04	.466 (.384-.564)	.430 (.210-.710)	1.08 (.930-1.29)	2.32 (1.74-2.70)	3.25 (2.55-4.83)	605
Non-Hispanic blacks	05-06	*	<LOD	.850 (.640-1.18)	1.74 (1.43-2.27)	2.96 (2.09-4.20)	722
Non-Hispanic blacks	07-08	*	<LOD	1.23 (.890-1.40)	2.85 (2.05-4.12)	4.81 (4.00-6.59)	574
Non-Hispanic whites	99-00	*	.160 (<LOD-.700)	.740 (.580-1.10)	1.30 (.960-1.90)	1.90 (1.50-2.80)	595
Non-Hispanic whites	01-02	.464 (.344-.626)	.600 (.410-.950)	1.53 (1.27-1.83)	2.46 (2.15-3.17)	3.75 (2.82-5.54)	1252
Non-Hispanic whites	03-04	*	<LOD	.750 (.610-.890)	1.75 (1.33-2.20)	2.68 (2.20-3.78)	1044
Non-Hispanic whites	05-06	*	<LOD	.600 (<LOD-.690)	1.42 (1.04-1.99)	2.56 (1.82-3.70)	1007
Non-Hispanic whites	07-08	*	<LOD	.910 (.820-1.04)	1.80 (1.56-2.46)	3.52 (2.20-5.61)	1087

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.09, 0.1, 0.2, 0.56,and 0.56 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Diethylthiophosphate (DETP) (creatinine corrected) (1999 – 2008)

CAS Number 5871-17-0

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	.250 (<LOD-.480)	.710 (.460-1.07)	1.72 (1.17-2.32)	2.64 (2.08-3.06)	1949
Total population	01-02	.496 (.388-.636)	.569 (.403-.789)	1.42 (1.16-1.79)	3.11 (2.58-3.82)	4.88 (3.78-6.65)	3015
Total population	03-04	*	<LOD	.740 (.667-.839)	1.59 (1.32-2.05)	2.87 (2.22-3.77)	2420
Total population	05-06	*	<LOD	.956 (<LOD-1.09)	1.88 (1.67-2.21)	2.89 (2.35-3.37)	2633
Total population	07-08	*	<LOD	1.24 (1.15-1.37)	2.46 (1.98-3.11)	3.92 (3.05-5.12)	2588
Age 6-11 years	99-00	*	.470 (<LOD-.870)	1.08 (.800-1.32)	1.75 (1.44-2.36)	2.45 (2.04-5.32)	471
Age 6-11 years	01-02	.591 (.471-.742)	.636 (.397-1.05)	1.63 (1.31-1.94)	3.22 (2.72-4.16)	5.70 (3.84-6.80)	575
Age 6-11 years	03-04	*	<LOD	.869 (.592-1.09)	1.57 (1.08-2.67)	2.67 (1.57-4.05)	296
Age 6-11 years	05-06	*	<LOD	1.23 (<LOD-1.33)	1.95 (1.60-2.86)	3.97 (1.95-5.88)	350
Age 6-11 years	07-08	*	<LOD	1.89 (1.32-2.09)	3.74 (2.46-5.55)	6.54 (3.49-16.0)	385
Age 12-19 years	99-00	*	.180 (<LOD-.400)	.510 (.320-.820)	1.07 (.720-1.61)	1.97 (1.07-3.92)	664
Age 12-19 years	01-02	.393 (.300-.515)	.534 (.313-.735)	1.23 (.978-1.53)	2.19 (1.61-3.07)	3.14 (2.25-3.97)	821
Age 12-19 years	03-04	*	.300 (<LOD-.354)	.645 (.559-.734)	1.49 (1.16-1.60)	1.97 (1.57-2.43)	689
Age 12-19 years	05-06	*	<LOD	.710 (<LOD-.889)	1.35 (1.00-2.03)	2.21 (1.35-3.33)	717
Age 12-19 years	07-08	*	<LOD	.902 (.692-1.15)	1.78 (1.15-3.32)	3.32 (1.68-5.48)	388
Age 20-59 years	99-00	*	.250 (<LOD-.460)	.680 (.440-1.08)	1.79 (1.08-2.39)	2.75 (2.02-3.22)	814
Age 20-59 years	01-02	.447 (.335-.597)	.494 (.316-.742)	1.32 (.986-1.71)	2.87 (2.08-3.95)	4.69 (3.20-7.81)	1122
Age 20-59 years	03-04	*	<LOD	.700 (.550-.875)	1.47 (1.11-2.23)	2.82 (2.02-3.81)	918
Age 20-59 years	05-06	*	<LOD	.913 (<LOD-1.13)	1.84 (1.65-2.11)	2.86 (2.25-3.33)	1091
Age 20-59 years	07-08	*	<LOD	1.24 (1.09-1.40)	2.27 (1.79-3.07)	3.51 (2.59-4.78)	1179
Age 60+ years	01-02	.821 (.708-.952)	.971 (.849-1.10)	2.25 (1.81-2.66)	3.97 (3.33-5.06)	5.51 (4.79-8.07)	497
Age 60+ years	03-04	*	.491 (<LOD-.560)	.933 (.814-1.17)	2.14 (1.46-3.00)	3.92 (2.28-8.15)	517
Age 60+ years	05-06	*	<LOD	1.11 (<LOD-1.38)	2.50 (1.67-3.11)	3.80 (2.86-8.71)	475
Age 60+ years	07-08	*	<LOD	1.32 (1.20-1.58)	2.91 (2.25-3.38)	4.49 (3.05-9.80)	636
Males	99-00	*	.270 (<LOD-.470)	.670 (.520-.840)	1.34 (1.08-2.17)	2.67 (1.67-3.23)	952
Males	01-02	.410 (.319-.526)	.517 (.342-.721)	1.22 (1.02-1.41)	2.46 (1.71-3.18)	3.67 (2.70-4.71)	1419
Males	03-04	*	.276 (<LOD-.326)	.667 (.560-.804)	1.49 (1.15-1.91)	2.87 (1.74-3.72)	1173
Males	05-06	*	<LOD	.773 (<LOD-.907)	1.42 (1.21-2.00)	2.35 (1.90-3.27)	1246
Males	07-08	*	<LOD	1.02 (.943-1.09)	1.94 (1.60-2.39)	3.22 (2.50-4.42)	1292
Females	99-00	*	<LOD	.790 (.380-1.50)	1.89 (1.07-2.52)	2.52 (1.89-3.75)	997
Females	01-02	.597 (.457-.779)	.647 (.423-.961)	1.77 (1.34-2.50)	3.82 (2.93-5.14)	6.57 (4.34-9.28)	1596
Females	03-04	*	<LOD	.821 (.700-.946)	1.76 (1.34-2.29)	3.02 (2.25-4.33)	1247
Females	05-06	*	<LOD	1.17 (1.03-1.38)	2.21 (1.83-2.50)	3.18 (2.50-4.47)	1387
Females	07-08	*	<LOD	1.47 (1.28-1.72)	2.86 (2.29-3.51)	4.48 (3.30-5.73)	1296

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Diethylthiophosphate (DETP) (creatinine corrected) (1999 – 2008)

CAS Number 5871-17-0

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	.330 (<LOD-.790)	.830 (.550-1.20)	1.69 (1.20-2.43)	2.71 (1.75-3.78)	672
Mexican Americans	01-02	.520 (.390-.693)	.570 (.416-.824)	1.30 (1.05-1.74)	2.58 (1.82-3.72)	3.82 (2.77-6.43)	763
Mexican Americans	03-04	*	.329 (<LOD-.414)	.824 (.555-1.22)	2.03 (1.26-3.63)	3.74 (2.47-6.18)	584
Mexican Americans	05-06	*	<LOD	.907 (<LOD-1.10)	1.74 (1.35-2.07)	2.86 (2.02-4.00)	695
Mexican Americans	07-08	*	<LOD	1.20 (.989-1.32)	2.20 (1.83-2.86)	3.32 (2.59-5.11)	499
Non-Hispanic blacks	99-00	.234 (.136-.403)	.310 (<LOD-.580)	.720 (.510-.850)	1.39 (1.03-2.10)	2.91 (1.49-4.24)	509
Non-Hispanic blacks	01-02	.556 (.457-.676)	.726 (.565-.938)	1.50 (1.34-1.70)	2.80 (2.35-3.30)	4.00 (3.29-4.99)	754
Non-Hispanic blacks	03-04	.321 (.270-.381)	.313 (.231-.407)	.699 (.561-.831)	1.45 (1.09-1.75)	2.64 (1.71-3.64)	604
Non-Hispanic blacks	05-06	*	<LOD	.720 (.606-.824)	1.48 (1.24-1.73)	2.45 (1.76-3.19)	721
Non-Hispanic blacks	07-08	*	<LOD	1.07 (.880-1.21)	2.40 (1.85-2.89)	4.12 (3.19-5.67)	573
Non-Hispanic whites	99-00	*	.230 (<LOD-.550)	.710 (.390-1.22)	1.88 (1.05-2.58)	2.64 (2.08-3.07)	595
Non-Hispanic whites	01-02	.506 (.373-.687)	.579 (.368-.850)	1.51 (1.18-2.00)	3.38 (2.64-4.35)	5.83 (3.95-7.81)	1252
Non-Hispanic whites	03-04	*	<LOD	.735 (.636-.848)	1.52 (1.20-2.07)	2.69 (2.07-3.97)	1043
Non-Hispanic whites	05-06	*	<LOD	1.00 (<LOD-1.21)	2.00 (1.73-2.27)	3.08 (2.50-3.74)	1007
Non-Hispanic whites	07-08	*	<LOD	1.24 (1.07-1.39)	2.28 (1.71-3.30)	3.49 (2.56-4.60)	1087

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Dimethylthiophosphate (DMTP) (1999 – 2008)

CAS Number 59401-04-6

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	1.82 (1.36-2.44)	2.70 (1.40-4.10)	11.0 (8.40-16.0)	38.0 (25.0-41.0)	48.0 (38.0-62.0)	1948
Total population	01-02	*	.580 (<LOD-1.45)	4.23 (3.10-5.88)	17.5 (13.0-22.7)	32.9 (27.2-45.3)	3016
Total population	03-04	2.25 (1.98-2.56)	2.03 (1.73-2.37)	6.36 (5.11-7.34)	19.6 (16.2-21.5)	35.3 (27.4-45.3)	2494
Total population	05-06	1.96 (1.74-2.20)	1.71 (1.43-1.94)	5.34 (4.49-6.08)	14.2 (10.5-20.8)	28.2 (22.1-36.0)	2631
Total population	07-08	2.28 (1.97-2.64)	2.10 (1.77-2.44)	5.90 (4.94-7.01)	18.3 (13.5-23.0)	36.8 (27.8-45.7)	2591
Age 6-11 years	99-00	2.72 (1.93-3.85)	4.20 (2.50-7.20)	20.0 (13.0-29.0)	40.0 (38.0-52.0)	62.0 (40.0-92.0)	471
Age 6-11 years	01-02	*	1.46 (.600-2.69)	8.33 (5.75-14.0)	28.4 (19.7-41.4)	45.7 (28.5-74.5)	575
Age 6-11 years	03-04	2.79 (2.25-3.45)	2.67 (1.81-3.88)	6.95 (5.64-8.58)	19.4 (10.5-27.4)	30.9 (19.4-76.5)	310
Age 6-11 years	05-06	2.70 (2.25-3.26)	2.38 (1.76-3.33)	8.21 (4.96-11.8)	21.4 (12.7-40.7)	40.7 (18.3-90.4)	349
Age 6-11 years	07-08	3.43 (2.88-4.09)	3.50 (2.69-4.10)	9.90 (7.14-13.9)	32.0 (19.1-45.7)	52.5 (36.7-67.4)	385
Age 12-19 years	99-00	2.53 (1.64-3.92)	3.70 (1.70-6.80)	16.0 (11.0-31.0)	38.0 (33.0-58.0)	69.0 (38.0-260)	664
Age 12-19 years	01-02	*	1.04 (<LOD-2.12)	4.83 (3.35-6.48)	20.8 (12.2-27.9)	34.9 (23.6-54.7)	822
Age 12-19 years	03-04	2.21 (1.81-2.70)	1.83 (1.46-2.16)	5.91 (4.04-8.78)	18.7 (12.2-33.9)	47.1 (22.2-80.8)	717
Age 12-19 years	05-06	2.51 (2.00-3.16)	2.53 (1.90-3.02)	6.44 (4.91-8.77)	21.7 (13.1-28.2)	38.5 (25.3-79.2)	717
Age 12-19 years	07-08	2.10 (1.68-2.61)	1.82 (1.53-2.31)	5.18 (3.55-7.48)	13.6 (8.16-27.9)	31.5 (12.4-54.5)	391
Age 20-59 years	99-00	1.59 (1.17-2.16)	2.30 (.830-3.80)	9.10 (7.10-13.0)	38.0 (19.0-39.0)	39.0 (38.0-58.0)	813
Age 20-59 years	01-02	*	<LOD	3.32 (2.29-4.96)	13.6 (9.50-20.0)	30.0 (20.5-45.3)	1121
Age 20-59 years	03-04	1.98 (1.71-2.30)	1.78 (1.48-2.18)	5.11 (4.31-6.53)	16.7 (12.1-20.8)	28.5 (24.1-40.0)	938
Age 20-59 years	05-06	1.72 (1.50-1.97)	1.37 (1.20-1.73)	4.25 (3.68-5.22)	12.4 (8.37-19.6)	26.6 (16.4-37.9)	1092
Age 20-59 years	07-08	2.03 (1.68-2.46)	1.90 (1.46-2.39)	5.18 (4.24-6.09)	13.3 (10.4-19.2)	30.6 (21.4-44.6)	1179
Age 60+ years	01-02	*	.860 (<LOD-2.16)	5.85 (3.33-9.56)	19.6 (13.0-27.9)	32.9 (22.7-51.0)	498
Age 60+ years	03-04	3.18 (2.47-4.08)	2.64 (2.16-3.81)	9.63 (6.32-15.5)	25.0 (15.5-45.3)	45.3 (20.9-119)	529
Age 60+ years	05-06	2.18 (1.81-2.63)	2.03 (1.46-2.68)	6.38 (4.62-8.23)	14.0 (9.72-20.9)	25.2 (18.2-37.6)	473
Age 60+ years	07-08	2.91 (2.37-3.58)	2.57 (1.99-3.18)	9.19 (5.54-13.0)	26.2 (19.4-32.5)	42.7 (30.5-54.1)	636
Males	99-00	2.10 (1.48-2.98)	3.50 (2.20-4.80)	14.0 (8.00-24.0)	38.0 (21.0-49.0)	42.0 (38.0-53.0)	952
Males	01-02	*	.690 (<LOD-1.52)	4.44 (3.32-6.48)	18.3 (12.7-25.6)	31.1 (25.0-43.3)	1420
Males	03-04	2.30 (1.95-2.70)	2.15 (1.70-2.53)	6.42 (4.90-7.75)	18.8 (13.3-22.5)	30.0 (23.3-45.3)	1221
Males	05-06	1.88 (1.64-2.14)	1.61 (1.28-1.94)	5.38 (3.96-6.38)	13.1 (9.59-20.9)	28.7 (19.5-41.7)	1243
Males	07-08	2.33 (2.00-2.71)	2.15 (1.85-2.50)	5.98 (4.78-7.26)	16.7 (11.8-24.7)	31.5 (21.2-48.9)	1293
Females	99-00	1.59 (1.23-2.06)	2.00 (.690-3.60)	9.70 (7.30-14.0)	38.0 (26.0-39.0)	52.0 (38.0-110)	996
Females	01-02	*	.430 (<LOD-1.45)	3.81 (2.68-5.85)	16.0 (10.9-22.7)	35.2 (25.0-46.1)	1596
Females	03-04	2.21 (1.92-2.55)	1.95 (1.68-2.29)	6.27 (4.93-7.39)	20.4 (16.4-24.0)	36.7 (27.7-47.8)	1273
Females	05-06	2.04 (1.79-2.33)	1.75 (1.46-2.13)	5.23 (4.49-6.10)	15.6 (10.9-20.8)	28.1 (20.8-37.9)	1388
Females	07-08	2.24 (1.88-2.66)	1.99 (1.57-2.52)	5.85 (4.92-7.31)	18.7 (13.4-26.0)	37.7 (27.0-50.1)	1298

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.18, 0.4, 0.5, 0.55,and 0.55 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Dimethylthiophosphate (DMTP) (1999 – 2008)

CAS Number 59401-04-6

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	1.79 (1.05-3.05)	2.00 (.530-4.40)	11.0 (6.70-17.0)	39.0 (32.0-62.0)	140 (46.0-230)	671
Mexican Americans	01-02	*	<LOD	3.93 (3.05-5.06)	15.1 (11.1-19.1)	35.6 (22.7-46.0)	763
Mexican Americans	03-04	2.41 (1.88-3.09)	2.54 (1.41-3.98)	6.43 (4.90-8.02)	17.2 (12.0-22.3)	28.9 (19.2-39.8)	610
Mexican Americans	05-06	2.37 (2.07-2.71)	2.26 (1.95-2.68)	5.65 (4.86-6.44)	16.4 (12.9-21.4)	28.3 (23.3-41.4)	693
Mexican Americans	07-08	2.10 (1.83-2.42)	1.98 (1.63-2.31)	5.18 (4.17-6.61)	13.6 (11.5-20.0)	31.0 (20.0-43.5)	501
Non-Hispanic blacks	99-00	2.13 (1.57-2.88)	3.60 (2.10-4.70)	12.0 (8.80-18.0)	38.0 (20.0-41.0)	41.0 (37.0-110)	509
Non-Hispanic blacks	01-02	1.54 (1.15-2.07)	1.18 (.580-1.97)	5.21 (3.11-8.25)	20.0 (13.4-27.2)	39.1 (25.9-62.8)	755
Non-Hispanic blacks	03-04	2.13 (1.83-2.48)	1.85 (1.65-2.20)	5.44 (3.87-8.28)	20.4 (15.8-24.9)	31.1 (24.9-51.9)	631
Non-Hispanic blacks	05-06	1.94 (1.63-2.31)	1.63 (1.23-2.02)	5.21 (3.93-7.18)	16.8 (13.3-21.6)	28.4 (21.5-40.6)	723
Non-Hispanic blacks	07-08	2.12 (1.89-2.38)	1.97 (1.64-2.26)	5.63 (4.15-6.94)	20.8 (12.9-23.9)	33.5 (26.3-47.6)	573
Non-Hispanic whites	99-00	1.77 (1.23-2.53)	2.70 (.830-4.40)	11.0 (7.50-17.0)	38.0 (17.0-53.0)	48.0 (38.0-69.0)	595
Non-Hispanic whites	01-02	*	.540 (<LOD-1.71)	4.21 (2.77-6.48)	18.8 (10.9-25.4)	33.1 (26.6-46.5)	1252
Non-Hispanic whites	03-04	2.31 (2.00-2.66)	2.07 (1.73-2.41)	6.51 (5.12-7.85)	19.8 (15.4-23.3)	36.7 (27.4-47.8)	1061
Non-Hispanic whites	05-06	1.94 (1.67-2.26)	1.76 (1.40-1.99)	5.33 (4.32-6.19)	13.6 (9.80-22.1)	28.9 (20.2-42.8)	1005
Non-Hispanic whites	07-08	2.22 (1.83-2.69)	1.96 (1.57-2.48)	5.84 (4.70-7.68)	17.1 (12.4-24.3)	37.3 (25.9-48.7)	1088

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.18, 0.4, 0.5, 0.55,and 0.55 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Dimethylthiophosphate (DMTP) (creatinine corrected) (1999 – 2008)

CAS Number 59401-04-6

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	1.64 (1.22-2.20)	2.12 (1.22-3.35)	9.57 (6.59-15.8)	32.0 (23.9-41.1)	51.0 (39.0-70.1)	1948
Total population	01-02	*	.933 (<LOD-1.40)	4.08 (2.65-6.06)	14.6 (11.5-20.5)	28.9 (24.7-39.4)	3015
Total population	03-04	2.21 (1.92-2.55)	1.98 (1.69-2.38)	5.96 (5.07-7.16)	19.1 (14.8-22.4)	32.6 (25.8-41.9)	2491
Total population	05-06	1.99 (1.76-2.26)	1.75 (1.56-1.90)	5.00 (4.16-6.24)	16.8 (11.8-22.1)	30.0 (24.1-38.3)	2630
Total population	07-08	2.34 (2.05-2.66)	2.00 (1.77-2.31)	5.91 (4.88-7.09)	17.5 (13.9-23.2)	33.7 (25.7-45.9)	2589
Age 6-11 years	99-00	2.95 (2.25-3.86)	5.32 (3.75-6.33)	19.1 (12.2-28.0)	47.0 (32.1-60.3)	66.1 (50.9-95.0)	471
Age 6-11 years	01-02	*	2.16 (1.32-3.12)	10.6 (7.84-13.6)	28.7 (18.8-45.0)	48.1 (33.4-71.1)	575
Age 6-11 years	03-04	3.40 (2.70-4.28)	3.41 (2.40-4.17)	7.91 (6.43-12.2)	25.2 (16.7-34.2)	36.1 (25.4-67.7)	310
Age 6-11 years	05-06	3.35 (2.67-4.21)	2.78 (2.03-3.66)	9.26 (5.67-15.1)	33.4 (16.8-54.3)	71.5 (28.7-161)	349
Age 6-11 years	07-08	4.35 (3.78-5.01)	4.26 (3.36-4.75)	14.1 (9.35-16.6)	32.8 (23.8-45.4)	51.3 (41.1-77.9)	385
Age 12-19 years	99-00	1.71 (1.07-2.75)	2.14 (.890-4.83)	13.5 (6.46-22.6)	36.0 (25.6-51.4)	61.5 (41.7-109)	664
Age 12-19 years	01-02	*	.933 (<LOD-1.57)	3.56 (2.38-5.57)	12.2 (8.96-16.0)	22.5 (13.2-34.7)	821
Age 12-19 years	03-04	1.66 (1.37-2.03)	1.52 (1.19-1.82)	4.38 (3.29-5.66)	13.3 (9.94-20.5)	26.5 (15.5-36.0)	715
Age 12-19 years	05-06	1.89 (1.54-2.33)	1.81 (1.38-2.33)	4.55 (3.47-6.17)	14.3 (8.75-27.5)	32.9 (14.3-51.4)	717
Age 12-19 years	07-08	1.62 (1.27-2.06)	1.46 (1.19-1.74)	4.14 (3.12-5.52)	11.1 (5.52-20.5)	20.5 (9.61-32.2)	389
Age 20-59 years	99-00	1.47 (1.07-2.02)	1.90 (.870-3.11)	8.09 (5.19-14.6)	27.0 (19.8-37.6)	47.5 (34.2-70.1)	813
Age 20-59 years	01-02	*	<LOD	3.16 (1.99-4.62)	11.9 (7.79-17.2)	25.2 (15.9-37.0)	1121
Age 20-59 years	03-04	1.88 (1.61-2.19)	1.67 (1.45-1.94)	4.88 (4.20-5.68)	13.9 (10.3-19.7)	30.3 (19.7-38.2)	937
Age 20-59 years	05-06	1.72 (1.52-1.96)	1.46 (1.28-1.65)	4.18 (3.14-4.99)	13.2 (9.30-21.9)	25.4 (21.4-30.3)	1091
Age 20-59 years	07-08	2.02 (1.73-2.36)	1.79 (1.52-2.05)	4.53 (3.90-5.90)	13.2 (9.47-17.2)	26.7 (17.1-41.8)	1179
Age 60+ years	01-02	*	1.39 (<LOD-2.40)	6.38 (3.68-9.97)	24.0 (14.9-35.2)	45.5 (26.5-69.7)	498
Age 60+ years	03-04	3.86 (2.99-4.97)	3.18 (2.46-4.84)	11.2 (7.10-18.6)	29.2 (18.6-47.9)	48.2 (24.9-113)	529
Age 60+ years	05-06	2.61 (2.12-3.20)	2.40 (1.75-2.75)	7.66 (5.71-11.3)	19.2 (12.1-31.1)	35.3 (20.5-56.4)	473
Age 60+ years	07-08	3.56 (2.79-4.55)	3.05 (2.31-4.13)	10.6 (6.86-14.8)	31.8 (17.7-50.2)	54.2 (34.1-87.5)	636
Males	99-00	1.61 (1.11-2.34)	2.39 (1.27-3.51)	9.27 (6.00-16.9)	28.9 (19.0-40.4)	41.1 (34.9-52.9)	952
Males	01-02	*	.778 (<LOD-1.14)	3.82 (2.65-4.98)	13.6 (10.0-17.8)	25.2 (17.2-37.6)	1420
Males	03-04	1.88 (1.58-2.23)	1.76 (1.51-2.12)	4.87 (3.87-6.31)	14.4 (9.18-20.4)	25.7 (17.7-36.9)	1220
Males	05-06	1.59 (1.37-1.86)	1.33 (1.14-1.57)	4.06 (2.85-5.27)	13.1 (8.56-20.5)	26.0 (17.2-34.2)	1243
Males	07-08	1.93 (1.68-2.21)	1.62 (1.42-1.94)	4.36 (3.77-5.50)	14.2 (10.4-17.7)	25.9 (18.2-39.7)	1292
Females	99-00	1.66 (1.26-2.18)	2.01 (.870-3.33)	10.0 (6.67-16.2)	34.9 (26.2-47.1)	70.1 (39.0-118)	996
Females	01-02	*	1.08 (<LOD-1.65)	4.44 (2.55-7.02)	17.4 (11.9-24.8)	38.0 (27.4-51.6)	1595
Females	03-04	2.60 (2.23-3.02)	2.24 (1.83-2.63)	7.11 (5.54-10.2)	22.8 (18.9-28.7)	41.6 (29.2-58.9)	1271
Females	05-06	2.47 (2.16-2.83)	2.19 (1.83-2.44)	6.07 (4.74-8.34)	20.7 (13.8-25.6)	36.7 (26.1-46.2)	1387
Females	07-08	2.81 (2.40-3.29)	2.50 (2.07-2.93)	7.40 (5.83-8.83)	21.9 (16.7-27.4)	41.2 (27.4-60.8)	1297

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Dimethylthiophosphate (DMTP) (creatinine corrected) (1999 – 2008)

CAS Number 59401-04-6

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	1.60 (.899-2.86)	1.83 (.680-4.23)	10.4 (5.95-16.9)	37.0 (23.1-63.1)	112 (40.5-190)	671
Mexican Americans	01-02	*	<LOD	3.55 (2.65-4.68)	13.8 (9.88-22.9)	30.4 (22.9-47.2)	763
Mexican Americans	03-04	2.20 (1.65-2.94)	2.24 (1.70-3.00)	5.95 (4.14-8.68)	15.7 (10.7-20.1)	24.5 (18.9-36.9)	609
Mexican Americans	05-06	2.24 (1.96-2.55)	2.14 (1.89-2.40)	5.19 (4.33-6.18)	14.7 (10.9-20.0)	28.4 (21.5-36.3)	693
Mexican Americans	07-08	2.14 (1.92-2.38)	1.88 (1.61-2.22)	4.84 (4.08-6.48)	13.2 (10.0-18.6)	26.2 (18.6-34.1)	500
Non-Hispanic blacks	99-00	1.45 (1.03-2.06)	1.75 (1.17-3.06)	8.48 (4.36-13.4)	25.5 (15.4-39.3)	54.4 (25.5-97.6)	509
Non-Hispanic blacks	01-02	1.13 (.889-1.44)	1.00 (.693-1.23)	3.62 (2.29-5.41)	12.4 (9.17-17.5)	23.3 (17.4-43.1)	754
Non-Hispanic blacks	03-04	1.46 (1.28-1.67)	1.22 (1.06-1.37)	3.90 (2.77-5.34)	12.7 (8.09-18.7)	26.0 (14.6-38.7)	630
Non-Hispanic blacks	05-06	1.40 (1.14-1.71)	1.12 (.938-1.37)	3.58 (2.63-5.06)	12.0 (8.44-19.3)	25.6 (17.4-31.2)	722
Non-Hispanic blacks	07-08	1.61 (1.45-1.80)	1.38 (1.22-1.61)	4.26 (3.41-5.20)	14.7 (10.7-18.8)	27.5 (20.9-37.4)	572
Non-Hispanic whites	99-00	1.68 (1.16-2.43)	2.22 (.870-3.51)	9.40 (5.58-17.0)	33.3 (20.6-49.4)	52.9 (39.0-71.1)	595
Non-Hispanic whites	01-02	*	.966 (<LOD-1.61)	4.22 (2.41-7.00)	15.9 (11.6-24.1)	33.1 (24.8-45.4)	1252
Non-Hispanic whites	03-04	2.40 (2.05-2.81)	2.12 (1.75-2.53)	6.27 (5.10-8.10)	20.0 (15.3-25.7)	36.2 (25.7-52.7)	1060
Non-Hispanic whites	05-06	2.09 (1.80-2.42)	1.78 (1.56-2.06)	5.14 (4.02-6.91)	16.8 (11.3-23.4)	30.0 (23.4-38.3)	1005
Non-Hispanic whites	07-08	2.40 (1.99-2.90)	2.04 (1.67-2.57)	6.00 (4.64-7.49)	16.9 (13.0-25.3)	37.6 (23.1-54.2)	1088

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Diethyldithiophosphate (DEDTP) (1999 – 2008)

CAS Number 298-06-6

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	.090 (<LOD-.140)	.210 (.140-.290)	.470 (.380-.640)	.870 (.640-1.10)	1949
Total population	01-02	*	<LOD	<LOD	.610 (.410-.780)	.890 (.710-1.32)	3013
Total population	03-04	*	<LOD	<LOD	<LOD	.290 (.160-.510)	2494
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2420
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2585
Age 6-11 years	99-00	*	.090 (<LOD-.160)	.190 (.130-.280)	.430 (.300-.650)	.850 (.470-1.00)	471
Age 6-11 years	01-02	*	<LOD	<LOD	.630 (.380-.870)	.940 (.690-1.42)	576
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	.540 (<LOD-.650)	310
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	317
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	383
Age 12-19 years	99-00	*	.080 (<LOD-.180)	.260 (.120-.350)	.640 (.420-.840)	.930 (.720-1.30)	664
Age 12-19 years	01-02	*	<LOD	<LOD	.560 (.330-.730)	.820 (.610-.990)	822
Age 12-19 years	03-04	*	<LOD	<LOD	.150 (<LOD-.350)	.450 (.370-.570)	717
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	660
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	390
Age 20-59 years	99-00	*	.090 (<LOD-.130)	.210 (.130-.290)	.450 (.360-.640)	.900 (.610-1.10)	814
Age 20-59 years	01-02	*	<LOD	<LOD	.620 (.430-.760)	.830 (.700-1.32)	1118
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	.220 (<LOD-.580)	938
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1006
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1176
Age 60+ years	01-02	*	<LOD	<LOD	.630 (.360-1.08)	1.11 (.610-1.41)	497
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	.150 (<LOD-.550)	529
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	437
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	636
Males	99-00	*	.090 (<LOD-.150)	.220 (.140-.310)	.490 (.380-.680)	.870 (.680-1.10)	952
Males	01-02	*	<LOD	<LOD	.600 (.380-.740)	.780 (.700-1.03)	1420
Males	03-04	*	<LOD	<LOD	<LOD	.390 (.160-.540)	1221
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1142
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1290
Females	99-00	*	.090 (<LOD-.130)	.190 (.110-.310)	.460 (.320-.840)	.870 (.440-1.40)	997
Females	01-02	*	<LOD	<LOD	.660 (.460-.880)	1.03 (.700-1.47)	1593
Females	03-04	*	<LOD	<LOD	<LOD	.230 (<LOD-.600)	1273
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1278
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1295

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.05, 0.1, 0.1, 0.39,and 0.39 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Diethyldithiophosphate (DEDTP) (1999 – 2008)

CAS Number 298-06-6

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.130 (.099-.171)	.100 (.050-.200)	.310 (.230-.390)	.650 (.530-.860)	1.10 (.860-1.60)	672
Mexican Americans	01-02	*	<LOD	.200 (<LOD-.520)	.720 (.410-1.12)	1.12 (.700-1.58)	763
Mexican Americans	03-04	*	<LOD	<LOD	.110 (<LOD-.680)	.680 (.180-1.15)	610
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	665
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	495
Non-Hispanic blacks	99-00	.117 (.084-.162)	.090 (<LOD-.230)	.270 (.140-.410)	.560 (.400-.830)	.870 (.650-1.20)	509
Non-Hispanic blacks	01-02	*	<LOD	<LOD	.620 (.440-.800)	.810 (.670-.930)	754
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	.250 (.110-.540)	631
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	660
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	574
Non-Hispanic whites	99-00	*	.080 (<LOD-.160)	.190 (.120-.290)	.450 (.310-.720)	.870 (.510-1.30)	595
Non-Hispanic whites	01-02	*	<LOD	<LOD	.610 (.350-.800)	.910 (.660-1.41)	1252
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	.240 (.120-.540)	1061
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	917
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1087

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.05, 0.1, 0.1, 0.39,and 0.39 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Diethyldithiophosphate (DEDTP) (creatinine corrected) (1999 – 2008)

CAS Number 298-06-6

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	.070 (<LOD-.110)	.200 (.140-.290)	.550 (.390-.700)	.860 (.670-1.14)	1949
Total population	01-02	*	<LOD	<LOD	.604 (.389-.783)	1.08 (.768-1.52)	3012
Total population	03-04	*	<LOD	<LOD	<LOD	.412 (.350-.507)	2491
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2419
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2583
Age 6-11 years	99-00	*	.100 (<LOD-.140)	.190 (.150-.270)	.570 (.410-.760)	1.03 (.570-1.58)	471
Age 6-11 years	01-02	*	<LOD	<LOD	.778 (.606-1.12)	1.36 (1.02-1.86)	576
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	.475 (<LOD-.967)	310
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	317
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	383
Age 12-19 years	99-00	*	.050 (<LOD-.080)	.170 (.100-.220)	.440 (.230-.730)	.730 (.380-1.09)	664
Age 12-19 years	01-02	*	<LOD	<LOD	.359 (.250-.537)	.667 (.375-.987)	821
Age 12-19 years	03-04	*	<LOD	<LOD	.226 (<LOD-.259)	.333 (.241-.600)	715
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	660
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	388
Age 20-59 years	99-00	*	.080 (<LOD-.110)	.210 (.140-.310)	.550 (.360-.730)	.860 (.650-1.20)	814
Age 20-59 years	01-02	*	<LOD	<LOD	.583 (.379-.740)	1.03 (.699-1.60)	1118
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	.400 (<LOD-.537)	937
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1005
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1176
Age 60+ years	01-02	*	<LOD	<LOD	.833 (.368-1.28)	1.44 (.853-2.61)	497
Age 60+ years	03-04	*	<LOD	<LOD	<LOD	.438 (<LOD-.700)	529
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	437
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	636
Males	99-00	*	.070 (<LOD-.110)	.190 (.140-.230)	.410 (.340-.500)	.720 (.520-.940)	952
Males	01-02	*	<LOD	<LOD	.389 (.309-.658)	.768 (.637-1.01)	1420
Males	03-04	*	<LOD	<LOD	<LOD	.339 (.269-.412)	1220
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1142
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1289
Females	99-00	*	.090 (<LOD-.120)	.220 (.140-.360)	.670 (.410-.870)	.890 (.660-1.62)	997
Females	01-02	*	<LOD	<LOD	.733 (.527-1.03)	1.27 (.868-2.37)	1592
Females	03-04	*	<LOD	<LOD	<LOD	.500 (<LOD-.604)	1271
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1277
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1294

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Diethyldithiophosphate (DEDTP) (creatinine corrected) (1999 – 2008)

CAS Number 298-06-6

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.116 (.084-.161)	.090 (.060-.170)	.300 (.190-.410)	.810 (.570-.990)	1.19 (.860-2.66)	672
Mexican Americans	01-02	*	<LOD	.292 (<LOD-.444)	.845 (.487-1.24)	1.29 (.901-1.67)	763
Mexican Americans	03-04	*	<LOD	<LOD	.318 (<LOD-.467)	.579 (.404-.940)	609
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	665
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	494
Non-Hispanic blacks	99-00	.080 (.057-.111)	.070 (<LOD-.110)	.170 (.110-.280)	.450 (.300-.580)	.700 (.500-1.02)	509
Non-Hispanic blacks	01-02	*	<LOD	<LOD	.456 (.362-.593)	.769 (.541-1.07)	753
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	.269 (.196-.368)	630
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	659
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	573
Non-Hispanic whites	99-00	*	.070 (<LOD-.120)	.200 (.140-.310)	.560 (.380-.730)	.880 (.600-1.38)	595
Non-Hispanic whites	01-02	*	<LOD	<LOD	.583 (.368-.868)	1.14 (.682-1.70)	1252
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	.389 (.333-.523)	1060
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	917
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1087

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Dimethyldithiophosphate (DMDTP) (1999 – 2008)

CAS Number 756-80-9

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	2.30 (1.30-3.90)	13.0 (5.00-17.0)	19.0 (17.0-38.0)	1949
Total population	01-02	*	<LOD	.920 (.330-1.30)	2.61 (2.04-3.45)	5.96 (4.41-7.90)	3015
Total population	03-04	*	<LOD	.700 (.570-.920)	2.54 (1.64-3.87)	5.74 (3.63-9.85)	2458
Total population	05-06	*	<LOD	<LOD	1.96 (1.41-2.59)	3.87 (2.77-6.09)	2635
Total population	07-08	*	<LOD	<LOD	2.37 (1.93-2.93)	5.60 (4.62-6.79)	2571
Age 6-11 years	99-00	.691 (.425-1.12)	.740 (.080-1.80)	4.30 (2.40-8.60)	17.0 (6.90-37.0)	32.0 (17.0-44.0)	471
Age 6-11 years	01-02	*	<LOD	1.30 (.750-2.11)	3.53 (2.20-4.50)	7.33 (4.32-9.74)	575
Age 6-11 years	03-04	*	<LOD	.900 (.620-1.14)	2.94 (1.14-5.48)	5.48 (2.94-8.53)	306
Age 6-11 years	05-06	*	<LOD	<LOD	1.84 (.540-3.35)	3.69 (2.67-9.95)	350
Age 6-11 years	07-08	*	<LOD	.950 (<LOD-1.48)	3.80 (2.45-5.70)	6.66 (5.11-9.64)	379
Age 12-19 years	99-00	*	<LOD	2.30 (1.40-4.50)	13.0 (5.40-20.0)	20.0 (17.0-38.0)	664
Age 12-19 years	01-02	*	<LOD	.830 (.400-1.14)	2.52 (1.85-3.07)	4.63 (3.59-5.83)	821
Age 12-19 years	03-04	*	<LOD	.580 (.350-.770)	1.46 (1.12-1.99)	2.67 (1.82-4.49)	699
Age 12-19 years	05-06	*	<LOD	<LOD	2.78 (1.51-3.76)	5.98 (3.03-11.5)	718
Age 12-19 years	07-08	*	<LOD	<LOD	1.45 (.810-2.03)	2.45 (1.65-3.93)	384
Age 20-59 years	99-00	*	<LOD	2.10 (.840-3.60)	11.0 (4.00-17.0)	17.0 (7.70-50.0)	814
Age 20-59 years	01-02	*	<LOD	.840 (<LOD-1.31)	2.32 (1.70-3.40)	4.90 (2.90-9.52)	1122
Age 20-59 years	03-04	*	<LOD	.610 (.350-.800)	2.00 (1.36-3.63)	5.07 (3.62-8.62)	925
Age 20-59 years	05-06	*	<LOD	<LOD	1.71 (.880-2.36)	3.60 (2.40-5.18)	1092
Age 20-59 years	07-08	*	<LOD	<LOD	1.84 (1.34-2.32)	4.27 (2.84-6.79)	1172
Age 60+ years	01-02	*	<LOD	1.02 (.540-1.37)	3.57 (2.58-5.96)	8.16 (5.04-16.1)	497
Age 60+ years	03-04	*	<LOD	1.39 (.720-2.34)	4.09 (2.35-13.4)	13.4 (3.36-33.3)	528
Age 60+ years	05-06	*	<LOD	<LOD	2.13 (1.67-3.34)	5.12 (2.62-8.17)	475
Age 60+ years	07-08	*	<LOD	1.03 (<LOD-1.99)	5.47 (4.31-6.33)	8.89 (6.33-12.2)	636
Males	99-00	*	.110 (<LOD-.610)	2.30 (1.20-4.90)	16.0 (5.70-17.0)	19.0 (17.0-38.0)	952
Males	01-02	*	<LOD	.890 (.370-1.28)	2.59 (1.88-3.41)	5.96 (4.47-7.86)	1420
Males	03-04	*	<LOD	.680 (.360-1.01)	2.26 (1.14-4.45)	5.30 (3.20-10.2)	1209
Males	05-06	*	<LOD	<LOD	1.96 (.980-3.04)	4.33 (2.42-7.65)	1246
Males	07-08	*	<LOD	<LOD	2.38 (1.76-3.70)	5.70 (3.80-10.0)	1278
Females	99-00	*	<LOD	2.20 (1.10-3.90)	11.0 (4.20-17.0)	20.0 (13.0-40.0)	997
Females	01-02	*	<LOD	.960 (.250-1.37)	2.61 (1.96-3.68)	5.72 (3.79-9.87)	1595
Females	03-04	*	<LOD	.730 (.590-.970)	2.83 (1.99-3.96)	6.15 (3.91-11.3)	1249
Females	05-06	*	<LOD	<LOD	1.96 (1.49-2.59)	3.75 (2.90-4.60)	1389
Females	07-08	*	<LOD	<LOD	2.34 (1.79-3.12)	5.54 (4.06-6.69)	1293

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.08, 0.1, 0.1, 0.51,and 0.51 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Dimethyldithiophosphate (DMDTP) (1999 – 2008)

CAS Number 756-80-9

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	.250 (<LOD-.870)	1.90 (1.10-3.00)	5.80 (4.10-9.70)	12.0 (5.90-28.0)	672
Mexican Americans	01-02	*	<LOD	1.08 (.780-1.38)	2.80 (2.19-3.54)	4.93 (3.73-7.42)	763
Mexican Americans	03-04	*	<LOD	.730 (.360-1.21)	2.11 (1.38-3.15)	5.26 (2.31-6.94)	610
Mexican Americans	05-06	*	<LOD	<LOD	2.04 (1.62-2.96)	5.12 (2.98-10.7)	695
Mexican Americans	07-08	*	<LOD	<LOD	1.63 (1.18-2.12)	3.88 (2.12-6.07)	491
Non-Hispanic blacks	99-00	*	.330 (<LOD-1.20)	3.20 (1.40-7.00)	14.0 (5.70-30.0)	19.0 (17.0-39.0)	509
Non-Hispanic blacks	01-02	*	<LOD	.640 (<LOD-1.41)	1.96 (1.36-4.15)	4.42 (2.68-8.38)	755
Non-Hispanic blacks	03-04	*	<LOD	.590 (.310-.730)	1.77 (1.05-3.33)	4.77 (2.75-7.80)	604
Non-Hispanic blacks	05-06	*	<LOD	<LOD	2.15 (1.66-2.82)	5.45 (2.82-8.39)	723
Non-Hispanic blacks	07-08	*	<LOD	<LOD	2.04 (1.54-2.65)	4.27 (2.66-7.79)	568
Non-Hispanic whites	99-00	*	<LOD	2.00 (.800-4.00)	13.0 (3.90-20.0)	20.0 (16.0-40.0)	595
Non-Hispanic whites	01-02	*	<LOD	1.01 (.180-1.43)	2.74 (1.94-4.18)	6.72 (4.88-8.54)	1252
Non-Hispanic whites	03-04	*	<LOD	.740 (.540-1.04)	2.66 (1.55-4.56)	5.89 (3.63-11.6)	1056
Non-Hispanic whites	05-06	*	<LOD	<LOD	1.93 (1.23-2.65)	3.60 (2.71-5.51)	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	2.32 (1.75-3.28)	5.60 (4.46-6.88)	1087

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.08, 0.1, 0.1, 0.51,and 0.51 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Dimethyldithiophosphate (DMDTP) (creatinine corrected) (1999 – 2008)

CAS Number 756-80-9

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	1.88 (.970-3.86)	10.1 (5.31-18.3)	21.7 (12.8-33.7)	1949
Total population	01-02	*	<LOD	.717 (.389-1.12)	2.80 (2.21-3.96)	6.84 (4.96-8.09)	3014
Total population	03-04	*	<LOD	.572 (.411-.772)	2.62 (1.72-4.12)	6.40 (3.85-9.75)	2455
Total population	05-06	*	<LOD	<LOD	2.18 (1.64-3.00)	4.62 (3.23-7.12)	2634
Total population	07-08	*	<LOD	<LOD	2.63 (2.17-3.08)	6.12 (4.15-8.24)	2569
Age 6-11 years	99-00	.748 (.474-1.18)	.790 (.190-1.60)	4.07 (2.31-7.18)	16.2 (8.22-27.0)	30.8 (20.2-38.9)	471
Age 6-11 years	01-02	*	<LOD	1.36 (.805-2.31)	4.10 (2.67-6.24)	6.98 (4.40-12.8)	575
Age 6-11 years	03-04	*	<LOD	.962 (.584-1.57)	3.39 (2.29-6.15)	7.12 (4.48-7.55)	306
Age 6-11 years	05-06	*	<LOD	<LOD	2.57 (1.39-4.14)	4.50 (3.17-9.35)	350
Age 6-11 years	07-08	*	<LOD	1.50 (<LOD-1.95)	4.35 (3.05-6.59)	8.01 (4.75-12.9)	379
Age 12-19 years	99-00	*	<LOD	1.52 (.620-3.47)	9.48 (4.04-16.8)	21.5 (9.48-42.3)	664
Age 12-19 years	01-02	*	<LOD	.543 (.306-.773)	2.02 (1.49-2.40)	3.13 (2.51-4.67)	820
Age 12-19 years	03-04	*	<LOD	.361 (.241-.584)	1.02 (.628-1.57)	2.46 (1.33-3.39)	697
Age 12-19 years	05-06	*	<LOD	<LOD	2.05 (1.16-3.56)	4.27 (2.30-8.66)	718
Age 12-19 years	07-08	*	<LOD	<LOD	1.16 (.782-1.85)	1.94 (1.39-3.79)	382
Age 20-59 years	99-00	*	<LOD	1.71 (.850-3.56)	8.50 (4.00-19.1)	20.5 (8.57-40.7)	814
Age 20-59 years	01-02	*	<LOD	.605 (<LOD-1.05)	2.56 (1.64-4.03)	6.33 (3.96-8.17)	1122
Age 20-59 years	03-04	*	<LOD	.451 (.340-.583)	2.17 (1.10-3.64)	5.71 (2.47-10.1)	924
Age 20-59 years	05-06	*	<LOD	<LOD	1.90 (1.44-2.57)	3.69 (2.37-7.07)	1091
Age 20-59 years	07-08	*	<LOD	<LOD	1.99 (1.80-2.32)	4.15 (2.77-6.77)	1172
Age 60+ years	01-02	*	<LOD	1.10 (.631-1.86)	4.89 (3.36-7.82)	13.4 (6.98-19.8)	497
Age 60+ years	03-04	*	<LOD	1.55 (.765-2.48)	6.52 (2.73-13.3)	13.3 (5.44-23.0)	528
Age 60+ years	05-06	*	<LOD	<LOD	3.22 (2.25-4.54)	6.53 (3.70-10.4)	475
Age 60+ years	07-08	*	<LOD	1.72 (<LOD-2.58)	5.92 (3.29-8.44)	10.3 (7.25-18.4)	636
Males	99-00	*	.150 (<LOD-.370)	1.79 (.840-3.97)	11.0 (4.62-17.4)	18.1 (7.51-44.7)	952
Males	01-02	*	<LOD	.628 (.333-.850)	2.39 (1.75-3.13)	5.37 (4.23-7.29)	1420
Males	03-04	*	<LOD	.467 (.280-.743)	2.03 (.990-3.56)	5.38 (2.29-8.25)	1208
Males	05-06	*	<LOD	<LOD	1.80 (1.14-3.17)	4.14 (2.18-7.15)	1246
Males	07-08	*	<LOD	<LOD	1.89 (1.44-2.71)	4.92 (2.77-8.44)	1277
Females	99-00	*	<LOD	2.06 (.940-4.00)	9.30 (4.96-25.5)	27.0 (9.66-47.5)	997
Females	01-02	*	<LOD	.831 (.412-1.50)	3.35 (2.50-4.96)	7.81 (5.29-11.9)	1594
Females	03-04	*	<LOD	.680 (.538-.887)	3.59 (2.41-5.18)	7.12 (4.13-13.1)	1247
Females	05-06	*	<LOD	<LOD	2.40 (2.00-3.18)	5.25 (3.18-7.60)	1388
Females	07-08	*	<LOD	<LOD	3.05 (2.44-4.00)	7.18 (4.22-11.1)	1292

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Urinary Dimethyldithiophosphate (DMDTP) (creatinine corrected) (1999 – 2008)

CAS Number 756-80-9

Metabolite of Several Organophosphorus Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	.270 (<LOD-.660)	1.35 (.860-2.53)	6.55 (3.83-11.8)	16.7 (6.25-38.8)	672
Mexican Americans	01-02	*	<LOD	.833 (.589-1.15)	2.72 (2.05-3.32)	5.16 (3.69-7.83)	763
Mexican Americans	03-04	*	<LOD	.651 (.318-1.09)	2.04 (1.10-3.74)	4.50 (2.17-5.88)	609
Mexican Americans	05-06	*	<LOD	<LOD	2.40 (1.29-4.00)	5.14 (3.45-10.5)	695
Mexican Americans	07-08	*	<LOD	<LOD	1.97 (1.50-2.77)	4.30 (2.77-6.92)	490
Non-Hispanic blacks	99-00	*	.250 (<LOD-.700)	2.40 (.690-5.44)	9.41 (4.81-17.8)	17.9 (11.5-40.7)	509
Non-Hispanic blacks	01-02	*	<LOD	.403 (<LOD-.847)	1.69 (.793-3.50)	3.50 (2.19-5.91)	754
Non-Hispanic blacks	03-04	*	<LOD	.343 (.242-.477)	1.07 (.727-1.84)	3.21 (1.45-6.07)	603
Non-Hispanic blacks	05-06	*	<LOD	<LOD	1.80 (.990-3.89)	4.95 (2.93-5.59)	722
Non-Hispanic blacks	07-08	*	<LOD	<LOD	1.79 (1.38-2.31)	4.27 (2.44-6.16)	567
Non-Hispanic whites	99-00	*	<LOD	1.77 (.780-4.02)	11.4 (4.07-21.5)	21.5 (11.4-34.8)	595
Non-Hispanic whites	01-02	*	<LOD	.787 (.389-1.37)	3.42 (2.48-5.24)	7.75 (5.80-9.47)	1252
Non-Hispanic whites	03-04	*	<LOD	.631 (.412-.897)	3.06 (1.75-5.84)	6.74 (4.42-12.0)	1055
Non-Hispanic whites	05-06	*	<LOD	<LOD	2.16 (1.64-3.00)	4.14 (2.91-7.59)	1007
Non-Hispanic whites	07-08	*	<LOD	<LOD	2.74 (2.12-3.58)	5.92 (4.00-9.71)	1087

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OP-DPM_BiomonitoringSummary.html

Pyrethroid Metabolites

Urinary trans-3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid (trans-DCCA) (1999 – 2010)

CAS Number 55701-05-8

Metabolite of Cyfluthrin, trans-Cypermethrin, and trans-Permethrin

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	.560 (.480-.700)	1.40 (1.17-1.77)	3.42 (2.39-5.56)	1976
Total population	01-02	*	<LOD	.430 (<LOD-.560)	1.18 (.930-1.64)	2.60 (1.85-3.58)	3033
Total population	07-08	*	<LOD	<LOD	2.23 (1.58-3.30)	5.23 (3.87-7.05)	2576
Total population	09-10	*	<LOD	<LOD	1.29 (.810-1.70)	5.42 (3.26-6.80)	2747
Age 6-11 years	99-00	*	<LOD	.970 (.700-1.66)	2.91 (1.76-4.19)	4.19 (2.97-11.7)	478
Age 6-11 years	01-02	*	<LOD	.470 (<LOD-.760)	1.39 (1.03-1.68)	2.50 (1.55-3.54)	576
Age 6-11 years	07-08	*	<LOD	<LOD	1.50 (.740-3.01)	4.01 (1.81-10.4)	384
Age 6-11 years	09-10	*	<LOD	<LOD	2.27 (<LOD-5.65)	8.64 (2.27-26.8)	386
Age 12-19 years	99-00	*	<LOD	.710 (.520-.860)	2.07 (1.25-3.42)	4.28 (2.12-6.23)	675
Age 12-19 years	01-02	*	<LOD	.490 (<LOD-.670)	1.20 (.800-1.60)	2.01 (1.49-3.77)	826
Age 12-19 years	07-08	*	<LOD	<LOD	2.30 (1.13-3.73)	5.08 (2.36-7.61)	388
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	1.78 (1.05-2.50)	401
Age 20-59 years	99-00	*	<LOD	.500 (.400-.620)	1.17 (.910-1.68)	2.94 (1.49-5.56)	823
Age 20-59 years	01-02	*	<LOD	<LOD	1.17 (.850-1.85)	2.56 (1.64-4.66)	1123
Age 20-59 years	07-08	*	<LOD	<LOD	2.15 (1.38-3.55)	5.36 (3.51-7.28)	1174
Age 20-59 years	09-10	*	<LOD	<LOD	1.13 (<LOD-1.83)	5.88 (3.24-7.71)	1309
Age 60+ years	01-02	*	<LOD	.460 (<LOD-.630)	1.13 (.760-2.44)	4.27 (1.20-6.49)	508
Age 60+ years	07-08	*	<LOD	<LOD	2.33 (.850-4.26)	4.87 (2.75-9.01)	630
Age 60+ years	09-10	*	<LOD	<LOD	1.66 (1.02-2.68)	6.09 (3.05-10.4)	651
Males	99-00	*	<LOD	.560 (.500-.670)	1.28 (1.11-1.63)	2.25 (1.55-5.10)	961
Males	01-02	*	<LOD	.420 (<LOD-.500)	1.12 (.860-1.58)	2.44 (1.69-3.70)	1419
Males	07-08	*	<LOD	<LOD	2.20 (1.20-3.76)	5.29 (3.12-7.61)	1289
Males	09-10	*	<LOD	<LOD	1.12 (<LOD-1.83)	4.98 (2.88-7.03)	1343
Females	99-00	*	<LOD	.550 (.410-.820)	1.77 (1.07-3.08)	4.19 (3.08-6.81)	1015
Females	01-02	*	<LOD	.440 (<LOD-.630)	1.23 (.910-1.98)	2.62 (1.90-3.58)	1614
Females	07-08	*	<LOD	<LOD	2.27 (1.49-3.51)	5.08 (3.55-6.48)	1287
Females	09-10	*	<LOD	<LOD	1.33 (<LOD-2.12)	5.51 (2.87-9.82)	1404

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 07-08, and 09-10 are 0.4, 0.4, 0.6, and 0.6 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cyfluthrin_Cypermethrin_Permethrin_BiomonitoringSummary.html

Urinary trans-3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid (trans-DCCA) (1999 – 2010)

CAS Number 55701-05-8

Metabolite of Cyfluthrin, trans-Cypermethrin, and trans-Permethrin

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	.470 (.410-.530)	1.23 (.830-1.60)	1.87 (1.49-3.35)	691
Mexican Americans	01-02	*	<LOD	.410 (<LOD-.510)	.860 (.680-1.14)	1.57 (1.08-2.01)	767
Mexican Americans	07-08	*	<LOD	<LOD	1.37 (<LOD-1.99)	2.89 (1.63-4.19)	495
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	2.32 (1.06-3.76)	602
Non-Hispanic blacks	99-00	*	<LOD	.780 (.490-1.13)	1.84 (1.08-4.69)	4.69 (1.41-14.5)	518
Non-Hispanic blacks	01-02	*	<LOD	.590 (.490-.740)	1.26 (1.05-1.70)	2.25 (1.54-3.32)	764
Non-Hispanic blacks	07-08	*	<LOD	<LOD	2.24 (1.26-3.30)	4.25 (3.38-8.10)	569
Non-Hispanic blacks	09-10	*	<LOD	<LOD	1.78 (<LOD-4.06)	5.14 (2.59-8.69)	504
Non-Hispanic whites	99-00	*	<LOD	.560 (.460-.730)	1.41 (1.14-2.14)	3.89 (2.14-6.43)	595
Non-Hispanic whites	01-02	*	<LOD	.410 (<LOD-.580)	1.18 (.850-1.85)	2.64 (1.85-4.27)	1278
Non-Hispanic whites	07-08	*	<LOD	<LOD	2.24 (1.38-3.76)	5.23 (3.96-6.48)	1082
Non-Hispanic whites	09-10	*	<LOD	<LOD	1.29 (.690-1.88)	6.13 (3.24-9.30)	1200

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 07-08, and 09-10 are 0.4, 0.4, 0.6, and 0.6 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cyfluthrin_Cypermethrin_Permethrin_BiomonitoringSummary.html

Urinary trans-3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid (trans-DCCA) (creatinine corrected) (1999 – 2010)

CAS Number 55701-05-8

Metabolite of Cyfluthrin, trans-Cypermethrin, and trans-Permethrin

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	.700 (.609-.778)	1.56 (1.33-1.87)	2.65 (2.15-3.89)	1976
Total population	01-02	*	<LOD	.737 (<LOD-.796)	1.47 (1.32-1.87)	2.62 (2.31-3.11)	3031
Total population	07-08	*	<LOD	<LOD	2.90 (2.21-3.81)	5.15 (4.20-6.40)	2574
Total population	09-10	*	<LOD	<LOD	2.10 (1.91-2.47)	4.37 (3.73-5.83)	2747
Age 6-11 years	99-00	*	<LOD	1.31 (.718-1.74)	2.37 (1.56-5.07)	5.60 (1.91-11.3)	478
Age 6-11 years	01-02	*	<LOD	.903 (<LOD-1.13)	2.16 (1.40-2.61)	2.87 (2.34-3.44)	576
Age 6-11 years	07-08	*	<LOD	<LOD	2.46 (2.07-3.46)	4.18 (2.47-9.69)	384
Age 6-11 years	09-10	*	<LOD	<LOD	2.61 (<LOD-5.87)	6.85 (2.61-38.8)	386
Age 12-19 years	99-00	*	<LOD	.525 (.438-.727)	1.42 (.824-2.19)	2.19 (1.34-4.31)	675
Age 12-19 years	01-02	*	<LOD	.528 (<LOD-.657)	.966 (.800-1.29)	1.57 (1.07-2.60)	825
Age 12-19 years	07-08	*	<LOD	<LOD	2.06 (1.16-4.97)	5.51 (2.06-7.15)	386
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	1.83 (1.25-2.75)	401
Age 20-59 years	99-00	*	<LOD	.700 (.571-.769)	1.33 (1.12-1.87)	2.39 (1.87-3.36)	823
Age 20-59 years	01-02	*	<LOD	<LOD	1.47 (1.22-2.00)	2.55 (2.07-3.11)	1123
Age 20-59 years	07-08	*	<LOD	<LOD	2.87 (2.15-3.82)	5.09 (3.83-6.81)	1174
Age 20-59 years	09-10	*	<LOD	<LOD	2.10 (<LOD-2.63)	4.37 (3.63-6.16)	1309
Age 60+ years	01-02	*	<LOD	.826 (<LOD-.933)	2.00 (1.22-2.80)	3.47 (2.15-6.57)	507
Age 60+ years	07-08	*	<LOD	<LOD	3.50 (2.21-4.83)	5.85 (3.65-8.56)	630
Age 60+ years	09-10	*	<LOD	<LOD	2.56 (2.00-3.72)	6.04 (3.82-13.7)	651
Males	99-00	*	<LOD	.562 (.484-.667)	1.26 (1.07-1.42)	2.15 (1.47-2.74)	961
Males	01-02	*	<LOD	.529 (<LOD-.583)	1.09 (.966-1.35)	2.25 (1.57-2.57)	1419
Males	07-08	*	<LOD	<LOD	2.10 (1.36-3.47)	4.85 (3.20-5.95)	1288
Males	09-10	*	<LOD	<LOD	1.86 (<LOD-2.25)	3.98 (2.63-6.04)	1343
Females	99-00	*	<LOD	.875 (.718-1.11)	1.91 (1.48-2.39)	3.67 (2.30-6.28)	1015
Females	01-02	*	<LOD	.903 (<LOD-1.00)	1.90 (1.56-2.15)	3.03 (2.55-3.20)	1612
Females	07-08	*	<LOD	<LOD	3.50 (2.37-4.69)	6.23 (4.20-9.69)	1286
Females	09-10	*	<LOD	<LOD	2.48 (<LOD-2.95)	5.30 (3.54-8.27)	1404

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cyfluthrin_Cypermethrin_Permethrin_BiomonitoringSummary.html

Urinary trans-3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid (trans-DCCA) (creatinine corrected) (1999 – 2010)

CAS Number 55701-05-8

Metabolite of Cyfluthrin, trans-Cypermethrin, and trans-Permethrin

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	.583 (.500-.745)	1.35 (1.02-1.65)	2.00 (1.56-2.80)	691
Mexican Americans	01-02	*	<LOD	.573 (<LOD-.651)	1.08 (.909-1.22)	1.87 (1.39-2.15)	767
Mexican Americans	07-08	*	<LOD	<LOD	1.87 (<LOD-2.94)	3.20 (2.07-4.16)	494
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	2.57 (2.02-3.50)	602
Non-Hispanic blacks	99-00	*	<LOD	.571 (.467-.739)	1.70 (.853-3.13)	3.36 (1.87-8.91)	518
Non-Hispanic blacks	01-02	*	<LOD	.490 (.433-.571)	1.17 (.848-1.56)	2.37 (1.40-2.89)	763
Non-Hispanic blacks	07-08	*	<LOD	<LOD	2.00 (1.56-2.63)	4.85 (2.31-8.30)	568
Non-Hispanic blacks	09-10	*	<LOD	<LOD	1.75 (<LOD-2.25)	3.50 (2.13-6.13)	504
Non-Hispanic whites	99-00	*	<LOD	.757 (.695-.848)	1.64 (1.33-2.00)	3.31 (2.00-5.60)	595
Non-Hispanic whites	01-02	*	<LOD	.778 (<LOD-.848)	1.56 (1.34-2.00)	2.63 (2.30-3.16)	1277
Non-Hispanic whites	07-08	*	<LOD	<LOD	3.10 (2.21-4.20)	5.34 (4.46-7.21)	1082
Non-Hispanic whites	09-10	*	<LOD	<LOD	2.46 (1.91-3.00)	4.91 (3.73-7.83)	1200

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cyfluthrin_Cypermethrin_Permethrin_BiomonitoringSummary.html

Urinary cis-3-(2,2-Dibromovinyl)-2,2-dimethylcyclopropane carboxylic acid (cis-DBCA) (1999 – 2010)

CAS Number 55701-05-8

Metabolite of Deltamethrin

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1698
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	3048
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2583
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2746
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	<LOD	415
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	580
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	384
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	386
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	570
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	831
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	389
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	401
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	<LOD	713
Age 20-59 years	01-02	*	<LOD	<LOD	<LOD	<LOD	1128
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1177
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1308
Age 60+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	509
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	633
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	651
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	818
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1429
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1290
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1343
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	880
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1619
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1293
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1403
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	578
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	767
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	500
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	602
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	445
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	776
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	572
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	503
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	527
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1281
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1082
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1200

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 07-08, and 09-10 are 0.1, 0.1, 0.5, and 0.5 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Deltamethrin_BiomonitoringSummary.html

Urinary cis-3-(2,2-Dibromovinyl)-2,2-dimethylcyclopropane carboxylic acid (cis-DBCA) (creatinine corrected) (1999 – 2010)

CAS Number 55701-05-8

Metabolite of Deltamethrin

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1698
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	3046
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2581
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2746
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	<LOD	415
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	580
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	384
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	386
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	570
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	830
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	387
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	401
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	<LOD	713
Age 20-59 years	01-02	*	<LOD	<LOD	<LOD	<LOD	1128
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1177
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1308
Age 60+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	508
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	633
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	651
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	818
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1429
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1289
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1343
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	880
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1617
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1292
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1403
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	578
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	767
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	499
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	602
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	445
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	775
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	571
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	503
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	527
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1280
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1082
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1200

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Deltamethrin_BiomonitoringSummary.html

Urinary 4-Fluoro-3-phenoxybenzoic acid (1999 – 2010)

CAS Number 77279-89-1

Metabolite of Cyfluthrin

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1949
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	3048
Total population	07-08	*	<LOD	<LOD	<LOD	.140 (<LOD-.210)	2588
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2747
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	<LOD	473
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	580
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	.120 (<LOD-.160)	385
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	386
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	662
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	831
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	390
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	401
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	<LOD	814
Age 20-59 years	01-02	*	<LOD	<LOD	<LOD	<LOD	1128
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	.170 (<LOD-.290)	1180
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1309
Age 60+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	509
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	.120 (<LOD-.260)	633
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	.220 (<LOD-.720)	651
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	950
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1429
Males	07-08	*	<LOD	<LOD	<LOD	.160 (<LOD-.270)	1293
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1343
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	999
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1619
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1295
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1404
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	666
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	767
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	.160 (<LOD-.240)	500
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	602
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	517
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	776
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	.140 (<LOD-.250)	574
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	.250 (<LOD-1.02)	504
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	594
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1281
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	.140 (<LOD-.210)	1084
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1200

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 07-08, and 09-10 are 0.2, 0.2, 0.1, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cyfluthrin_BiomonitoringSummary.html

Urinary 4-Fluoro-3-phenoxybenzoic acid (creatinine corrected) (1999 – 2010)

CAS Number 77279-89-1

Metabolite of Cyfluthrin

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1949
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	3046
Total population	07-08	*	<LOD	<LOD	<LOD	.350 (<LOD-.412)	2586
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2747
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	<LOD	473
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	580
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	.374 (<LOD-.412)	385
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	386
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	662
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	830
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	388
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	401
Age 20-59 years	99-00	*	<LOD	<LOD	<LOD	<LOD	814
Age 20-59 years	01-02	*	<LOD	<LOD	<LOD	<LOD	1128
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	.368 (<LOD-.467)	1180
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1309
Age 60+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	508
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	.389 (<LOD-.476)	633
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	.467 (<LOD-.700)	651
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	950
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1429
Males	07-08	*	<LOD	<LOD	<LOD	.233 (<LOD-.280)	1292
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1343
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	999
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1617
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1294
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1404
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	666
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	767
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	.333 (<LOD-.414)	499
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	602
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	517
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	775
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	.235 (<LOD-.292)	573
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	.333 (<LOD-.788)	504
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	594
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1280
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	.368 (<LOD-.438)	1084
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1200

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cyfluthrin_BiomonitoringSummary.html

Urinary 3-Phenoxybenzoic acid (1999 – 2010)

CAS Number 3739-38-6

Metabolite of Cypermethrin, Deltamethrin, and Permethrin

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.292 (.247-.345)	.250 (.190-.320)	.730 (.590-.850)	1.75 (1.49-2.16)	4.33 (2.62-6.30)	1998
Total population	01-02	.318 (.275-.368)	.270 (.220-.340)	.700 (.570-.810)	1.73 (1.49-2.16)	3.54 (2.69-5.25)	3048
Total population	07-08	.401 (.350-.460)	.390 (.340-.450)	1.10 (.870-1.39)	3.22 (2.55-4.19)	6.63 (4.99-8.24)	2454
Total population	09-10	.418 (.389-.449)	.400 (.350-.460)	1.06 (.970-1.19)	3.12 (2.69-3.77)	6.50 (5.57-8.04)	2723
Age 6-11 years	99-00	.417 (.292-.595)	.320 (.210-.490)	1.12 (.700-1.60)	4.18 (2.02-6.54)	8.63 (3.89-71.1)	483
Age 6-11 years	01-02	.325 (.260-.406)	.300 (.200-.420)	.760 (.570-1.05)	1.81 (1.42-2.78)	3.38 (2.25-4.12)	580
Age 6-11 years	07-08	.397 (.339-.464)	.360 (.280-.410)	1.13 (.780-1.55)	3.40 (2.19-5.87)	9.88 (3.40-17.3)	371
Age 6-11 years	09-10	.549 (.389-.774)	.480 (.350-.700)	1.43 (1.00-2.15)	4.43 (2.80-8.04)	8.51 (4.12-39.4)	383
Age 12-19 years	99-00	.336 (.265-.427)	.290 (.200-.440)	.870 (.620-1.04)	1.93 (1.49-2.90)	4.33 (1.83-11.1)	682
Age 12-19 years	01-02	.353 (.288-.434)	.300 (.250-.390)	.800 (.560-1.13)	1.86 (1.48-2.35)	3.45 (2.14-6.69)	831
Age 12-19 years	07-08	.393 (.273-.565)	.360 (.200-.640)	1.15 (.720-1.83)	2.96 (2.11-6.73)	7.42 (2.96-12.1)	361
Age 12-19 years	09-10	.403 (.346-.470)	.410 (.310-.510)	.970 (.810-1.29)	2.25 (1.80-3.19)	3.92 (2.55-5.85)	398
Age 20-59 years	99-00	.267 (.227-.314)	.230 (.160-.300)	.640 (.510-.820)	1.49 (1.25-1.78)	3.21 (2.04-5.41)	833
Age 20-59 years	01-02	.314 (.271-.364)	.270 (.220-.340)	.670 (.530-.780)	1.65 (1.27-2.34)	3.25 (2.51-6.16)	1128
Age 20-59 years	07-08	.427 (.376-.485)	.420 (.370-.470)	1.11 (.900-1.39)	3.38 (2.42-4.99)	6.65 (4.86-9.69)	1110
Age 20-59 years	09-10	.416 (.382-.454)	.390 (.330-.470)	1.07 (.930-1.23)	3.50 (2.67-4.45)	6.95 (5.57-9.31)	1296
Age 60+ years	01-02	.303 (.233-.394)	.250 (.180-.350)	.690 (.490-1.10)	2.03 (1.45-3.68)	5.16 (2.77-6.61)	509
Age 60+ years	07-08	.335 (.270-.416)	.300 (.210-.470)	1.05 (.690-1.54)	2.68 (1.84-3.97)	4.70 (2.83-6.43)	612
Age 60+ years	09-10	.382 (.343-.427)	.360 (.290-.450)	.980 (.860-1.17)	2.56 (2.07-2.88)	5.93 (3.21-8.95)	646
Males	99-00	.273 (.226-.330)	.250 (.180-.330)	.710 (.570-.820)	1.49 (1.29-1.73)	2.41 (1.92-3.79)	974
Males	01-02	.326 (.281-.379)	.300 (.230-.360)	.690 (.570-.750)	1.60 (1.37-2.15)	3.23 (2.56-5.25)	1429
Males	07-08	.419 (.361-.487)	.430 (.370-.500)	1.11 (.830-1.48)	3.12 (2.15-4.58)	5.91 (4.19-7.56)	1215
Males	09-10	.421 (.391-.454)	.400 (.340-.450)	1.07 (.900-1.29)	3.21 (2.51-4.45)	6.50 (5.51-9.07)	1331
Females	99-00	.311 (.253-.384)	.250 (.190-.340)	.740 (.510-.990)	2.30 (1.63-3.36)	6.03 (3.27-11.8)	1024
Females	01-02	.311 (.260-.371)	.250 (.200-.320)	.730 (.550-.920)	1.81 (1.53-2.47)	3.76 (2.51-6.55)	1619
Females	07-08	.385 (.322-.462)	.360 (.290-.450)	1.07 (.820-1.42)	3.30 (2.32-5.30)	6.79 (5.15-9.69)	1239
Females	09-10	.415 (.366-.471)	.400 (.350-.480)	1.06 (.910-1.26)	2.92 (2.51-3.84)	6.50 (4.89-8.50)	1392
Mexican Americans	99-00	.260 (.230-.295)	.230 (.190-.270)	.600 (.430-.750)	1.35 (1.16-1.53)	2.18 (1.53-3.26)	697
Mexican Americans	01-02	.290 (.233-.361)	.260 (.190-.350)	.650 (.490-.810)	1.26 (.860-2.17)	2.65 (1.50-3.44)	767
Mexican Americans	07-08	.369 (.302-.451)	.400 (.280-.460)	.940 (.740-1.15)	2.27 (1.58-3.39)	3.62 (2.70-12.7)	476
Mexican Americans	09-10	.371 (.316-.436)	.380 (.300-.480)	.830 (.750-1.02)	1.93 (1.55-2.53)	3.70 (2.53-4.81)	596
Non-Hispanic blacks	99-00	.454 (.352-.586)	.450 (.350-.610)	1.13 (.750-1.46)	2.32 (1.45-5.35)	5.35 (2.32-21.1)	524
Non-Hispanic blacks	01-02	.507 (.430-.599)	.520 (.440-.630)	.980 (.840-1.20)	2.03 (1.72-2.52)	3.86 (3.05-5.84)	776
Non-Hispanic blacks	07-08	.420 (.353-.501)	.430 (.320-.540)	1.12 (.770-1.66)	3.11 (2.44-4.26)	6.13 (4.12-8.39)	533
Non-Hispanic blacks	09-10	.464 (.349-.616)	.500 (.360-.650)	1.29 (.790-1.94)	2.86 (2.07-4.59)	5.86 (3.42-8.50)	499
Non-Hispanic whites	99-00	.288 (.233-.355)	.240 (.160-.320)	.710 (.530-.850)	1.78 (1.41-3.05)	5.34 (2.62-8.43)	603
Non-Hispanic whites	01-02	.297 (.248-.355)	.240 (.190-.320)	.600 (.490-.780)	1.75 (1.46-2.34)	3.70 (2.52-6.16)	1281
Non-Hispanic whites	07-08	.394 (.329-.470)	.380 (.310-.450)	1.09 (.780-1.42)	3.38 (2.42-4.92)	6.53 (5.15-8.24)	1040
Non-Hispanic whites	09-10	.412 (.384-.441)	.370 (.330-.420)	1.06 (.920-1.19)	3.83 (2.82-4.46)	8.08 (5.93-11.1)	1192

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 07-08, and 09-10 are 0.1, 0.1, 0.1, and 0.1 respectively.

Biomonitoring Summary:
https://www.cdc.gov/biomonitoring/Cyhalothrin_Cypermethrin_Deltamethrin_Fenpropathrin_Permethrin_Tralomethrin_BiomonitoringSummary.html

Urinary 3-Phenoxybenzoic acid (creatinine corrected) (1999 – 2010)

CAS Number 3739-38-6

Metabolite of Cypermethrin, Deltamethrin, and Permethrin

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.261 (.224-.304)	.246 (.203-.280)	.550 (.459-.629)	1.40 (1.13-1.73)	3.19 (2.16-4.55)	1998
Total population	01-02	.324 (.284-.371)	.290 (.247-.336)	.600 (.512-.743)	1.54 (1.26-1.91)	3.35 (2.50-4.92)	3046
Total population	07-08	.426 (.374-.485)	.384 (.333-.450)	1.02 (.886-1.19)	3.08 (2.31-4.04)	5.83 (4.52-7.51)	2452
Total population	09-10	.438 (.409-.469)	.384 (.342-.432)	1.01 (.898-1.13)	2.88 (2.50-3.19)	5.44 (4.52-6.38)	2723
Age 6-11 years	99-00	.450 (.299-.677)	.371 (.241-.592)	1.13 (.733-1.62)	3.97 (1.75-8.07)	9.91 (2.43-64.0)	483
Age 6-11 years	01-02	.423 (.335-.534)	.383 (.296-.500)	.864 (.594-1.35)	2.21 (1.61-2.95)	3.32 (2.64-5.40)	580
Age 6-11 years	07-08	.511 (.431-.605)	.448 (.363-.545)	1.20 (.886-1.83)	3.81 (2.13-7.27)	9.86 (3.81-15.7)	371
Age 6-11 years	09-10	.744 (.537-1.03)	.667 (.503-.838)	1.87 (1.30-2.60)	4.73 (2.88-9.57)	10.2 (4.48-51.9)	383
Age 12-19 years	99-00	.227 (.178-.290)	.205 (.156-.269)	.486 (.379-.732)	1.37 (1.03-1.62)	2.52 (1.41-4.44)	682
Age 12-19 years	01-02	.274 (.229-.328)	.236 (.189-.313)	.539 (.424-.730)	1.11 (.864-1.63)	2.35 (1.36-6.19)	830
Age 12-19 years	07-08	.316 (.230-.434)	.281 (.191-.425)	.869 (.523-1.29)	3.13 (1.47-4.37)	5.41 (3.36-9.20)	359
Age 12-19 years	09-10	.347 (.302-.399)	.301 (.256-.397)	.733 (.575-.903)	1.53 (1.33-2.46)	2.64 (1.76-3.75)	398
Age 20-59 years	99-00	.246 (.216-.278)	.239 (.200-.272)	.505 (.405-.590)	1.11 (.861-1.49)	2.53 (1.73-4.09)	833
Age 20-59 years	01-02	.311 (.271-.357)	.282 (.245-.328)	.552 (.444-.673)	1.44 (1.02-1.91)	3.22 (1.91-4.92)	1128
Age 20-59 years	07-08	.443 (.384-.510)	.401 (.353-.472)	1.01 (.867-1.16)	2.95 (2.22-4.04)	6.29 (4.18-8.05)	1110
Age 20-59 years	09-10	.419 (.389-.451)	.365 (.326-.421)	.993 (.826-1.10)	2.93 (2.35-3.62)	4.72 (4.17-6.15)	1296
Age 60+ years	01-02	.372 (.301-.462)	.319 (.241-.406)	.785 (.541-1.05)	2.16 (1.30-3.50)	4.65 (2.63-6.15)	508
Age 60+ years	07-08	.418 (.351-.498)	.363 (.288-.473)	1.06 (.832-1.59)	3.11 (2.22-4.43)	4.93 (3.37-7.62)	612
Age 60+ years	09-10	.455 (.417-.496)	.397 (.342-.455)	1.06 (.875-1.30)	2.88 (2.37-3.61)	5.44 (3.77-8.53)	646
Males	99-00	.210 (.173-.253)	.195 (.152-.254)	.513 (.388-.582)	1.09 (.841-1.41)	1.72 (1.49-2.52)	974
Males	01-02	.269 (.233-.310)	.239 (.203-.280)	.500 (.429-.571)	1.27 (1.05-1.59)	2.95 (1.74-4.00)	1429
Males	07-08	.359 (.314-.411)	.333 (.291-.392)	.840 (.722-1.00)	2.58 (1.58-3.57)	4.42 (3.40-6.46)	1214
Males	09-10	.377 (.348-.409)	.323 (.295-.368)	.865 (.744-1.01)	2.48 (1.98-2.97)	4.72 (3.53-6.45)	1331
Females	99-00	.323 (.270-.387)	.273 (.235-.333)	.608 (.477-.743)	1.94 (1.35-3.00)	5.04 (3.19-6.90)	1024
Females	01-02	.388 (.331-.455)	.344 (.284-.408)	.737 (.563-.938)	1.84 (1.46-2.35)	4.43 (2.62-5.59)	1617
Females	07-08	.500 (.416-.601)	.433 (.355-.540)	1.28 (.995-1.60)	3.56 (2.40-4.93)	7.20 (5.15-9.57)	1238
Females	09-10	.505 (.453-.564)	.446 (.394-.500)	1.15 (1.00-1.33)	3.19 (2.54-3.73)	5.86 (4.58-8.90)	1392
Mexican Americans	99-00	.234 (.202-.272)	.219 (.187-.234)	.475 (.368-.594)	1.04 (.700-1.39)	1.67 (1.06-3.00)	697
Mexican Americans	01-02	.274 (.230-.328)	.242 (.206-.316)	.512 (.404-.654)	1.03 (.750-1.67)	1.83 (1.15-2.75)	767
Mexican Americans	07-08	.386 (.320-.466)	.379 (.287-.488)	.911 (.692-1.24)	1.94 (1.47-2.38)	3.16 (2.08-9.55)	475
Mexican Americans	09-10	.390 (.341-.446)	.355 (.305-.438)	.696 (.631-.774)	1.62 (1.40-2.15)	3.22 (2.19-3.89)	596
Non-Hispanic blacks	99-00	.309 (.238-.401)	.268 (.224-.353)	.636 (.456-.935)	1.49 (1.05-3.43)	3.86 (1.51-7.25)	524
Non-Hispanic blacks	01-02	.374 (.308-.455)	.357 (.290-.430)	.675 (.561-.817)	1.44 (1.20-2.31)	2.91 (2.03-3.76)	775
Non-Hispanic blacks	07-08	.335 (.287-.391)	.320 (.269-.375)	.748 (.621-1.03)	2.30 (1.68-3.35)	4.62 (3.21-6.54)	532
Non-Hispanic blacks	09-10	.352 (.281-.442)	.360 (.289-.436)	.865 (.587-1.21)	1.93 (1.48-2.59)	4.03 (2.43-4.91)	499
Non-Hispanic whites	99-00	.272 (.225-.329)	.250 (.200-.292)	.552 (.443-.667)	1.55 (1.09-2.27)	4.02 (2.07-5.49)	603
Non-Hispanic whites	01-02	.321 (.274-.377)	.281 (.238-.333)	.586 (.468-.811)	1.59 (1.26-2.19)	3.57 (2.25-5.59)	1280
Non-Hispanic whites	07-08	.438 (.369-.519)	.368 (.304-.488)	1.00 (.849-1.23)	3.41 (2.41-4.37)	6.29 (4.52-8.37)	1040
Non-Hispanic whites	09-10	.451 (.417-.488)	.388 (.328-.438)	1.07 (.889-1.25)	3.16 (2.63-3.71)	6.09 (4.69-9.08)	1192

Biomonitoring Summary:
https://www.cdc.gov/biomonitoring/Cyhalothrin_Cypermethrin_Deltamethrin_Fenpropathrin_Permethrin_Tralomethrin_BiomonitoringSummary.html

Organochlorine Pesticide Metabolites: Urine

Urinary 2,4,5-Trichlorophenol (2003 – 2010)‡

CAS Number 95-95-4

Metabolite of Several Organochlorine Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	.100 (.100-.100)	.200 (.200-.300)	.400 (.300-.400)	2525
Total population	05-06	*	<LOD	.100 (.100-.200)	.300 (.200-.300)	.400 (.300-.500)	2548
Total population	07-08	*	<LOD	.100 (<LOD-.100)	.200 (.200-.200)	.300 (.200-.300)	2604
Total population	09-10	*	<LOD	<LOD	.200 (.200-.200)	.300 (.200-.300)	2749
Age 6-11 years	03-04	*	<LOD	.100 (.100-.200)	.200 (.200-.300)	.300 (.200-.500)	314
Age 6-11 years	05-06	*	<LOD	.100 (.100-.200)	.300 (.200-.400)	.400 (.300-.500)	356
Age 6-11 years	07-08	*	<LOD	.100 (<LOD-.100)	.200 (.100-.300)	.300 (.200-.500)	389
Age 6-11 years	09-10	*	<LOD	<LOD	.200 (.100-.200)	.200 (.200-.300)	415
Age 12-19 years	03-04	*	<LOD	.100 (.100-.200)	.200 (.200-.300)	.300 (.200-.500)	722
Age 12-19 years	05-06	*	<LOD	.100 (.100-.200)	.300 (.200-.300)	.400 (.300-.500)	702
Age 12-19 years	07-08	*	<LOD	.100 (<LOD-.100)	.200 (.100-.200)	.200 (.200-.500)	401
Age 12-19 years	09-10	*	<LOD	.100 (<LOD-.100)	.200 (.200-.300)	.300 (.200-.500)	420
Age 20+ years	03-04	*	<LOD	.100 (.100-.100)	.300 (.200-.300)	.400 (.300-.500)	1489
Age 20+ years	05-06	*	<LOD	.100 (.100-.200)	.300 (.200-.300)	.400 (.300-.500)	1490
Age 20+ years	07-08	*	<LOD	.100 (<LOD-.100)	.200 (.200-.300)	.300 (.200-.400)	1814
Age 20+ years	09-10	*	<LOD	<LOD	.200 (.200-.200)	.300 (.200-.300)	1914
Males	03-04	*	<LOD	.100 (.100-.100)	.200 (.200-.300)	.400 (.300-.400)	1231
Males	05-06	*	<LOD	.100 (.100-.200)	.200 (.200-.300)	.400 (.300-.500)	1270
Males	07-08	*	<LOD	.100 (<LOD-.100)	.200 (.200-.200)	.300 (.200-.300)	1294
Males	09-10	*	<LOD	<LOD	.200 (.200-.200)	.300 (.200-.300)	1399
Females	03-04	*	<LOD	.100 (.100-.200)	.200 (.200-.300)	.400 (.300-.400)	1294
Females	05-06	*	<LOD	.100 (.100-.200)	.300 (.200-.400)	.500 (.300-.500)	1278
Females	07-08	*	<LOD	.100 (<LOD-.100)	.200 (.200-.300)	.300 (.200-.400)	1310
Females	09-10	*	<LOD	.100 (<LOD-.100)	.200 (.200-.200)	.300 (.200-.300)	1350
Mexican Americans	03-04	*	<LOD	.100 (<LOD-.200)	.200 (.200-.300)	.300 (.200-.400)	617
Mexican Americans	05-06	*	<LOD	.100 (<LOD-.200)	.300 (.200-.300)	.400 (.300-.500)	637
Mexican Americans	07-08	*	<LOD	<LOD	.200 (.100-.200)	.200 (.200-.300)	531
Mexican Americans	09-10	*	<LOD	<LOD	.100 (<LOD-.200)	.200 (.100-.300)	566
Non-Hispanic blacks	03-04	*	<LOD	.200 (.100-.200)	.300 (.200-.500)	.400 (.300-.700)	636
Non-Hispanic blacks	05-06	*	<LOD	.200 (.100-.200)	.300 (.200-.400)	.500 (.300-.500)	678
Non-Hispanic blacks	07-08	*	<LOD	.100 (.100-.200)	.200 (.200-.300)	.400 (.300-.500)	597
Non-Hispanic blacks	09-10	*	<LOD	.100 (<LOD-.100)	.200 (.200-.200)	.200 (.200-.300)	516
Non-Hispanic whites	03-04	*	<LOD	.100 (.100-.100)	.200 (.200-.300)	.400 (.300-.400)	1077
Non-Hispanic whites	05-06	*	<LOD	.100 (.100-.200)	.300 (.200-.300)	.400 (.300-.600)	1038
Non-Hispanic whites	07-08	*	<LOD	.100 (<LOD-.100)	.200 (.200-.300)	.300 (.200-.400)	1077
Non-Hispanic whites	09-10	*	<LOD	<LOD	.200 (.200-.200)	.300 (.200-.300)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.1, 0.1, 0.1, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Trichlorophenols_BiomonitoringSummary.html

Urinary 2,4,5-Trichlorophenol (creatinine corrected) (2003 – 2010)‡

CAS Number 95-95-4

Metabolite of Several Organochlorine Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	.170 (.160-.180)	.280 (.260-.310)	.370 (.330-.420)	2522
Total population	05-06	*	<LOD	.160 (.150-.180)	.290 (.260-.320)	.410 (.360-.450)	2548
Total population	07-08	*	<LOD	.150 (<LOD-.160)	.280 (.230-.320)	.390 (.330-.470)	2604
Total population	09-10	*	<LOD	<LOD	.260 (.240-.280)	.350 (.320-.390)	2749
Age 6-11 years	03-04	*	<LOD	.180 (.150-.230)	.290 (.250-.320)	.370 (.310-.540)	314
Age 6-11 years	05-06	*	<LOD	.180 (.140-.200)	.310 (.210-.450)	.450 (.320-.610)	356
Age 6-11 years	07-08	*	<LOD	.180 (<LOD-.190)	.270 (.210-.390)	.430 (.270-.580)	389
Age 6-11 years	09-10	*	<LOD	<LOD	.320 (.240-.350)	.390 (.320-.470)	415
Age 12-19 years	03-04	*	<LOD	.120 (.100-.140)	.200 (.170-.220)	.240 (.220-.280)	720
Age 12-19 years	05-06	*	<LOD	.120 (.110-.130)	.210 (.180-.240)	.290 (.240-.330)	702
Age 12-19 years	07-08	*	<LOD	.100 (<LOD-.120)	.170 (.150-.210)	.250 (.170-.310)	401
Age 12-19 years	09-10	*	<LOD	.110 (<LOD-.130)	.190 (.150-.250)	.280 (.190-.380)	420
Age 20+ years	03-04	*	<LOD	.180 (.160-.180)	.290 (.270-.320)	.390 (.350-.470)	1488
Age 20+ years	05-06	*	<LOD	.170 (.150-.190)	.300 (.260-.330)	.410 (.370-.470)	1490
Age 20+ years	07-08	*	<LOD	.150 (<LOD-.180)	.290 (.230-.350)	.410 (.340-.500)	1814
Age 20+ years	09-10	*	<LOD	<LOD	.270 (.240-.280)	.350 (.320-.410)	1914
Males	03-04	*	<LOD	.130 (.110-.150)	.230 (.190-.260)	.320 (.270-.350)	1230
Males	05-06	*	<LOD	.130 (.120-.140)	.220 (.190-.240)	.310 (.260-.360)	1270
Males	07-08	*	<LOD	.110 (<LOD-.120)	.190 (.180-.230)	.300 (.230-.340)	1294
Males	09-10	*	<LOD	<LOD	.210 (.190-.230)	.280 (.240-.330)	1399
Females	03-04	*	<LOD	.200 (.180-.210)	.320 (.290-.350)	.440 (.350-.510)	1292
Females	05-06	*	<LOD	.210 (.180-.230)	.350 (.300-.410)	.470 (.410-.550)	1278
Females	07-08	*	<LOD	.190 (<LOD-.230)	.330 (.280-.410)	.470 (.370-.580)	1310
Females	09-10	*	<LOD	.180 (<LOD-.190)	.300 (.280-.330)	.420 (.330-.470)	1350
Mexican Americans	03-04	*	<LOD	.140 (<LOD-.150)	.240 (.200-.280)	.330 (.280-.460)	616
Mexican Americans	05-06	*	<LOD	.140 (<LOD-.160)	.240 (.190-.320)	.350 (.290-.380)	637
Mexican Americans	07-08	*	<LOD	<LOD	.210 (.180-.250)	.270 (.240-.320)	531
Mexican Americans	09-10	*	<LOD	<LOD	.190 (<LOD-.230)	.290 (.220-.330)	566
Non-Hispanic blacks	03-04	*	<LOD	.120 (.100-.150)	.230 (.170-.290)	.310 (.230-.390)	635
Non-Hispanic blacks	05-06	*	<LOD	.110 (.100-.140)	.210 (.170-.260)	.320 (.260-.360)	678
Non-Hispanic blacks	07-08	*	<LOD	.120 (.100-.140)	.200 (.170-.250)	.290 (.230-.420)	597
Non-Hispanic blacks	09-10	*	<LOD	.090 (<LOD-.110)	.160 (.130-.200)	.220 (.160-.380)	516
Non-Hispanic whites	03-04	*	<LOD	.180 (.160-.190)	.290 (.260-.320)	.370 (.340-.440)	1076
Non-Hispanic whites	05-06	*	<LOD	.180 (.160-.190)	.300 (.270-.350)	.410 (.360-.500)	1038
Non-Hispanic whites	07-08	*	<LOD	.160 (<LOD-.190)	.300 (.250-.360)	.440 (.330-.510)	1077
Non-Hispanic whites	09-10	*	<LOD	<LOD	.280 (.250-.320)	.370 (.330-.410)	1206

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Trichlorophenols_BiomonitoringSummary.html

Urinary 2,4,6-Trichlorophenol (2003 – 2010)‡

CAS Number 88-06-2

Metabolite of Several Organochlorine Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	.500 (<LOD-.600)	1.00 (.800-1.20)	1.40 (1.20-1.80)	2525
Total population	05-06	*	<LOD	.600 (<LOD-.700)	1.00 (.800-1.20)	1.40 (1.20-1.80)	2548
Total population	07-08	*	<LOD	<LOD	.800 (.700-.900)	1.20 (1.00-1.30)	2604
Total population	09-10	*	<LOD	.500 (<LOD-.600)	.800 (.700-.900)	1.10 (1.00-1.40)	2749
Age 6-11 years	03-04	*	<LOD	.600 (.500-.700)	1.10 (.800-1.40)	1.90 (1.10-3.10)	314
Age 6-11 years	05-06	*	<LOD	.700 (.600-.900)	1.30 (1.00-2.30)	2.70 (1.30-5.40)	356
Age 6-11 years	07-08	*	<LOD	.600 (<LOD-.700)	1.10 (.900-1.40)	1.60 (1.30-2.10)	389
Age 6-11 years	09-10	*	<LOD	.500 (<LOD-.600)	.900 (.700-1.20)	1.30 (.900-2.20)	415
Age 12-19 years	03-04	*	<LOD	.600 (.500-.800)	1.20 (.900-1.70)	1.80 (1.50-2.10)	722
Age 12-19 years	05-06	*	<LOD	.600 (<LOD-.800)	1.00 (.800-1.30)	1.30 (1.20-1.70)	702
Age 12-19 years	07-08	*	<LOD	.600 (<LOD-.700)	.800 (.700-1.10)	1.10 (.800-1.70)	401
Age 12-19 years	09-10	*	<LOD	.600 (<LOD-.700)	.900 (.700-1.30)	1.30 (.900-1.90)	420
Age 20+ years	03-04	*	<LOD	.500 (<LOD-.600)	1.00 (.800-1.10)	1.30 (1.10-1.70)	1489
Age 20+ years	05-06	*	<LOD	.600 (<LOD-.700)	1.00 (.800-1.20)	1.30 (1.20-1.80)	1490
Age 20+ years	07-08	*	<LOD	<LOD	.800 (.700-.900)	1.10 (.900-1.30)	1814
Age 20+ years	09-10	*	<LOD	<LOD	.800 (.700-.900)	1.10 (1.00-1.20)	1914
Males	03-04	*	<LOD	.600 (<LOD-.600)	1.00 (.800-1.10)	1.30 (1.10-1.80)	1231
Males	05-06	*	<LOD	.600 (<LOD-.800)	1.10 (.900-1.30)	1.60 (1.20-2.00)	1270
Males	07-08	*	<LOD	.500 (<LOD-.600)	.900 (.700-1.00)	1.20 (1.10-1.40)	1294
Males	09-10	*	<LOD	<LOD	.800 (.700-.900)	1.10 (1.00-1.20)	1399
Females	03-04	*	<LOD	.500 (<LOD-.600)	1.10 (.900-1.20)	1.40 (1.10-2.00)	1294
Females	05-06	*	<LOD	.500 (<LOD-.600)	.900 (.800-1.20)	1.30 (1.10-1.70)	1278
Females	07-08	*	<LOD	<LOD	.800 (.700-.900)	1.10 (.900-1.40)	1310
Females	09-10	*	<LOD	.500 (<LOD-.600)	.800 (.700-1.00)	1.10 (.900-1.60)	1350
Mexican Americans	03-04	*	<LOD	.700 (.600-.800)	1.20 (1.10-1.60)	1.80 (1.30-2.00)	617
Mexican Americans	05-06	*	<LOD	.600 (.500-.700)	1.00 (.800-1.20)	1.30 (1.20-1.70)	637
Mexican Americans	07-08	*	<LOD	<LOD	.700 (.700-.900)	1.00 (.900-1.20)	531
Mexican Americans	09-10	*	<LOD	.500 (<LOD-.600)	.900 (.700-1.10)	1.10 (.900-1.30)	566
Non-Hispanic blacks	03-04	*	<LOD	.900 (.700-1.00)	1.40 (1.10-1.90)	2.00 (1.50-2.70)	636
Non-Hispanic blacks	05-06	*	<LOD	.800 (.700-1.10)	1.50 (1.20-1.90)	2.20 (1.60-3.30)	678
Non-Hispanic blacks	07-08	*	<LOD	.600 (.500-.600)	1.00 (.900-1.10)	1.30 (1.10-1.60)	597
Non-Hispanic blacks	09-10	*	<LOD	.700 (.600-.800)	1.10 (.900-1.30)	1.50 (1.20-2.00)	516
Non-Hispanic whites	03-04	*	<LOD	<LOD	.800 (.700-1.00)	1.20 (1.00-1.50)	1077
Non-Hispanic whites	05-06	*	<LOD	.500 (<LOD-.700)	.900 (.700-1.30)	1.30 (1.10-1.80)	1038
Non-Hispanic whites	07-08	*	<LOD	<LOD	.800 (.700-.900)	1.20 (1.00-1.40)	1077
Non-Hispanic whites	09-10	*	<LOD	<LOD	.700 (.600-.900)	1.00 (.800-1.30)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.5, 0.5, 0.5, and 0.5 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Trichlorophenols_BiomonitoringSummary.html

Urinary 2,4,6-Trichlorophenol (creatinine corrected) (2003 – 2010)‡

CAS Number 88-06-2

Metabolite of Several Organochlorine Insecticides

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	.710 (<LOD-.780)	1.25 (1.17-1.35)	1.75 (1.59-2.06)	2522
Total population	05-06	*	<LOD	.720 (<LOD-.760)	1.27 (1.17-1.38)	1.75 (1.59-1.94)	2548
Total population	07-08	*	<LOD	<LOD	1.25 (1.06-1.42)	1.75 (1.52-2.19)	2604
Total population	09-10	*	<LOD	.710 (<LOD-.760)	1.21 (1.13-1.35)	1.67 (1.55-1.84)	2749
Age 6-11 years	03-04	*	<LOD	.920 (.850-1.13)	1.59 (1.22-1.91)	2.11 (1.46-4.55)	314
Age 6-11 years	05-06	*	<LOD	.880 (.740-1.06)	1.59 (1.21-2.06)	2.50 (1.61-5.20)	356
Age 6-11 years	07-08	*	<LOD	.900 (<LOD-.930)	1.46 (1.14-1.67)	2.33 (1.52-2.92)	389
Age 6-11 years	09-10	*	<LOD	.850 (<LOD-1.03)	1.59 (1.17-1.74)	1.85 (1.67-2.33)	415
Age 12-19 years	03-04	*	<LOD	.580 (.510-.660)	.970 (.830-1.10)	1.21 (1.09-1.49)	720
Age 12-19 years	05-06	*	<LOD	.550 (<LOD-.630)	.970 (.690-1.17)	1.40 (1.08-1.59)	702
Age 12-19 years	07-08	*	<LOD	.550 (<LOD-.610)	.830 (.730-1.03)	1.30 (.930-1.48)	401
Age 12-19 years	09-10	*	<LOD	.590 (<LOD-.700)	.970 (.690-1.23)	1.23 (.920-1.66)	420
Age 20+ years	03-04	*	<LOD	.710 (<LOD-.770)	1.25 (1.17-1.35)	1.75 (1.59-2.00)	1488
Age 20+ years	05-06	*	<LOD	.730 (<LOD-.780)	1.30 (1.17-1.40)	1.75 (1.57-2.06)	1490
Age 20+ years	07-08	*	<LOD	<LOD	1.30 (1.06-1.46)	1.84 (1.52-2.33)	1814
Age 20+ years	09-10	*	<LOD	<LOD	1.21 (1.13-1.35)	1.67 (1.52-1.94)	1914
Males	03-04	*	<LOD	.560 (<LOD-.600)	.920 (.820-1.10)	1.30 (1.17-1.46)	1230
Males	05-06	*	<LOD	.600 (<LOD-.650)	1.00 (.850-1.13)	1.43 (1.25-1.59)	1270
Males	07-08	*	<LOD	.530 (<LOD-.600)	.930 (.830-1.06)	1.46 (1.18-1.59)	1294
Males	09-10	*	<LOD	<LOD	.980 (.850-1.12)	1.33 (1.13-1.59)	1399
Females	03-04	*	<LOD	.900 (<LOD-.960)	1.59 (1.35-1.75)	2.19 (1.75-2.63)	1292
Females	05-06	*	<LOD	.850 (<LOD-.970)	1.46 (1.30-1.67)	2.06 (1.67-2.50)	1278
Females	07-08	*	<LOD	<LOD	1.46 (1.23-1.75)	2.19 (1.67-2.50)	1310
Females	09-10	*	<LOD	.850 (<LOD-.920)	1.46 (1.30-1.59)	2.06 (1.62-2.33)	1350
Mexican Americans	03-04	*	<LOD	.760 (.600-.900)	1.15 (.970-1.38)	1.59 (1.18-2.42)	616
Mexican Americans	05-06	*	<LOD	.650 (.570-.700)	1.03 (.860-1.19)	1.46 (1.11-1.94)	637
Mexican Americans	07-08	*	<LOD	<LOD	1.05 (.910-1.17)	1.35 (1.13-1.57)	531
Mexican Americans	09-10	*	<LOD	.690 (<LOD-.760)	1.00 (.900-1.33)	1.67 (1.13-2.18)	566
Non-Hispanic blacks	03-04	*	<LOD	.600 (.560-.640)	.950 (.800-1.10)	1.34 (1.06-1.67)	635
Non-Hispanic blacks	05-06	*	<LOD	.630 (.540-.740)	1.03 (.830-1.49)	1.59 (1.13-2.07)	678
Non-Hispanic blacks	07-08	*	<LOD	.520 (.470-.620)	1.00 (.830-1.13)	1.40 (1.13-1.52)	597
Non-Hispanic blacks	09-10	*	<LOD	.560 (.490-.610)	.830 (.750-.950)	1.17 (.920-1.52)	516
Non-Hispanic whites	03-04	*	<LOD	<LOD	1.30 (1.17-1.46)	1.75 (1.59-2.11)	1076
Non-Hispanic whites	05-06	*	<LOD	.760 (<LOD-.830)	1.35 (1.25-1.50)	1.79 (1.60-2.06)	1038
Non-Hispanic whites	07-08	*	<LOD	<LOD	1.35 (1.13-1.52)	1.84 (1.52-2.50)	1077
Non-Hispanic whites	09-10	*	<LOD	<LOD	1.30 (1.18-1.46)	1.73 (1.59-2.06)	1206

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Trichlorophenols_BiomonitoringSummary.html

Organochlorine Pesticides and Metabolites: Serum

Serum Aldrin (lipid adjusted) (2001 – 2004)

CAS Number 309-00-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2275
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1946
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	756
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	588
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1519
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1358
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1057
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	946
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1218
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1000
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	559
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	456
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	512
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	485
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1045
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	881

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 5.94 and 7.8.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Aldrin (whole weight) (2001 – 2004)

CAS Number 309-00-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2275
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1946
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	756
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	588
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1519
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1358
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1057
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	946
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1218
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1000
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	559
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	456
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	512
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	485
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1045
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	881

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Dieldrin (lipid adjusted) (2001 – 2004)

CAS Number 60-57-1

Metabolite of Aldrin

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	15.3 (14.5-17.4)	20.3 (18.7-22.4)	2159
Total population	03-04	*	<LOD	9.00 (8.40-9.90)	14.4 (12.1-16.4)	19.0 (15.8-24.2)	1952
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	716
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	9.10 (<LOD-16.4)	587
Age 20+ years	01-02	*	<LOD	10.5 (<LOD-11.6)	16.6 (15.1-18.2)	21.3 (19.1-24.0)	1443
Age 20+ years	03-04	*	<LOD	9.50 (8.80-10.4)	14.9 (12.8-17.0)	19.5 (16.0-25.7)	1365
Males	01-02	*	<LOD	<LOD	15.7 (14.4-18.7)	20.3 (18.6-24.0)	1007
Males	03-04	*	<LOD	9.30 (8.40-10.8)	15.1 (13.1-19.1)	21.9 (14.9-38.5)	954
Females	01-02	*	<LOD	<LOD	15.3 (13.4-17.2)	19.8 (18.0-21.6)	1152
Females	03-04	*	<LOD	8.70 (7.80-9.50)	12.8 (11.2-15.4)	16.9 (13.9-22.4)	998
Mexican Americans	01-02	*	<LOD	<LOD	11.7 (<LOD-15.1)	15.4 (12.7-19.1)	539
Mexican Americans	03-04	*	<LOD	<LOD	10.8 (9.00-14.1)	14.0 (10.6-24.1)	456
Non-Hispanic blacks	01-02	*	<LOD	<LOD	15.0 (11.8-19.1)	20.6 (15.8-25.2)	484
Non-Hispanic blacks	03-04	*	<LOD	8.80 (<LOD-10.1)	13.0 (10.5-15.8)	15.9 (13.3-21.5)	487
Non-Hispanic whites	01-02	*	<LOD	<LOD	15.6 (14.8-17.8)	21.1 (18.9-23.6)	980
Non-Hispanic whites	03-04	*	<LOD	9.30 (8.60-10.2)	14.9 (12.5-17.5)	19.7 (15.6-33.4)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 7.8.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Dieldrin (whole weight) (2001 – 2004)

CAS Number 60-57-1

Metabolite of Aldrin

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	.110 (.100-.120)	.150 (.130-.170)	2159
Total population	03-04	*	<LOD	.059 (.054-.064)	.098 (.083-.112)	.138 (.109-.177)	1952
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	716
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	.048 (<LOD-.093)	587
Age 20+ years	01-02	*	<LOD	.070 (<LOD-.080)	.120 (.110-.130)	.160 (.140-.180)	1443
Age 20+ years	03-04	*	<LOD	.062 (.056-.069)	.102 (.088-.117)	.139 (.112-.182)	1365
Males	01-02	*	<LOD	<LOD	.120 (.100-.130)	.160 (.130-.190)	1007
Males	03-04	*	<LOD	.064 (.054-.075)	.109 (.084-.138)	.147 (.108-.242)	954
Females	01-02	*	<LOD	<LOD	.100 (.090-.110)	.140 (.120-.160)	1152
Females	03-04	*	<LOD	.055 (.049-.060)	.089 (.077-.100)	.110 (.096-.147)	998
Mexican Americans	01-02	*	<LOD	<LOD	.090 (<LOD-.100)	.120 (.090-.140)	539
Mexican Americans	03-04	*	<LOD	<LOD	.077 (.062-.116)	.113 (.073-.158)	456
Non-Hispanic blacks	01-02	*	<LOD	<LOD	.090 (.070-.110)	.130 (.090-.190)	484
Non-Hispanic blacks	03-04	*	<LOD	.053 (<LOD-.058)	.080 (.063-.101)	.103 (.080-.149)	487
Non-Hispanic whites	01-02	*	<LOD	<LOD	.110 (.100-.130)	.150 (.130-.180)	980
Non-Hispanic whites	03-04	*	<LOD	.062 (.054-.070)	.103 (.086-.124)	.139 (.109-.202)	885

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Endrin (lipid adjusted) (2001 – 2004)

CAS Number 72-20-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	5.10 (<LOD-5.40)	2187
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1825
Age 12-19 years	01-02	*	<LOD	<LOD	5.20 (<LOD-5.50)	5.60 (5.40-5.70)	730
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	539
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1457
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1286
Males	01-02	*	<LOD	<LOD	<LOD	5.20 (<LOD-5.40)	1022
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	885
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1165
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	940
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	5.30 (<LOD-6.50)	547
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	433
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	5.40 (<LOD-6.30)	487
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	446
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	5.10 (<LOD-5.40)	1000
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	831

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 5.09 and 7.8.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Endrin (whole weight) (2001 – 2004)

CAS Number 72-20-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	.020 (<LOD-.020)	2187
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1825
Age 12-19 years	01-02	*	<LOD	<LOD	.020 (<LOD-.020)	.020 (.020-.020)	730
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	539
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1457
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1286
Males	01-02	*	<LOD	<LOD	<LOD	.020 (<LOD-.020)	1022
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	885
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1165
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	940
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	.020 (<LOD-.020)	547
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	433
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	.020 (<LOD-.020)	487
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	446
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	.020 (<LOD-.020)	1000
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	831

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Heptachlor epoxide (lipid adjusted) (1999 – 2004)

CAS Number 1024-57-3

Metabolite of Heptachlor

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	15.4 (<LOD-19.8)	24.0 (15.1-38.8)	1589
Total population	01-02	*	<LOD	<LOD	14.8 (13.0-17.8)	21.8 (18.2-27.3)	2259
Total population	03-04	*	<LOD	<LOD	13.4 (11.1-15.9)	18.9 (15.9-23.0)	1963
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	638
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	741
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	592
Age 20+ years	99-00	*	<LOD	<LOD	17.8 (<LOD-23.9)	27.1 (16.8-46.1)	951
Age 20+ years	01-02	*	<LOD	<LOD	15.7 (13.7-18.8)	23.1 (19.1-29.1)	1518
Age 20+ years	03-04	*	<LOD	8.20 (<LOD-9.50)	14.5 (11.6-17.6)	20.6 (16.8-24.0)	1371
Males	99-00	*	<LOD	<LOD	<LOD	19.6 (<LOD-27.2)	760
Males	01-02	*	<LOD	<LOD	13.9 (12.0-17.8)	20.8 (15.9-25.3)	1047
Males	03-04	*	<LOD	<LOD	13.4 (11.2-16.4)	18.6 (16.6-21.3)	956
Females	99-00	*	<LOD	<LOD	18.2 (<LOD-25.2)	27.7 (16.0-54.3)	829
Females	01-02	*	<LOD	<LOD	15.6 (13.3-18.2)	23.2 (18.9-29.8)	1212
Females	03-04	*	<LOD	<LOD	13.5 (11.0-16.8)	19.6 (14.8-24.5)	1007
Mexican Americans	99-00	*	<LOD	<LOD	15.3 (<LOD-25.6)	22.2 (<LOD-62.3)	598
Mexican Americans	01-02	*	<LOD	<LOD	13.2 (<LOD-16.3)	16.8 (13.8-23.1)	553
Mexican Americans	03-04	*	<LOD	<LOD	10.6 (8.10-13.5)	13.7 (10.9-16.5)	460
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	19.5 (<LOD-32.4)	336
Non-Hispanic blacks	01-02	*	<LOD	<LOD	14.6 (11.7-19.0)	21.5 (18.2-27.3)	503
Non-Hispanic blacks	03-04	*	<LOD	<LOD	13.5 (10.1-16.8)	18.6 (12.7-25.2)	490
Non-Hispanic whites	99-00	*	<LOD	<LOD	16.5 (<LOD-21.8)	26.4 (<LOD-54.3)	539
Non-Hispanic whites	01-02	*	<LOD	<LOD	15.3 (13.0-19.6)	22.8 (18.9-29.8)	1041
Non-Hispanic whites	03-04	*	<LOD	7.90 (<LOD-9.40)	14.0 (11.2-17.6)	20.4 (15.8-24.5)	888

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.6, 10.5, and 7.8, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Heptachlor epoxide (whole weight) (1999 – 2004)

CAS Number 1024-57-3

Metabolite of Heptachlor

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	.110 (<LOD-.140)	.180 (.110-.220)	1589
Total population	01-02	*	<LOD	<LOD	.100 (.090-.120)	.150 (.130-.180)	2259
Total population	03-04	*	<LOD	<LOD	.094 (.076-.108)	.128 (.108-.161)	1963
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	638
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	741
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	592
Age 20+ years	99-00	*	<LOD	<LOD	.130 (<LOD-.170)	.190 (.130-.270)	951
Age 20+ years	01-02	*	<LOD	<LOD	.110 (.090-.140)	.170 (.140-.190)	1518
Age 20+ years	03-04	*	<LOD	.057 (<LOD-.063)	.101 (.082-.116)	.135 (.113-.173)	1371
Males	99-00	*	<LOD	<LOD	<LOD	.150 (<LOD-.180)	760
Males	01-02	*	<LOD	<LOD	.100 (.090-.120)	.150 (.110-.180)	1047
Males	03-04	*	<LOD	<LOD	.094 (.077-.111)	.126 (.106-.149)	956
Females	99-00	*	<LOD	<LOD	.120 (<LOD-.190)	.200 (.120-.310)	829
Females	01-02	*	<LOD	<LOD	.100 (.090-.130)	.170 (.130-.200)	1212
Females	03-04	*	<LOD	<LOD	.096 (.071-.108)	.133 (.107-.173)	1007
Mexican Americans	99-00	*	<LOD	<LOD	.100 (<LOD-.170)	.170 (<LOD-.380)	598
Mexican Americans	01-02	*	<LOD	<LOD	.090 (<LOD-.110)	.120 (.100-.240)	553
Mexican Americans	03-04	*	<LOD	<LOD	.069 (.053-.097)	.098 (.074-.113)	460
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	.110 (<LOD-.200)	336
Non-Hispanic blacks	01-02	*	<LOD	<LOD	.090 (.070-.110)	.130 (.100-.180)	503
Non-Hispanic blacks	03-04	*	<LOD	<LOD	.087 (.067-.104)	.110 (.090-.157)	490
Non-Hispanic whites	99-00	*	<LOD	<LOD	.120 (<LOD-.170)	.180 (<LOD-.310)	539
Non-Hispanic whites	01-02	*	<LOD	<LOD	.100 (.090-.130)	.170 (.130-.190)	1041
Non-Hispanic whites	03-04	*	<LOD	.055 (<LOD-.063)	.101 (.077-.117)	.135 (.111-.180)	888

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Oxychlordane (lipid adjusted) (1999 – 2004)

CAS Number 27304-13-8

Metabolite of Chlordane

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	20.8 (17.8-23.0)	34.4 (30.5-38.6)	44.8 (40.2-49.6)	1661
Total population	01-02	11.4 (<LOD-12.5)	11.1 (<LOD-12.5)	21.7 (19.3-24.4)	36.4 (31.5-41.4)	49.7 (42.0-61.2)	2249
Total population	03-04	9.37 (8.69-10.1)	10.3 (9.20-11.0)	18.0 (16.8-20.1)	29.0 (26.8-32.1)	37.7 (34.8-43.8)	1978
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	663
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	11.5 (<LOD-12.6)	752
Age 12-19 years	03-04	*	<LOD	<LOD	9.20 (<LOD-11.5)	11.5 (8.10-18.9)	595
Age 20+ years	99-00	*	<LOD	23.3 (21.0-25.9)	37.7 (32.3-43.5)	47.7 (43.1-50.8)	998
Age 20+ years	01-02	12.9 (11.7-14.3)	13.3 (11.4-14.9)	23.9 (21.2-26.7)	38.5 (33.4-45.9)	53.1 (44.1-65.9)	1497
Age 20+ years	03-04	10.6 (9.82-11.5)	11.4 (10.6-12.4)	19.9 (17.9-21.5)	31.3 (28.8-33.2)	39.2 (36.5-44.8)	1383
Males	99-00	*	<LOD	18.1 (16.1-19.6)	31.3 (25.9-38.2)	42.4 (35.3-49.6)	793
Males	01-02	11.1 (<LOD-12.6)	11.1 (<LOD-12.6)	20.6 (16.6-24.9)	33.1 (27.5-43.8)	48.1 (40.2-56.9)	1049
Males	03-04	9.10 (8.20-10.1)	9.90 (8.30-11.2)	17.1 (15.6-18.4)	27.6 (25.3-32.2)	36.0 (32.7-39.2)	963
Females	99-00	*	<LOD	22.3 (20.1-25.9)	36.9 (31.5-40.3)	46.2 (39.1-51.8)	868
Females	01-02	11.7 (10.7-12.7)	11.0 (<LOD-12.9)	23.1 (20.7-25.0)	37.5 (34.5-42.1)	52.8 (42.7-70.0)	1200
Females	03-04	9.63 (8.89-10.4)	10.6 (9.10-11.3)	20.1 (17.4-21.7)	30.3 (27.5-32.7)	41.9 (36.3-45.5)	1015
Mexican Americans	99-00	*	<LOD	16.3 (<LOD-19.9)	28.9 (18.8-42.0)	39.9 (26.8-61.0)	628
Mexican Americans	01-02	*	<LOD	13.9 (11.0-18.4)	27.2 (21.0-33.1)	37.9 (29.9-42.0)	557
Mexican Americans	03-04	*	<LOD	12.8 (10.1-15.8)	22.9 (15.8-31.4)	31.4 (22.4-51.6)	462
Non-Hispanic blacks	99-00	*	<LOD	18.7 (<LOD-32.2)	39.9 (26.5-47.3)	48.6 (43.5-65.5)	350
Non-Hispanic blacks	01-02	11.7 (<LOD-13.6)	<LOD	22.8 (17.2-28.3)	41.4 (30.6-53.7)	56.5 (41.8-73.5)	501
Non-Hispanic blacks	03-04	8.74 (<LOD-10.2)	8.70 (<LOD-10.6)	18.9 (15.9-21.5)	35.1 (25.4-40.2)	44.2 (37.7-56.8)	493
Non-Hispanic whites	99-00	*	<LOD	21.8 (18.6-24.6)	34.2 (28.9-40.9)	44.0 (37.2-49.8)	559
Non-Hispanic whites	01-02	12.1 (11.0-13.3)	11.8 (10.5-13.9)	23.0 (20.1-25.7)	37.5 (31.6-45.1)	52.2 (41.0-67.4)	1031
Non-Hispanic whites	03-04	10.2 (9.36-11.1)	11.2 (10.0-12.1)	19.7 (17.2-21.7)	30.3 (26.8-33.6)	37.7 (34.3-45.5)	898

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.5, 10.5, and 7.8, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (whole weight) (1999 – 2004)

CAS Number 27304-13-8

Metabolite of Chlordane

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	.140 (.120-.150)	.260 (.200-.290)	.310 (.290-.340)	1661
Total population	01-02	.070 (<LOD-.077)	.070 (<LOD-.080)	.140 (.130-.160)	.250 (.220-.300)	.350 (.290-.440)	2249
Total population	03-04	.057 (.053-.062)	.063 (.058-.068)	.119 (.106-.133)	.204 (.189-.213)	.269 (.246-.291)	1978
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	663
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	.060 (<LOD-.070)	752
Age 12-19 years	03-04	*	<LOD	<LOD	.047 (<LOD-.063)	.066 (.048-.092)	595
Age 20+ years	99-00	*	<LOD	.150 (.140-.180)	.280 (.230-.300)	.330 (.300-.400)	998
Age 20+ years	01-02	.082 (.074-.091)	.080 (.070-.090)	.160 (.140-.180)	.270 (.230-.320)	.370 (.310-.450)	1497
Age 20+ years	03-04	.067 (.061-.073)	.073 (.066-.079)	.130 (.115-.146)	.210 (.203-.227)	.286 (.258-.320)	1383
Males	99-00	*	<LOD	.120 (.100-.140)	.220 (.180-.280)	.300 (.260-.340)	793
Males	01-02	.069 (<LOD-.079)	.070 (<LOD-.080)	.130 (.120-.160)	.230 (.190-.300)	.320 (.250-.430)	1049
Males	03-04	.056 (.050-.063)	.063 (.055-.076)	.115 (.100-.126)	.189 (.168-.207)	.258 (.216-.302)	963
Females	99-00	*	<LOD	.140 (.130-.170)	.270 (.200-.310)	.320 (.290-.400)	868
Females	01-02	.071 (.065-.077)	.070 (<LOD-.080)	.150 (.130-.160)	.260 (.230-.310)	.370 (.280-.510)	1200
Females	03-04	.058 (.053-.064)	.063 (.057-.068)	.126 (.104-.146)	.208 (.199-.231)	.286 (.245-.331)	1015
Mexican Americans	99-00	*	<LOD	.100 (<LOD-.130)	.210 (.130-.320)	.290 (.190-.410)	628
Mexican Americans	01-02	*	<LOD	.100 (.070-.130)	.200 (.150-.240)	.280 (.210-.360)	557
Mexican Americans	03-04	*	<LOD	.083 (.066-.104)	.149 (.108-.230)	.230 (.148-.373)	462
Non-Hispanic blacks	99-00	*	<LOD	.110 (<LOD-.170)	.240 (.170-.290)	.320 (.240-.430)	350
Non-Hispanic blacks	01-02	.066 (<LOD-.077)	<LOD	.130 (.090-.170)	.260 (.180-.350)	.350 (.240-.560)	501
Non-Hispanic blacks	03-04	.049 (<LOD-.057)	.050 (<LOD-.062)	.112 (.087-.136)	.225 (.165-.287)	.315 (.253-.348)	493
Non-Hispanic whites	99-00	*	<LOD	.140 (.120-.170)	.270 (.200-.300)	.320 (.280-.380)	559
Non-Hispanic whites	01-02	.075 (.068-.083)	.080 (.070-.090)	.150 (.130-.170)	.250 (.220-.310)	.370 (.280-.450)	1031
Non-Hispanic whites	03-04	.063 (.058-.070)	.070 (.063-.077)	.128 (.110-.148)	.207 (.190-.223)	.271 (.242-.315)	898

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (lipid adjusted) (1999 – 2004)

CAS Number 39765-80-5

Metabolite of Chlordane

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	18.3 (16.7-20.0)	17.9 (16.1-20.1)	31.9 (28.9-36.0)	55.1 (48.4-62.6)	79.4 (67.6-88.1)	1933
Total population	01-02	17.0 (15.2-18.9)	17.9 (15.5-20.5)	33.7 (30.2-37.2)	56.3 (49.6-66.0)	78.2 (64.0-113)	2286
Total population	03-04	14.7 (13.1-16.5)	14.8 (13.5-17.0)	30.2 (26.7-32.5)	49.0 (42.6-54.7)	68.3 (58.6-82.3)	1955
Age 12-19 years	99-00	*	<LOD	<LOD	18.8 (<LOD-20.6)	25.2 (19.1-28.4)	664
Age 12-19 years	01-02	*	<LOD	<LOD	13.4 (11.8-16.4)	19.2 (15.2-23.5)	758
Age 12-19 years	03-04	*	<LOD	8.70 (<LOD-12.5)	16.1 (10.7-23.7)	22.6 (16.1-34.6)	589
Age 20+ years	99-00	20.8 (19.0-22.8)	20.7 (18.0-23.5)	35.4 (30.9-40.3)	59.9 (51.8-67.6)	82.7 (74.9-89.6)	1269
Age 20+ years	01-02	19.8 (17.6-22.3)	20.9 (19.0-23.1)	36.6 (32.8-41.1)	60.6 (52.5-69.9)	84.9 (66.0-123)	1528
Age 20+ years	03-04	16.9 (15.1-18.9)	17.3 (14.6-20.0)	31.8 (28.9-35.3)	51.4 (45.9-58.6)	74.7 (59.8-90.0)	1366
Males	99-00	17.7 (16.5-19.1)	17.2 (14.9-20.1)	30.2 (27.7-34.2)	51.1 (47.3-58.6)	78.2 (60.2-88.1)	922
Males	01-02	17.0 (14.8-19.5)	18.3 (14.8-21.1)	34.4 (28.3-39.3)	54.8 (45.0-68.9)	78.2 (59.7-113)	1062
Males	03-04	14.8 (12.7-17.3)	14.6 (12.2-18.0)	30.8 (26.7-35.3)	51.0 (42.0-59.4)	68.6 (56.0-93.8)	955
Females	99-00	18.8 (16.7-21.1)	18.4 (16.1-22.2)	32.9 (29.0-38.3)	59.0 (48.4-67.6)	80.8 (71.5-95.5)	1011
Females	01-02	17.0 (15.4-18.7)	17.6 (15.0-20.3)	32.8 (30.4-36.7)	56.9 (51.9-65.5)	78.1 (65.5-111)	1224
Females	03-04	14.5 (13.1-16.1)	15.0 (13.8-16.3)	28.2 (25.3-32.8)	48.1 (41.4-52.7)	68.3 (56.8-79.9)	1000
Mexican Americans	99-00	*	<LOD	25.1 (22.7-29.5)	40.7 (35.1-51.8)	56.3 (45.8-77.2)	650
Mexican Americans	01-02	11.9 (<LOD-14.6)	10.6 (<LOD-14.5)	26.0 (19.3-30.4)	47.9 (36.3-57.2)	59.8 (49.3-74.1)	558
Mexican Americans	03-04	10.2 (7.86-13.2)	9.10 (<LOD-11.1)	20.7 (11.1-34.7)	39.5 (25.9-65.5)	62.2 (36.0-93.4)	457
Non-Hispanic blacks	99-00	20.3 (17.0-24.1)	17.5 (15.4-23.5)	35.7 (28.9-45.5)	77.0 (60.8-90.7)	107 (84.0-143)	404
Non-Hispanic blacks	01-02	18.8 (15.4-22.9)	19.2 (14.7-22.0)	36.8 (28.3-50.5)	73.6 (50.8-110)	112 (68.7-160)	514
Non-Hispanic blacks	03-04	14.4 (12.2-17.0)	13.8 (11.2-16.3)	30.8 (26.5-36.1)	59.9 (47.7-77.7)	86.6 (56.8-129)	486
Non-Hispanic whites	99-00	19.1 (17.2-21.1)	19.0 (16.9-22.2)	32.8 (28.0-37.6)	52.5 (44.9-64.4)	74.0 (62.3-86.7)	722
Non-Hispanic whites	01-02	17.5 (15.6-19.7)	19.0 (16.3-21.1)	34.0 (29.7-38.1)	55.5 (45.9-69.4)	78.7 (59.1-126)	1052
Non-Hispanic whites	03-04	15.8 (13.7-18.2)	16.0 (13.8-19.3)	30.8 (26.4-35.0)	48.8 (42.1-55.7)	67.6 (57.5-87.3)	889

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.5, 10.5, and 7.8, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum trans-Nonachlor (whole weight) (1999 – 2004)

CAS Number 39765-80-5

Metabolite of Chlordane

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.109 (.099-.119)	.110 (.090-.120)	.210 (.190-.240)	.370 (.330-.420)	.550 (.470-.630)	1933
Total population	01-02	.104 (.093-.116)	.110 (.100-.120)	.220 (.190-.250)	.390 (.330-.480)	.590 (.430-.800)	2286
Total population	03-04	.089 (.080-.100)	.094 (.084-.108)	.191 (.171-.211)	.324 (.290-.371)	.470 (.410-.558)	1955
Age 12-19 years	99-00	*	<LOD	<LOD	.090 (<LOD-.110)	.120 (.100-.130)	664
Age 12-19 years	01-02	*	<LOD	<LOD	.070 (.060-.080)	.090 (.080-.130)	758
Age 12-19 years	03-04	*	<LOD	.041 (<LOD-.060)	.081 (.054-.117)	.109 (.081-.161)	589
Age 20+ years	99-00	.128 (.116-.141)	.130 (.110-.150)	.230 (.210-.260)	.400 (.360-.460)	.580 (.490-.690)	1269
Age 20+ years	01-02	.125 (.111-.141)	.130 (.120-.150)	.240 (.210-.280)	.420 (.350-.540)	.640 (.470-.840)	1528
Age 20+ years	03-04	.106 (.095-.119)	.112 (.096-.127)	.210 (.186-.237)	.355 (.301-.405)	.520 (.430-.594)	1366
Males	99-00	.106 (.098-.114)	.100 (.090-.120)	.210 (.180-.220)	.350 (.310-.400)	.520 (.400-.630)	922
Males	01-02	.105 (.091-.122)	.110 (.090-.130)	.220 (.190-.260)	.380 (.310-.500)	.580 (.390-.830)	1062
Males	03-04	.092 (.079-.108)	.098 (.085-.126)	.202 (.177-.232)	.343 (.285-.395)	.458 (.395-.594)	955
Females	99-00	.111 (.099-.125)	.110 (.090-.130)	.220 (.190-.250)	.390 (.310-.460)	.580 (.460-.690)	1011
Females	01-02	.103 (.093-.113)	.110 (.090-.120)	.220 (.180-.240)	.400 (.340-.450)	.590 (.430-.830)	1224
Females	03-04	.087 (.078-.097)	.092 (.079-.098)	.183 (.161-.210)	.317 (.286-.367)	.470 (.409-.565)	1000
Mexican Americans	99-00	*	<LOD	.170 (.120-.210)	.310 (.240-.340)	.390 (.320-.520)	650
Mexican Americans	01-02	.071 (<LOD-.091)	.060 (<LOD-.090)	.160 (.120-.210)	.330 (.270-.390)	.470 (.360-.590)	558
Mexican Americans	03-04	.062 (.047-.082)	.055 (<LOD-.069)	.135 (.069-.237)	.288 (.158-.559)	.414 (.279-.651)	457
Non-Hispanic blacks	99-00	.112 (.093-.134)	.100 (.080-.130)	.220 (.180-.300)	.490 (.340-.600)	.760 (.510-.960)	404
Non-Hispanic blacks	01-02	.106 (.085-.131)	.110 (.080-.130)	.220 (.160-.310)	.490 (.320-.680)	.680 (.410-1.20)	514
Non-Hispanic blacks	03-04	.080 (.068-.096)	.078 (.061-.093)	.186 (.145-.242)	.417 (.272-.565)	.573 (.497-.684)	486
Non-Hispanic whites	99-00	.116 (.104-.129)	.120 (.100-.140)	.220 (.190-.240)	.370 (.300-.440)	.510 (.440-.630)	722
Non-Hispanic whites	01-02	.108 (.096-.122)	.120 (.100-.130)	.220 (.190-.250)	.390 (.310-.490)	.600 (.400-.930)	1052
Non-Hispanic whites	03-04	.098 (.085-.113)	.103 (.090-.124)	.205 (.173-.234)	.327 (.288-.390)	.461 (.397-.576)	889

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum p,p'-Dichlorodiphenyltrichloroethane (DDT) (lipid adjusted) (1999 – 2004)

CAS Number 50-29-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	28.0 (21.9-34.0)	1679
Total population	01-02	*	<LOD	<LOD	<LOD	26.6 (22.5-36.0)	2305
Total population	03-04	*	<LOD	<LOD	11.9 (10.0-15.1)	19.5 (15.1-27.5)	1965
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	677
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	756
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	9.10 (<LOD-12.2)	595
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	30.5 (23.0-37.3)	1002
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	28.1 (23.8-39.0)	1549
Age 20+ years	03-04	*	<LOD	<LOD	12.9 (10.3-16.5)	20.7 (15.9-28.7)	1370
Males	99-00	*	<LOD	<LOD	<LOD	25.1 (<LOD-39.3)	799
Males	01-02	*	<LOD	<LOD	<LOD	21.6 (<LOD-25.8)	1073
Males	03-04	*	<LOD	<LOD	10.6 (9.10-13.7)	15.2 (11.8-26.9)	959
Females	99-00	*	<LOD	<LOD	<LOD	29.4 (23.0-35.8)	880
Females	01-02	*	<LOD	<LOD	18.3 (<LOD-21.9)	36.6 (25.5-54.3)	1232
Females	03-04	*	<LOD	<LOD	14.0 (10.8-17.5)	21.0 (18.0-27.8)	1006
Mexican Americans	99-00	*	<LOD	<LOD	61.3 (27.0-155)	155 (59.3-590)	635
Mexican Americans	01-02	*	<LOD	<LOD	83.1 (33.3-236)	293 (104-541)	566
Mexican Americans	03-04	*	<LOD	8.90 (<LOD-12.9)	24.0 (18.6-33.3)	48.6 (31.1-71.1)	461
Non-Hispanic blacks	99-00	*	<LOD	<LOD	22.3 (<LOD-31.5)	31.5 (23.2-65.0)	356
Non-Hispanic blacks	01-02	*	<LOD	<LOD	23.2 (<LOD-40.9)	40.9 (21.2-95.8)	514
Non-Hispanic blacks	03-04	*	<LOD	9.00 (<LOD-10.4)	17.5 (14.8-23.2)	30.7 (19.0-53.4)	490
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	564
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	17.9 (<LOD-20.7)	1061
Non-Hispanic whites	03-04	*	<LOD	<LOD	9.70 (8.50-11.2)	12.9 (10.7-16.6)	890

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 20.7, 17.4, and 7.8, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-Dichlorodiphenyltrichloroethane (DDT) (whole weight) (1999 – 2004)

CAS Number 50-29-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	.170 (.130-.220)	1679
Total population	01-02	*	<LOD	<LOD	<LOD	.180 (.160-.220)	2305
Total population	03-04	*	<LOD	<LOD	.078 (.065-.097)	.128 (.098-.167)	1965
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	677
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	756
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	.048 (<LOD-.069)	595
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	.190 (.150-.230)	1002
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	.200 (.170-.260)	1549
Age 20+ years	03-04	*	<LOD	<LOD	.084 (.068-.106)	.142 (.105-.189)	1370
Males	99-00	*	<LOD	<LOD	<LOD	.150 (<LOD-.240)	799
Males	01-02	*	<LOD	<LOD	<LOD	.150 (<LOD-.180)	1073
Males	03-04	*	<LOD	<LOD	.071 (.059-.095)	.108 (.078-.180)	959
Females	99-00	*	<LOD	<LOD	<LOD	.190 (.150-.230)	880
Females	01-02	*	<LOD	<LOD	.130 (<LOD-.150)	.240 (.180-.400)	1232
Females	03-04	*	<LOD	<LOD	.087 (.071-.106)	.146 (.106-.207)	1006
Mexican Americans	99-00	*	<LOD	<LOD	.400 (.190-1.00)	1.00 (.330-4.26)	635
Mexican Americans	01-02	*	<LOD	<LOD	.530 (.250-1.34)	1.62 (.570-4.01)	566
Mexican Americans	03-04	*	<LOD	.063 (<LOD-.079)	.146 (.114-.203)	.313 (.189-.627)	461
Non-Hispanic blacks	99-00	*	<LOD	<LOD	.120 (<LOD-.170)	.180 (.140-.420)	356
Non-Hispanic blacks	01-02	*	<LOD	<LOD	.130 (<LOD-.290)	.250 (.120-.530)	514
Non-Hispanic blacks	03-04	*	<LOD	.051 (<LOD-.061)	.112 (.080-.143)	.201 (.132-.343)	490
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	564
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	.130 (<LOD-.140)	1061
Non-Hispanic whites	03-04	*	<LOD	<LOD	.064 (.054-.075)	.086 (.074-.107)	890

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-Dichlorodiphenyldichloroethene (DDE) (lipid adjusted) (1999 – 2004)

CAS Number 72-55-9

Metabolite of Dichlorodiphenyltrichloroethane

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	260 (226-298)	226 (184-278)	537 (476-631)	1150 (976-1350)	1830 (1410-2300)	1964
Total population	01-02	295 (267-327)	251 (228-278)	598 (521-699)	1410 (1210-1500)	2320 (1830-2780)	2298
Total population	03-04	238 (195-292)	203 (163-275)	509 (376-655)	1170 (836-1570)	1860 (1400-2380)	1956
Age 12-19 years	99-00	118 (102-135)	108 (97.7-119)	185 (141-237)	339 (243-479)	528 (339-812)	686
Age 12-19 years	01-02	124 (106-146)	113 (100-140)	213 (172-253)	319 (282-389)	456 (343-722)	758
Age 12-19 years	03-04	105 (84.7-129)	93.6 (81.0-114)	167 (123-240)	341 (211-586)	522 (313-1430)	588
Age 20+ years	99-00	297 (256-344)	269 (213-323)	608 (530-693)	1260 (1030-1550)	2020 (1520-2730)	1278
Age 20+ years	01-02	338 (303-376)	285 (249-337)	695 (595-798)	1480 (1310-1700)	2550 (1980-3080)	1540
Age 20+ years	03-04	268 (217-332)	233 (175-314)	557 (420-734)	1270 (877-1800)	1990 (1500-2470)	1368
Males	99-00	249 (220-283)	223 (182-262)	494 (380-578)	1010 (789-1130)	1430 (1080-2160)	937
Males	01-02	285 (252-323)	248 (222-285)	520 (441-627)	1160 (937-1360)	1900 (1580-2490)	1069
Males	03-04	235 (193-288)	200 (164-262)	466 (331-653)	1000 (763-1400)	1610 (1210-2320)	955
Females	99-00	270 (226-322)	234 (184-302)	601 (492-711)	1350 (1040-1720)	2210 (1570-2810)	1027
Females	01-02	305 (273-341)	256 (219-297)	708 (567-844)	1480 (1410-1710)	2670 (1940-3300)	1229
Females	03-04	241 (193-301)	207 (161-281)	539 (386-735)	1250 (813-1900)	2010 (1500-2450)	1001
Mexican Americans	99-00	674 (574-792)	624 (545-701)	1350 (1090-1660)	3090 (2040-4950)	4950 (3070-9350)	657
Mexican Americans	01-02	652 (569-747)	561 (455-690)	1400 (1050-1950)	4110 (2520-6550)	7080 (3080-15600)	566
Mexican Americans	03-04	444 (362-545)	373 (283-522)	875 (608-1170)	2150 (1520-2470)	3290 (2380-9240)	457
Non-Hispanic blacks	99-00	295 (241-362)	251 (199-313)	668 (492-874)	1850 (1040-2220)	2300 (1560-5680)	416
Non-Hispanic blacks	01-02	324 (262-400)	248 (223-296)	762 (583-999)	1620 (1180-2980)	3260 (1270-6900)	515
Non-Hispanic blacks	03-04	262 (233-295)	216 (173-267)	589 (453-747)	1620 (1130-2310)	2860 (1880-3440)	487
Non-Hispanic whites	99-00	217 (189-249)	194 (162-238)	438 (355-507)	825 (647-1010)	1160 (1010-1350)	732
Non-Hispanic whites	01-02	253 (226-284)	225 (203-254)	463 (402-558)	1150 (878-1340)	1640 (1410-1940)	1053
Non-Hispanic whites	03-04	208 (165-263)	177 (148-238)	417 (302-564)	907 (574-1480)	1490 (909-2300)	888

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 18.6, 8.3, and 7.8, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum p,p'-Dichlorodiphenyldichloroethene (DDE) (whole weight) (1999 – 2004)

CAS Number 72-55-9

Metabolite of Dichlorodiphenyltrichloroethane

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	1.54 (1.33-1.79)	1.31 (1.09-1.66)	3.50 (2.97-4.27)	7.49 (6.14-9.25)	11.6 (9.25-14.8)	1964
Total population	01-02	1.81 (1.64-2.01)	1.57 (1.37-1.72)	3.97 (3.43-4.59)	8.81 (7.85-10.1)	15.4 (12.9-17.6)	2298
Total population	03-04	1.45 (1.18-1.79)	1.26 (1.00-1.58)	3.16 (2.40-4.21)	7.07 (5.55-9.80)	12.1 (8.37-16.0)	1956
Age 12-19 years	99-00	.561 (.488-.646)	.520 (.430-.600)	.870 (.680-1.18)	1.52 (1.13-2.25)	2.32 (1.76-3.56)	686
Age 12-19 years	01-02	.623 (.534-.726)	.590 (.500-.730)	1.00 (.820-1.22)	1.65 (1.39-2.07)	2.30 (1.91-3.14)	758
Age 12-19 years	03-04	.516 (.419-.635)	.456 (.385-.557)	.796 (.611-1.19)	1.69 (.994-2.69)	2.51 (1.56-6.71)	588
Age 20+ years	99-00	1.83 (1.56-2.14)	1.61 (1.26-2.07)	4.17 (3.48-4.66)	8.12 (6.37-10.6)	12.3 (9.87-16.7)	1278
Age 20+ years	01-02	2.14 (1.91-2.39)	1.77 (1.61-2.05)	4.59 (4.10-5.26)	9.75 (8.34-11.5)	16.8 (13.7-19.1)	1540
Age 20+ years	03-04	1.69 (1.36-2.10)	1.46 (1.12-1.96)	3.68 (2.66-4.96)	7.91 (6.01-11.0)	12.8 (9.25-16.8)	1368
Males	99-00	1.49 (1.30-1.70)	1.25 (1.10-1.44)	3.02 (2.57-3.80)	6.43 (5.40-8.00)	9.63 (6.63-15.6)	937
Males	01-02	1.77 (1.57-2.01)	1.59 (1.36-1.76)	3.40 (3.03-4.10)	7.48 (6.43-8.75)	13.1 (9.66-17.6)	1069
Males	03-04	1.46 (1.18-1.80)	1.30 (1.04-1.58)	2.80 (2.18-4.13)	6.71 (5.51-8.54)	9.93 (7.51-15.4)	955
Females	99-00	1.59 (1.32-1.92)	1.38 (1.03-1.99)	4.05 (3.15-4.79)	8.18 (6.36-11.5)	13.2 (9.81-18.5)	1027
Females	01-02	1.85 (1.66-2.06)	1.49 (1.32-1.75)	4.57 (3.81-5.47)	10.2 (9.01-11.9)	16.8 (13.4-19.7)	1229
Females	03-04	1.45 (1.16-1.82)	1.25 (.965-1.66)	3.55 (2.43-4.59)	7.87 (5.41-12.6)	13.7 (8.50-17.3)	1001
Mexican Americans	99-00	3.92 (3.40-4.51)	3.52 (3.17-3.91)	8.22 (7.26-10.4)	22.0 (12.2-32.2)	32.2 (19.7-48.1)	657
Mexican Americans	01-02	3.92 (3.37-4.57)	3.53 (2.68-4.34)	9.34 (7.31-12.5)	26.6 (17.9-38.3)	40.9 (26.8-90.5)	566
Mexican Americans	03-04	2.69 (2.18-3.32)	2.24 (1.70-3.24)	5.78 (4.54-7.21)	13.0 (9.53-15.6)	22.9 (15.3-43.4)	457
Non-Hispanic blacks	99-00	1.63 (1.31-2.02)	1.37 (1.11-1.66)	3.84 (3.01-5.69)	11.2 (6.57-13.3)	14.6 (8.88-35.2)	416
Non-Hispanic blacks	01-02	1.82 (1.46-2.28)	1.38 (1.22-1.72)	4.39 (3.52-6.06)	10.6 (7.24-17.6)	19.4 (8.51-49.3)	515
Non-Hispanic blacks	03-04	1.47 (1.30-1.65)	1.20 (.963-1.51)	3.76 (2.85-4.75)	9.23 (7.19-14.9)	16.8 (14.7-20.6)	487
Non-Hispanic whites	99-00	1.32 (1.14-1.53)	1.13 (1.01-1.35)	2.88 (2.34-3.36)	5.75 (4.62-6.53)	8.04 (6.32-9.81)	732
Non-Hispanic whites	01-02	1.57 (1.39-1.76)	1.41 (1.27-1.58)	3.11 (2.56-3.68)	7.00 (6.02-8.34)	11.3 (8.60-13.7)	1053
Non-Hispanic whites	03-04	1.29 (1.01-1.64)	1.12 (.890-1.49)	2.63 (1.84-3.90)	6.36 (3.90-8.71)	9.71 (6.01-15.0)	888

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum o,p'-Dichlorodiphenyltrichloroethane (DDT) (lipid adjusted) (1999 – 2004)

CAS Number 72-55-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1669
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2279
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1946
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	667
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	756
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	588
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1002
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1523
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1358
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	796
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1059
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	949
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	873
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1220
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	997
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	632
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	565
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	458
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	354
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	507
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	486
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	560
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1045
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	880

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 20.7, 17.4, and 7.8, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum o,p'-Dichlorodiphenyltrichloroethane (DDT) (whole weight) (1999 – 2004)

CAS Number 72-55-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1669
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2279
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1946
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	667
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	756
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	588
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1002
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1523
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1358
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	796
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1059
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	949
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	873
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1220
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	997
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	632
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	565
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	458
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	354
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	507
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	486
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	560
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1045
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	880

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum Hexachlorobenzene (lipid adjusted) (1999 – 2004)

CAS Number 118-74-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1702
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2277
Total population	03-04	15.2 (14.5-15.9)	14.9 (14.2-15.7)	19.0 (18.1-20.3)	24.4 (22.6-26.4)	28.9 (25.6-32.8)	1961
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	591
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	747
Age 12-19 years	03-04	13.3 (12.5-14.1)	13.4 (11.5-14.9)	16.7 (15.5-18.4)	20.7 (19.7-22.7)	25.3 (22.7-30.2)	588
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1111
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1530
Age 20+ years	03-04	15.5 (14.7-16.2)	15.1 (14.5-15.9)	19.4 (18.3-20.9)	24.8 (22.7-26.6)	29.0 (25.6-33.6)	1373
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	807
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1058
Males	03-04	14.5 (13.8-15.3)	14.2 (13.4-15.0)	18.1 (17.0-19.3)	23.6 (21.0-25.6)	26.9 (25.2-31.3)	957
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	895
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1219
Females	03-04	15.8 (15.0-16.6)	15.7 (15.1-16.4)	20.0 (18.7-21.4)	24.9 (23.0-28.6)	29.8 (26.5-33.7)	1004
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	583
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	554
Mexican Americans	03-04	16.2 (14.9-17.7)	15.3 (14.7-16.4)	20.4 (18.3-22.5)	27.6 (24.7-29.4)	33.7 (27.6-44.6)	460
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	350
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	511
Non-Hispanic blacks	03-04	14.5 (13.9-15.0)	14.1 (13.7-15.1)	18.3 (16.6-19.9)	22.3 (20.9-24.0)	26.6 (23.9-30.9)	488
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	636
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1052
Non-Hispanic whites	03-04	15.1 (14.4-16.0)	15.0 (14.2-15.9)	19.2 (17.9-20.8)	24.3 (22.3-26.4)	28.2 (24.9-32.8)	888

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 118.0, 31.4, and 7.8, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (whole weight) (1999 – 2004)

CAS Number 118-74-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1702
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2277
Total population	03-04	.092 (.088-.097)	.090 (.086-.095)	.120 (.113-.126)	.157 (.145-.167)	.186 (.169-.212)	1961
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	591
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	747
Age 12-19 years	03-04	.065 (.062-.069)	.064 (.060-.069)	.079 (.072-.086)	.102 (.091-.111)	.123 (.111-.141)	588
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1111
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1530
Age 20+ years	03-04	.097 (.092-.102)	.095 (.090-.099)	.123 (.118-.130)	.160 (.147-.175)	.191 (.174-.223)	1373
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	807
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1058
Males	03-04	.090 (.085-.095)	.087 (.082-.094)	.115 (.107-.122)	.147 (.135-.163)	.179 (.159-.203)	957
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	895
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1219
Females	03-04	.095 (.089-.100)	.092 (.088-.099)	.123 (.118-.132)	.163 (.148-.176)	.190 (.176-.226)	1004
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	583
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	554
Mexican Americans	03-04	.098 (.089-.109)	.090 (.081-.107)	.125 (.114-.152)	.171 (.157-.203)	.225 (.178-.258)	460
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	350
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	511
Non-Hispanic blacks	03-04	.081 (.077-.085)	.078 (.073-.083)	.104 (.095-.118)	.140 (.127-.155)	.167 (.145-.196)	488
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	636
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1052
Non-Hispanic whites	03-04	.094 (.088-.099)	.092 (.086-.097)	.121 (.114-.129)	.156 (.143-.173)	.182 (.163-.218)	888

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (lipid adjusted) (1999 – 2004)

CAS Number 319-85-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	9.68 (<LOD-10.9)	<LOD	19.1 (16.0-21.6)	42.0 (33.4-50.6)	68.9 (50.6-89.5)	1893
Total population	01-02	*	<LOD	16.0 (14.2-17.3)	36.7 (30.4-45.7)	67.2 (50.3-85.7)	2291
Total population	03-04	*	<LOD	14.1 (12.1-16.5)	32.1 (27.1-37.8)	56.5 (43.7-69.4)	1959
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	11.7 (<LOD-16.1)	653
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	13.1 (9.70-19.0)	758
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	8.80 (<LOD-14.7)	589
Age 20+ years	99-00	10.9 (9.61-12.4)	<LOD	21.1 (18.9-24.0)	46.0 (35.9-56.8)	73.4 (52.7-96.0)	1240
Age 20+ years	01-02	9.87 (9.04-10.8)	7.80 (6.90-8.90)	17.4 (16.0-20.5)	39.6 (33.2-52.0)	71.7 (53.7-96.2)	1533
Age 20+ years	03-04	7.89 (<LOD-9.09)	<LOD	16.3 (13.6-18.4)	35.2 (29.6-42.5)	62.2 (48.2-87.6)	1370
Males	99-00	*	<LOD	14.6 (10.8-19.1)	29.8 (23.3-38.7)	44.9 (32.8-68.9)	901
Males	01-02	*	<LOD	12.9 (11.1-15.7)	27.5 (24.0-34.4)	45.7 (35.2-55.6)	1067
Males	03-04	*	<LOD	10.4 (8.70-12.5)	21.6 (17.7-26.4)	35.3 (26.1-49.9)	952
Females	99-00	11.1 (9.56-12.8)	<LOD	22.0 (19.1-27.6)	51.3 (42.2-67.6)	81.8 (64.4-111)	992
Females	01-02	10.2 (9.46-11.0)	7.70 (6.90-8.50)	18.5 (16.2-22.7)	47.5 (37.6-62.0)	84.7 (62.0-111)	1224
Females	03-04	8.43 (<LOD-9.45)	<LOD	18.6 (16.9-21.5)	41.8 (33.9-51.4)	70.3 (62.2-98.4)	1007
Mexican Americans	99-00	16.7 (13.7-20.2)	15.5 (11.6-20.4)	37.7 (29.6-47.3)	97.9 (62.6-135)	142 (99.8-199)	632
Mexican Americans	01-02	13.1 (11.6-14.7)	11.8 (9.60-13.4)	25.8 (21.1-32.7)	69.4 (50.8-87.6)	134 (85.7-166)	563
Mexican Americans	03-04	10.5 (8.66-12.8)	10.0 (<LOD-12.7)	23.8 (17.5-29.9)	50.1 (30.0-70.3)	70.3 (42.5-123)	460
Non-Hispanic blacks	99-00	*	<LOD	15.4 (12.0-23.1)	37.9 (30.2-42.2)	49.9 (40.9-81.1)	403
Non-Hispanic blacks	01-02	*	<LOD	12.0 (8.20-16.2)	36.2 (18.4-73.4)	71.2 (31.9-178)	513
Non-Hispanic blacks	03-04	*	<LOD	9.70 (8.30-11.9)	27.1 (21.1-36.3)	48.2 (34.8-54.3)	487
Non-Hispanic whites	99-00	*	<LOD	17.5 (14.2-20.5)	34.7 (25.2-46.1)	51.6 (40.0-70.8)	702
Non-Hispanic whites	01-02	*	<LOD	14.4 (11.8-16.8)	31.9 (26.6-37.8)	52.0 (37.7-69.5)	1051
Non-Hispanic whites	03-04	*	<LOD	12.8 (10.9-14.7)	27.6 (22.1-32.2)	40.8 (32.3-56.5)	887

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 9.36, 6.76, and 7.8, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum beta-Hexachlorocyclohexane (whole weight) (1999 – 2004)

CAS Number 319-85-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.058 (<LOD-.066)	<LOD	.120 (.100-.150)	.290 (.220-.360)	.450 (.360-.560)	1893
Total population	01-02	*	<LOD	.100 (.090-.120)	.250 (.210-.310)	.460 (.340-.600)	2291
Total population	03-04	*	<LOD	.092 (.081-.103)	.216 (.173-.254)	.372 (.294-.442)	1959
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	.050 (<LOD-.070)	653
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	.080 (.050-.100)	758
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	.048 (<LOD-.064)	589
Age 20+ years	99-00	.067 (.059-.077)	<LOD	.140 (.120-.160)	.330 (.240-.410)	.480 (.410-.620)	1240
Age 20+ years	01-02	.062 (.057-.069)	.050 (.050-.060)	.120 (.100-.140)	.270 (.230-.350)	.480 (.370-.690)	1533
Age 20+ years	03-04	.050 (<LOD-.058)	<LOD	.103 (.089-.125)	.234 (.191-.290)	.412 (.308-.587)	1370
Males	99-00	*	<LOD	.090 (.080-.120)	.210 (.160-.250)	.290 (.220-.470)	901
Males	01-02	*	<LOD	.080 (.070-.100)	.200 (.150-.260)	.310 (.250-.400)	1067
Males	03-04	*	<LOD	.072 (.056-.089)	.144 (.118-.174)	.222 (.170-.305)	952
Females	99-00	.065 (.056-.077)	<LOD	.150 (.120-.190)	.380 (.300-.450)	.560 (.420-.680)	992
Females	01-02	.062 (.057-.067)	.050 (.040-.050)	.130 (.110-.150)	.320 (.260-.400)	.570 (.450-.710)	1224
Females	03-04	.051 (<LOD-.057)	<LOD	.118 (.103-.130)	.290 (.244-.319)	.442 (.382-.661)	1007
Mexican Americans	99-00	.098 (.080-.119)	.090 (.070-.110)	.240 (.200-.310)	.580 (.390-.840)	.910 (.580-1.37)	632
Mexican Americans	01-02	.078 (.068-.091)	.070 (.050-.080)	.160 (.130-.210)	.470 (.330-.700)	1.01 (.620-1.32)	563
Mexican Americans	03-04	.064 (.051-.080)	.057 (<LOD-.086)	.139 (.124-.190)	.331 (.191-.501)	.521 (.297-.814)	460
Non-Hispanic blacks	99-00	*	<LOD	.100 (.070-.140)	.250 (.190-.290)	.360 (.280-.460)	403
Non-Hispanic blacks	01-02	*	<LOD	.070 (.050-.110)	.220 (.120-.410)	.410 (.190-1.05)	513
Non-Hispanic blacks	03-04	*	<LOD	.065 (.047-.083)	.167 (.131-.214)	.281 (.200-.404)	487
Non-Hispanic whites	99-00	*	<LOD	.120 (.100-.140)	.250 (.170-.340)	.390 (.280-.510)	702
Non-Hispanic whites	01-02	*	<LOD	.090 (.080-.110)	.210 (.180-.260)	.350 (.250-.480)	1051
Non-Hispanic whites	03-04	*	<LOD	.083 (.073-.096)	.175 (.146-.220)	.287 (.221-.372)	887

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (lipid adjusted) (1999 – 2004)

CAS Number 58-89-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1799
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2280
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1960
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	660
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	593
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1139
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1522
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1367
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	863
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1060
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	952
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	936
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1220
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1008
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	631
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	563
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	461
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	380
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	509
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	490
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	646
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1045
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	884

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.5, 10.5, and 7.8, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (whole weight) (1999 – 2004)

CAS Number 58-89-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1799
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2280
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1960
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	660
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	593
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1139
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1522
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1367
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	863
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1060
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	952
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	936
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1220
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1008
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	631
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	563
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	461
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	380
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	509
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	490
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	646
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1045
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	884

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum Mirex (lipid adjusted) (1999 – 2004)

CAS Number 2385-85-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1853
Total population	01-02	*	<LOD	<LOD	15.8 (<LOD-73.7)	57.1 (13.2-230)	2257
Total population	03-04	*	<LOD	<LOD	8.40 (<LOD-13.0)	13.2 (7.90-29.6)	1951
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	659
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	728
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	592
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1194
Age 20+ years	01-02	*	<LOD	<LOD	19.6 (<LOD-108)	71.0 (14.6-305)	1529
Age 20+ years	03-04	*	<LOD	<LOD	9.10 (<LOD-15.6)	15.4 (8.10-37.1)	1359
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	887
Males	01-02	*	<LOD	<LOD	16.1 (<LOD-65.6)	50.8 (12.3-225)	1052
Males	03-04	*	<LOD	<LOD	9.70 (<LOD-15.4)	15.5 (9.70-24.4)	949
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	966
Females	01-02	*	<LOD	<LOD	15.0 (<LOD-108)	63.0 (12.0-374)	1205
Females	03-04	*	<LOD	<LOD	<LOD	11.6 (<LOD-31.3)	1002
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	617
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	548
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	459
Non-Hispanic blacks	99-00	*	<LOD	<LOD	15.5 (<LOD-42.2)	39.5 (<LOD-115)	398
Non-Hispanic blacks	01-02	*	<LOD	13.7 (<LOD-47.3)	51.3 (15.4-230)	153 (30.5-425)	500
Non-Hispanic blacks	03-04	*	<LOD	<LOD	18.1 (8.70-40.8)	40.3 (15.5-82.7)	484
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	688
Non-Hispanic whites	01-02	*	<LOD	<LOD	15.1 (<LOD-104)	66.7 (12.5-291)	1049
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	11.6 (<LOD-23.4)	884

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.6, 10.5, and 7.8, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (whole weight) (1999 – 2004)

CAS Number 2385-85-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1853
Total population	01-02	*	<LOD	<LOD	.100 (<LOD-.470)	.410 (.080-1.73)	2257
Total population	03-04	*	<LOD	<LOD	.054 (<LOD-.084)	.093 (.052-.170)	1951
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	659
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	728
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	592
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1194
Age 20+ years	01-02	*	<LOD	<LOD	.140 (<LOD-.690)	.470 (.090-1.92)	1529
Age 20+ years	03-04	*	<LOD	<LOD	.059 (<LOD-.102)	.106 (.053-.215)	1359
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	887
Males	01-02	*	<LOD	<LOD	.110 (<LOD-.470)	.370 (.090-1.37)	1052
Males	03-04	*	<LOD	<LOD	.064 (<LOD-.106)	.108 (.062-.170)	949
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	966
Females	01-02	*	<LOD	<LOD	.090 (<LOD-.510)	.430 (.070-1.79)	1205
Females	03-04	*	<LOD	<LOD	<LOD	.077 (<LOD-.170)	1002
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	617
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	548
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	459
Non-Hispanic blacks	99-00	*	<LOD	<LOD	.090 (<LOD-.220)	.220 (<LOD-.450)	398
Non-Hispanic blacks	01-02	*	<LOD	.090 (<LOD-.240)	.310 (.090-1.41)	1.08 (.170-3.02)	500
Non-Hispanic blacks	03-04	*	<LOD	<LOD	.112 (.055-.268)	.256 (.089-.635)	484
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	688
Non-Hispanic whites	01-02	*	<LOD	<LOD	.100 (<LOD-.610)	.450 (.080-1.79)	1049
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	.079 (<LOD-.174)	884

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Polybrominated Diphenyl Ethers and PBB 153

Serum 2,2',4-Tribromodiphenyl ether (BDE 17) (lipid adjusted) (2003 – 2004)

CAS Number 147217-75-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1992
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	607
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1385
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	964
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1028
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	482
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	491
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	892

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 1.0.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,4,4'-Tribromodiphenyl ether (BDE 28) (lipid adjusted) (2003 – 2004)

CAS Number 41318-75-6

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	1.19 (1.03-1.37)	1.10 (1.00-1.30)	2.20 (1.90-2.60)	4.80 (3.30-6.70)	8.00 (5.40-11.3)	1987
Age 12-19 years	03-04	1.30 (1.15-1.46)	1.20 (1.10-1.50)	2.40 (2.00-2.60)	4.00 (2.90-5.60)	6.10 (4.00-9.40)	598
Age 20+ years	03-04	1.17 (1.01-1.37)	1.10 (.900-1.30)	2.20 (1.90-2.70)	5.00 (3.30-7.20)	8.20 (6.00-10.9)	1389
Males	03-04	1.21 (1.05-1.39)	1.10 (1.00-1.30)	2.30 (2.00-2.70)	5.10 (3.50-7.30)	8.20 (6.00-11.3)	964
Females	03-04	1.17 (.990-1.38)	1.10 (.900-1.40)	2.10 (1.80-2.60)	4.60 (3.00-6.90)	7.80 (4.70-11.8)	1023
Mexican Americans	03-04	1.43 (1.29-1.59)	1.40 (1.20-1.50)	2.40 (2.00-2.90)	4.70 (3.70-5.50)	7.30 (5.60-8.30)	488
Non-Hispanic blacks	03-04	1.21 (1.03-1.42)	1.10 (.900-1.30)	2.20 (1.80-2.50)	5.30 (3.50-6.70)	8.40 (5.40-12.3)	470
Non-Hispanic whites	03-04	1.17 (.968-1.42)	1.10 (.900-1.30)	2.20 (1.80-2.70)	4.90 (3.00-8.00)	8.00 (4.50-13.6)	905

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.8.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4'-Tetrabromodiphenyl ether (BDE 47) (lipid adjusted) (2003 – 2004)

CAS Number 5436-43-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	20.5 (17.6-23.9)	19.2 (15.7-22.3)	41.1 (35.6-49.2)	85.1 (66.8-127)	163 (108-240)	2016
Age 12-19 years	03-04	28.2 (24.6-32.3)	27.2 (22.1-33.6)	53.6 (44.9-63.6)	104 (82.4-145)	174 (115-211)	615
Age 20+ years	03-04	19.5 (16.5-23.1)	18.0 (14.6-21.6)	39.1 (32.8-47.0)	83.3 (63.0-127)	163 (102-240)	1401
Males	03-04	21.4 (18.1-25.3)	19.2 (15.8-24.0)	45.2 (37.3-54.9)	94.3 (66.8-148)	168 (112-382)	981
Females	03-04	19.6 (16.4-23.5)	19.1 (14.1-23.2)	38.4 (31.8-46.4)	79.5 (60.7-121)	155 (102-239)	1035
Mexican Americans	03-04	25.5 (23.0-28.1)	23.6 (21.2-25.5)	47.1 (38.2-56.5)	87.2 (72.0-105)	151 (105-195)	478
Non-Hispanic blacks	03-04	24.3 (20.9-28.2)	21.4 (18.2-25.6)	47.5 (40.7-53.2)	116 (81.8-149)	242 (136-481)	499
Non-Hispanic whites	03-04	19.5 (16.1-23.7)	17.4 (14.4-22.2)	40.2 (33.1-51.9)	85.1 (60.3-142)	163 (90.2-283)	912

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 4.2.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,3',4,4'-Tetrabromodiphenyl ether (BDE 66) (lipid adjusted) (2003 – 2004)

CAS Number 189084-61-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	1.30 (1.00-2.10)	1999
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	1.30 (<LOD-1.90)	606
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	1.30 (1.00-2.20)	1393
Males	03-04	*	<LOD	<LOD	<LOD	1.40 (1.00-2.60)	970
Females	03-04	*	<LOD	<LOD	<LOD	1.10 (<LOD-2.20)	1029
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	1.20 (<LOD-1.60)	461
Non-Hispanic blacks	03-04	*	<LOD	<LOD	1.00 (<LOD-2.00)	2.40 (1.40-5.10)	496
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	1.20 (<LOD-2.50)	914

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 1.0.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85) (lipid adjusted) (2003 – 2004)

CAS Number 182346-21-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	4.10 (2.80-6.30)	2000
Age 12-19 years	03-04	*	<LOD	<LOD	2.80 (<LOD-3.50)	4.00 (3.50-6.30)	610
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	4.10 (2.50-6.70)	1390
Males	03-04	*	<LOD	<LOD	2.40 (<LOD-3.30)	4.80 (3.10-8.40)	967
Females	03-04	*	<LOD	<LOD	<LOD	3.60 (<LOD-5.20)	1033
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	3.70 (2.80-4.80)	484
Non-Hispanic blacks	03-04	*	<LOD	<LOD	3.50 (2.50-4.40)	6.90 (3.10-18.0)	493
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	3.90 (<LOD-7.50)	895

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 2.4.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5-Pentabromodiphenyl ether (BDE 99) (lipid adjusted) (2003 – 2004)

CAS Number 60328-60-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	9.20 (7.50-11.1)	21.7 (17.0-29.1)	42.2 (33.3-54.8)	1985
Age 12-19 years	03-04	6.88 (6.14-7.72)	5.70 (<LOD-7.70)	12.9 (11.4-15.7)	27.9 (19.6-37.9)	45.2 (35.9-56.8)	602
Age 20+ years	03-04	*	<LOD	8.50 (7.10-10.5)	20.6 (15.5-28.8)	41.6 (30.8-57.3)	1383
Males	03-04	5.28 (<LOD-6.14)	<LOD	10.0 (8.40-11.6)	24.5 (18.0-37.3)	45.5 (33.8-57.3)	964
Females	03-04	*	<LOD	8.70 (6.60-10.6)	18.3 (14.7-28.8)	41.2 (22.9-60.3)	1021
Mexican Americans	03-04	5.90 (5.45-6.39)	5.50 (<LOD-5.80)	10.8 (9.30-12.6)	20.0 (17.0-23.5)	30.8 (24.5-41.7)	478
Non-Hispanic blacks	03-04	6.22 (5.42-7.12)	5.00 (<LOD-5.70)	11.5 (9.60-13.1)	30.2 (21.5-42.2)	74.7 (30.2-155)	479
Non-Hispanic whites	03-04	*	<LOD	8.90 (6.80-11.3)	21.7 (15.3-34.0)	43.6 (30.7-71.4)	903

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 5.0.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',6-Pentabromodiphenyl ether (BDE 100) (lipid adjusted) (2003 – 2004)

CAS Number 189084-64-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	3.93 (3.42-4.51)	3.60 (3.10-4.10)	7.80 (6.80-9.00)	18.4 (15.4-22.0)	36.5 (24.6-54.0)	2040
Age 12-19 years	03-04	5.17 (4.46-6.00)	4.90 (3.80-6.10)	9.50 (7.90-12.8)	19.3 (14.4-26.2)	34.3 (25.2-45.0)	622
Age 20+ years	03-04	3.77 (3.24-4.38)	3.30 (2.90-4.00)	7.40 (6.20-9.00)	18.3 (15.0-22.2)	36.6 (23.2-59.2)	1418
Males	03-04	4.16 (3.55-4.86)	3.80 (3.10-4.50)	8.50 (7.50-9.90)	18.5 (14.9-25.1)	44.1 (21.9-61.5)	994
Females	03-04	3.72 (3.15-4.40)	3.30 (2.80-4.10)	7.10 (6.00-8.00)	18.4 (14.4-23.1)	33.3 (23.3-46.0)	1046
Mexican Americans	03-04	4.58 (4.03-5.22)	4.30 (3.80-5.20)	8.10 (6.80-9.10)	14.9 (11.4-20.3)	26.7 (20.3-36.2)	488
Non-Hispanic blacks	03-04	4.72 (4.01-5.55)	4.30 (3.30-5.20)	9.50 (7.80-10.9)	24.1 (16.6-34.3)	41.3 (26.0-79.2)	503
Non-Hispanic whites	03-04	3.78 (3.17-4.51)	3.30 (2.90-4.10)	7.70 (6.20-9.70)	18.6 (14.5-23.3)	40.5 (22.6-59.2)	921

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 1.4.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153) (lipid adjusted) (2003 – 2004)

CAS Number 68631-49-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	5.69 (5.11-6.34)	4.80 (4.20-5.30)	11.3 (9.90-12.8)	32.6 (27.9-40.3)	65.7 (54.9-88.4)	2039
Age 12-19 years	03-04	8.05 (6.68-9.70)	7.50 (6.10-9.90)	15.3 (11.7-19.4)	31.0 (22.9-44.2)	52.9 (35.9-68.5)	621
Age 20+ years	03-04	5.41 (4.83-6.05)	4.40 (3.80-5.10)	10.6 (9.00-12.3)	32.8 (26.5-45.9)	73.3 (58.2-90.4)	1418
Males	03-04	6.85 (5.99-7.84)	5.50 (4.80-6.70)	12.7 (11.2-16.5)	49.3 (31.0-62.9)	88.4 (63.4-115)	994
Females	03-04	4.78 (4.20-5.43)	4.10 (3.40-5.00)	9.70 (7.40-11.9)	26.0 (20.2-31.6)	54.5 (34.6-62.9)	1045
Mexican Americans	03-04	5.11 (4.32-6.06)	4.80 (4.20-5.40)	8.70 (6.50-11.0)	17.2 (13.0-25.3)	34.0 (18.3-55.1)	487
Non-Hispanic blacks	03-04	6.05 (5.35-6.83)	5.50 (4.80-6.20)	12.9 (9.90-17.5)	30.0 (21.0-44.2)	53.1 (36.8-63.3)	503
Non-Hispanic whites	03-04	5.85 (5.03-6.81)	4.90 (3.90-5.70)	11.9 (9.90-15.2)	39.0 (28.5-54.9)	75.9 (58.0-93.2)	921

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 2.2.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154) (lipid adjusted) (2003 – 2004)

CAS Number 207122-15-4

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	.900 (.800-1.10)	2.10 (1.70-2.70)	4.20 (2.80-5.40)	2014
Age 12-19 years	03-04	*	<LOD	1.20 (1.00-1.40)	2.70 (2.00-3.00)	4.00 (3.00-4.80)	614
Age 20+ years	03-04	*	<LOD	.900 (.800-1.10)	2.00 (1.60-2.60)	4.20 (2.70-5.70)	1400
Males	03-04	*	<LOD	1.00 (.800-1.20)	2.30 (1.80-3.00)	4.30 (3.20-6.50)	976
Females	03-04	*	<LOD	.900 (.800-1.00)	1.80 (1.40-2.80)	4.20 (2.50-5.70)	1038
Mexican Americans	03-04	*	<LOD	1.00 (.900-1.10)	1.80 (1.40-2.30)	3.90 (2.30-4.50)	477
Non-Hispanic blacks	03-04	*	<LOD	1.20 (.900-1.40)	2.70 (2.30-4.40)	5.30 (3.10-8.70)	498
Non-Hispanic whites	03-04	*	<LOD	.900 (.800-1.10)	2.00 (1.50-2.80)	4.20 (2.50-6.70)	913

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.8.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183) (lipid adjusted) (2003 – 2004)

CAS Number 207122-16-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1993
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	604
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1389
Males	03-04	*	<LOD	<LOD	<LOD	1.70 (<LOD-2.60)	962
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1031
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	484
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	1.80 (<LOD-2.70)	482
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	901

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 1.7.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153) (lipid adjusted) (2003 – 2004)

CAS Number 59080-40-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	2.29 (1.82-2.87)	2.20 (2.00-2.60)	4.40 (3.40-6.30)	12.8 (6.60-25.5)	27.2 (11.7-60.9)	2032
Age 12-19 years	03-04	*	<LOD	1.10 (.900-1.60)	2.70 (2.00-3.00)	4.10 (2.90-4.70)	616
Age 20+ years	03-04	2.72 (2.14-3.47)	2.50 (2.20-2.80)	4.90 (3.60-7.90)	13.6 (7.20-34.6)	34.6 (12.8-66.8)	1416
Males	03-04	2.76 (2.21-3.45)	2.70 (2.30-3.20)	5.40 (3.90-8.50)	15.8 (9.30-27.8)	35.4 (13.5-70.3)	987
Females	03-04	1.92 (1.50-2.46)	2.00 (1.60-2.30)	3.60 (2.80-4.90)	9.70 (4.60-27.5)	23.9 (7.40-56.6)	1045
Mexican Americans	03-04	1.11 (.917-1.33)	1.10 (<LOD-1.30)	2.60 (2.00-3.00)	6.00 (3.50-8.60)	10.0 (6.50-15.2)	484
Non-Hispanic blacks	03-04	2.35 (1.64-3.37)	2.10 (1.70-2.80)	4.80 (3.00-12.1)	13.9 (7.00-38.2)	29.7 (12.1-70.2)	503
Non-Hispanic whites	03-04	2.66 (2.06-3.42)	2.50 (2.20-2.80)	4.90 (3.40-7.80)	13.5 (6.60-36.4)	34.6 (11.6-70.3)	917

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.8.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Polychlorinated Dibenzo-p-dioxins

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	58.2 (<LOD-63.6)	86.0 (75.5-96.7)	112 (101-131)	1894
Total population	01-02	39.0 (33.7-45.0)	40.2 (34.9-46.9)	68.7 (56.7-82.2)	115 (88.2-138)	147 (126-181)	1220
Total population	03-04	25.3 (23.4-27.3)	24.9 (22.8-26.9)	42.5 (38.8-48.1)	70.4 (62.7-80.1)	91.3 (73.5-117)	1874
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	63.6 (<LOD-75.6)	657
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	16.7 (15.1-18.4)	16.4 (15.1-18.3)	23.6 (21.5-25.8)	33.4 (28.6-36.8)	46.7 (34.5-78.1)	586
Age 20+ years	99-00	*	<LOD	62.0 (57.1-66.7)	92.9 (81.2-101)	120 (102-139)	1237
Age 20+ years	01-02	39.0 (33.7-45.0)	40.2 (34.9-46.9)	68.7 (56.7-82.2)	115 (88.2-138)	147 (126-181)	1220
Age 20+ years	03-04	26.8 (24.6-29.2)	27.3 (24.6-29.0)	45.6 (41.3-53.2)	73.7 (64.1-88.6)	95.0 (76.1-126)	1288
Males	99-00	*	<LOD	<LOD	73.6 (69.0-80.8)	94.7 (83.1-103)	910
Males	01-02	36.6 (31.7-42.3)	39.0 (33.3-42.6)	62.1 (49.7-75.0)	102 (75.8-132)	138 (103-169)	553
Males	03-04	24.2 (21.7-27.0)	23.2 (21.1-25.6)	40.6 (35.3-46.9)	64.2 (58.8-73.7)	85.0 (65.8-113)	920
Females	99-00	*	<LOD	62.7 (<LOD-69.1)	102 (86.0-118)	131 (111-164)	984
Females	01-02	41.2 (34.9-48.7)	43.6 (35.3-52.4)	76.0 (59.5-90.1)	125 (93.4-150)	158 (130-191)	667
Females	03-04	26.3 (24.4-28.3)	26.8 (24.3-28.3)	44.4 (41.1-50.2)	76.1 (65.3-89.1)	95.7 (80.7-128)	954
Mexican Americans	99-00	*	<LOD	61.4 (<LOD-69.0)	97.7 (82.8-111)	132 (108-159)	621
Mexican Americans	01-02	39.6 (35.7-43.9)	39.7 (33.6-47.4)	64.0 (55.8-74.7)	107 (82.4-128)	149 (111-171)	262
Mexican Americans	03-04	25.8 (22.6-29.4)	26.1 (20.9-30.9)	41.9 (36.7-44.7)	61.0 (49.7-71.9)	80.1 (65.0-89.1)	424
Non-Hispanic blacks	99-00	*	<LOD	58.1 (<LOD-71.1)	95.0 (75.1-110)	125 (102-183)	408
Non-Hispanic blacks	01-02	43.7 (35.4-54.0)	42.8 (32.2-59.8)	80.6 (60.9-106)	134 (101-166)	167 (130-230)	218
Non-Hispanic blacks	03-04	25.8 (22.6-29.4)	23.7 (20.7-27.1)	41.2 (32.6-56.4)	69.2 (54.6-115)	115 (67.1-164)	454
Non-Hispanic whites	99-00	*	<LOD	59.0 (<LOD-64.8)	84.9 (72.0-97.0)	106 (96.7-122)	709
Non-Hispanic whites	01-02	39.3 (33.0-46.8)	40.5 (34.0-50.1)	71.0 (56.3-87.5)	117 (87.1-147)	147 (125-186)	657
Non-Hispanic whites	03-04	25.0 (22.6-27.7)	24.6 (22.3-27.4)	42.6 (39.4-48.5)	73.5 (60.4-86.7)	93.7 (71.6-127)	875

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 55.9, 10.3, and 13.0, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	354 (<LOD-384)	564 (501-617)	749 (646-869)	1894
Total population	01-02	252 (219-289)	267 (232-305)	440 (376-529)	779 (591-989)	1030 (840-1290)	1220
Total population	03-04	155 (143-167)	150 (134-163)	288 (242-319)	465 (399-550)	618 (516-787)	1874
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	289 (<LOD-340)	657
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	84.6 (77.4-92.5)	83.9 (76.1-92.0)	118 (106-131)	165 (139-185)	210 (176-319)	586
Age 20+ years	99-00	*	<LOD	385 (354-418)	610 (534-677)	802 (681-936)	1237
Age 20+ years	01-02	252 (219-289)	267 (232-305)	440 (376-529)	779 (591-989)	1030 (840-1290)	1220
Age 20+ years	03-04	169 (155-184)	170 (150-186)	314 (267-348)	506 (419-576)	628 (546-810)	1288
Males	99-00	*	<LOD	<LOD	489 (436-543)	613 (535-681)	910
Males	01-02	243 (211-279)	245 (213-291)	422 (349-527)	766 (536-976)	983 (766-1260)	553
Males	03-04	150 (135-167)	144 (129-161)	273 (236-305)	424 (365-516)	554 (440-667)	920
Females	99-00	*	<LOD	373 (<LOD-428)	637 (562-802)	907 (806-1040)	984
Females	01-02	260 (221-306)	281 (236-324)	466 (386-551)	795 (621-997)	1140 (849-1330)	667
Females	03-04	159 (147-172)	158 (138-170)	303 (249-345)	520 (429-591)	623 (545-848)	954
Mexican Americans	99-00	*	<LOD	372 (<LOD-404)	598 (546-657)	849 (657-1020)	621
Mexican Americans	01-02	254 (232-278)	249 (229-286)	403 (360-521)	791 (643-929)	988 (817-1240)	262
Mexican Americans	03-04	158 (139-180)	159 (138-193)	274 (241-299)	414 (349-469)	556 (451-592)	424
Non-Hispanic blacks	99-00	*	<LOD	323 (<LOD-391)	567 (422-716)	778 (574-1130)	408
Non-Hispanic blacks	01-02	258 (208-319)	262 (180-339)	478 (343-600)	852 (578-1170)	1170 (821-1660)	218
Non-Hispanic blacks	03-04	148 (128-170)	137 (117-156)	247 (188-344)	434 (345-599)	715 (405-1090)	454
Non-Hispanic whites	99-00	*	<LOD	370 (<LOD-401)	565 (491-634)	733 (637-816)	709
Non-Hispanic whites	01-02	255 (216-302)	277 (228-328)	442 (374-547)	782 (551-1020)	1020 (803-1290)	657
Non-Hispanic whites	03-04	155 (140-170)	152 (131-171)	292 (248-325)	492 (390-571)	621 (506-810)	875

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (lipid adjusted) (2001 – 2004)

CAS Number 39227-28-6

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	10.7 (<LOD-13.9)	14.9 (11.7-20.0)	1239
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1861
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	582
Age 20+ years	01-02	*	<LOD	<LOD	10.7 (<LOD-13.9)	14.9 (11.7-20.0)	1239
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1279
Males	01-02	*	<LOD	<LOD	10.9 (<LOD-14.3)	14.7 (11.5-17.6)	566
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	914
Females	01-02	*	<LOD	<LOD	10.7 (<LOD-14.1)	15.6 (11.1-23.0)	673
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	947
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	9.20 (<LOD-11.8)	263
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	421
Non-Hispanic blacks	01-02	*	<LOD	<LOD	13.9 (<LOD-17.6)	18.3 (13.9-23.0)	220
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	450
Non-Hispanic whites	01-02	*	<LOD	<LOD	11.3 (<LOD-14.4)	15.1 (12.0-20.5)	672
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	870

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 9.0 and 11.9.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (whole weight) (2001 – 2004)

CAS Number 39227-28-6

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	74.7 (<LOD-90.7)	105 (81.2-139)	1239
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1861
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	582
Age 20+ years	01-02	*	<LOD	<LOD	74.7 (<LOD-90.7)	105 (81.2-139)	1239
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1279
Males	01-02	*	<LOD	<LOD	73.6 (<LOD-90.7)	105 (77.9-134)	566
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	914
Females	01-02	*	<LOD	<LOD	74.7 (<LOD-90.7)	102 (78.0-152)	673
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	947
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	71.2 (<LOD-118)	263
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	421
Non-Hispanic blacks	01-02	*	<LOD	<LOD	82.1 (<LOD-130)	130 (75.7-184)	220
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	450
Non-Hispanic whites	01-02	*	<LOD	<LOD	77.5 (<LOD-97.1)	105 (78.8-143)	672
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	870

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (lipid adjusted) (1999 – 2004)

CAS Number 57653-85-7

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	32.6 (28.3-38.2)	56.9 (47.4-67.3)	74.0 (68.3-82.4)	1885
Total population	01-02	34.6 (29.6-40.6)	39.2 (32.7-44.7)	60.8 (50.3-74.2)	95.2 (76.2-120)	128 (99.4-153)	1234
Total population	03-04	17.2 (15.7-18.9)	20.0 (17.8-22.9)	36.5 (32.2-40.0)	53.0 (48.1-59.6)	68.5 (59.6-74.9)	1871
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	26.7 (20.2-29.6)	648
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	16.1 (14.3-18.1)	19.4 (16.4-27.7)	584
Age 20+ years	99-00	*	<LOD	36.2 (31.5-40.7)	62.8 (53.6-69.1)	75.6 (70.5-84.2)	1237
Age 20+ years	01-02	34.6 (29.6-40.6)	39.2 (32.7-44.7)	60.8 (50.3-74.2)	95.2 (76.2-120)	128 (99.4-153)	1234
Age 20+ years	03-04	19.7 (17.8-21.8)	23.8 (20.7-26.4)	39.3 (35.4-42.2)	56.6 (49.7-63.8)	70.8 (60.7-82.2)	1287
Males	99-00	*	<LOD	31.5 (23.7-38.2)	55.0 (45.7-64.2)	71.3 (59.4-79.4)	908
Males	01-02	34.1 (28.3-41.1)	38.9 (32.1-44.7)	61.9 (50.0-79.5)	94.9 (70.8-131)	130 (88.5-181)	564
Males	03-04	17.5 (15.5-19.8)	19.8 (17.8-21.6)	35.5 (29.8-40.3)	52.9 (45.4-63.2)	70.2 (57.5-88.7)	920
Females	99-00	*	<LOD	34.9 (29.1-39.7)	61.2 (51.0-69.2)	74.9 (68.4-92.2)	977
Females	01-02	35.1 (29.9-41.2)	40.1 (32.4-46.3)	59.8 (49.8-72.3)	97.6 (77.1-114)	126 (108-142)	670
Females	03-04	16.9 (15.3-18.6)	20.5 (17.8-24.6)	36.9 (33.2-41.0)	53.6 (48.3-59.6)	65.6 (60.0-73.4)	951
Mexican Americans	99-00	*	<LOD	21.3 (<LOD-27.6)	43.3 (34.1-52.3)	58.0 (49.5-64.8)	624
Mexican Americans	01-02	18.3 (15.6-21.4)	21.2 (19.4-25.0)	31.9 (27.5-40.3)	51.5 (40.3-69.9)	68.3 (48.0-111)	260
Mexican Americans	03-04	*	<LOD	21.1 (16.3-26.5)	32.2 (24.5-47.4)	43.0 (31.5-65.3)	424
Non-Hispanic blacks	99-00	*	<LOD	31.9 (26.6-41.2)	56.7 (44.9-74.6)	81.6 (72.2-91.7)	402
Non-Hispanic blacks	01-02	38.9 (33.6-45.0)	40.3 (33.5-47.3)	63.5 (54.6-76.9)	93.9 (78.7-133)	136 (92.6-185)	219
Non-Hispanic blacks	03-04	16.2 (12.9-20.4)	18.1 (14.4-21.6)	34.9 (28.4-42.9)	54.5 (44.4-69.4)	74.0 (54.3-122)	454
Non-Hispanic whites	99-00	*	<LOD	35.5 (29.7-40.0)	60.9 (51.4-68.3)	74.3 (68.3-83.0)	703
Non-Hispanic whites	01-02	37.8 (31.5-45.4)	42.8 (33.9-51.2)	65.0 (52.3-82.9)	99.6 (78.4-130)	131 (103-165)	671
Non-Hispanic whites	03-04	18.7 (17.0-20.6)	22.9 (19.9-26.2)	38.0 (35.2-41.5)	56.6 (48.7-63.8)	69.0 (60.6-74.9)	872

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 20.1, 9.1, and 12.3, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD) (whole weight) (1999 – 2004)

CAS Number 57653-85-7

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	202 (168-239)	374 (314-426)	496 (429-571)	1885
Total population	01-02	224 (192-261)	247 (219-287)	412 (347-498)	663 (549-785)	870 (696-1100)	1234
Total population	03-04	105 (95.7-116)	123 (111-136)	240 (219-263)	357 (325-395)	443 (395-487)	1871
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	126 (93.2-155)	648
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	77.6 (67.4-84.8)	94.5 (77.6-122)	584
Age 20+ years	99-00	*	<LOD	232 (196-268)	403 (349-458)	521 (458-607)	1237
Age 20+ years	01-02	224 (192-261)	247 (219-287)	412 (347-498)	663 (549-785)	870 (696-1100)	1234
Age 20+ years	03-04	124 (112-138)	146 (125-172)	259 (235-285)	376 (334-422)	466 (403-528)	1287
Males	99-00	*	<LOD	189 (134-239)	353 (278-417)	449 (378-526)	908
Males	01-02	226 (190-270)	263 (223-301)	425 (347-540)	678 (547-794)	883 (666-1180)	564
Males	03-04	108 (95.4-123)	123 (108-141)	231 (206-261)	351 (286-424)	450 (374-538)	920
Females	99-00	*	<LOD	213 (174-263)	400 (344-467)	553 (467-651)	977
Females	01-02	222 (190-260)	239 (207-281)	397 (338-474)	644 (526-771)	864 (720-1060)	670
Females	03-04	103 (92.8-113)	121 (101-142)	249 (225-277)	363 (336-395)	429 (395-512)	951
Mexican Americans	99-00	*	<LOD	128 (<LOD-167)	284 (242-334)	380 (328-419)	624
Mexican Americans	01-02	117 (99.4-139)	130 (107-157)	233 (198-270)	409 (278-524)	524 (384-731)	260
Mexican Americans	03-04	*	<LOD	141 (106-188)	221 (188-337)	327 (210-426)	424
Non-Hispanic blacks	99-00	*	<LOD	191 (150-234)	374 (267-424)	477 (389-568)	402
Non-Hispanic blacks	01-02	229 (199-264)	229 (190-284)	371 (333-477)	643 (480-799)	821 (596-1260)	219
Non-Hispanic blacks	03-04	92.9 (73.3-118)	106 (77.0-125)	219 (165-260)	362 (279-460)	461 (372-689)	454
Non-Hispanic whites	99-00	*	<LOD	222 (183-270)	403 (346-460)	520 (450-615)	703
Non-Hispanic whites	01-02	246 (206-293)	275 (233-325)	443 (365-553)	684 (549-870)	897 (718-1150)	671
Non-Hispanic whites	03-04	116 (105-127)	136 (120-165)	258 (231-286)	375 (333-418)	466 (402-519)	872

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD) (lipid adjusted) (1999 – 2004)

CAS Number 19408-74-3

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1870
Total population	01-02	*	<LOD	<LOD	12.5 (10.5-15.3)	17.0 (14.3-20.0)	1238
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1869
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	642
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	585
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1228
Age 20+ years	01-02	*	<LOD	<LOD	12.5 (10.5-15.3)	17.0 (14.3-20.0)	1238
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1284
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	895
Males	01-02	*	<LOD	<LOD	12.1 (<LOD-14.8)	15.1 (12.9-18.5)	567
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	918
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	975
Females	01-02	*	<LOD	<LOD	13.0 (10.7-16.8)	18.3 (15.7-21.1)	671
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	951
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	618
Mexican Americans	01-02	*	<LOD	<LOD	9.60 (<LOD-11.6)	12.2 (<LOD-20.6)	262
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	396
Non-Hispanic blacks	01-02	*	<LOD	<LOD	14.6 (11.2-20.0)	19.9 (14.6-23.9)	220
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	701
Non-Hispanic whites	01-02	*	<LOD	<LOD	12.9 (9.90-15.9)	17.3 (14.7-20.6)	672
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	871

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 20.3, 9.3, and 12.3, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD) (whole weight) (1999 – 2004)

CAS Number 19408-74-3

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1870
Total population	01-02	*	<LOD	<LOD	86.5 (68.8-108)	121 (99.5-146)	1238
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1869
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	642
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	585
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1228
Age 20+ years	01-02	*	<LOD	<LOD	86.5 (68.8-108)	121 (99.5-146)	1238
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1284
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	895
Males	01-02	*	<LOD	<LOD	84.1 (<LOD-104)	108 (90.6-142)	567
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	918
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	975
Females	01-02	*	<LOD	<LOD	89.8 (67.9-121)	123 (102-157)	671
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	951
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	618
Mexican Americans	01-02	*	<LOD	<LOD	74.7 (<LOD-104)	107 (<LOD-167)	262
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	396
Non-Hispanic blacks	01-02	*	<LOD	<LOD	92.6 (62.8-126)	123 (82.6-169)	220
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	701
Non-Hispanic whites	01-02	*	<LOD	<LOD	88.1 (67.9-119)	124 (96.6-152)	672
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	871

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) (lipid adjusted) (1999 – 2004)

CAS Number 3268-87-9

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	406 (359-453)	674 (597-767)	913 (787-1010)	1921
Total population	01-02	346 (<LOD-394)	333 (<LOD-402)	573 (498-668)	944 (780-1090)	1260 (998-1610)	1171
Total population	03-04	*	<LOD	336 (283-389)	582 (490-658)	767 (645-913)	1851
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	421 (363-517)	667
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	244 (<LOD-330)	352 (264-458)	581
Age 20+ years	99-00	*	<LOD	445 (389-496)	710 (624-802)	948 (822-1080)	1254
Age 20+ years	01-02	346 (<LOD-394)	333 (<LOD-402)	573 (498-668)	944 (780-1090)	1260 (998-1610)	1171
Age 20+ years	03-04	220 (<LOD-244)	223 (<LOD-243)	358 (297-421)	597 (502-719)	794 (665-978)	1270
Males	99-00	*	<LOD	<LOD	517 (447-580)	704 (563-838)	919
Males	01-02	*	<LOD	442 (346-579)	767 (593-968)	1030 (837-1240)	517
Males	03-04	*	<LOD	270 (244-320)	457 (377-559)	668 (501-856)	910
Females	99-00	*	<LOD	504 (422-579)	802 (674-928)	1010 (928-1180)	1002
Females	01-02	410 (356-472)	405 (335-502)	647 (574-751)	1020 (858-1360)	1450 (1060-1780)	654
Females	03-04	235 (<LOD-256)	238 (225-248)	402 (321-486)	640 (551-749)	829 (675-1020)	941
Mexican Americans	99-00	*	<LOD	418 (365-502)	703 (610-873)	940 (737-1230)	632
Mexican Americans	01-02	*	<LOD	432 (394-545)	755 (578-1220)	1150 (696-1640)	250
Mexican Americans	03-04	*	<LOD	296 (225-356)	452 (363-540)	588 (417-861)	419
Non-Hispanic blacks	99-00	*	<LOD	444 (371-519)	741 (566-983)	1120 (799-1560)	411
Non-Hispanic blacks	01-02	421 (352-503)	420 (339-509)	682 (537-907)	1110 (956-1520)	1640 (1130-1900)	210
Non-Hispanic blacks	03-04	*	<LOD	345 (276-455)	642 (513-883)	926 (636-1310)	448
Non-Hispanic whites	99-00	*	<LOD	391 (333-452)	625 (562-754)	861 (676-1010)	721
Non-Hispanic whites	01-02	349 (<LOD-409)	335 (<LOD-421)	574 (496-679)	945 (764-1170)	1290 (972-1660)	632
Non-Hispanic whites	03-04	*	<LOD	343 (282-403)	585 (464-674)	758 (635-922)	865

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 329.0, 319.0, and 218.0, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) (whole weight) (1999 – 2004)

CAS Number 3268-87-9

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	2530 (2230-2880)	4260 (3770-4760)	5950 (5090-6790)	1921
Total population	01-02	2230 (<LOD-2540)	2170 (<LOD-2550)	3860 (3180-4520)	6460 (5140-8290)	9110 (6940-11400)	1171
Total population	03-04	*	<LOD	2180 (1830-2540)	3760 (3100-4540)	5020 (4190-6070)	1851
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	1910 (1600-2340)	667
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	1160 (<LOD-1590)	1780 (1160-2850)	581
Age 20+ years	99-00	*	<LOD	2810 (2480-3110)	4570 (4100-5020)	6200 (5340-7300)	1254
Age 20+ years	01-02	2230 (<LOD-2540)	2170 (<LOD-2550)	3860 (3180-4520)	6460 (5140-8290)	9110 (6940-11400)	1171
Age 20+ years	03-04	1380 (<LOD-1540)	1360 (<LOD-1470)	2350 (1970-2900)	4030 (3370-4700)	5340 (4490-6370)	1270
Males	99-00	*	<LOD	<LOD	3160 (2760-3760)	4160 (3320-5570)	919
Males	01-02	*	<LOD	3160 (2410-4070)	5270 (4070-7140)	7620 (6020-9760)	517
Males	03-04	*	<LOD	1780 (1540-2070)	3090 (2410-4020)	4190 (3410-5350)	910
Females	99-00	*	<LOD	3110 (2680-3560)	5090 (4610-5740)	6760 (5870-8710)	1002
Females	01-02	2590 (2250-2980)	2620 (2160-3000)	4340 (3880-4860)	6990 (5870-9040)	10000 (7070-12300)	654
Females	03-04	1420 (<LOD-1560)	1410 (1300-1510)	2700 (2210-3030)	4340 (3750-4830)	5770 (4590-6740)	941
Mexican Americans	99-00	*	<LOD	2470 (2240-2990)	4350 (3660-5570)	6560 (5340-7590)	632
Mexican Americans	01-02	*	<LOD	3410 (2760-3860)	5810 (4250-7670)	8050 (5760-11800)	250
Mexican Americans	03-04	*	<LOD	1880 (1560-2220)	3240 (2450-3880)	3910 (3240-4630)	419
Non-Hispanic blacks	99-00	*	<LOD	2520 (2090-2950)	4770 (4040-5740)	7140 (4740-10700)	411
Non-Hispanic blacks	01-02	2480 (2050-3000)	2460 (2060-2970)	4170 (3160-5560)	7250 (5470-9920)	9920 (7990-12000)	210
Non-Hispanic blacks	03-04	*	<LOD	2150 (1780-2880)	3860 (3080-5640)	5720 (3750-7830)	448
Non-Hispanic whites	99-00	*	<LOD	2560 (2160-2910)	4120 (3580-4780)	5800 (4740-6790)	721
Non-Hispanic whites	01-02	2270 (<LOD-2660)	2200 (<LOD-2770)	3860 (3090-4720)	6530 (4890-8860)	9150 (6630-12300)	632
Non-Hispanic whites	03-04	*	<LOD	2220 (1830-2700)	3770 (3040-4680)	5050 (4190-6350)	865

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD) (lipid adjusted) (1999 – 2004)

CAS Number 40321-76-4

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1915
Total population	01-02	*	<LOD	<LOD	11.3 (9.30-13.6)	15.8 (13.3-19.8)	1236
Total population	03-04	*	<LOD	6.10 (5.50-6.80)	9.00 (8.30-9.70)	11.0 (9.90-12.2)	1878
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	659
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	4.80 (<LOD-5.90)	588
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1256
Age 20+ years	01-02	*	<LOD	<LOD	11.3 (9.30-13.6)	15.8 (13.3-19.8)	1236
Age 20+ years	03-04	*	<LOD	6.60 (5.90-7.20)	9.30 (8.60-10.1)	11.3 (10.1-12.7)	1290
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	920
Males	01-02	*	<LOD	<LOD	10.8 (9.10-13.3)	14.5 (11.7-19.4)	564
Males	03-04	*	<LOD	5.90 (5.30-6.40)	8.90 (7.90-9.60)	11.0 (9.60-12.7)	923
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	995
Females	01-02	*	<LOD	6.10 (<LOD-7.80)	11.8 (9.40-14.3)	16.6 (13.7-20.8)	672
Females	03-04	*	<LOD	6.50 (5.70-7.20)	9.10 (8.30-10.1)	11.0 (10.0-12.2)	955
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	632
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	8.70 (<LOD-12.7)	262
Mexican Americans	03-04	*	<LOD	<LOD	6.50 (5.20-7.90)	7.80 (6.70-9.20)	425
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	408
Non-Hispanic blacks	01-02	*	<LOD	7.70 (<LOD-9.30)	13.9 (9.60-18.4)	18.4 (14.2-24.0)	218
Non-Hispanic blacks	03-04	*	<LOD	6.40 (5.30-8.20)	9.90 (8.50-13.4)	14.4 (9.60-20.1)	455
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	717
Non-Hispanic whites	01-02	*	<LOD	<LOD	11.7 (9.50-14.3)	16.7 (13.6-20.2)	672
Non-Hispanic whites	03-04	*	<LOD	6.50 (5.80-7.10)	9.30 (8.60-10.0)	11.1 (10.1-12.2)	877

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.2, 6.0, and 4.5, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD) (whole weight) (1999 – 2004)

CAS Number 40321-76-4

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1915
Total population	01-02	*	<LOD	<LOD	77.8 (62.8-96.3)	117 (90.3-133)	1236
Total population	03-04	*	<LOD	40.7 (37.4-43.0)	60.3 (53.2-67.4)	76.1 (66.9-87.4)	1878
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	659
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	23.8 (<LOD-27.2)	588
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1256
Age 20+ years	01-02	*	<LOD	<LOD	77.8 (62.8-96.3)	117 (90.3-133)	1236
Age 20+ years	03-04	*	<LOD	43.0 (39.2-47.8)	63.5 (55.6-71.5)	80.7 (67.9-89.9)	1290
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	920
Males	01-02	*	<LOD	<LOD	76.1 (54.7-93.7)	107 (83.5-133)	564
Males	03-04	*	<LOD	39.3 (35.1-43.4)	57.3 (49.3-66.1)	67.8 (58.7-90.4)	923
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	995
Females	01-02	*	<LOD	37.8 (<LOD-50.2)	80.4 (62.9-107)	121 (85.7-167)	672
Females	03-04	*	<LOD	41.8 (37.7-45.2)	63.6 (55.9-72.9)	80.7 (70.5-88.3)	955
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	632
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	66.0 (<LOD-111)	262
Mexican Americans	03-04	*	<LOD	<LOD	44.5 (34.2-52.0)	52.8 (44.5-76.6)	425
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	408
Non-Hispanic blacks	01-02	*	<LOD	43.8 (<LOD-53.8)	81.9 (58.2-117)	123 (81.9-169)	218
Non-Hispanic blacks	03-04	*	<LOD	39.7 (30.6-48.0)	67.3 (48.0-93.0)	93.0 (66.7-137)	455
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	717
Non-Hispanic whites	01-02	*	<LOD	<LOD	80.8 (61.6-107)	121 (88.6-142)	672
Non-Hispanic whites	03-04	*	<LOD	42.6 (38.6-45.1)	63.4 (55.4-67.9)	78.8 (67.9-84.7)	877

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) (lipid adjusted) (1999 – 2004)

CAS Number 1746-01-6

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1898
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1228
Total population	03-04	*	<LOD	<LOD	4.10 (<LOD-4.40)	5.20 (4.30-5.80)	1876
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	658
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	588
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1240
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1228
Age 20+ years	03-04	*	<LOD	<LOD	4.30 (3.90-4.60)	5.30 (4.50-6.10)	1288
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	912
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	559
Males	03-04	*	<LOD	<LOD	<LOD	4.60 (3.80-5.30)	921
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	986
Females	01-02	*	<LOD	<LOD	<LOD	6.40 (<LOD-9.20)	669
Females	03-04	*	<LOD	<LOD	4.40 (4.00-4.90)	5.50 (4.50-6.60)	955
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	630
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	262
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	3.80 (<LOD-5.50)	424
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	404
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	7.50 (<LOD-10.0)	217
Non-Hispanic blacks	03-04	*	<LOD	<LOD	4.50 (<LOD-6.10)	6.20 (4.40-10.3)	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	709
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	665
Non-Hispanic whites	03-04	*	<LOD	<LOD	4.10 (<LOD-4.50)	5.20 (4.30-5.90)	877

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.1, 5.8, and 3.8, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) (whole weight) (1999 – 2004)

CAS Number 1746-01-6

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1898
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1228
Total population	03-04	*	<LOD	<LOD	27.5 (<LOD-30.1)	34.1 (30.2-39.6)	1876
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	658
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	588
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1240
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1228
Age 20+ years	03-04	*	<LOD	<LOD	28.6 (26.4-31.2)	36.4 (31.5-42.7)	1288
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	912
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	559
Males	03-04	*	<LOD	<LOD	<LOD	28.8 (25.4-34.5)	921
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	986
Females	01-02	*	<LOD	<LOD	<LOD	50.7 (<LOD-74.3)	669
Females	03-04	*	<LOD	<LOD	30.2 (27.4-33.1)	38.7 (32.3-44.5)	955
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	630
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	262
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	23.6 (<LOD-32.5)	424
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	404
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	55.6 (<LOD-72.0)	217
Non-Hispanic blacks	03-04	*	<LOD	<LOD	31.1 (<LOD-42.0)	42.4 (29.5-67.8)	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	709
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	665
Non-Hispanic whites	03-04	*	<LOD	<LOD	28.0 (<LOD-30.0)	33.6 (31.1-38.8)	877

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Polychlorinated Dibenzofurans

Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (1999 – 2004)

CAS Number 67562-39-4

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	14.7 (<LOD-18.0)	19.5 (17.4-23.0)	1709
Total population	01-02	9.64 (8.53-10.9)	10.3 (8.80-11.7)	14.6 (12.7-16.7)	21.3 (18.0-25.5)	27.1 (22.5-32.0)	1219
Total population	03-04	*	<LOD	10.6 (9.90-11.4)	14.6 (13.1-16.5)	18.7 (16.5-24.2)	1858
Age 12-19 years	99-00	*	<LOD	<LOD	18.4 (16.2-20.9)	24.7 (20.9-28.1)	600
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	9.36 (8.60-10.2)	8.80 (<LOD-9.80)	13.4 (12.3-14.6)	19.3 (16.2-29.6)	33.2 (21.2-54.2)	583
Age 20+ years	99-00	*	<LOD	<LOD	14.2 (<LOD-17.5)	18.4 (15.0-23.8)	1109
Age 20+ years	01-02	9.64 (8.53-10.9)	10.3 (8.80-11.7)	14.6 (12.7-16.7)	21.3 (18.0-25.5)	27.1 (22.5-32.0)	1219
Age 20+ years	03-04	*	<LOD	10.3 (9.60-11.1)	13.8 (12.5-16.0)	18.0 (16.0-20.9)	1275
Males	99-00	*	<LOD	<LOD	16.4 (<LOD-20.0)	21.0 (18.1-26.8)	815
Males	01-02	10.1 (8.74-11.6)	11.0 (9.30-12.6)	15.2 (12.9-17.2)	20.8 (17.2-27.8)	28.9 (22.0-34.8)	557
Males	03-04	*	<LOD	11.3 (10.1-12.9)	17.1 (14.3-19.1)	23.9 (18.3-30.9)	913
Females	99-00	*	<LOD	<LOD	<LOD	17.5 (14.3-20.3)	894
Females	01-02	9.28 (8.20-10.5)	9.40 (8.20-11.2)	14.1 (12.4-16.6)	21.3 (17.4-25.5)	26.5 (22.3-31.9)	662
Females	03-04	*	<LOD	9.90 (9.30-10.5)	13.0 (12.2-14.3)	16.0 (14.3-18.4)	945
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	19.7 (<LOD-25.4)	570
Mexican Americans	01-02	7.73 (7.19-8.31)	8.20 (7.80-8.70)	11.2 (10.6-12.5)	16.5 (14.5-19.6)	20.8 (17.2-26.8)	260
Mexican Americans	03-04	*	<LOD	9.10 (<LOD-10.6)	12.0 (10.1-16.8)	15.1 (11.6-20.0)	420
Non-Hispanic blacks	99-00	*	<LOD	<LOD	22.4 (15.2-28.2)	28.2 (26.5-29.6)	359
Non-Hispanic blacks	01-02	12.3 (10.6-14.4)	12.8 (10.9-15.2)	17.4 (15.4-21.0)	25.5 (22.4-31.2)	32.1 (25.7-37.6)	214
Non-Hispanic blacks	03-04	*	<LOD	11.3 (10.7-12.2)	16.1 (13.4-19.0)	20.4 (16.7-26.8)	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	17.5 (14.9-18.9)	636
Non-Hispanic whites	01-02	9.50 (8.30-10.9)	10.1 (8.40-12.0)	14.4 (12.6-16.6)	20.5 (16.9-25.5)	25.8 (20.5-31.7)	665
Non-Hispanic whites	03-04	*	<LOD	10.5 (9.60-11.5)	14.6 (12.9-17.4)	19.0 (16.3-26.2)	864

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 13.5, 7.0, and 8.6, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (whole weight) (1999 – 2004)

CAS Number 67562-39-4

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	85.3 (<LOD-95.8)	108 (95.8-120)	1709
Total population	01-02	62.2 (55.4-69.9)	64.5 (58.0-71.6)	94.1 (82.3-110)	134 (119-165)	181 (147-206)	1219
Total population	03-04	*	<LOD	63.6 (59.9-67.7)	88.3 (81.0-100)	116 (101-137)	1858
Age 12-19 years	99-00	*	<LOD	<LOD	79.3 (69.5-84.2)	102 (83.4-120)	600
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	47.5 (44.0-51.3)	43.7 (<LOD-49.3)	63.7 (59.1-72.3)	102 (85.3-114)	175 (113-222)	583
Age 20+ years	99-00	*	<LOD	<LOD	85.7 (<LOD-97.7)	108 (93.6-127)	1109
Age 20+ years	01-02	62.2 (55.4-69.9)	64.5 (58.0-71.6)	94.1 (82.3-110)	134 (119-165)	181 (147-206)	1219
Age 20+ years	03-04	*	<LOD	63.5 (59.6-67.6)	86.5 (78.8-100)	112 (94.9-135)	1275
Males	99-00	*	<LOD	<LOD	91.4 (<LOD-108)	112 (99.3-133)	815
Males	01-02	66.3 (58.2-75.6)	70.4 (59.8-81.8)	99.3 (85.5-120)	143 (120-181)	182 (146-237)	557
Males	03-04	*	<LOD	69.7 (62.9-76.0)	100 (85.9-116)	135 (113-193)	913
Females	99-00	*	<LOD	<LOD	<LOD	97.8 (86.2-130)	894
Females	01-02	58.8 (52.0-66.4)	60.2 (53.5-67.6)	89.5 (74.7-107)	131 (108-165)	169 (131-225)	662
Females	03-04	*	<LOD	58.5 (54.5-62.4)	83.5 (74.7-87.7)	102 (87.7-116)	945
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	113 (<LOD-133)	570
Mexican Americans	01-02	49.5 (46.0-53.4)	50.4 (45.7-57.2)	76.9 (67.1-82.1)	99.7 (90.9-124)	133 (94.8-202)	260
Mexican Americans	03-04	*	<LOD	56.0 (<LOD-64.6)	74.2 (62.6-91.4)	90.5 (76.4-107)	420
Non-Hispanic blacks	99-00	*	<LOD	<LOD	117 (89.0-143)	153 (109-197)	359
Non-Hispanic blacks	01-02	72.6 (61.9-85.2)	70.9 (62.4-85.2)	107 (91.5-128)	147 (131-177)	193 (154-259)	214
Non-Hispanic blacks	03-04	*	<LOD	66.2 (60.2-75.5)	91.3 (80.3-112)	119 (102-151)	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	97.7 (89.3-104)	636
Non-Hispanic whites	01-02	61.8 (54.3-70.4)	65.4 (57.4-72.2)	94.3 (78.1-112)	133 (114-166)	180 (137-222)	665
Non-Hispanic whites	03-04	*	<LOD	63.9 (59.6-69.2)	87.8 (79.8-100)	116 (102-139)	864

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (2001 – 2004)

CAS Number 55673-89-7

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1224
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1852
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	583
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1224
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1269
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	558
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	908
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	666
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	944
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	262
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	423
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	217
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	452
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	661
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	856

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 7.0 and 8.6.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (whole weight) (2001 – 2004)

CAS Number 55673-89-7

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1224
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1852
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	583
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1224
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1269
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	558
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	908
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	666
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	944
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	262
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	423
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	217
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	452
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	661
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	856

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (1999 – 2004)

CAS Number 70648-26-9

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1890
Total population	01-02	*	<LOD	8.00 (6.90-9.60)	12.1 (9.40-14.9)	15.4 (12.9-18.6)	1223
Total population	03-04	*	<LOD	<LOD	7.50 (<LOD-7.90)	8.90 (7.90-10.2)	1866
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	657
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	583
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	12.8 (<LOD-14.5)	1233
Age 20+ years	01-02	*	<LOD	8.00 (6.90-9.60)	12.1 (9.40-14.9)	15.4 (12.9-18.6)	1223
Age 20+ years	03-04	*	<LOD	<LOD	7.60 (<LOD-8.20)	9.50 (8.00-10.5)	1283
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	908
Males	01-02	*	<LOD	8.20 (7.10-10.0)	12.8 (9.50-15.9)	15.9 (12.2-20.9)	562
Males	03-04	*	<LOD	<LOD	7.40 (<LOD-8.00)	8.50 (7.80-10.0)	916
Females	99-00	*	<LOD	<LOD	<LOD	12.9 (<LOD-16.4)	982
Females	01-02	*	<LOD	7.90 (6.70-9.00)	11.7 (9.40-13.8)	14.5 (12.2-18.6)	661
Females	03-04	*	<LOD	<LOD	7.50 (<LOD-8.40)	9.30 (7.80-10.4)	950
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	631
Mexican Americans	01-02	*	<LOD	<LOD	7.30 (<LOD-8.00)	8.00 (7.00-10.9)	261
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	14.3 (<LOD-15.1)	399
Non-Hispanic blacks	01-02	*	<LOD	8.90 (7.70-10.1)	13.6 (11.1-17.1)	18.6 (14.6-22.6)	214
Non-Hispanic blacks	03-04	*	<LOD	<LOD	7.80 (<LOD-10.9)	10.9 (7.50-19.4)	453
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	703
Non-Hispanic whites	01-02	*	<LOD	8.30 (7.10-10.2)	12.5 (10.0-15.9)	15.9 (13.1-19.0)	664
Non-Hispanic whites	03-04	*	<LOD	<LOD	7.60 (<LOD-8.10)	9.40 (8.00-10.2)	869

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.7, 6.5, and 7.4, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (1999 – 2004)

CAS Number 70648-26-9

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1890
Total population	01-02	*	<LOD	54.0 (46.5-63.6)	82.3 (65.5-104)	108 (88.0-138)	1223
Total population	03-04	*	<LOD	<LOD	49.1 (<LOD-54.5)	60.1 (53.4-68.8)	1866
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	657
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	583
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	84.2 (<LOD-97.2)	1233
Age 20+ years	01-02	*	<LOD	54.0 (46.5-63.6)	82.3 (65.5-104)	108 (88.0-138)	1223
Age 20+ years	03-04	*	<LOD	<LOD	51.0 (<LOD-57.2)	62.2 (56.2-72.7)	1283
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	908
Males	01-02	*	<LOD	56.9 (48.6-71.4)	90.1 (71.1-108)	108 (87.4-144)	562
Males	03-04	*	<LOD	<LOD	49.3 (<LOD-54.9)	59.3 (52.9-68.8)	916
Females	99-00	*	<LOD	<LOD	<LOD	82.8 (<LOD-102)	982
Females	01-02	*	<LOD	51.6 (43.7-59.6)	76.1 (62.6-97.0)	105 (81.6-140)	661
Females	03-04	*	<LOD	<LOD	48.9 (<LOD-57.2)	61.9 (53.3-72.7)	950
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	631
Mexican Americans	01-02	*	<LOD	<LOD	48.4 (<LOD-56.3)	65.3 (48.6-79.4)	261
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	90.8 (<LOD-105)	399
Non-Hispanic blacks	01-02	*	<LOD	52.7 (45.0-62.7)	87.1 (63.7-108)	122 (85.2-147)	214
Non-Hispanic blacks	03-04	*	<LOD	<LOD	56.9 (<LOD-71.7)	71.7 (53.8-112)	453
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	703
Non-Hispanic whites	01-02	*	<LOD	56.0 (48.6-66.1)	84.2 (64.5-115)	112 (88.6-142)	664
Non-Hispanic whites	03-04	*	<LOD	<LOD	50.6 (<LOD-56.3)	61.4 (54.0-71.8)	869

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (1999 – 2004)

CAS Number 57117-44-9

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1898
Total population	01-02	*	<LOD	7.10 (<LOD-8.20)	10.4 (9.00-13.1)	14.0 (11.0-17.1)	1236
Total population	03-04	*	<LOD	<LOD	<LOD	8.80 (<LOD-9.80)	1868
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	656
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	585
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1242
Age 20+ years	01-02	*	<LOD	7.10 (<LOD-8.20)	10.4 (9.00-13.1)	14.0 (11.0-17.1)	1236
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	9.00 (8.00-10.1)	1283
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	913
Males	01-02	*	<LOD	7.10 (<LOD-8.60)	11.3 (8.50-13.8)	15.1 (11.3-18.7)	566
Males	03-04	*	<LOD	<LOD	<LOD	9.10 (7.90-10.8)	918
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	985
Females	01-02	*	<LOD	7.00 (6.20-8.00)	10.0 (9.20-11.4)	13.1 (10.5-15.6)	670
Females	03-04	*	<LOD	<LOD	<LOD	8.50 (<LOD-9.20)	950
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	625
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	6.90 (<LOD-11.1)	262
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	408
Non-Hispanic blacks	01-02	*	<LOD	7.60 (6.10-9.10)	12.1 (10.0-14.1)	16.0 (12.3-21.0)	219
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	8.50 (<LOD-12.1)	453
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	708
Non-Hispanic whites	01-02	*	<LOD	7.40 (6.20-9.00)	10.7 (9.20-14.3)	14.8 (11.6-17.2)	670
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	9.10 (8.00-10.6)	871

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.6, 6.1, and 7.9, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (1999 – 2004)

CAS Number 57117-44-9

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1898
Total population	01-02	*	<LOD	46.2 (<LOD-56.5)	70.3 (58.4-90.7)	101 (77.6-120)	1236
Total population	03-04	*	<LOD	<LOD	<LOD	59.8 (<LOD-65.4)	1868
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	656
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	585
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1242
Age 20+ years	01-02	*	<LOD	46.2 (<LOD-56.5)	70.3 (58.4-90.7)	101 (77.6-120)	1236
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	61.0 (57.6-65.7)	1283
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	913
Males	01-02	*	<LOD	47.9 (<LOD-60.5)	72.3 (57.5-105)	104 (73.5-133)	566
Males	03-04	*	<LOD	<LOD	<LOD	61.0 (54.0-67.7)	918
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	985
Females	01-02	*	<LOD	45.0 (37.0-54.3)	66.2 (58.3-79.1)	90.7 (71.9-115)	670
Females	03-04	*	<LOD	<LOD	<LOD	58.1 (<LOD-65.0)	950
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	625
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	52.7 (<LOD-65.9)	262
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	408
Non-Hispanic blacks	01-02	*	<LOD	44.4 (37.2-57.3)	71.5 (59.8-90.9)	107 (70.7-142)	219
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	58.4 (<LOD-73.0)	453
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	708
Non-Hispanic whites	01-02	*	<LOD	49.6 (41.9-57.9)	72.8 (58.4-102)	103 (82.6-121)	670
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	63.4 (57.3-67.7)	871

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (1999 – 2004)

CAS Number 72918-21-9

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1875
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1223
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1864
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	645
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	583
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1230
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1223
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1281
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	894
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	559
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	914
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	981
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	664
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	950
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	620
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	261
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	400
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	216
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	699
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	665
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	866

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.7, 6.0, and 8.3, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (whole weight) (1999 – 2004)

CAS Number 72918-21-9

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1875
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1223
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1864
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	645
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	583
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1230
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1223
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1281
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	894
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	559
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	914
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	981
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	664
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	950
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	620
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	261
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	400
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	216
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	699
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	665
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	866

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (1999 – 2004)

CAS Number 60851-34-5

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1884
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1230
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1866
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	652
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	584
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1232
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1230
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1282
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	900
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	565
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	916
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	984
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	665
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	950
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	614
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	260
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	422
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	408
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	218
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	704
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	671
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	869

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.9, 5.8, and 8.2, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (1999 – 2004)

CAS Number 60851-34-5

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1884
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1230
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1866
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	652
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	584
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1232
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1230
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1282
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	900
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	565
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	916
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	984
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	665
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	950
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	614
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	260
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	422
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	408
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	218
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	704
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	671
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	869

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (lipid adjusted) (1999 – 2004)

CAS Number 39001-02-0

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1884
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1202
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1849
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	652
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	581
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1232
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1202
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1268
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	904
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	541
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	905
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	980
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	661
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	944
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	623
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	257
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	420
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	404
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	212
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	453
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	705
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	653
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	857

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 35.6, 21.0, and 12.0, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (whole weight) (1999 – 2004)

CAS Number 39001-02-0

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1884
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1202
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1849
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	652
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	581
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1232
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1202
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1268
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	904
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	541
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	905
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	980
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	661
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	944
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	623
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	257
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	420
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	404
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	212
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	453
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	705
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	653
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	857

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (1999 – 2004)

CAS Number 57117-41-6

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1922
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1235
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1867
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	663
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	586
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1259
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1235
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1281
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	920
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	565
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	917
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1002
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	670
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	950
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	637
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	263
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	409
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	217
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	717
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	670
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	869

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 13.2, 5.8, and 7.1, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (1999 – 2004)

CAS Number 57117-41-6

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1922
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1235
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1867
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	663
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	586
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1259
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1235
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1281
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	920
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	565
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	917
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1002
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	670
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	950
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	637
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	263
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	409
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	217
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	717
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	670
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	869

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (1999 – 2004)

CAS Number 57117-31-4

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	15.9 (13.7-17.1)	1895
Total population	01-02	*	<LOD	9.20 (7.50-11.1)	14.3 (12.3-16.2)	18.1 (16.1-21.1)	1230
Total population	03-04	*	<LOD	6.80 (<LOD-7.20)	9.90 (8.90-10.7)	12.3 (11.0-13.3)	1871
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	656
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	586
Age 20+ years	99-00	*	<LOD	<LOD	12.7 (<LOD-13.9)	16.1 (14.1-17.6)	1239
Age 20+ years	01-02	*	<LOD	9.20 (7.50-11.1)	14.3 (12.3-16.2)	18.1 (16.1-21.1)	1230
Age 20+ years	03-04	*	<LOD	7.20 (<LOD-7.70)	10.3 (9.40-11.2)	13.0 (11.4-14.7)	1285
Males	99-00	*	<LOD	<LOD	<LOD	13.9 (12.8-15.4)	906
Males	01-02	*	<LOD	9.40 (7.30-11.6)	14.1 (11.6-16.7)	16.7 (14.0-22.8)	560
Males	03-04	*	<LOD	7.00 (<LOD-7.30)	9.80 (8.70-10.6)	12.2 (10.4-14.8)	920
Females	99-00	*	<LOD	<LOD	13.1 (<LOD-16.1)	16.7 (14.3-19.2)	989
Females	01-02	*	<LOD	9.10 (7.50-10.7)	14.5 (13.0-16.1)	18.5 (16.4-21.2)	670
Females	03-04	*	<LOD	<LOD	10.3 (8.90-11.0)	12.6 (11.0-13.7)	951
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	632
Mexican Americans	01-02	*	<LOD	<LOD	7.80 (6.10-9.80)	9.80 (7.80-12.5)	264
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	7.90 (<LOD-10.5)	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	16.3 (13.4-19.0)	400
Non-Hispanic blacks	01-02	*	<LOD	8.40 (6.80-9.30)	14.1 (11.7-16.4)	19.1 (15.1-23.0)	216
Non-Hispanic blacks	03-04	*	<LOD	<LOD	9.80 (8.00-13.9)	15.9 (9.70-23.9)	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	15.6 (13.8-17.1)	706
Non-Hispanic whites	01-02	*	5.90 (<LOD-6.90)	10.3 (8.10-12.0)	15.5 (13.0-17.6)	18.5 (16.5-22.2)	665
Non-Hispanic whites	03-04	*	<LOD	7.10 (<LOD-7.70)	10.3 (9.10-11.2)	12.4 (11.0-13.7)	873

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.7, 5.5, and 6.8, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (1999 – 2004)

CAS Number 57117-31-4

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	103 (96.0-113)	1895
Total population	01-02	*	<LOD	60.8 (51.3-70.6)	99.4 (83.4-114)	134 (113-152)	1230
Total population	03-04	*	<LOD	44.2 (<LOD-46.9)	65.7 (60.5-71.1)	83.9 (74.9-92.9)	1871
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	656
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	586
Age 20+ years	99-00	*	<LOD	<LOD	85.2 (<LOD-96.0)	107 (98.3-125)	1239
Age 20+ years	01-02	*	<LOD	60.8 (51.3-70.6)	99.4 (83.4-114)	134 (113-152)	1230
Age 20+ years	03-04	*	<LOD	46.5 (<LOD-50.6)	69.3 (62.2-74.6)	86.8 (78.3-99.8)	1285
Males	99-00	*	<LOD	<LOD	<LOD	95.7 (80.1-101)	906
Males	01-02	*	<LOD	62.7 (49.3-76.6)	98.5 (76.6-134)	135 (105-160)	560
Males	03-04	*	<LOD	43.4 (<LOD-46.3)	62.0 (56.8-71.9)	83.2 (72.4-95.0)	920
Females	99-00	*	<LOD	<LOD	90.0 (<LOD-101)	111 (97.2-129)	989
Females	01-02	*	<LOD	59.8 (52.0-67.6)	100 (90.5-105)	126 (107-146)	670
Females	03-04	*	<LOD	<LOD	66.9 (59.7-74.3)	84.4 (74.7-95.7)	951
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	632
Mexican Americans	01-02	*	<LOD	<LOD	55.8 (48.7-69.7)	76.3 (61.9-92.4)	264
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	57.1 (<LOD-70.2)	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	105 (82.7-116)	400
Non-Hispanic blacks	01-02	*	<LOD	50.0 (41.3-60.4)	89.5 (72.3-107)	121 (92.0-154)	216
Non-Hispanic blacks	03-04	*	<LOD	<LOD	66.8 (48.5-93.2)	97.4 (79.1-129)	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	103 (96.8-122)	706
Non-Hispanic whites	01-02	*	37.5 (<LOD-44.1)	65.7 (52.9-78.2)	104 (90.7-118)	136 (118-154)	665
Non-Hispanic whites	03-04	*	<LOD	45.9 (<LOD-50.6)	68.3 (61.3-73.6)	85.0 (74.6-102)	873

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (lipid adjusted) (1999 – 2004)

CAS Number 51207-31-9

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1903
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1229
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1868
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	660
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	586
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1243
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1229
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1282
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	912
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	558
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	917
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	991
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	671
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	951
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	628
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	262
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	409
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	217
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	707
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	667
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	870

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 11.9, 5.2, and 6.0, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (whole weight) (1999 – 2004)

CAS Number 51207-31-9

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1903
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1229
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1868
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	660
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	586
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1243
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1229
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1282
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	912
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	558
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	917
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	991
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	671
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	951
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	628
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	262
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	409
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	217
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	454
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	707
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	667
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	870

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Dioxin-like Polychlorinated Biphenyls: coplanar PCBs

Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (lipid adjusted) (1999 – 2004)

CAS Number 70362-50-4

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1883
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1215
Total population	03-04	*	<LOD	<LOD	<LOD	13.4 (<LOD-16.4)	1860
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	651
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	14.7 (<LOD-16.5)	579
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1232
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1215
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	13.1 (<LOD-16.5)	1281
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	900
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	554
Males	03-04	*	<LOD	<LOD	<LOD	14.4 (<LOD-17.9)	913
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	983
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	661
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	947
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	621
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	259
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	18.7 (<LOD-25.2)	420
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	405
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	218
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	453
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	699
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	657
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	13.1 (<LOD-16.4)	867

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 68.4, 26.8, and 13.1, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (whole weight) (1999 – 2004)

CAS Number 70362-50-4

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1883
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	1215
Total population	03-04	*	<LOD	<LOD	<LOD	80.3 (<LOD-96.2)	1860
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	651
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	71.4 (<LOD-82.8)	579
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1232
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1215
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	80.7 (<LOD-99.3)	1281
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	900
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	554
Males	03-04	*	<LOD	<LOD	<LOD	81.1 (<LOD-104)	913
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	983
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	661
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	947
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	621
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	259
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	103 (<LOD-199)	420
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	405
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	218
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	453
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	699
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	657
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	80.5 (<LOD-106)	867

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (lipid adjusted) (1999 – 2004)

CAS Number 57465-28-8

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	28.5 (24.9-32.8)	53.2 (45.7-59.9)	80.5 (62.8-100)	1896
Total population	01-02	22.7 (20.9-24.7)	24.5 (22.2-26.8)	40.8 (36.1-47.5)	69.3 (61.6-80.8)	108 (92.7-116)	1226
Total population	03-04	16.3 (14.9-17.9)	14.7 (<LOD-16.5)	24.8 (22.4-27.4)	46.7 (41.6-51.9)	68.7 (58.1-84.4)	1860
Age 12-19 years	99-00	*	<LOD	<LOD	24.3 (<LOD-27.5)	31.1 (26.4-36.4)	658
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	17.0 (15.2-20.2)	21.2 (17.3-25.6)	577
Age 20+ years	99-00	*	<LOD	30.8 (27.2-36.3)	57.1 (50.5-65.8)	89.5 (66.1-110)	1238
Age 20+ years	01-02	22.7 (20.9-24.7)	24.5 (22.2-26.8)	40.8 (36.1-47.5)	69.3 (61.6-80.8)	108 (92.7-116)	1226
Age 20+ years	03-04	17.6 (16.0-19.3)	16.0 (14.2-18.6)	26.8 (24.2-30.3)	49.8 (43.5-59.1)	74.8 (60.2-94.4)	1283
Males	99-00	*	<LOD	25.8 (<LOD-28.9)	41.6 (36.1-45.7)	62.0 (49.7-75.0)	911
Males	01-02	20.3 (18.5-22.3)	23.1 (20.8-25.4)	36.6 (32.8-39.4)	52.7 (46.4-62.3)	81.9 (61.0-101)	561
Males	03-04	14.9 (<LOD-16.4)	<LOD	21.8 (20.1-25.4)	38.5 (31.0-46.1)	51.5 (46.5-60.5)	912
Females	99-00	*	<LOD	33.6 (27.4-41.4)	59.4 (53.0-78.7)	98.1 (69.9-120)	985
Females	01-02	25.1 (22.9-27.4)	26.1 (23.0-28.8)	48.6 (41.4-54.4)	82.9 (71.1-96.8)	116 (98.6-128)	665
Females	03-04	17.8 (16.0-19.7)	15.7 (<LOD-18.4)	27.6 (24.3-33.4)	57.1 (46.0-67.1)	82.5 (63.0-109)	948
Mexican Americans	99-00	*	<LOD	23.8 (<LOD-30.3)	43.2 (37.0-52.6)	66.1 (52.4-79.2)	631
Mexican Americans	01-02	17.8 (15.5-20.4)	19.9 (18.3-21.2)	28.5 (26.5-34.2)	47.9 (39.7-54.9)	69.2 (49.3-103)	262
Mexican Americans	03-04	15.5 (<LOD-17.9)	14.2 (<LOD-17.5)	22.5 (18.9-26.8)	31.2 (27.4-37.8)	42.0 (33.5-48.0)	420
Non-Hispanic blacks	99-00	*	<LOD	30.6 (25.2-43.1)	67.4 (45.0-126)	126 (67.4-224)	404
Non-Hispanic blacks	01-02	22.2 (18.2-27.0)	22.1 (19.6-25.4)	44.3 (37.9-51.5)	88.4 (59.0-111)	115 (96.1-153)	217
Non-Hispanic blacks	03-04	16.5 (13.9-19.5)	<LOD	23.5 (18.9-34.6)	63.4 (41.5-126)	142 (52.1-292)	452
Non-Hispanic whites	99-00	*	<LOD	28.3 (<LOD-34.0)	50.5 (41.6-57.0)	67.8 (57.0-94.1)	704
Non-Hispanic whites	01-02	23.1 (20.9-25.4)	24.7 (22.0-27.6)	42.0 (35.4-49.6)	72.3 (63.9-82.9)	114 (91.0-128)	663
Non-Hispanic whites	03-04	16.0 (14.3-17.8)	14.5 (<LOD-16.9)	24.3 (21.4-28.2)	46.5 (41.6-50.9)	64.0 (52.1-76.1)	869

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 23.2, 10.8, and 13.9, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (whole weight) (1999 – 2004)

CAS Number 57465-28-8

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	177 (151-212)	336 (294-404)	564 (455-663)	1896
Total population	01-02	147 (135-160)	158 (143-175)	270 (249-298)	482 (436-541)	738 (625-840)	1226
Total population	03-04	100 (91.0-110)	89.8 (<LOD-101)	159 (146-178)	308 (273-349)	475 (378-590)	1860
Age 12-19 years	99-00	*	<LOD	<LOD	108 (<LOD-126)	144 (116-196)	658
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	88.2 (78.8-106)	109 (89.2-135)	577
Age 20+ years	99-00	*	<LOD	204 (173-232)	381 (319-451)	596 (479-709)	1238
Age 20+ years	01-02	147 (135-160)	158 (143-175)	270 (249-298)	482 (436-541)	738 (625-840)	1226
Age 20+ years	03-04	111 (100-122)	100 (88.7-115)	176 (158-194)	326 (286-394)	534 (394-668)	1283
Males	99-00	*	<LOD	154 (<LOD-182)	260 (241-274)	382 (308-509)	911
Males	01-02	134 (121-149)	152 (130-169)	249 (233-267)	399 (346-467)	566 (467-693)	561
Males	03-04	92.3 (<LOD-102)	<LOD	148 (131-168)	245 (203-296)	360 (296-442)	912
Females	99-00	*	<LOD	212 (159-250)	429 (350-531)	648 (534-744)	985
Females	01-02	159 (146-172)	160 (149-186)	301 (270-348)	550 (483-637)	818 (658-958)	665
Females	03-04	108 (96.2-121)	94.5 (<LOD-110)	180 (153-212)	370 (303-455)	559 (438-843)	948
Mexican Americans	99-00	*	<LOD	146 (<LOD-213)	285 (229-364)	424 (361-534)	631
Mexican Americans	01-02	114 (97.8-133)	125 (106-150)	217 (175-257)	335 (272-460)	593 (354-784)	262
Mexican Americans	03-04	95.3 (<LOD-111)	91.4 (<LOD-99.4)	145 (116-180)	238 (172-288)	298 (238-461)	420
Non-Hispanic blacks	99-00	*	<LOD	192 (147-258)	457 (308-691)	786 (457-1520)	404
Non-Hispanic blacks	01-02	131 (106-161)	128 (110-158)	266 (214-304)	532 (361-662)	779 (585-1060)	217
Non-Hispanic blacks	03-04	94.3 (79.0-112)	<LOD	143 (106-254)	483 (254-847)	976 (483-1430)	452
Non-Hispanic whites	99-00	*	<LOD	175 (<LOD-215)	311 (274-356)	508 (394-660)	704
Non-Hispanic whites	01-02	150 (136-164)	160 (146-179)	276 (249-301)	486 (431-553)	746 (600-937)	663
Non-Hispanic whites	03-04	98.4 (87.5-111)	89.4 (<LOD-104)	158 (142-182)	297 (260-346)	431 (365-541)	869

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (lipid adjusted) (1999 – 2004)

CAS Number 32774-16-6

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	34.4 (31.0-38.7)	44.9 (40.6-48.9)	1888
Total population	01-02	17.9 (16.0-19.9)	19.0 (17.0-22.0)	33.1 (27.7-38.6)	50.0 (43.9-55.0)	60.9 (56.1-65.8)	1223
Total population	03-04	*	<LOD	19.5 (16.8-22.7)	31.0 (27.9-36.0)	40.6 (36.5-47.3)	1866
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	648
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	581
Age 20+ years	99-00	*	<LOD	<LOD	36.4 (33.8-40.3)	47.8 (42.8-51.0)	1240
Age 20+ years	01-02	17.9 (16.0-19.9)	19.0 (17.0-22.0)	33.1 (27.7-38.6)	50.0 (43.9-55.0)	60.9 (56.1-65.8)	1223
Age 20+ years	03-04	*	<LOD	21.9 (19.0-24.2)	32.7 (28.6-37.3)	43.2 (37.3-49.5)	1285
Males	99-00	*	<LOD	<LOD	36.2 (31.9-40.1)	44.3 (39.0-51.3)	908
Males	01-02	20.2 (17.8-22.8)	22.1 (18.5-25.3)	36.0 (29.5-43.2)	53.7 (46.5-57.3)	60.9 (55.7-69.0)	559
Males	03-04	*	<LOD	22.3 (17.7-24.8)	36.3 (29.3-41.1)	46.1 (38.8-52.0)	917
Females	99-00	*	<LOD	<LOD	34.0 (29.4-38.6)	46.5 (37.9-51.1)	980
Females	01-02	16.0 (14.2-18.1)	17.0 (14.7-19.2)	30.2 (24.5-36.5)	46.4 (40.7-51.9)	60.9 (52.2-70.0)	664
Females	03-04	*	<LOD	18.4 (<LOD-20.4)	28.4 (27.2-30.6)	35.8 (31.0-41.1)	949
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	31.9 (28.8-35.2)	622
Mexican Americans	01-02	*	<LOD	15.0 (11.3-18.3)	25.4 (18.3-32.3)	32.5 (26.7-41.9)	260
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	20.9 (16.5-30.2)	420
Non-Hispanic blacks	99-00	*	<LOD	<LOD	40.3 (28.7-48.6)	52.2 (44.3-63.6)	403
Non-Hispanic blacks	01-02	17.2 (15.4-19.1)	18.5 (15.7-20.0)	31.7 (25.8-35.4)	47.5 (42.0-54.0)	57.3 (48.3-64.5)	217
Non-Hispanic blacks	03-04	*	<LOD	17.3 (<LOD-22.6)	31.5 (26.8-36.9)	58.7 (31.5-97.9)	453
Non-Hispanic whites	99-00	*	<LOD	<LOD	34.6 (31.7-40.1)	45.3 (40.1-50.9)	709
Non-Hispanic whites	01-02	19.5 (17.2-22.2)	21.4 (17.4-24.7)	36.0 (29.8-41.1)	53.5 (47.0-58.3)	64.3 (59.2-72.8)	662
Non-Hispanic whites	03-04	*	<LOD	21.2 (17.4-24.5)	32.6 (27.3-38.8)	41.1 (35.9-50.2)	873

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 27.0, 11.0, and 15.9, respectively.

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (whole weight) (1999 – 2004)

CAS Number 32774-16-6

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	230 (219-244)	287 (274-319)	1888
Total population	01-02	115 (103-129)	125 (108-146)	217 (189-253)	344 (300-376)	416 (379-490)	1223
Total population	03-04	*	<LOD	133 (114-149)	203 (191-226)	269 (243-305)	1866
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	648
Age 12-19 years	01-02	†	†	†	†	†	†
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	581
Age 20+ years	99-00	*	<LOD	<LOD	241 (227-261)	303 (281-339)	1240
Age 20+ years	01-02	115 (103-129)	125 (108-146)	217 (189-253)	344 (300-376)	416 (379-490)	1223
Age 20+ years	03-04	*	<LOD	146 (130-160)	216 (198-242)	287 (245-325)	1285
Males	99-00	*	<LOD	<LOD	229 (215-258)	286 (256-338)	908
Males	01-02	133 (117-152)	151 (130-168)	244 (198-293)	363 (309-409)	449 (372-529)	559
Males	03-04	*	<LOD	143 (122-159)	225 (190-259)	291 (245-334)	917
Females	99-00	*	<LOD	<LOD	234 (197-257)	293 (261-346)	980
Females	01-02	102 (90.0-115)	107 (91.0-123)	195 (170-234)	319 (282-368)	402 (373-462)	664
Females	03-04	*	<LOD	120 (<LOD140)	194 (182-203)	249 (222-284)	949
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	215 (181-261)	622
Mexican Americans	01-02	*	<LOD	98.1 (79.3-138)	184 (143-250)	266 (179-341)	260
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	168 (109-237)	420
Non-Hispanic blacks	99-00	*	<LOD	<LOD	251 (190-299)	320 (262-410)	403
Non-Hispanic blacks	01-02	101 (91.2-113)	104 (88.0-118)	190 (147-234)	299 (267-335)	362 (309-423)	217
Non-Hispanic blacks	03-04	*	<LOD	110 (<LOD-144)	216 (162-257)	338 (221-556)	453
Non-Hispanic whites	99-00	*	<LOD	<LOD	238 (222-257)	286 (267-340)	709
Non-Hispanic whites	01-02	127 (112-144)	145 (124-157)	229 (195-275)	368 (317-388)	438 (388-515)	662
Non-Hispanic whites	03-04	*	<LOD	141 (116-165)	210 (189-242)	277 (239-324)	873

† Data not collected for this age group for Survey year 01-02.

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Dioxin-like Polychlorinated Biphenyls: mono-ortho-substituted PCBs

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (lipid adjusted) (1999 – 2004)

CAS Number 32598-14-4

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1915
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2307
Total population	03-04	1.20 (1.09-1.31)	1.09 (1.00-1.20)	1.90 (1.75-2.20)	4.04 (3.40-4.89)	6.24 (5.20-7.79)	1879
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	665
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	.686 (.603-.781)	.700 (.600-.720)	1.00 (.900-1.11)	1.50 (1.20-2.00)	2.26 (1.50-3.50)	593
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1250
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1549
Age 20+ years	03-04	1.30 (1.18-1.43)	1.15 (1.04-1.30)	2.10 (1.86-2.40)	4.44 (3.80-5.20)	6.82 (5.70-8.30)	1286
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	913
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1075
Males	03-04	1.02 (.923-1.12)	.980 (.850-1.08)	1.60 (1.40-1.80)	3.20 (2.76-3.42)	4.70 (3.83-5.50)	937
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1002
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1232
Females	03-04	1.40 (1.25-1.57)	1.20 (1.05-1.40)	2.30 (2.00-2.79)	5.17 (4.47-5.90)	7.70 (6.00-9.55)	942
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	635
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	567
Mexican Americans	03-04	.719 (.624-.829)	.700 (.600-.800)	1.10 (.900-1.36)	1.90 (1.80-2.20)	2.90 (1.98-3.52)	427
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	12.8 (<LOD-18.0)	409
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	1.41 (1.15-1.74)	1.14 (.980-1.32)	2.47 (1.70-3.90)	6.70 (4.09-10.1)	11.9 (6.40-18.1)	456
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	714
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1061
Non-Hispanic whites	03-04	1.21 (1.08-1.36)	1.10 (1.00-1.20)	1.90 (1.74-2.28)	3.91 (3.22-4.85)	5.93 (4.98-7.79)	878

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (whole weight) (1999 – 2004)

CAS Number 32598-14-4

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1915
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2307
Total population	03-04	.007 (.007-.008)	.007 (.006-.007)	.012 (.011-.014)	.027 (.023-.031)	.043 (.037-.049)	1879
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	665
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	.003 (.003-.004)	.003 (.003-.004)	.005 (.005-.006)	.008 (.006-.010)	.011 (.008-.020)	593
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1250
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1549
Age 20+ years	03-04	.008 (.007-.009)	.007 (.006-.008)	.014 (.012-.015)	.030 (.026-.035)	.047 (.039-.053)	1286
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	913
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1075
Males	03-04	.006 (.006-.007)	.006 (.005-.007)	.010 (.009-.011)	.019 (.016-.023)	.030 (.027-.039)	937
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1002
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1232
Females	03-04	.008 (.007-.010)	.007 (.006-.009)	.015 (.013-.017)	.033 (.029-.040)	.049 (.043-.067)	942
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	635
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	567
Mexican Americans	03-04	.004 (.004-.005)	.004 (.004-.005)	.007 (.006-.009)	.014 (.011-.017)	.019 (.015-.023)	427
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	.090 (<LOD-.110)	409
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	.008 (.007-.010)	.007 (.005-.008)	.015 (.010-.020)	.041 (.027-.067)	.082 (.041-.116)	456
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	714
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1061
Non-Hispanic whites	03-04	.007 (.007-.008)	.007 (.006-.007)	.012 (.011-.014)	.027 (.022-.031)	.043 (.035-.049)	878

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (lipid adjusted) (1999 – 2004)

CAS Number 31508-00-6

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	13.1 (<LOD-15.1)	27.0 (22.1-30.3)	40.8 (32.8-48.6)	1926
Total population	01-02	*	<LOD	15.1 (13.0-17.5)	29.0 (26.1-33.7)	44.6 (39.6-48.9)	2307
Total population	03-04	6.00 (5.54-6.50)	5.19 (4.80-5.61)	10.4 (9.70-11.6)	21.8 (19.3-23.8)	31.3 (28.2-36.6)	1887
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	667
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	3.06 (2.76-3.39)	2.83 (2.70-3.10)	4.15 (3.60-4.56)	6.80 (4.70-9.60)	9.60 (6.80-13.2)	596
Age 20+ years	99-00	*	<LOD	14.9 (12.9-17.4)	28.1 (24.8-33.8)	43.8 (35.6-52.3)	1259
Age 20+ years	01-02	*	<LOD	16.9 (15.1-19.0)	32.4 (28.3-37.3)	46.5 (41.1-51.0)	1549
Age 20+ years	03-04	6.62 (6.10-7.18)	5.65 (5.21-6.40)	11.5 (10.2-12.6)	22.8 (20.7-25.9)	34.3 (29.6-39.6)	1291
Males	99-00	*	<LOD	<LOD	19.6 (16.6-24.4)	28.0 (24.4-38.1)	919
Males	01-02	*	<LOD	12.0 (<LOD-14.9)	22.0 (17.6-27.1)	32.7 (25.4-47.5)	1075
Males	03-04	5.11 (4.70-5.57)	4.71 (4.16-5.06)	8.72 (7.30-9.70)	16.4 (14.0-18.9)	23.2 (20.7-25.1)	940
Females	99-00	*	<LOD	16.7 (13.6-19.7)	32.0 (27.1-40.3)	46.8 (41.2-57.8)	1007
Females	01-02	*	<LOD	18.7 (16.5-21.0)	36.4 (31.6-40.9)	48.9 (44.5-54.3)	1232
Females	03-04	6.99 (6.32-7.73)	6.02 (5.31-6.84)	12.3 (11.1-14.4)	27.3 (22.7-30.0)	37.8 (31.3-45.0)	947
Mexican Americans	99-00	*	<LOD	<LOD	17.3 (14.5-19.6)	23.7 (20.9-27.1)	636
Mexican Americans	01-02	*	<LOD	<LOD	16.8 (12.5-21.7)	26.4 (19.3-33.2)	567
Mexican Americans	03-04	3.56 (3.04-4.18)	3.15 (2.60-3.82)	5.02 (4.26-6.66)	9.37 (7.45-11.7)	14.0 (10.0-17.6)	426
Non-Hispanic blacks	99-00	*	<LOD	19.0 (13.6-21.7)	38.7 (28.4-54.4)	59.7 (45.7-80.8)	413
Non-Hispanic blacks	01-02	*	<LOD	15.6 (12.6-19.9)	37.3 (26.1-46.4)	54.9 (40.0-66.6)	515
Non-Hispanic blacks	03-04	6.70 (5.52-8.14)	5.25 (4.40-6.10)	12.7 (8.80-18.0)	35.1 (21.1-45.0)	57.8 (33.5-110)	462
Non-Hispanic whites	99-00	*	<LOD	13.1 (<LOD-15.6)	25.6 (20.8-32.0)	40.3 (30.4-46.8)	720
Non-Hispanic whites	01-02	*	<LOD	15.9 (13.6-18.1)	31.1 (27.1-35.9)	45.3 (38.7-50.1)	1061
Non-Hispanic whites	03-04	6.19 (5.57-6.87)	5.46 (4.85-6.20)	10.9 (9.62-12.1)	22.0 (19.3-24.4)	30.7 (26.2-36.6)	878

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.6, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (whole weight) (1999 – 2004)

CAS Number 31508-00-6

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	.090 (<LOD-.100)	.180 (.150-.200)	.260 (.220-.320)	1926
Total population	01-02	*	<LOD	.100 (.090-.110)	.190 (.160-.220)	.300 (.270-.320)	2307
Total population	03-04	.037 (.034-.040)	.032 (.029-.036)	.066 (.061-.073)	.143 (.127-.160)	.216 (.192-.233)	1887
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	667
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	.015 (.014-.017)	.014 (.013-.016)	.021 (.018-.023)	.036 (.024-.046)	.047 (.035-.076)	596
Age 20+ years	99-00	*	<LOD	.100 (.090-.110)	.190 (.170-.220)	.280 (.230-.360)	1259
Age 20+ years	01-02	*	<LOD	.110 (.100-.130)	.210 (.180-.250)	.310 (.280-.370)	1549
Age 20+ years	03-04	.041 (.038-.045)	.036 (.032-.041)	.072 (.066-.081)	.159 (.137-.174)	.226 (.202-.249)	1291
Males	99-00	*	<LOD	<LOD	.130 (.110-.140)	.190 (.160-.220)	919
Males	01-02	*	<LOD	.080 (<LOD-.100)	.140 (.120-.170)	.210 (.160-.300)	1075
Males	03-04	.032 (.029-.035)	.030 (.026-.033)	.054 (.046-.062)	.110 (.083-.125)	.160 (.136-.180)	940
Females	99-00	*	<LOD	.110 (.090-.130)	.210 (.180-.260)	.320 (.260-.410)	1007
Females	01-02	*	<LOD	.130 (.100-.140)	.240 (.210-.260)	.360 (.300-.380)	1232
Females	03-04	.042 (.038-.047)	.036 (.030-.043)	.081 (.068-.097)	.176 (.152-.206)	.242 (.217-.290)	947
Mexican Americans	99-00	*	<LOD	<LOD	.110 (.090-.130)	.140 (.130-.180)	636
Mexican Americans	01-02	*	<LOD	<LOD	.120 (.080-.160)	.180 (.130-.220)	567
Mexican Americans	03-04	.022 (.018-.026)	.019 (.016-.024)	.034 (.029-.039)	.069 (.046-.086)	.094 (.075-.117)	426
Non-Hispanic blacks	99-00	*	<LOD	.120 (.080-.150)	.220 (.180-.320)	.400 (.260-.500)	413
Non-Hispanic blacks	01-02	*	<LOD	.100 (.070-.120)	.210 (.170-.270)	.320 (.230-.460)	515
Non-Hispanic blacks	03-04	.038 (.031-.046)	.030 (.026-.034)	.074 (.054-.106)	.218 (.133-.277)	.370 (.218-.618)	462
Non-Hispanic whites	99-00	*	<LOD	.090 (<LOD-.100)	.180 (.150-.200)	.250 (.200-.330)	720
Non-Hispanic whites	01-02	*	<LOD	.100 (.090-.120)	.210 (.170-.240)	.300 (.270-.360)	1061
Non-Hispanic whites	03-04	.038 (.034-.043)	.034 (.029-.040)	.067 (.062-.076)	.143 (.127-.165)	.209 (.178-.234)	878

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (lipid adjusted) (1999 – 2004)

CAS Number 38380-08-4

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	12.6 (<LOD-13.8)	17.0 (15.5-18.0)	1907
Total population	01-02	*	<LOD	<LOD	14.3 (12.1-16.0)	18.3 (15.6-21.1)	2296
Total population	03-04	2.54 (2.36-2.74)	3.29 (2.90-3.80)	7.00 (6.20-8.07)	11.4 (10.4-12.6)	15.3 (13.8-17.5)	1880
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	665
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	756
Age 12-19 years	03-04	*	.500 (<LOD-.660)	1.20 (1.00-1.43)	2.30 (2.06-2.45)	3.00 (2.37-3.60)	586
Age 20+ years	99-00	*	<LOD	<LOD	13.6 (<LOD-14.7)	17.5 (16.0-20.1)	1242
Age 20+ years	01-02	*	<LOD	<LOD	15.0 (13.3-17.0)	19.7 (17.0-22.1)	1540
Age 20+ years	03-04	3.31 (3.05-3.60)	4.10 (3.40-4.66)	7.81 (6.80-8.70)	12.0 (10.9-13.5)	16.8 (14.7-18.6)	1294
Males	99-00	*	<LOD	<LOD	12.6 (<LOD-14.0)	17.0 (14.6-18.0)	912
Males	01-02	*	<LOD	<LOD	13.7 (11.3-16.4)	18.4 (14.3-22.1)	1069
Males	03-04	2.57 (2.34-2.82)	3.10 (2.80-3.80)	6.92 (5.82-8.00)	11.8 (9.79-14.2)	17.1 (14.7-19.3)	940
Females	99-00	*	<LOD	<LOD	12.8 (<LOD-14.7)	16.5 (15.4-20.7)	995
Females	01-02	*	<LOD	<LOD	14.8 (13.2-15.5)	18.2 (16.2-21.0)	1227
Females	03-04	2.51 (2.28-2.76)	3.42 (2.80-4.10)	7.09 (6.35-8.10)	11.1 (10.4-12.0)	14.1 (12.7-16.8)	940
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	631
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	566
Mexican Americans	03-04	.858 (.640-1.15)	1.00 (.700-1.40)	2.48 (1.50-3.60)	4.78 (4.00-5.68)	6.40 (5.40-7.70)	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	14.6 (<LOD-20.5)	23.1 (17.2-32.1)	412
Non-Hispanic blacks	01-02	*	<LOD	<LOD	15.5 (12.7-21.0)	23.5 (16.4-31.4)	511
Non-Hispanic blacks	03-04	2.32 (1.87-2.89)	3.04 (2.40-3.60)	7.40 (5.48-9.80)	14.7 (11.5-18.6)	24.8 (15.0-33.0)	456
Non-Hispanic whites	99-00	*	<LOD	<LOD	13.6 (<LOD-15.2)	17.4 (16.0-18.9)	711
Non-Hispanic whites	01-02	*	<LOD	<LOD	15.0 (13.2-17.5)	19.4 (16.2-22.1)	1056
Non-Hispanic whites	03-04	3.03 (2.70-3.39)	4.03 (3.15-4.66)	7.76 (6.51-8.79)	11.7 (10.5-13.1)	15.7 (13.5-18.5)	880

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.4, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (whole weight) (1999 – 2004)

CAS Number 38380-08-4

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	.090 (<LOD-.090)	.110 (.100-.130)	1907
Total population	01-02	*	<LOD	<LOD	.100 (.080-.110)	.130 (.110-.140)	2296
Total population	03-04	.016 (.014-.017)	.021 (.018-.024)	.048 (.041-.052)	.075 (.069-.085)	.103 (.094-.112)	1880
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	665
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	756
Age 12-19 years	03-04	*	.003 (<LOD-.003)	.006 (.005-.007)	.012 (.011-.012)	.015 (.012-.018)	586
Age 20+ years	99-00	*	<LOD	<LOD	.090 (<LOD-.100)	.120 (.100-.140)	1242
Age 20+ years	01-02	*	<LOD	<LOD	.100 (.090-.120)	.130 (.120-.140)	1540
Age 20+ years	03-04	.021 (.019-.023)	.026 (.021-.030)	.051 (.045-.057)	.082 (.072-.093)	.109 (.098-.121)	1294
Males	99-00	*	<LOD	<LOD	.090 (<LOD-.100)	.110 (.090-.130)	912
Males	01-02	*	<LOD	<LOD	.090 (.080-.120)	.120 (.110-.150)	1069
Males	03-04	.016 (.014-.018)	.021 (.017-.025)	.045 (.037-.054)	.076 (.068-.094)	.108 (.094-.123)	940
Females	99-00	*	<LOD	<LOD	.090 (<LOD-.090)	.110 (.090-.140)	995
Females	01-02	*	<LOD	<LOD	.100 (.090-.100)	.130 (.110-.140)	1227
Females	03-04	.015 (.014-.017)	.020 (.017-.025)	.049 (.044-.052)	.073 (.064-.085)	.101 (.089-.112)	940
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	631
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	566
Mexican Americans	03-04	.005 (.004-.007)	.007 (.004-.009)	.015 (.011-.022)	.036 (.025-.041)	.046 (.037-.070)	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	.090 (<LOD-.120)	.150 (.110-.190)	412
Non-Hispanic blacks	01-02	*	<LOD	<LOD	.100 (.080-.130)	.150 (.100-.180)	511
Non-Hispanic blacks	03-04	.013 (.010-.017)	.018 (.014-.022)	.044 (.032-.056)	.099 (.067-.127)	.166 (.108-.198)	456
Non-Hispanic whites	99-00	*	<LOD	<LOD	.090 (<LOD-.100)	.110 (.100-.130)	711
Non-Hispanic whites	01-02	*	<LOD	<LOD	.100 (.090-.120)	.130 (.120-.140)	1056
Non-Hispanic whites	03-04	.019 (.017-.021)	.025 (.020-.031)	.051 (.044-.057)	.078 (.069-.089)	.104 (.094-.119)	880

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (lipid adjusted) (1999 – 2004)

CAS Number 69782-90-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1897
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2294
Total population	03-04	.605 (.554-.661)	.800 (.700-.940)	1.73 (1.47-1.93)	2.80 (2.50-3.10)	3.80 (3.36-4.30)	1858
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	654
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	755
Age 12-19 years	03-04	*	<LOD	<LOD	.690 (.540-.760)	.980 (.750-1.12)	580
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1243
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1539
Age 20+ years	03-04	.743 (.675-.817)	.980 (.800-1.10)	1.88 (1.69-2.05)	2.98 (2.68-3.30)	3.97 (3.51-4.59)	1278
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	901
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1068
Males	03-04	.594 (.541-.653)	.750 (.700-.900)	1.65 (1.38-1.88)	2.90 (2.39-3.50)	4.00 (3.57-4.87)	928
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	996
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1226
Females	03-04	.615 (.552-.685)	.890 (.700-1.00)	1.79 (1.60-1.99)	2.70 (2.50-2.91)	3.40 (3.20-3.93)	930
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	622
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	566
Mexican Americans	03-04	*	<LOD	.600 (<LOD-.820)	1.12 (.960-1.32)	1.59 (1.20-1.80)	422
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	405
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	510
Non-Hispanic blacks	03-04	.568 (.488-.662)	.720 (.600-.930)	1.80 (1.39-2.26)	3.55 (3.10-4.40)	5.35 (3.60-8.80)	448
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	716
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1055
Non-Hispanic whites	03-04	.713 (.635-.801)	.980 (.760-1.12)	1.81 (1.58-2.06)	2.86 (2.54-3.27)	3.80 (3.27-4.73)	869

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.4, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (whole weight) (1999 – 2004)

CAS Number 69782-90-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1897
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2294
Total population	03-04	.004 (.003-.004)	.005 (.004-.006)	.011 (.010-.013)	.018 (.016-.021)	.024 (.022-.027)	1858
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	654
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	755
Age 12-19 years	03-04	*	<LOD	<LOD	.004 (.003-.004)	.005 (.004-.005)	580
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1243
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1539
Age 20+ years	03-04	.005 (.004-.005)	.006 (.005-.007)	.012 (.011-.014)	.019 (.017-.022)	.026 (.023-.031)	1278
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	901
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1068
Males	03-04	.004 (.003-.004)	.005 (.004-.006)	.011 (.009-.012)	.018 (.016-.022)	.025 (.022-.027)	928
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	996
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1226
Females	03-04	.004 (.003-.004)	.005 (.004-.006)	.012 (.010-.013)	.017 (.016-.020)	.024 (.021-.027)	930
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	622
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	566
Mexican Americans	03-04	*	<LOD	.004 (<LOD-.006)	.008 (.006-.009)	.011 (.009-.014)	422
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	405
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	510
Non-Hispanic blacks	03-04	.003 (.003-.004)	.004 (.003-.006)	.011 (.008-.014)	.025 (.016-.031)	.040 (.026-.050)	448
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	716
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1055
Non-Hispanic whites	03-04	.004 (.004-.005)	.006 (.005-.008)	.012 (.010-.014)	.018 (.016-.021)	.025 (.022-.027)	869

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (lipid adjusted) (1999 – 2004)

CAS Number 52663-72-6

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1908
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2298
Total population	03-04	.494 (.441-.553)	.700 (.560-.800)	1.60 (1.40-1.70)	2.99 (2.74-3.36)	4.10 (3.80-4.47)	1864
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	666
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	*	<LOD	<LOD	.640 (.500-.770)	.870 (.700-1.10)	584
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1242
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1540
Age 20+ years	03-04	.592 (.521-.673)	.860 (.700-1.00)	1.72 (1.55-2.03)	3.30 (2.90-3.60)	4.30 (3.90-4.81)	1280
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	908
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1069
Males	03-04	.423 (<LOD-.471)	.500 (.440-.600)	1.33 (1.16-1.60)	2.70 (2.25-3.50)	3.80 (3.50-4.70)	931
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1000
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1229
Females	03-04	.573 (.492-.669)	.880 (.660-1.06)	1.71 (1.51-2.10)	3.21 (2.82-3.62)	4.30 (3.80-4.70)	933
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	627
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	564
Mexican Americans	03-04	*	<LOD	.600 (.400-.800)	1.20 (.960-1.44)	1.70 (1.30-1.94)	419
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	411
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	.521 (.432-.628)	.560 (.460-.800)	1.95 (1.25-2.40)	4.30 (3.27-6.79)	7.90 (4.70-11.8)	451
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	715
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1056
Non-Hispanic whites	03-04	.538 (.458-.632)	.800 (.600-.990)	1.66 (1.42-1.90)	2.98 (2.70-3.45)	3.94 (3.62-4.47)	875

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (whole weight) (1999 – 2004)

CAS Number 52663-72-6

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1908
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2298
Total population	03-04	.003 (.003-.003)	.004 (.003-.005)	.010 (.009-.012)	.020 (.018-.022)	.026 (.024-.027)	1864
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	666
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	*	<LOD	<LOD	.004 (.003-.004)	.005 (.004-.005)	584
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1242
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1540
Age 20+ years	03-04	.004 (.003-.004)	.005 (.004-.006)	.012 (.010-.013)	.021 (.019-.023)	.027 (.025-.030)	1280
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	908
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1069
Males	03-04	.003 (<LOD-.003)	.003 (.003-.004)	.009 (.008-.010)	.018 (.015-.021)	.023 (.021-.026)	931
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1000
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1229
Females	03-04	.003 (.003-.004)	.005 (.004-.006)	.012 (.010-.013)	.022 (.019-.024)	.027 (.025-.031)	933
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	627
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	564
Mexican Americans	03-04	*	<LOD	.004 (.003-.004)	.009 (.007-.011)	.013 (.010-.015)	419
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	411
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	.003 (.002-.004)	.003 (.003-.005)	.012 (.008-.015)	.028 (.019-.042)	.051 (.030-.072)	451
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	715
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1056
Non-Hispanic whites	03-04	.003 (.003-.004)	.005 (.004-.006)	.011 (.009-.013)	.020 (.018-.022)	.025 (.023-.027)	875

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (lipid adjusted) (2001 – 2004)

CAS Number 39635-31-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2298
Total population	03-04	*	<LOD	<LOD	.900 (.700-1.16)	1.47 (1.10-2.18)	1817
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	752
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	1.00 (<LOD-3.09)	570
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1546
Age 20+ years	03-04	*	<LOD	<LOD	1.00 (.760-1.20)	1.50 (1.10-2.14)	1247
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1070
Males	03-04	*	<LOD	<LOD	1.00 (.800-1.20)	1.54 (1.20-2.23)	903
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1228
Females	03-04	*	<LOD	<LOD	.830 (.600-1.14)	1.39 (.890-2.18)	914
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	564
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	.700 (<LOD-1.00)	406
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	514
Non-Hispanic blacks	03-04	*	<LOD	<LOD	1.20 (.840-1.60)	1.85 (1.20-2.83)	444
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1057
Non-Hispanic whites	03-04	*	<LOD	<LOD	.900 (.700-1.26)	1.51 (1.04-2.19)	851

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (whole weight) (2001 – 2004)

CAS Number 39635-31-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2298
Total population	03-04	*	<LOD	<LOD	.006 (.005-.008)	.010 (.007-.014)	1817
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	752
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	.005 (<LOD-.017)	570
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1546
Age 20+ years	03-04	*	<LOD	<LOD	.006 (.005-.008)	.010 (.007-.014)	1247
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1070
Males	03-04	*	<LOD	<LOD	.006 (.005-.009)	.011 (.008-.014)	903
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1228
Females	03-04	*	<LOD	<LOD	.005 (.004-.008)	.009 (.006-.014)	914
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	564
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	.005 (<LOD-.007)	406
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	514
Non-Hispanic blacks	03-04	*	<LOD	<LOD	.008 (.005-.010)	.012 (.007-.016)	444
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1057
Non-Hispanic whites	03-04	*	<LOD	<LOD	.006 (.005-.008)	.010 (.007-.014)	851

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Polychlorinated Biphenyls: Non-Dioxin-Like

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (lipid adjusted) (1999 – 2004)

CAS Number 7012-37-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1849
Total population	03-04	4.90 (4.60-5.22)	4.96 (4.65-5.26)	6.79 (6.40-7.31)	9.39 (8.70-10.1)	11.3 (10.7-11.8)	1866
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	647
Age 12-19 years	03-04	5.02 (4.48-5.63)	4.88 (4.26-5.48)	7.20 (5.90-8.60)	10.2 (8.40-11.5)	11.7 (10.7-13.3)	590
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1202
Age 20+ years	03-04	4.88 (4.61-5.17)	4.98 (4.67-5.26)	6.78 (6.40-7.25)	9.10 (8.70-9.87)	11.1 (10.6-11.8)	1276
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	886
Males	03-04	4.81 (4.47-5.16)	4.86 (4.45-5.20)	6.70 (6.07-7.50)	9.39 (8.34-10.4)	10.8 (10.5-11.4)	926
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	963
Females	03-04	4.99 (4.66-5.35)	5.07 (4.73-5.37)	6.90 (6.49-7.40)	9.37 (8.72-10.1)	11.6 (10.7-13.1)	940
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	618
Mexican Americans	03-04	4.95 (4.55-5.38)	4.90 (4.40-5.70)	6.70 (6.07-7.90)	8.94 (8.17-9.70)	10.5 (9.02-14.7)	413
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	392
Non-Hispanic blacks	03-04	4.95 (4.20-5.84)	5.03 (4.10-5.60)	7.20 (5.62-8.80)	10.2 (8.51-12.4)	13.1 (10.8-15.3)	459
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	687
Non-Hispanic whites	03-04	4.89 (4.58-5.22)	4.90 (4.61-5.26)	6.76 (6.33-7.32)	9.40 (8.70-10.3)	11.1 (10.6-11.8)	876

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00 and 03-04 are 32.4 and 1.7.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (whole weight) (1999 – 2004)

CAS Number 7012-37-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1849
Total population	03-04	.030 (.028-.032)	.030 (.028-.032)	.041 (.039-.043)	.057 (.055-.060)	.067 (.063-.071)	1866
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	647
Age 12-19 years	03-04	.025 (.023-.028)	.025 (.021-.028)	.035 (.030-.042)	.051 (.042-.061)	.061 (.051-.070)	590
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1202
Age 20+ years	03-04	.031 (.029-.033)	.031 (.029-.032)	.042 (.040-.043)	.058 (.055-.061)	.067 (.063-.071)	1276
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	886
Males	03-04	.030 (.028-.032)	.030 (.027-.032)	.041 (.037-.044)	.056 (.051-.061)	.065 (.061-.070)	926
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	963
Females	03-04	.030 (.028-.032)	.030 (.028-.032)	.042 (.039-.044)	.058 (.055-.061)	.070 (.064-.075)	940
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	618
Mexican Americans	03-04	.030 (.028-.033)	.031 (.027-.035)	.041 (.036-.044)	.053 (.048-.059)	.063 (.054-.070)	413
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	392
Non-Hispanic blacks	03-04	.028 (.024-.033)	.029 (.024-.033)	.039 (.034-.047)	.059 (.047-.070)	.070 (.064-.082)	459
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	687
Non-Hispanic whites	03-04	.030 (.028-.032)	.030 (.028-.032)	.041 (.039-.043)	.058 (.055-.061)	.068 (.062-.075)	876

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5'-Tetrachlorobiphenyl (PCB 44) (lipid adjusted) (2003 – 2004)

CAS Number 41464-39-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	2.06 (1.93-2.19)	2.05 (1.90-2.20)	3.03 (2.90-3.20)	4.40 (4.10-4.86)	5.70 (5.40-6.10)	1890
Age 12-19 years	03-04	2.45 (2.22-2.70)	2.44 (2.10-2.70)	3.68 (3.19-4.37)	5.78 (5.13-6.30)	7.99 (6.20-9.10)	597
Age 20+ years	03-04	2.00 (1.88-2.13)	2.00 (1.90-2.11)	2.97 (2.80-3.20)	4.27 (3.85-4.70)	5.44 (5.00-5.89)	1293
Males	03-04	2.12 (2.01-2.25)	2.12 (2.00-2.30)	3.11 (2.97-3.31)	4.52 (4.10-5.20)	5.89 (5.38-6.80)	942
Females	03-04	1.99 (1.82-2.18)	1.98 (1.80-2.20)	2.94 (2.72-3.21)	4.30 (3.77-5.05)	5.60 (5.00-6.20)	948
Mexican Americans	03-04	2.09 (1.88-2.31)	2.10 (1.90-2.39)	3.10 (2.52-3.73)	4.20 (3.30-6.10)	5.69 (3.80-7.40)	427
Non-Hispanic blacks	03-04	2.21 (1.94-2.52)	2.12 (1.80-2.56)	3.18 (2.72-3.94)	4.90 (3.90-6.32)	6.32 (5.01-9.62)	464
Non-Hispanic whites	03-04	2.03 (1.87-2.19)	2.01 (1.90-2.20)	3.07 (2.90-3.29)	4.40 (4.01-4.95)	5.70 (5.25-6.35)	877

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.4.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5'-Tetrachlorobiphenyl (PCB 44) (whole weight) (2003 – 2004)

CAS Number 41464-39-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	.013 (.012-.013)	.013 (.012-.014)	.018 (.017-.020)	.026 (.024-.028)	.032 (.030-.034)	1890
Age 12-19 years	03-04	.012 (.011-.014)	.013 (.011-.014)	.019 (.016-.021)	.029 (.024-.031)	.037 (.030-.042)	597
Age 20+ years	03-04	.013 (.012-.013)	.013 (.012-.014)	.018 (.017-.020)	.025 (.023-.027)	.031 (.029-.034)	1293
Males	03-04	.013 (.012-.014)	.013 (.012-.014)	.018 (.017-.020)	.026 (.024-.028)	.034 (.030-.038)	942
Females	03-04	.012 (.011-.013)	.012 (.011-.013)	.018 (.016-.020)	.025 (.023-.028)	.030 (.028-.032)	948
Mexican Americans	03-04	.013 (.011-.014)	.013 (.011-.014)	.017 (.015-.020)	.023 (.018-.031)	.027 (.021-.049)	427
Non-Hispanic blacks	03-04	.013 (.011-.014)	.012 (.010-.014)	.018 (.015-.022)	.026 (.021-.034)	.035 (.026-.040)	464
Non-Hispanic whites	03-04	.012 (.012-.014)	.012 (.011-.014)	.019 (.017-.020)	.026 (.024-.028)	.032 (.029-.035)	877

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5'-Tetrachlorobiphenyl (PCB 49) (lipid adjusted) (2003 – 2004)

CAS Number 41464-40-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	1.29 (1.20-1.39)	1.35 (1.24-1.45)	1.90 (1.80-2.10)	2.80 (2.60-3.08)	3.53 (3.33-3.80)	1876
Age 12-19 years	03-04	1.54 (1.37-1.72)	1.59 (1.33-1.80)	2.30 (2.00-2.84)	3.60 (3.10-4.13)	4.66 (3.80-5.73)	590
Age 20+ years	03-04	1.26 (1.17-1.35)	1.33 (1.22-1.40)	1.90 (1.78-2.03)	2.69 (2.50-2.80)	3.36 (3.15-3.63)	1286
Males	03-04	1.36 (1.27-1.45)	1.40 (1.30-1.50)	2.00 (1.90-2.20)	3.00 (2.60-3.23)	3.79 (3.36-4.10)	932
Females	03-04	1.23 (1.12-1.35)	1.30 (1.13-1.40)	1.80 (1.70-2.04)	2.66 (2.38-3.01)	3.39 (3.02-3.73)	944
Mexican Americans	03-04	1.33 (1.20-1.48)	1.46 (1.20-1.57)	2.00 (1.67-2.30)	2.70 (2.17-3.80)	3.56 (2.63-4.20)	426
Non-Hispanic blacks	03-04	1.40 (1.23-1.59)	1.40 (1.20-1.64)	2.06 (1.70-2.80)	3.23 (2.80-3.70)	3.88 (3.33-5.53)	453
Non-Hispanic whites	03-04	1.26 (1.15-1.38)	1.32 (1.20-1.40)	1.90 (1.78-2.11)	2.77 (2.50-3.10)	3.45 (3.20-3.90)	876

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.4.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5'-Tetrachlorobiphenyl (PCB 49) (whole weight) (2003 – 2004)

CAS Number 41464-40-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	.008 (.007-.008)	.008 (.007-.009)	.012 (.011-.012)	.016 (.015-.017)	.019 (.018-.021)	1876
Age 12-19 years	03-04	.008 (.007-.009)	.008 (.007-.009)	.012 (.010-.013)	.018 (.015-.019)	.022 (.018-.025)	590
Age 20+ years	03-04	.008 (.007-.008)	.008 (.007-.009)	.012 (.011-.013)	.015 (.015-.017)	.019 (.018-.021)	1286
Males	03-04	.008 (.008-.009)	.008 (.008-.009)	.012 (.011-.013)	.017 (.015-.018)	.021 (.019-.022)	932
Females	03-04	.007 (.007-.008)	.008 (.007-.008)	.011 (.010-.012)	.015 (.014-.017)	.018 (.017-.019)	944
Mexican Americans	03-04	.008 (.007-.009)	.008 (.007-.009)	.011 (.010-.014)	.015 (.012-.018)	.018 (.015-.023)	426
Non-Hispanic blacks	03-04	.008 (.007-.009)	.008 (.007-.009)	.012 (.010-.014)	.017 (.015-.020)	.021 (.017-.026)	453
Non-Hispanic whites	03-04	.008 (.007-.009)	.008 (.007-.009)	.012 (.011-.013)	.016 (.015-.017)	.019 (.018-.021)	876

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) (lipid adjusted) (1999 – 2004)

CAS Number 35693-99-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1912
Total population	01-02	*	<LOD	<LOD	<LOD	16.5 (14.3-17.2)	1537
Total population	03-04	2.66 (2.43-2.91)	2.74 (2.50-3.00)	4.17 (3.72-4.60)	5.91 (5.40-6.67)	7.60 (7.01-8.00)	1897
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	664
Age 12-19 years	01-02	*	<LOD	<LOD	16.2 (<LOD-23.8)	22.9 (16.9-32.3)	291
Age 12-19 years	03-04	3.16 (2.81-3.56)	3.22 (2.60-3.96)	5.15 (4.46-5.79)	7.60 (6.55-8.33)	9.20 (7.80-12.5)	597
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1248
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	16.0 (13.5-16.9)	1246
Age 20+ years	03-04	2.59 (2.36-2.84)	2.70 (2.46-2.92)	4.06 (3.60-4.43)	5.70 (5.16-6.49)	7.15 (6.62-7.80)	1300
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	908
Males	01-02	*	<LOD	<LOD	<LOD	16.0 (<LOD-17.5)	716
Males	03-04	2.75 (2.54-2.98)	2.80 (2.55-3.20)	4.36 (3.90-4.88)	5.94 (5.51-6.80)	7.80 (7.29-8.49)	946
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1004
Females	01-02	*	<LOD	<LOD	<LOD	16.6 (14.0-18.2)	821
Females	03-04	2.57 (2.30-2.87)	2.70 (2.40-2.96)	3.96 (3.52-4.30)	5.86 (4.96-6.67)	7.15 (6.57-8.10)	951
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	631
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	16.9 (<LOD-20.6)	366
Mexican Americans	03-04	2.88 (2.56-3.24)	3.00 (2.70-3.30)	4.41 (3.60-5.30)	6.00 (4.71-8.11)	7.83 (5.70-12.0)	426
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	408
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	16.6 (<LOD-20.9)	282
Non-Hispanic blacks	03-04	2.74 (2.35-3.19)	2.58 (2.08-3.40)	4.11 (3.30-5.60)	6.92 (5.10-8.70)	8.70 (7.10-10.2)	464
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	716
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	16.6 (14.7-17.5)	773
Non-Hispanic whites	03-04	2.60 (2.35-2.88)	2.70 (2.40-2.98)	4.17 (3.70-4.60)	5.79 (5.20-6.75)	7.37 (6.80-7.87)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 12.4, and 0.8, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) (whole weight) (1999 – 2004)

CAS Number 35693-99-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1912
Total population	01-02	*	<LOD	<LOD	<LOD	.090 (.080-.100)	1537
Total population	03-04	.016 (.015-.018)	.017 (.015-.019)	.024 (.022-.028)	.035 (.032-.037)	.043 (.039-.046)	1897
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	664
Age 12-19 years	01-02	*	<LOD	<LOD	.080 (<LOD-.100)	.100 (.080-.140)	291
Age 12-19 years	03-04	.016 (.014-.018)	.017 (.014-.019)	.026 (.022-.029)	.037 (.032-.041)	.042 (.037-.056)	597
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1248
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	.090 (.080-.090)	1246
Age 20+ years	03-04	.016 (.015-.018)	.017 (.015-.019)	.024 (.022-.028)	.034 (.031-.036)	.043 (.038-.045)	1300
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	908
Males	01-02	*	<LOD	<LOD	<LOD	.090 (<LOD-.110)	716
Males	03-04	.017 (.016-.018)	.018 (.016-.020)	.025 (.023-.029)	.036 (.032-.039)	.044 (.040-.048)	946
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1004
Females	01-02	*	<LOD	<LOD	<LOD	.090 (.080-.100)	821
Females	03-04	.016 (.014-.017)	.016 (.014-.018)	.024 (.021-.028)	.033 (.030-.036)	.042 (.036-.046)	951
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	631
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	.090 (<LOD-.110)	366
Mexican Americans	03-04	.018 (.016-.020)	.018 (.016-.021)	.025 (.022-.030)	.035 (.028-.044)	.044 (.032-.064)	426
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	408
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	.090 (<LOD-.110)	282
Non-Hispanic blacks	03-04	.016 (.014-.018)	.015 (.012-.019)	.022 (.019-.031)	.035 (.029-.043)	.043 (.035-.049)	464
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	716
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	.090 (.080-.100)	773
Non-Hispanic whites	03-04	.016 (.014-.018)	.017 (.014-.019)	.024 (.022-.028)	.035 (.032-.037)	.043 (.038-.047)	885

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (lipid adjusted) (1999 – 2004)

CAS Number 33025-41-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1931
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2250
Total population	03-04	1.39 (1.32-1.47)	1.37 (1.30-1.40)	1.97 (1.90-2.10)	3.10 (2.94-3.26)	4.10 (3.90-4.55)	1898
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	671
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	724
Age 12-19 years	03-04	1.24 (1.14-1.34)	1.20 (1.10-1.26)	1.76 (1.62-2.00)	2.40 (2.30-2.70)	3.25 (2.70-4.10)	598
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1260
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1526
Age 20+ years	03-04	1.42 (1.34-1.49)	1.40 (1.30-1.43)	2.00 (1.90-2.12)	3.10 (2.97-3.40)	4.20 (3.90-4.71)	1300
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	919
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1047
Males	03-04	1.29 (1.20-1.39)	1.30 (1.20-1.38)	1.87 (1.72-2.01)	2.70 (2.50-3.00)	3.30 (2.96-3.82)	947
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1012
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1203
Females	03-04	1.50 (1.42-1.58)	1.41 (1.38-1.50)	2.10 (1.92-2.30)	3.70 (3.20-4.00)	5.08 (4.10-5.46)	951
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	636
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	548
Mexican Americans	03-04	1.19 (1.09-1.30)	1.14 (1.00-1.30)	1.60 (1.48-1.73)	2.23 (1.80-3.20)	3.20 (2.46-3.60)	427
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	414
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	495
Non-Hispanic blacks	03-04	1.50 (1.34-1.68)	1.38 (1.21-1.50)	2.31 (1.80-2.80)	3.80 (3.10-4.80)	5.46 (4.30-8.60)	464
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	723
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1047
Non-Hispanic whites	03-04	1.39 (1.31-1.47)	1.39 (1.30-1.45)	1.96 (1.90-2.10)	3.01 (2.71-3.28)	4.09 (3.70-4.33)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 12.4, and 0.8, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (whole weight) (1999 – 2004)

CAS Number 33025-41-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1931
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2250
Total population	03-04	.008 (.008-.009)	.008 (.008-.009)	.012 (.012-.013)	.019 (.018-.021)	.025 (.024-.030)	1898
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	671
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	724
Age 12-19 years	03-04	.006 (.006-.007)	.006 (.005-.007)	.009 (.008-.010)	.013 (.012-.014)	.017 (.013-.019)	598
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1260
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1526
Age 20+ years	03-04	.009 (.008-.009)	.008 (.008-.009)	.013 (.012-.013)	.020 (.019-.022)	.026 (.024-.032)	1300
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	919
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1047
Males	03-04	.008 (.007-.009)	.008 (.007-.008)	.011 (.010-.013)	.017 (.016-.019)	.020 (.019-.022)	947
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1012
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1203
Females	03-04	.009 (.009-.010)	.009 (.008-.009)	.013 (.012-.014)	.022 (.021-.024)	.032 (.026-.034)	951
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	636
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	548
Mexican Americans	03-04	.007 (.007-.008)	.007 (.006-.008)	.010 (.009-.011)	.015 (.011-.018)	.018 (.014-.020)	427
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	414
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	495
Non-Hispanic blacks	03-04	.009 (.008-.009)	.008 (.007-.009)	.013 (.011-.015)	.022 (.019-.030)	.036 (.024-.070)	464
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	723
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1047
Non-Hispanic whites	03-04	.009 (.008-.009)	.008 (.008-.009)	.012 (.012-.013)	.019 (.018-.022)	.025 (.023-.030)	885

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (lipid adjusted) (1999 – 2004)

CAS Number 32690-93-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	20.8 (17.9-23.4)	29.0 (24.5-32.3)	1924
Total population	01-02	*	<LOD	13.2 (11.0-15.7)	23.5 (20.2-27.7)	33.0 (26.9-38.7)	2307
Total population	03-04	4.81 (4.63-4.99)	4.36 (3.90-4.88)	8.72 (8.30-9.28)	15.8 (14.7-17.7)	22.3 (19.7-25.5)	1898
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	671
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	2.20 (2.02-2.39)	2.20 (2.03-2.33)	2.98 (2.80-3.30)	4.19 (3.60-4.73)	5.32 (4.20-6.90)	598
Age 20+ years	99-00	*	<LOD	12.6 (<LOD-14.4)	22.4 (19.5-25.6)	30.0 (26.2-35.8)	1253
Age 20+ years	01-02	*	<LOD	14.7 (12.4-17.1)	25.2 (21.4-28.9)	34.8 (28.8-41.4)	1549
Age 20+ years	03-04	5.38 (5.16-5.62)	5.00 (4.60-5.50)	9.60 (8.90-10.6)	17.1 (15.7-18.5)	24.1 (20.8-27.7)	1300
Males	99-00	*	<LOD	<LOD	15.4 (13.0-17.8)	21.6 (18.3-24.4)	915
Males	01-02	*	<LOD	10.6 (<LOD-12.3)	20.2 (15.4-24.9)	28.8 (20.8-38.2)	1075
Males	03-04	4.06 (3.82-4.31)	3.62 (3.30-4.00)	6.71 (6.20-7.77)	12.4 (10.8-13.1)	15.8 (14.6-18.5)	947
Females	99-00	*	<LOD	13.9 (<LOD-16.4)	24.6 (21.9-28.5)	31.9 (28.8-40.3)	1009
Females	01-02	*	<LOD	15.8 (13.5-18.7)	26.1 (23.2-29.3)	35.9 (31.4-41.4)	1232
Females	03-04	5.65 (5.33-5.98)	5.38 (4.84-5.95)	10.9 (9.30-12.1)	19.1 (17.4-21.1)	27.4 (22.9-29.6)	951
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	15.8 (12.8-18.2)	636
Mexican Americans	01-02	*	<LOD	<LOD	13.3 (<LOD-18.1)	19.6 (16.2-23.0)	567
Mexican Americans	03-04	2.43 (2.10-2.80)	2.12 (1.90-2.40)	3.34 (2.90-4.16)	6.10 (5.25-7.40)	10.4 (6.61-12.2)	427
Non-Hispanic blacks	99-00	*	<LOD	<LOD	29.0 (18.6-38.4)	43.8 (35.4-64.0)	411
Non-Hispanic blacks	01-02	*	<LOD	12.0 (<LOD-14.2)	21.7 (16.4-26.9)	31.9 (24.5-41.0)	515
Non-Hispanic blacks	03-04	4.96 (4.21-5.83)	4.00 (3.45-4.65)	9.17 (6.80-12.4)	23.0 (14.6-35.1)	40.2 (23.0-68.2)	464
Non-Hispanic whites	99-00	*	<LOD	<LOD	21.6 (18.9-24.0)	29.0 (24.3-32.3)	719
Non-Hispanic whites	01-02	*	<LOD	14.7 (12.2-17.3)	25.8 (21.3-30.1)	35.9 (29.0-42.5)	1061
Non-Hispanic whites	03-04	5.23 (4.98-5.50)	4.91 (4.38-5.65)	9.30 (8.60-10.4)	16.1 (15.1-18.2)	21.9 (19.2-25.2)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.8, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (whole weight) (1999 – 2004)

CAS Number 32690-93-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	.140 (.120-.150)	.180 (.160-.220)	1924
Total population	01-02	*	<LOD	.090 (.070-.100)	.150 (.140-.180)	.210 (.180-.270)	2307
Total population	03-04	.029 (.028-.031)	.027 (.024-.029)	.058 (.053-.062)	.104 (.093-.121)	.153 (.135-.171)	1898
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	671
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	.011 (.010-.012)	.011 (.010-.012)	.015 (.014-.018)	.021 (.019-.025)	.026 (.021-.033)	598
Age 20+ years	99-00	*	<LOD	.080 (<LOD-.100)	.150 (.140-.160)	.200 (.170-.230)	1253
Age 20+ years	01-02	*	<LOD	.100 (.080-.110)	.170 (.140-.190)	.230 (.200-.280)	1549
Age 20+ years	03-04	.034 (.032-.035)	.031 (.028-.033)	.064 (.059-.068)	.115 (.103-.128)	.167 (.143-.186)	1300
Males	99-00	*	<LOD	<LOD	.100 (.090-.120)	.150 (.130-.170)	915
Males	01-02	*	<LOD	.070 (<LOD-.080)	.130 (.100-.170)	.190 (.140-.250)	1075
Males	03-04	.025 (.023-.027)	.023 (.021-.027)	.043 (.040-.050)	.077 (.067-.087)	.103 (.092-.118)	947
Females	99-00	*	<LOD	.100 (<LOD-.110)	.160 (.140-.180)	.220 (.190-.250)	1009
Females	01-02	*	<LOD	.100 (.090-.110)	.170 (.150-.190)	.240 (.210-.290)	1232
Females	03-04	.034 (.032-.037)	.031 (.027-.036)	.071 (.062-.085)	.130 (.120-.143)	.186 (.154-.216)	951
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	.110 (.080-.130)	636
Mexican Americans	01-02	*	<LOD	<LOD	.090 (<LOD-.120)	.140 (.110-.160)	567
Mexican Americans	03-04	.015 (.013-.017)	.013 (.011-.016)	.022 (.019-.026)	.042 (.032-.054)	.071 (.049-.097)	427
Non-Hispanic blacks	99-00	*	<LOD	<LOD	.170 (.110-.250)	.280 (.220-.420)	411
Non-Hispanic blacks	01-02	*	<LOD	.070 (<LOD-.080)	.130 (.100-.170)	.200 (.150-.250)	515
Non-Hispanic blacks	03-04	.028 (.024-.033)	.022 (.019-.025)	.055 (.038-.077)	.153 (.090-.215)	.236 (.143-.337)	464
Non-Hispanic whites	99-00	*	<LOD	<LOD	.150 (.130-.160)	.190 (.160-.210)	719
Non-Hispanic whites	01-02	*	<LOD	.100 (.080-.110)	.170 (.140-.200)	.230 (.190-.280)	1061
Non-Hispanic whites	03-04	.032 (.030-.034)	.030 (.027-.033)	.064 (.058-.067)	.113 (.096-.123)	.153 (.131-.176)	885

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87) (lipid adjusted) (2001 – 2004)

CAS Number 41464-51-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2298
Total population	03-04	.656 (.579-.744)	.900 (.800-.980)	1.32 (1.24-1.46)	2.02 (1.90-2.17)	2.70 (2.40-3.03)	1892
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	.706 (.629-.792)	.860 (.800-1.00)	1.56 (1.32-1.69)	2.25 (2.05-2.60)	3.44 (2.27-3.98)	596
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1540
Age 20+ years	03-04	.650 (.568-.742)	.900 (.800-.970)	1.30 (1.22-1.40)	2.00 (1.85-2.17)	2.60 (2.35-2.91)	1296
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1069
Males	03-04	.665 (.606-.730)	.900 (.800-.970)	1.40 (1.30-1.50)	2.05 (1.90-2.27)	2.70 (2.33-3.08)	945
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1229
Females	03-04	.648 (.545-.771)	.870 (.780-1.00)	1.30 (1.20-1.41)	2.00 (1.84-2.23)	2.60 (2.35-3.08)	947
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	564
Mexican Americans	03-04	.693 (.569-.843)	.840 (.700-1.00)	1.49 (1.14-1.70)	2.00 (1.64-2.40)	2.30 (2.00-3.10)	427
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	.824 (.723-.939)	1.05 (.950-1.10)	1.70 (1.32-2.10)	2.81 (2.48-3.09)	3.42 (3.00-4.14)	462
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1056
Non-Hispanic whites	03-04	.625 (.531-.735)	.830 (.780-.940)	1.30 (1.20-1.40)	1.97 (1.85-2.17)	2.49 (2.30-2.80)	882

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87) (whole weight) (2001 – 2004)

CAS Number 41464-51-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2298
Total population	03-04	.004 (.004-.005)	.005 (.005-.006)	.008 (.008-.009)	.012 (.012-.013)	.017 (.015-.017)	1892
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	.004 (.003-.004)	.005 (.004-.005)	.008 (.007-.008)	.011 (.010-.013)	.016 (.011-.021)	596
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1540
Age 20+ years	03-04	.004 (.004-.005)	.006 (.005-.006)	.008 (.008-.009)	.012 (.011-.014)	.017 (.014-.018)	1296
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1069
Males	03-04	.004 (.004-.005)	.006 (.005-.006)	.009 (.008-.009)	.013 (.012-.014)	.017 (.015-.018)	945
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1229
Females	03-04	.004 (.003-.005)	.005 (.005-.006)	.008 (.007-.009)	.012 (.011-.013)	.016 (.014-.017)	947
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	564
Mexican Americans	03-04	.004 (.003-.005)	.005 (.004-.006)	.008 (.007-.010)	.011 (.009-.014)	.014 (.011-.022)	427
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	.005 (.004-.005)	.006 (.006-.006)	.009 (.008-.012)	.015 (.014-.017)	.020 (.017-.027)	462
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1056
Non-Hispanic whites	03-04	.004 (.003-.005)	.005 (.005-.006)	.008 (.007-.009)	.012 (.011-.013)	.016 (.014-.017)	882

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (lipid adjusted) (1999 – 2004)

CAS Number 38380-02-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	13.1 (<LOD-14.7)	19.1 (16.2-20.6)	1897
Total population	01-02	*	<LOD	<LOD	17.6 (15.3-21.0)	26.3 (22.1-30.5)	2281
Total population	03-04	4.16 (3.82-4.54)	3.79 (3.43-4.10)	6.53 (5.76-7.56)	13.0 (10.5-16.1)	18.0 (16.7-19.4)	1877
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	654
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	2.34 (2.08-2.64)	2.30 (2.05-2.60)	3.20 (2.80-3.86)	5.16 (3.80-6.12)	6.00 (4.77-10.0)	587
Age 20+ years	99-00	*	<LOD	<LOD	13.9 (<LOD-16.0)	20.0 (17.2-21.6)	1243
Age 20+ years	01-02	*	<LOD	10.8 (<LOD-12.3)	19.4 (16.7-22.3)	29.0 (23.5-32.1)	1523
Age 20+ years	03-04	4.52 (4.14-4.94)	4.08 (3.75-4.45)	7.10 (6.08-8.53)	14.7 (10.9-17.0)	18.6 (17.1-21.3)	1290
Males	99-00	*	<LOD	<LOD	<LOD	16.7 (13.8-20.5)	905
Males	01-02	*	<LOD	<LOD	17.0 (13.8-21.0)	24.9 (19.8-30.1)	1061
Males	03-04	3.97 (3.64-4.33)	3.69 (3.31-4.00)	6.11 (5.44-7.00)	11.1 (9.40-14.3)	16.8 (12.9-19.0)	936
Females	99-00	*	<LOD	<LOD	13.9 (<LOD-16.2)	20.3 (17.3-23.5)	992
Females	01-02	*	<LOD	<LOD	18.0 (15.8-22.2)	28.5 (22.5-33.2)	1220
Females	03-04	4.35 (3.94-4.81)	3.90 (3.43-4.70)	7.05 (6.00-8.46)	15.3 (11.5-17.3)	18.9 (17.5-22.8)	941
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	624
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	13.8 (10.7-17.4)	562
Mexican Americans	03-04	2.33 (2.08-2.62)	2.20 (1.90-2.47)	3.35 (2.80-4.02)	5.21 (4.50-6.10)	6.35 (5.53-7.55)	426
Non-Hispanic blacks	99-00	*	<LOD	<LOD	21.1 (17.0-31.1)	32.0 (22.9-57.4)	400
Non-Hispanic blacks	01-02	*	<LOD	11.7 (10.6-13.1)	22.5 (18.8-25.8)	29.0 (23.0-37.2)	510
Non-Hispanic blacks	03-04	5.54 (4.53-6.77)	4.81 (3.80-5.80)	10.4 (7.20-15.3)	23.1 (16.7-29.7)	31.7 (24.2-49.1)	447
Non-Hispanic whites	99-00	*	<LOD	<LOD	12.5 (<LOD-14.5)	18.2 (14.3-20.8)	715
Non-Hispanic whites	01-02	*	<LOD	<LOD	18.5 (15.3-22.3)	28.5 (22.1-32.4)	1046
Non-Hispanic whites	03-04	4.23 (3.80-4.72)	3.90 (3.40-4.44)	6.70 (5.70-8.00)	12.6 (9.73-15.8)	17.3 (15.5-18.1)	883

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.6, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (whole weight) (1999 – 2004)

CAS Number 38380-02-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	.090 (<LOD-.100)	.120 (.100-.150)	1897
Total population	01-02	*	<LOD	<LOD	.120 (.100-.140)	.180 (.150-.210)	2281
Total population	03-04	.025 (.023-.028)	.024 (.021-.026)	.042 (.038-.049)	.082 (.067-.102)	.119 (.102-.140)	1877
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	654
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	.012 (.011-.013)	.012 (.010-.013)	.017 (.015-.019)	.025 (.019-.032)	.032 (.025-.045)	587
Age 20+ years	99-00	*	<LOD	<LOD	.090 (<LOD-.100)	.130 (.110-.150)	1243
Age 20+ years	01-02	*	<LOD	.070 (<LOD-.080)	.130 (.110-.160)	.190 (.160-.210)	1523
Age 20+ years	03-04	.028 (.026-.031)	.026 (.024-.028)	.046 (.041-.054)	.093 (.073-.110)	.127 (.110-.153)	1290
Males	99-00	*	<LOD	<LOD	<LOD	.110 (.090-.130)	905
Males	01-02	*	<LOD	<LOD	.110 (.090-.140)	.160 (.120-.200)	1061
Males	03-04	.025 (.022-.027)	.023 (.021-.025)	.040 (.036-.045)	.070 (.059-.090)	.110 (.078-.132)	936
Females	99-00	*	<LOD	<LOD	.100 (<LOD-.110)	.130 (.100-.170)	992
Females	01-02	*	<LOD	<LOD	.130 (.110-.160)	.200 (.160-.210)	1220
Females	03-04	.026 (.024-.029)	.024 (.020-.028)	.045 (.040-.053)	.095 (.078-.111)	.130 (.110-.158)	941
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	624
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	.100 (.070-.120)	562
Mexican Americans	03-04	.014 (.012-.016)	.013 (.011-.016)	.022 (.019-.026)	.036 (.030-.040)	.046 (.036-.058)	426
Non-Hispanic blacks	99-00	*	<LOD	<LOD	.140 (.110-.180)	.210 (.150-.400)	400
Non-Hispanic blacks	01-02	*	<LOD	.070 (.060-.090)	.140 (.110-.150)	.190 (.140-.230)	510
Non-Hispanic blacks	03-04	.032 (.026-.039)	.027 (.023-.033)	.060 (.042-.086)	.149 (.112-.172)	.211 (.150-.306)	447
Non-Hispanic whites	99-00	*	<LOD	<LOD	.090 (<LOD-.100)	.110 (.090-.150)	715
Non-Hispanic whites	01-02	*	<LOD	<LOD	.120 (.100-.160)	.190 (.160-.210)	1046
Non-Hispanic whites	03-04	.026 (.023-.029)	.025 (.022-.027)	.043 (.038-.051)	.081 (.065-.102)	.112 (.098-.127)	883

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (lipid adjusted) (1999 – 2004)

CAS Number 37680-73-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1929
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2307
Total population	03-04	1.65 (1.51-1.81)	1.70 (1.50-1.80)	2.70 (2.50-2.94)	4.40 (3.97-4.82)	5.83 (5.29-6.66)	1897
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	669
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	1.93 (1.76-2.11)	1.73 (1.51-2.10)	3.20 (3.00-3.60)	5.05 (4.23-5.87)	7.25 (5.10-8.30)	598
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1260
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1549
Age 20+ years	03-04	1.62 (1.46-1.78)	1.67 (1.50-1.80)	2.64 (2.40-2.90)	4.40 (3.88-4.75)	5.51 (5.00-6.60)	1299
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	918
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1075
Males	03-04	1.71 (1.59-1.84)	1.75 (1.60-1.90)	2.80 (2.60-3.10)	4.50 (3.97-5.06)	6.00 (5.35-6.75)	947
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1011
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1232
Females	03-04	1.60 (1.41-1.81)	1.61 (1.41-1.82)	2.57 (2.30-2.98)	4.40 (3.71-4.94)	5.60 (4.88-7.25)	950
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	634
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	567
Mexican Americans	03-04	1.72 (1.55-1.92)	1.70 (1.50-1.96)	3.00 (2.30-3.80)	4.40 (3.56-5.38)	5.38 (4.10-6.60)	427
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	413
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	1.69 (1.38-2.07)	1.70 (1.50-2.16)	3.00 (2.57-3.80)	5.88 (3.88-7.39)	7.68 (6.60-11.9)	464
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	724
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1061
Non-Hispanic whites	03-04	1.61 (1.46-1.79)	1.61 (1.41-1.80)	2.60 (2.37-2.90)	4.40 (3.75-4.61)	5.50 (5.00-6.15)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 25.7, 10.5, and 0.6, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (whole weight) (1999 – 2004)

CAS Number 37680-73-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1929
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2307
Total population	03-04	.010 (.009-.011)	.010 (.009-.012)	.016 (.015-.018)	.027 (.024-.028)	.033 (.031-.037)	1897
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	669
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	.010 (.009-.011)	.009 (.008-.011)	.016 (.014-.018)	.024 (.021-.028)	.030 (.025-.044)	598
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1260
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1549
Age 20+ years	03-04	.010 (.009-.011)	.011 (.009-.012)	.016 (.015-.018)	.027 (.024-.029)	.034 (.031-.037)	1299
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	918
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1075
Males	03-04	.011 (.010-.011)	.011 (.010-.012)	.017 (.016-.019)	.025 (.024-.029)	.037 (.031-.041)	947
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1011
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1232
Females	03-04	.010 (.009-.011)	.010 (.009-.011)	.015 (.014-.018)	.027 (.022-.029)	.032 (.030-.036)	950
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	634
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	567
Mexican Americans	03-04	.011 (.009-.012)	.011 (.009-.012)	.018 (.014-.021)	.024 (.020-.030)	.029 (.022-.052)	427
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	413
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	.010 (.008-.012)	.011 (.008-.013)	.016 (.013-.022)	.032 (.023-.041)	.045 (.032-.059)	464
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	724
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1061
Non-Hispanic whites	03-04	.010 (.009-.011)	.010 (.009-.011)	.016 (.014-.018)	.025 (.024-.027)	.031 (.029-.037)	885

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3,3',4',6-Pentachlorobiphenyl (PCB 110) (lipid adjusted) (2001 – 2004)

CAS Number 74472-35-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2298
Total population	03-04	1.22 (1.11-1.33)	1.20 (1.10-1.36)	1.96 (1.80-2.20)	3.40 (3.10-3.57)	4.42 (3.88-4.95)	1882
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	1.44 (1.30-1.59)	1.30 (1.20-1.50)	2.50 (2.19-2.91)	4.13 (3.40-4.90)	5.40 (4.30-7.68)	593
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1540
Age 20+ years	03-04	1.19 (1.08-1.30)	1.20 (1.09-1.33)	1.88 (1.71-2.11)	3.30 (2.95-3.50)	4.18 (3.66-4.94)	1289
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1069
Males	03-04	1.26 (1.18-1.35)	1.30 (1.19-1.40)	2.05 (1.80-2.30)	3.42 (3.07-3.70)	4.61 (3.80-5.00)	939
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1229
Females	03-04	1.17 (1.04-1.32)	1.20 (1.00-1.36)	1.82 (1.70-2.20)	3.40 (2.77-3.57)	4.40 (3.57-5.54)	943
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	564
Mexican Americans	03-04	1.33 (1.18-1.51)	1.29 (1.13-1.50)	2.30 (1.80-2.95)	3.40 (2.70-4.30)	4.10 (3.30-5.50)	420
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	1.36 (1.20-1.53)	1.30 (1.14-1.50)	2.10 (1.72-3.00)	4.19 (2.91-5.10)	5.32 (4.40-6.89)	464
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1056
Non-Hispanic whites	03-04	1.17 (1.05-1.31)	1.20 (1.00-1.33)	1.86 (1.70-2.16)	3.40 (2.93-3.57)	4.19 (3.69-4.95)	877

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.8.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3,3',4',6-Pentachlorobiphenyl (PCB 110) (whole weight) (2001 – 2004)

CAS Number 74472-35-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2298
Total population	03-04	.007 (.007-.008)	.007 (.007-.008)	.012 (.011-.013)	.019 (.018-.021)	.026 (.023-.028)	1882
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	.007 (.007-.008)	.007 (.006-.008)	.013 (.010-.015)	.020 (.017-.022)	.026 (.019-.037)	593
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1540
Age 20+ years	03-04	.007 (.007-.008)	.007 (.007-.008)	.012 (.011-.013)	.019 (.017-.021)	.025 (.023-.028)	1289
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1069
Males	03-04	.008 (.007-.008)	.008 (.007-.009)	.013 (.011-.014)	.019 (.018-.021)	.028 (.022-.031)	939
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1229
Females	03-04	.007 (.006-.008)	.007 (.006-.008)	.011 (.010-.013)	.019 (.016-.022)	.024 (.021-.027)	943
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	564
Mexican Americans	03-04	.008 (.007-.009)	.008 (.007-.010)	.014 (.011-.016)	.019 (.016-.022)	.022 (.017-.043)	420
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	.008 (.007-.009)	.008 (.006-.009)	.012 (.010-.016)	.023 (.017-.028)	.028 (.023-.032)	464
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1056
Non-Hispanic whites	03-04	.007 (.006-.008)	.007 (.006-.008)	.012 (.010-.013)	.019 (.017-.021)	.026 (.022-.029)	877

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (lipid adjusted) (1999 – 2004)

CAS Number 38380-07-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1927
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2298
Total population	03-04	*	<LOD	<LOD	<LOD	.600 (.500-.700)	1877
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	668
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	.510 (<LOD-.700)	589
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1259
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1540
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	.620 (.490-.800)	1288
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	917
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1069
Males	03-04	*	<LOD	<LOD	<LOD	.600 (.420-.770)	937
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1010
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1229
Females	03-04	*	<LOD	<LOD	<LOD	.630 (.500-.800)	940
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	636
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	564
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	424
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	409
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	*	<LOD	<LOD	.670 (.500-.800)	1.00 (.770-2.10)	455
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	725
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1056
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	.500 (.420-.600)	878

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (whole weight) (1999 – 2004)

CAS Number 38380-07-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1927
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2298
Total population	03-04	*	<LOD	<LOD	<LOD	.004 (.003-.004)	1877
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	668
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	.003 (<LOD-.004)	589
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1259
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1540
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	.004 (.004-.005)	1288
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	917
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1069
Males	03-04	*	<LOD	<LOD	<LOD	.004 (.003-.005)	937
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1010
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1229
Females	03-04	*	<LOD	<LOD	<LOD	.004 (.003-.005)	940
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	636
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	564
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	424
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	409
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	*	<LOD	<LOD	.004 (.003-.005)	.006 (.005-.013)	455
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	725
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1056
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	.003 (.002-.004)	878

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' & 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (lipid adjusted) (1999 – 2004)

CAS Number 52712-04-6 and 74472-42-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	49.3 (42.9-55.8)	71.2 (59.8-82.7)	1930
Total population	01-02	19.9 (18.0-22.0)	20.2 (18.2-23.1)	40.4 (35.3-45.1)	70.1 (61.8-78.8)	94.6 (82.5-107)	2293
Total population	03-04	15.1 (14.1-16.1)	15.1 (13.6-16.6)	30.5 (28.1-34.0)	55.4 (47.3-63.3)	75.3 (69.0-81.8)	1896
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	669
Age 12-19 years	01-02	*	<LOD	<LOD	17.0 (13.7-20.2)	23.1 (17.7-41.2)	748
Age 12-19 years	03-04	4.97 (4.45-5.55)	4.57 (4.10-5.02)	7.39 (6.35-8.63)	12.7 (10.4-14.5)	15.2 (13.1-21.3)	598
Age 20+ years	99-00	*	<LOD	<LOD	54.7 (47.4-60.8)	72.8 (66.0-88.9)	1261
Age 20+ years	01-02	23.3 (21.1-25.8)	24.0 (21.4-26.8)	44.6 (40.4-49.2)	73.9 (66.2-83.0)	100 (88.8-109)	1545
Age 20+ years	03-04	17.7 (16.5-19.0)	17.6 (15.5-20.4)	34.3 (30.0-38.8)	59.6 (50.6-66.9)	77.4 (72.3-87.7)	1298
Males	99-00	*	<LOD	<LOD	47.2 (<LOD-55.7)	68.2 (55.7-83.8)	918
Males	01-02	20.1 (17.9-22.6)	20.5 (17.6-23.5)	39.2 (32.2-46.0)	69.2 (58.1-82.5)	94.6 (77.8-109)	1066
Males	03-04	14.9 (13.8-15.9)	14.4 (12.9-15.8)	29.6 (26.6-33.8)	56.3 (45.3-62.3)	75.8 (63.3-87.7)	947
Females	99-00	*	<LOD	<LOD	53.7 (44.7-61.2)	72.1 (61.2-88.9)	1012
Females	01-02	19.7 (17.8-21.7)	20.2 (18.2-23.1)	41.8 (37.5-45.9)	70.1 (63.4-78.5)	93.9 (80.2-109)	1227
Females	03-04	15.3 (14.0-16.8)	15.8 (14.2-17.8)	31.8 (28.3-36.6)	54.6 (47.3-64.4)	72.5 (68.4-80.9)	949
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	636
Mexican Americans	01-02	*	<LOD	18.6 (13.6-23.4)	33.3 (26.5-44.2)	51.8 (42.3-57.6)	559
Mexican Americans	03-04	7.06 (6.02-8.28)	6.52 (5.20-7.60)	12.3 (8.91-16.0)	23.6 (18.9-28.3)	29.2 (24.7-36.1)	427
Non-Hispanic blacks	99-00	*	<LOD	<LOD	72.6 (61.7-89.4)	122 (86.5-185)	412
Non-Hispanic blacks	01-02	22.3 (19.3-25.6)	22.0 (18.4-27.1)	46.5 (38.0-55.6)	91.5 (70.1-112)	122 (91.5-169)	513
Non-Hispanic blacks	03-04	17.8 (14.9-21.3)	15.9 (12.5-21.0)	41.2 (30.6-57.3)	86.5 (69.4-110)	153 (94.6-191)	464
Non-Hispanic whites	99-00	*	<LOD	<LOD	49.3 (41.4-55.8)	70.1 (55.7-85.2)	727
Non-Hispanic whites	01-02	21.5 (19.2-24.0)	22.1 (19.6-24.9)	43.0 (37.7-48.0)	70.7 (62.3-79.7)	96.1 (79.1-110)	1057
Non-Hispanic whites	03-04	16.0 (14.5-17.7)	15.8 (14.6-18.4)	31.4 (28.2-36.6)	55.1 (47.2-62.3)	71.6 (64.0-75.8)	883

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 41.1, 10.5, and 0.4, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' & 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (whole weight) (1999 – 2004)

CAS Number 52712-04-6 and 74472-42-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	.340 (.300-.370)	.460 (.390-.530)	1930
Total population	01-02	.122 (.110-.135)	.120 (.110-.140)	.270 (.230-.290)	.460 (.410-.510)	.650 (.560-.700)	2293
Total population	03-04	.092 (.086-.099)	.095 (.082-.105)	.206 (.180-.231)	.359 (.326-.392)	.477 (.450-.528)	1896
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	669
Age 12-19 years	01-02	*	<LOD	<LOD	.090 (.060-.110)	.110 (.090-.210)	748
Age 12-19 years	03-04	.025 (.023-.028)	.023 (.020-.027)	.037 (.030-.047)	.062 (.049-.074)	.079 (.067-.103)	598
Age 20+ years	99-00	*	<LOD	<LOD	.360 (.320-.390)	.490 (.400-.560)	1261
Age 20+ years	01-02	.148 (.133-.163)	.150 (.140-.170)	.290 (.270-.320)	.510 (.450-.550)	.680 (.610-.720)	1545
Age 20+ years	03-04	.111 (.103-.120)	.114 (.099-.128)	.232 (.204-.256)	.383 (.354-.416)	.506 (.467-.594)	1298
Males	99-00	*	<LOD	<LOD	.320 (<LOD-.370)	.420 (.370-.530)	918
Males	01-02	.125 (.112-.140)	.130 (.110-.140)	.260 (.230-.290)	.460 (.370-.540)	.630 (.510-.710)	1066
Males	03-04	.092 (.085-.099)	.091 (.079-.103)	.198 (.172-.229)	.354 (.316-.379)	.474 (.389-.562)	947
Females	99-00	*	<LOD	<LOD	.340 (.300-.370)	.490 (.390-.540)	1012
Females	01-02	.119 (.107-.132)	.120 (.110-.150)	.270 (.230-.300)	.460 (.420-.500)	.660 (.590-.700)	1227
Females	03-04	.093 (.084-.102)	.098 (.085-.115)	.212 (.178-.244)	.373 (.325-.417)	.482 (.450-.568)	949
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	636
Mexican Americans	01-02	*	<LOD	.110 (.090-.150)	.240 (.170-.330)	.350 (.270-.430)	559
Mexican Americans	03-04	.043 (.036-.051)	.040 (.032-.049)	.080 (.068-.100)	.148 (.122-.203)	.239 (.147-.346)	427
Non-Hispanic blacks	99-00	*	<LOD	<LOD	.470 (.360-.670)	.830 (.530-1.22)	412
Non-Hispanic blacks	01-02	.125 (.108-.146)	.130 (.090-.160)	.290 (.230-.350)	.560 (.420-.680)	.770 (.560-1.06)	513
Non-Hispanic blacks	03-04	.101 (.084-.122)	.087 (.068-.113)	.239 (.186-.326)	.568 (.424-.811)	.965 (.698-1.09)	464
Non-Hispanic whites	99-00	*	<LOD	<LOD	.340 (.300-.370)	.440 (.370-.530)	727
Non-Hispanic whites	01-02	.133 (.119-.149)	.140 (.120-.160)	.280 (.250-.300)	.460 (.420-.530)	.650 (.550-.720)	1057
Non-Hispanic whites	03-04	.099 (.089-.109)	.104 (.091-.121)	.216 (.179-.252)	.355 (.320-.390)	.467 (.410-.520)	883

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (lipid adjusted) (1999 – 2004)

CAS Number 51908-16-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	13.3 (<LOD-16.1)	1923
Total population	01-02	*	<LOD	<LOD	11.0 (<LOD-12.5)	15.4 (13.6-16.9)	2299
Total population	03-04	2.17 (2.02-2.32)	2.21 (2.03-2.54)	4.80 (4.38-5.21)	8.27 (7.10-9.50)	11.7 (10.2-13.3)	1894
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	667
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	.620 (.562-.685)	.600 (.520-.690)	1.02 (.870-1.20)	1.67 (1.50-1.80)	2.30 (1.79-2.97)	594
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	14.3 (<LOD-17.1)	1256
Age 20+ years	01-02	*	<LOD	<LOD	11.8 (10.7-13.5)	16.5 (14.6-18.1)	1541
Age 20+ years	03-04	2.60 (2.41-2.79)	2.60 (2.40-2.90)	5.27 (4.82-5.88)	8.81 (8.00-9.80)	12.7 (10.7-15.2)	1300
Males	99-00	*	<LOD	<LOD	<LOD	13.1 (<LOD-17.1)	915
Males	01-02	*	<LOD	<LOD	11.0 (<LOD-13.0)	15.4 (13.0-17.2)	1069
Males	03-04	2.16 (1.97-2.37)	2.10 (1.90-2.50)	4.80 (4.09-5.30)	8.30 (6.90-10.1)	12.4 (10.0-14.9)	945
Females	99-00	*	<LOD	<LOD	<LOD	13.9 (<LOD-16.3)	1008
Females	01-02	*	<LOD	<LOD	11.0 (<LOD-12.2)	15.2 (13.2-17.3)	1230
Females	03-04	2.17 (2.02-2.34)	2.35 (2.04-2.63)	4.83 (4.47-5.37)	8.00 (7.04-9.10)	11.3 (9.95-13.2)	949
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	633
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	567
Mexican Americans	03-04	.940 (.826-1.07)	.820 (.780-1.00)	1.74 (1.21-2.60)	3.31 (2.80-4.00)	4.60 (3.47-6.00)	425
Non-Hispanic blacks	99-00	*	<LOD	<LOD	17.0 (13.4-22.9)	29.8 (20.2-42.2)	412
Non-Hispanic blacks	01-02	*	<LOD	<LOD	16.6 (12.8-21.4)	23.8 (16.9-31.6)	515
Non-Hispanic blacks	03-04	2.81 (2.37-3.34)	2.60 (2.05-3.50)	7.10 (4.97-8.90)	16.8 (11.5-23.2)	28.5 (17.8-41.6)	463
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	723
Non-Hispanic whites	01-02	*	<LOD	<LOD	10.8 (<LOD-12.0)	15.2 (12.8-16.8)	1054
Non-Hispanic whites	03-04	2.25 (2.06-2.45)	2.35 (2.10-2.60)	4.82 (4.37-5.41)	7.76 (6.94-8.70)	10.5 (9.51-11.3)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (whole weight) (1999 – 2004)

CAS Number 51908-16-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	.080 (<LOD-.110)	1923
Total population	01-02	*	<LOD	<LOD	.070 (<LOD-.080)	.110 (.090-.120)	2299
Total population	03-04	.013 (.012-.014)	.014 (.013-.016)	.032 (.028-.035)	.054 (.047-.062)	.077 (.069-.090)	1894
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	667
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	.003 (.003-.003)	.003 (.003-.003)	.006 (.004-.007)	.008 (.007-.010)	.011 (.009-.014)	594
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	.090 (<LOD-.120)	1256
Age 20+ years	01-02	*	<LOD	<LOD	.080 (.070-.090)	.110 (.100-.120)	1541
Age 20+ years	03-04	.016 (.015-.018)	.017 (.015-.020)	.035 (.032-.038)	.058 (.053-.064)	.084 (.073-.099)	1300
Males	99-00	*	<LOD	<LOD	<LOD	.080 (<LOD-.110)	915
Males	01-02	*	<LOD	<LOD	.070 (<LOD-.090)	.100 (.090-.120)	1069
Males	03-04	.013 (.012-.015)	.014 (.012-.016)	.032 (.027-.036)	.054 (.045-.063)	.074 (.064-.096)	945
Females	99-00	*	<LOD	<LOD	<LOD	.090 (<LOD-.110)	1008
Females	01-02	*	<LOD	<LOD	.070 (<LOD-.080)	.110 (.090-.120)	1230
Females	03-04	.013 (.012-.014)	.015 (.013-.016)	.032 (.028-.036)	.054 (.047-.065)	.079 (.069-.088)	949
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	633
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	567
Mexican Americans	03-04	.006 (.005-.007)	.005 (.004-.007)	.012 (.008-.016)	.024 (.017-.033)	.034 (.024-.046)	425
Non-Hispanic blacks	99-00	*	<LOD	<LOD	.110 (.080-.130)	.180 (.120-.270)	412
Non-Hispanic blacks	01-02	*	<LOD	<LOD	.100 (.080-.130)	.150 (.110-.200)	515
Non-Hispanic blacks	03-04	.016 (.013-.019)	.016 (.012-.019)	.041 (.030-.061)	.100 (.069-.167)	.180 (.126-.224)	463
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	723
Non-Hispanic whites	01-02	*	<LOD	<LOD	.070 (<LOD-.080)	.100 (.090-.120)	1054
Non-Hispanic whites	03-04	.014 (.013-.015)	.015 (.013-.018)	.033 (.028-.036)	.053 (.047-.057)	.069 (.064-.075)	885

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149) (lipid adjusted) (2001 – 2004)

CAS Number 38380-04-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2307
Total population	03-04	.598 (.556-.642)	.600 (.550-.680)	.900 (.830-1.00)	1.45 (1.28-1.60)	1.90 (1.68-2.20)	1873
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	.650 (.605-.698)	.640 (.600-.700)	1.00 (.900-1.10)	1.70 (1.40-2.15)	2.40 (1.80-2.98)	590
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1549
Age 20+ years	03-04	.590 (.546-.638)	.600 (.540-.680)	.900 (.800-1.00)	1.40 (1.20-1.60)	1.89 (1.60-2.17)	1283
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1075
Males	03-04	.623 (.578-.671)	.650 (.600-.700)	.960 (.880-1.06)	1.50 (1.30-1.66)	1.90 (1.60-2.40)	930
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1232
Females	03-04	.575 (.521-.634)	.600 (.500-.620)	.890 (.800-.950)	1.40 (1.20-1.67)	1.90 (1.69-2.20)	943
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	567
Mexican Americans	03-04	.549 (.496-.608)	.530 (.500-.600)	.900 (.700-1.04)	1.28 (1.03-1.60)	1.60 (1.26-2.30)	408
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	.760 (.678-.853)	.800 (.700-.880)	1.20 (1.00-1.58)	1.98 (1.70-2.59)	2.90 (2.20-4.20)	463
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1061
Non-Hispanic whites	03-04	.574 (.524-.628)	.600 (.510-.670)	.880 (.800-.950)	1.33 (1.19-1.50)	1.80 (1.50-2.02)	881

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149) (whole weight) (2001 – 2004)

CAS Number 38380-04-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2307
Total population	03-04	.004 (.003-.004)	.004 (.004-.004)	.006 (.005-.006)	.009 (.008-.009)	.011 (.010-.013)	1873
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	.003 (.003-.004)	.003 (.003-.003)	.005 (.004-.006)	.008 (.007-.009)	.012 (.008-.016)	590
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1549
Age 20+ years	03-04	.004 (.003-.004)	.004 (.004-.004)	.006 (.005-.006)	.009 (.007-.010)	.011 (.010-.013)	1283
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1075
Males	03-04	.004 (.004-.004)	.004 (.004-.004)	.006 (.005-.007)	.009 (.008-.010)	.011 (.010-.013)	930
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1232
Females	03-04	.003 (.003-.004)	.004 (.003-.004)	.005 (.005-.006)	.008 (.007-.010)	.011 (.009-.013)	943
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	567
Mexican Americans	03-04	.003 (.003-.004)	.003 (.003-.004)	.005 (.004-.006)	.007 (.006-.008)	.009 (.007-.014)	408
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	.004 (.004-.005)	.004 (.004-.005)	.007 (.006-.008)	.012 (.010-.013)	.019 (.013-.022)	463
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1061
Non-Hispanic whites	03-04	.004 (.003-.004)	.004 (.003-.004)	.005 (.005-.006)	.008 (.007-.009)	.010 (.009-.012)	881

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151) (lipid adjusted) (2001 – 2004)

CAS Number 52663-63-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2307
Total population	03-04	*	<LOD	.420 (.400-.500)	.700 (.640-.820)	1.00 (.840-1.30)	1870
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	*	<LOD	.400 (<LOD-.470)	.700 (.510-.820)	.880 (.700-1.10)	588
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1549
Age 20+ years	03-04	*	<LOD	.440 (.400-.500)	.720 (.650-.850)	1.02 (.850-1.40)	1282
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1075
Males	03-04	*	<LOD	.430 (.400-.500)	.720 (.620-.900)	1.10 (.830-1.50)	931
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1232
Females	03-04	*	<LOD	.410 (.400-.500)	.700 (.600-.820)	1.00 (.830-1.20)	939
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	567
Mexican Americans	03-04	*	<LOD	<LOD	.500 (.400-.700)	.700 (.530-.700)	426
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	*	.400 (<LOD-.500)	.700 (.500-.900)	1.30 (.900-1.90)	2.20 (1.40-4.55)	461
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1061
Non-Hispanic whites	03-04	*	<LOD	.400 (<LOD-.450)	.650 (.590-.700)	.850 (.750-1.00)	864

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151) (whole weight) (2001 – 2004)

CAS Number 52663-63-5

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2307
Total population	03-04	*	<LOD	.003 (.002-.003)	.004 (.004-.005)	.006 (.005-.008)	1870
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	*	<LOD	.002 (<LOD-.002)	.003 (.003-.004)	.004 (.003-.006)	588
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1549
Age 20+ years	03-04	*	<LOD	.003 (.003-.003)	.004 (.004-.006)	.007 (.005-.010)	1282
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1075
Males	03-04	*	<LOD	.003 (.003-.003)	.005 (.004-.006)	.006 (.005-.010)	931
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1232
Females	03-04	*	<LOD	.003 (.002-.003)	.004 (.004-.005)	.006 (.005-.008)	939
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	567
Mexican Americans	03-04	*	<LOD	<LOD	.003 (.003-.004)	.004 (.003-.005)	426
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	*	.002 (<LOD-.003)	.004 (.003-.006)	.008 (.006-.010)	.013 (.008-.028)	461
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1061
Non-Hispanic whites	03-04	*	<LOD	.003 (<LOD-.003)	.004 (.004-.004)	.005 (.004-.006)	864

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (lipid adjusted) (1999 – 2004)

CAS Number 35065-27-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	77.8 (70.2-87.3)	114 (93.0-133)	1926
Total population	01-02	27.2 (24.7-30.1)	30.1 (26.1-34.3)	57.8 (52.1-63.2)	94.7 (86.5-104)	126 (109-142)	2306
Total population	03-04	19.8 (18.8-20.9)	20.8 (18.4-22.2)	43.3 (39.1-46.9)	71.8 (64.4-82.8)	97.1 (88.8-111)	1896
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	668
Age 12-19 years	01-02	*	<LOD	12.5 (11.1-14.1)	21.2 (17.4-26.7)	31.9 (23.1-64.7)	757
Age 12-19 years	03-04	5.86 (5.25-6.55)	5.40 (4.70-6.21)	8.50 (7.80-9.85)	15.7 (12.9-18.4)	20.7 (16.9-28.3)	596
Age 20+ years	99-00	*	<LOD	<LOD	83.2 (75.9-91.8)	122 (100-139)	1258
Age 20+ years	01-02	32.6 (29.5-36.1)	35.1 (31.1-39.0)	62.8 (57.6-68.0)	99.5 (90.7-110)	132 (116-146)	1549
Age 20+ years	03-04	23.7 (22.3-25.1)	24.2 (21.8-27.4)	47.1 (43.3-50.5)	77.5 (68.0-87.9)	101 (92.9-119)	1300
Males	99-00	*	<LOD	<LOD	75.0 (66.7-86.2)	111 (87.7-128)	917
Males	01-02	28.5 (25.5-32.0)	31.5 (26.7-35.2)	57.7 (48.3-66.2)	97.5 (82.1-110)	126 (104-150)	1074
Males	03-04	20.0 (18.7-21.3)	19.7 (17.7-21.2)	42.9 (37.4-47.6)	72.7 (60.4-88.8)	107 (86.8-122)	947
Females	99-00	*	<LOD	<LOD	79.0 (70.2-92.0)	119 (91.4-142)	1009
Females	01-02	26.1 (23.6-28.8)	29.0 (25.1-33.4)	57.9 (52.1-62.9)	94.3 (87.8-98.2)	128 (105-145)	1232
Females	03-04	19.7 (18.4-21.1)	21.9 (19.0-24.1)	43.8 (39.4-47.7)	70.9 (63.0-81.5)	93.3 (83.8-100)	949
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	67.5 (59.5-71.8)	634
Mexican Americans	01-02	12.5 (10.8-14.4)	11.1 (<LOD-13.3)	24.5 (18.2-33.9)	47.4 (36.2-60.3)	66.7 (55.2-72.3)	567
Mexican Americans	03-04	8.75 (7.39-10.4)	7.86 (6.17-9.40)	15.6 (11.4-22.2)	30.3 (25.2-34.9)	37.8 (31.1-45.2)	425
Non-Hispanic blacks	99-00	*	<LOD	59.4 (<LOD-82.0)	121 (90.3-159)	176 (130-287)	412
Non-Hispanic blacks	01-02	30.0 (26.2-34.4)	31.0 (25.8-36.4)	65.1 (54.2-82.7)	127 (97.1-152)	170 (126-246)	515
Non-Hispanic blacks	03-04	22.8 (19.1-27.2)	20.9 (17.0-28.7)	54.1 (37.3-69.2)	126 (92.9-158)	194 (126-294)	464
Non-Hispanic whites	99-00	*	<LOD	<LOD	76.4 (69.3-83.9)	102 (87.8-127)	725
Non-Hispanic whites	01-02	29.9 (26.8-33.4)	33.0 (28.7-37.1)	61.2 (55.8-66.7)	96.3 (86.5-109)	126 (104-142)	1061
Non-Hispanic whites	03-04	21.3 (19.7-23.1)	22.2 (20.4-25.9)	44.9 (39.7-49.5)	70.9 (60.4-82.1)	91.3 (82.1-103)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 55.6, 10.5, and 1.1, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (whole weight) (1999 – 2004)

CAS Number 35065-27-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	.530 (.490-.560)	.750 (.610-.840)	1926
Total population	01-02	.167 (.151-.185)	.190 (.170-.210)	.380 (.340-.410)	.620 (.560-.690)	.860 (.760-.950)	2306
Total population	03-04	.121 (.114-.128)	.135 (.120-.144)	.283 (.258-.310)	.477 (.439-.518)	.624 (.575-.733)	1896
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	668
Age 12-19 years	01-02	*	<LOD	.060 (.050-.070)	.110 (.080-.140)	.150 (.110-.310)	757
Age 12-19 years	03-04	.030 (.027-.033)	.027 (.025-.031)	.044 (.039-.055)	.076 (.062-.098)	.101 (.079-.129)	596
Age 20+ years	99-00	*	<LOD	<LOD	.560 (.510-.610)	.790 (.670-.880)	1258
Age 20+ years	01-02	.206 (.187-.228)	.220 (.200-.250)	.410 (.380-.450)	.670 (.600-.740)	.900 (.820-1.04)	1549
Age 20+ years	03-04	.148 (.139-.158)	.156 (.141-.179)	.313 (.283-.339)	.512 (.452-.563)	.671 (.603-.756)	1300
Males	99-00	*	<LOD	<LOD	.530 (.470-.560)	.690 (.580-.850)	917
Males	01-02	.177 (.159-.198)	.200 (.170-.220)	.380 (.340-.430)	.610 (.510-.730)	.850 (.700-1.04)	1074
Males	03-04	.123 (.115-.133)	.127 (.111-.146)	.277 (.253-.310)	.474 (.413-.522)	.608 (.533-.794)	947
Females	99-00	*	<LOD	<LOD	.530 (.480-.590)	.770 (.610-.880)	1009
Females	01-02	.158 (.142-.175)	.180 (.150-.210)	.380 (.340-.400)	.630 (.570-.710)	.860 (.760-.950)	1232
Females	03-04	.119 (.110-.128)	.138 (.113-.149)	.291 (.253-.319)	.492 (.439-.541)	.624 (.578-.689)	949
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	.470 (.380-.540)	634
Mexican Americans	01-02	.075 (.063-.089)	.060 (<LOD-.080)	.150 (.120-.210)	.330 (.270-.420)	.470 (.380-.550)	567
Mexican Americans	03-04	.053 (.044-.064)	.047 (.038-.057)	.100 (.078-.144)	.205 (.164-.241)	.323 (.213-.435)	425
Non-Hispanic blacks	99-00	*	<LOD	.370 (<LOD-.510)	.750 (.620-.890)	1.27 (.820-1.64)	412
Non-Hispanic blacks	01-02	.169 (.146-.195)	.180 (.140-.200)	.390 (.330-.490)	.780 (.580-.950)	1.05 (.830-1.43)	515
Non-Hispanic blacks	03-04	.129 (.108-.156)	.126 (.098-.149)	.330 (.236-.425)	.734 (.562-1.06)	1.26 (.892-1.60)	464
Non-Hispanic whites	99-00	*	<LOD	<LOD	.520 (.480-.560)	.740 (.580-.850)	725
Non-Hispanic whites	01-02	.185 (.165-.207)	.210 (.180-.230)	.390 (.370-.430)	.640 (.570-.720)	.840 (.740-.990)	1061
Non-Hispanic whites	03-04	.131 (.121-.143)	.144 (.127-.170)	.295 (.268-.329)	.474 (.412-.518)	.600 (.519-.689)	885

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (lipid adjusted) (1999 – 2004)

CAS Number 35065-30-6

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	23.6 (22.0-25.4)	30.9 (28.1-35.1)	1798
Total population	01-02	*	<LOD	17.5 (15.7-19.3)	26.7 (24.9-29.0)	35.0 (32.4-37.3)	2301
Total population	03-04	5.46 (5.22-5.71)	6.30 (5.96-7.10)	12.9 (12.3-13.9)	21.7 (19.2-23.5)	28.2 (25.8-29.8)	1888
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	645
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	756
Age 12-19 years	03-04	1.12 (.974-1.30)	1.12 (1.00-1.30)	1.90 (1.70-2.50)	4.00 (3.53-4.37)	5.60 (4.35-6.69)	592
Age 20+ years	99-00	*	<LOD	<LOD	24.9 (23.3-26.4)	33.9 (29.6-37.5)	1153
Age 20+ years	01-02	10.5 (<LOD-11.3)	11.1 (<LOD-12.2)	19.1 (17.3-20.9)	28.4 (26.2-30.9)	36.8 (33.4-39.4)	1545
Age 20+ years	03-04	6.86 (6.48-7.26)	7.83 (6.87-8.70)	14.2 (13.1-14.9)	22.7 (20.7-24.9)	29.5 (26.7-32.2)	1296
Males	99-00	*	<LOD	<LOD	24.1 (22.0-27.0)	32.6 (28.1-37.0)	863
Males	01-02	*	10.9 (<LOD-11.9)	18.4 (16.3-20.9)	28.1 (24.7-31.9)	36.1 (32.1-38.3)	1073
Males	03-04	5.81 (5.43-6.22)	6.40 (5.61-7.68)	13.8 (12.4-14.4)	23.4 (20.4-25.6)	29.4 (26.0-32.7)	942
Females	99-00	*	<LOD	<LOD	22.4 (20.7-25.4)	29.7 (25.8-36.3)	935
Females	01-02	*	<LOD	16.4 (15.0-18.0)	25.9 (24.0-28.4)	34.0 (30.6-38.4)	1228
Females	03-04	5.14 (4.82-5.48)	6.28 (5.81-7.18)	12.5 (11.5-13.8)	19.2 (17.9-21.7)	26.1 (24.0-29.8)	946
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	23.2 (20.3-26.5)	606
Mexican Americans	01-02	*	<LOD	<LOD	15.4 (11.4-18.7)	21.1 (17.1-25.1)	565
Mexican Americans	03-04	2.34 (1.91-2.86)	2.20 (1.54-3.20)	4.91 (3.40-8.17)	10.4 (8.40-13.5)	13.9 (10.8-20.1)	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	30.9 (23.1-36.3)	41.9 (33.7-59.1)	382
Non-Hispanic blacks	01-02	*	<LOD	19.0 (14.9-23.2)	32.5 (25.5-43.9)	44.4 (32.5-61.7)	514
Non-Hispanic blacks	03-04	5.42 (4.63-6.35)	6.28 (5.11-7.75)	14.3 (10.7-18.3)	31.7 (23.1-40.7)	48.5 (32.1-66.1)	461
Non-Hispanic whites	99-00	*	<LOD	<LOD	24.1 (22.1-25.9)	31.0 (26.8-37.3)	658
Non-Hispanic whites	01-02	*	10.9 (<LOD-12.0)	18.4 (16.8-20.4)	27.7 (25.4-30.2)	35.0 (32.3-38.1)	1059
Non-Hispanic whites	03-04	6.13 (5.74-6.56)	7.40 (6.40-8.18)	13.8 (12.6-14.6)	21.7 (19.2-24.2)	27.0 (24.9-29.5)	882

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 17.2, 10.5, and 0.4, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (whole weight) (1999 – 2004)

CAS Number 35065-30-6

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	.160 (.140-.180)	.210 (.200-.230)	1798
Total population	01-02	*	<LOD	.110 (.110-.120)	.180 (.170-.200)	.250 (.210-.270)	2301
Total population	03-04	.033 (.032-.035)	.041 (.037-.045)	.087 (.080-.092)	.144 (.134-.149)	.188 (.173-.202)	1888
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	645
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	756
Age 12-19 years	03-04	.006 (.005-.006)	.006 (.005-.007)	.010 (.009-.012)	.020 (.017-.022)	.029 (.022-.033)	592
Age 20+ years	99-00	*	<LOD	<LOD	.170 (.150-.190)	.220 (.200-.250)	1153
Age 20+ years	01-02	.067 (<LOD-.072)	.070 (<LOD-.080)	.120 (.110-.130)	.200 (.180-.210)	.250 (.230-.290)	1545
Age 20+ years	03-04	.043 (.040-.046)	.051 (.045-.054)	.093 (.089-.099)	.149 (.141-.160)	.199 (.180-.223)	1296
Males	99-00	*	<LOD	<LOD	.170 (.140-.200)	.220 (.200-.250)	863
Males	01-02	*	.070 (<LOD-.080)	.120 (.110-.130)	.190 (.170-.210)	.250 (.210-.280)	1073
Males	03-04	.036 (.033-.039)	.043 (.036-.051)	.089 (.080-.093)	.148 (.132-.164)	.200 (.173-.225)	942
Females	99-00	*	<LOD	<LOD	.150 (.130-.170)	.210 (.190-.230)	935
Females	01-02	*	<LOD	.110 (.100-.120)	.180 (.160-.200)	.250 (.210-.280)	1228
Females	03-04	.031 (.029-.033)	.040 (.034-.044)	.083 (.075-.092)	.140 (.121-.149)	.176 (.160-.194)	946
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	.170 (.130-.190)	606
Mexican Americans	01-02	*	<LOD	<LOD	.110 (.080-.130)	.150 (.120-.190)	565
Mexican Americans	03-04	.014 (.012-.018)	.015 (.010-.018)	.032 (.025-.047)	.073 (.054-.113)	.119 (.078-.134)	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	.190 (.150-.210)	.260 (.190-.370)	382
Non-Hispanic blacks	01-02	*	<LOD	.110 (.090-.140)	.210 (.150-.270)	.290 (.210-.390)	514
Non-Hispanic blacks	03-04	.031 (.026-.037)	.038 (.027-.044)	.087 (.069-.117)	.210 (.136-.280)	.338 (.221-.380)	461
Non-Hispanic whites	99-00	*	<LOD	<LOD	.160 (.140-.200)	.210 (.200-.240)	658
Non-Hispanic whites	01-02	*	.070 (<LOD-.080)	.120 (.110-.130)	.190 (.170-.210)	.250 (.210-.280)	1059
Non-Hispanic whites	03-04	.038 (.035-.041)	.046 (.042-.052)	.091 (.083-.096)	.145 (.132-.151)	.180 (.164-.207)	882

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172) (lipid adjusted) (1999 – 2004)

CAS Number 52663-74-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1901
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2199
Total population	03-04	.647 (.606-.691)	.900 (.800-1.00)	1.80 (1.69-1.90)	2.98 (2.70-3.30)	4.16 (3.65-4.55)	1878
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	660
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	679
Age 12-19 years	03-04	*	<LOD	<LOD	.610 (.460-.840)	1.10 (.700-1.43)	585
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1241
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1520
Age 20+ years	03-04	.805 (.746-.869)	1.08 (1.00-1.16)	1.95 (1.80-2.10)	3.20 (2.87-3.60)	4.38 (3.79-5.00)	1293
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	911
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1027
Males	03-04	.668 (.612-.730)	.900 (.800-1.01)	1.82 (1.70-2.00)	3.30 (2.80-3.80)	4.43 (3.76-5.50)	937
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	990
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1172
Females	03-04	.627 (.581-.678)	.900 (.800-1.03)	1.72 (1.51-1.90)	2.80 (2.50-3.11)	3.70 (3.37-4.26)	941
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	630
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	519
Mexican Americans	03-04	*	<LOD	.700 (.470-1.20)	1.40 (1.20-1.95)	2.00 (1.40-2.91)	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	409
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	494
Non-Hispanic blacks	03-04	.688 (.579-.818)	.900 (.700-1.10)	2.20 (1.70-2.60)	5.00 (3.38-6.53)	7.60 (5.00-11.3)	458
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	706
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1027
Non-Hispanic whites	03-04	.720 (.665-.781)	1.00 (.870-1.10)	1.80 (1.69-2.00)	2.94 (2.70-3.20)	3.90 (3.53-4.20)	877

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.4, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172) (whole weight) (1999 – 2004)

CAS Number 52663-74-8

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1901
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2199
Total population	03-04	.004 (.004-.004)	.006 (.005-.006)	.012 (.011-.012)	.021 (.019-.022)	.027 (.024-.031)	1878
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	660
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	679
Age 12-19 years	03-04	*	<LOD	<LOD	.003 (.002-.004)	.005 (.004-.009)	585
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1241
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1520
Age 20+ years	03-04	.005 (.005-.005)	.007 (.006-.007)	.013 (.012-.014)	.022 (.020-.024)	.028 (.025-.033)	1293
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	911
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1027
Males	03-04	.004 (.004-.005)	.006 (.005-.007)	.012 (.011-.013)	.021 (.018-.024)	.029 (.024-.036)	937
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	990
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1172
Females	03-04	.004 (.003-.004)	.006 (.005-.006)	.012 (.010-.012)	.019 (.017-.021)	.026 (.023-.028)	941
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	630
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	519
Mexican Americans	03-04	*	<LOD	.005 (.003-.007)	.010 (.007-.015)	.017 (.011-.022)	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	409
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	494
Non-Hispanic blacks	03-04	.004 (.003-.005)	.006 (.004-.006)	.013 (.010-.017)	.030 (.020-.048)	.052 (.028-.067)	458
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	706
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1027
Non-Hispanic whites	03-04	.004 (.004-.005)	.006 (.005-.007)	.012 (.011-.013)	.020 (.018-.022)	.026 (.023-.029)	877

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177) (lipid adjusted) (1999 – 2004)

CAS Number 40186-70-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1873
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2287
Total population	03-04	1.13 (1.07-1.20)	1.30 (1.20-1.40)	2.77 (2.50-3.09)	5.30 (4.70-5.90)	7.20 (6.38-8.50)	1882
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	653
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	756
Age 12-19 years	03-04	*	<LOD	.600 (.500-.720)	1.04 (.800-1.40)	1.70 (1.20-1.95)	588
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1220
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1531
Age 20+ years	03-04	1.40 (1.30-1.50)	1.50 (1.40-1.71)	3.10 (2.80-3.44)	5.70 (4.99-6.22)	7.80 (6.50-9.50)	1294
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	887
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1065
Males	03-04	1.12 (1.03-1.21)	1.30 (1.17-1.41)	2.70 (2.40-3.00)	5.30 (4.72-5.80)	7.82 (6.22-9.50)	940
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	986
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1222
Females	03-04	1.15 (1.06-1.23)	1.30 (1.18-1.49)	2.80 (2.57-3.19)	5.30 (4.50-6.06)	6.97 (6.15-7.92)	942
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	622
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	562
Mexican Americans	03-04	.500 (<LOD-.649)	.550 (.400-.700)	1.36 (1.00-1.63)	2.40 (1.86-3.30)	3.40 (2.33-4.63)	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	399
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	10.6 (<LOD-12.4)	515
Non-Hispanic blacks	03-04	1.52 (1.25-1.84)	1.56 (1.29-2.05)	4.40 (3.20-5.70)	9.80 (6.30-13.3)	15.8 (10.0-25.7)	458
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	698
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1048
Non-Hispanic whites	03-04	1.16 (1.08-1.25)	1.34 (1.20-1.50)	2.74 (2.41-3.09)	5.00 (4.57-5.56)	6.50 (5.98-7.40)	880

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.4, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177) (whole weight) (1999 – 2004)

CAS Number 40186-70-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1873
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2287
Total population	03-04	.007 (.007-.007)	.008 (.008-.009)	.018 (.016-.021)	.034 (.031-.037)	.047 (.043-.056)	1882
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	653
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	756
Age 12-19 years	03-04	*	<LOD	.003 (.003-.004)	.006 (.005-.007)	.007 (.006-.011)	588
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1220
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1531
Age 20+ years	03-04	.009 (.008-.009)	.010 (.009-.011)	.021 (.018-.023)	.036 (.033-.041)	.053 (.045-.058)	1294
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	887
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1065
Males	03-04	.007 (.006-.007)	.009 (.008-.009)	.018 (.016-.021)	.032 (.030-.036)	.045 (.039-.062)	940
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	986
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1222
Females	03-04	.007 (.006-.008)	.008 (.007-.009)	.018 (.017-.021)	.035 (.032-.042)	.051 (.043-.056)	942
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	622
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	562
Mexican Americans	03-04	.003 (<LOD-.004)	.003 (.002-.005)	.008 (.006-.011)	.018 (.012-.025)	.025 (.018-.032)	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	399
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	.070 (<LOD-.100)	515
Non-Hispanic blacks	03-04	.009 (.007-.011)	.009 (.007-.012)	.026 (.018-.036)	.057 (.044-.090)	.105 (.058-.143)	458
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	698
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1048
Non-Hispanic whites	03-04	.007 (.007-.008)	.009 (.008-.010)	.018 (.016-.021)	.032 (.029-.036)	.044 (.040-.052)	880

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (lipid adjusted) (1999 – 2004)

CAS Number 52663-67-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1932
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2299
Total population	03-04	.933 (.894-.974)	1.20 (1.10-1.30)	2.50 (2.30-2.67)	4.24 (3.90-4.47)	6.10 (5.13-7.10)	1887
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	669
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	*	<LOD	.400 (<LOD-.480)	.850 (.620-1.04)	1.12 (1.00-1.32)	590
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1263
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1541
Age 20+ years	03-04	1.18 (1.11-1.25)	1.46 (1.30-1.60)	2.74 (2.60-2.90)	4.41 (4.10-4.80)	6.50 (5.69-7.58)	1297
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	919
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1069
Males	03-04	.991 (.918-1.07)	1.20 (1.10-1.37)	2.66 (2.45-2.80)	4.50 (3.80-5.10)	6.40 (5.30-7.70)	940
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1013
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1230
Females	03-04	.881 (.835-.930)	1.20 (1.10-1.30)	2.30 (2.20-2.59)	4.01 (3.71-4.34)	5.40 (4.47-6.70)	947
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	635
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	567
Mexican Americans	03-04	*	<LOD	.900 (.600-1.34)	1.99 (1.37-2.60)	3.10 (2.00-3.60)	424
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	415
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	1.09 (.911-1.30)	1.30 (.910-1.65)	3.10 (2.30-4.21)	7.10 (5.13-10.1)	11.4 (6.80-16.5)	460
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	724
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1054
Non-Hispanic whites	03-04	1.03 (.963-1.10)	1.30 (1.19-1.50)	2.61 (2.40-2.80)	4.20 (3.80-4.40)	5.33 (4.58-6.30)	882

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (whole weight) (1999 – 2004)

CAS Number 52663-67-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1932
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2299
Total population	03-04	.006 (.005-.006)	.008 (.007-.008)	.016 (.015-.018)	.029 (.026-.032)	.041 (.035-.045)	1887
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	669
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	*	<LOD	.002 (<LOD-.002)	.004 (.003-.005)	.006 (.004-.007)	590
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1263
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1541
Age 20+ years	03-04	.007 (.007-.008)	.009 (.008-.010)	.018 (.017-.019)	.031 (.028-.034)	.043 (.038-.048)	1297
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	919
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1069
Males	03-04	.006 (.006-.007)	.008 (.007-.009)	.017 (.016-.018)	.030 (.025-.034)	.042 (.034-.050)	940
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1013
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1230
Females	03-04	.005 (.005-.006)	.008 (.006-.008)	.016 (.014-.017)	.028 (.025-.031)	.040 (.034-.045)	947
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	635
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	567
Mexican Americans	03-04	*	<LOD	.005 (.004-.008)	.013 (.009-.020)	.022 (.014-.028)	424
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	415
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	515
Non-Hispanic blacks	03-04	.006 (.005-.008)	.008 (.006-.008)	.019 (.016-.027)	.044 (.032-.061)	.077 (.045-.089)	460
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	724
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1054
Non-Hispanic whites	03-04	.006 (.006-.007)	.008 (.007-.010)	.017 (.015-.018)	.028 (.025-.031)	.037 (.033-.045)	882

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (lipid adjusted) (1999 – 2004)

CAS Number 35065-29-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	37.5 (32.7-41.8)	62.0 (56.6-66.6)	79.3 (72.1-89.2)	1924
Total population	01-02	19.2 (17.4-21.1)	21.8 (19.0-24.6)	42.2 (38.3-47.5)	69.7 (63.7-75.9)	87.3 (83.3-93.0)	2302
Total population	03-04	15.1 (14.5-15.7)	18.0 (16.4-18.9)	37.1 (34.9-39.5)	63.7 (56.2-68.2)	81.5 (75.8-89.9)	1896
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	667
Age 12-19 years	01-02	*	<LOD	<LOD	12.2 (<LOD-14.8)	21.3 (14.2-26.0)	755
Age 12-19 years	03-04	3.06 (2.65-3.54)	2.97 (2.57-3.41)	5.00 (4.20-5.80)	11.1 (8.70-13.0)	14.7 (13.0-18.8)	598
Age 20+ years	99-00	*	<LOD	41.1 (37.6-45.2)	65.6 (60.6-69.4)	84.8 (75.6-96.1)	1257
Age 20+ years	01-02	23.0 (20.8-25.5)	26.5 (22.7-28.6)	46.7 (41.4-51.3)	74.5 (66.7-79.8)	91.4 (85.0-99.5)	1547
Age 20+ years	03-04	19.0 (17.9-20.1)	21.5 (18.9-24.3)	40.4 (37.9-42.8)	66.7 (61.0-70.1)	88.0 (77.8-96.7)	1298
Males	99-00	*	<LOD	40.6 (34.5-45.0)	65.1 (58.6-71.4)	83.8 (75.8-96.3)	919
Males	01-02	21.1 (18.8-23.7)	25.1 (21.2-30.0)	46.7 (39.8-51.8)	73.8 (63.2-79.8)	86.9 (78.0-99.4)	1073
Males	03-04	16.1 (14.8-17.4)	18.5 (15.8-21.3)	39.6 (35.8-41.7)	68.6 (63.7-75.0)	88.3 (76.8-96.7)	947
Females	99-00	*	<LOD	34.4 (29.8-39.3)	56.7 (52.2-62.6)	74.6 (66.6-90.5)	1005
Females	01-02	17.5 (15.9-19.3)	18.5 (16.0-21.6)	39.7 (34.8-43.9)	64.3 (58.0-74.8)	87.9 (79.1-98.1)	1229
Females	03-04	14.2 (13.4-15.0)	17.8 (15.8-19.2)	35.4 (31.8-38.5)	55.7 (51.2-59.9)	74.3 (64.8-87.6)	949
Mexican Americans	99-00	*	<LOD	<LOD	41.7 (33.2-50.5)	57.8 (49.7-63.8)	633
Mexican Americans	01-02	*	<LOD	18.0 (11.5-22.7)	36.9 (28.2-45.7)	54.2 (42.2-60.0)	566
Mexican Americans	03-04	6.14 (4.91-7.67)	5.80 (3.80-7.50)	12.6 (8.97-21.5)	27.2 (22.3-35.4)	38.8 (27.2-60.7)	427
Non-Hispanic blacks	99-00	*	<LOD	39.3 (32.2-48.4)	78.4 (64.3-93.7)	117 (89.6-144)	414
Non-Hispanic blacks	01-02	19.5 (16.5-23.1)	21.0 (16.9-23.8)	48.4 (36.7-57.9)	90.5 (73.7-101)	116 (96.1-167)	514
Non-Hispanic blacks	03-04	15.1 (12.8-17.7)	18.1 (12.6-20.8)	39.0 (29.7-51.1)	89.9 (64.4-122)	137 (91.4-206)	464
Non-Hispanic whites	99-00	*	<LOD	39.9 (34.5-45.3)	62.3 (56.5-68.6)	79.0 (71.3-91.4)	719
Non-Hispanic whites	01-02	21.4 (19.1-23.9)	24.8 (21.5-28.1)	45.6 (40.2-51.0)	72.4 (63.8-78.0)	87.9 (83.8-94.3)	1059
Non-Hispanic whites	03-04	16.9 (15.9-18.0)	19.8 (18.4-23.1)	39.3 (35.8-42.0)	63.7 (55.0-69.1)	79.8 (70.1-89.3)	883

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 28.2, 10.5, and 0.4, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (whole weight) (1999 – 2004)

CAS Number 35065-29-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	.250 (.220-.270)	.410 (.370-.450)	.540 (.490-.600)	1924
Total population	01-02	.118 (.106-.130)	.140 (.120-.160)	.280 (.250-.300)	.460 (.400-.510)	.610 (.540-.690)	2302
Total population	03-04	.092 (.088-.096)	.114 (.102-.127)	.246 (.230-.253)	.409 (.386-.438)	.534 (.495-.598)	1896
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	667
Age 12-19 years	01-02	*	<LOD	<LOD	.060 (<LOD-.080)	.090 (.070-.140)	755
Age 12-19 years	03-04	.016 (.014-.018)	.015 (.013-.017)	.025 (.022-.030)	.050 (.046-.056)	.076 (.056-.096)	598
Age 20+ years	99-00	*	<LOD	.270 (.240-.300)	.440 (.410-.480)	.560 (.500-.620)	1257
Age 20+ years	01-02	.146 (.131-.162)	.170 (.150-.190)	.300 (.280-.340)	.490 (.430-.560)	.640 (.570-.740)	1547
Age 20+ years	03-04	.119 (.112-.126)	.138 (.125-.151)	.270 (.249-.284)	.433 (.402-.474)	.572 (.511-.635)	1298
Males	99-00	*	<LOD	.260 (.220-.300)	.460 (.370-.510)	.570 (.500-.650)	919
Males	01-02	.131 (.117-.147)	.170 (.140-.200)	.300 (.260-.340)	.480 (.410-.550)	.620 (.530-.720)	1073
Males	03-04	.099 (.091-.108)	.117 (.098-.148)	.250 (.231-.274)	.422 (.388-.495)	.596 (.499-.654)	947
Females	99-00	*	<LOD	.230 (.200-.270)	.380 (.340-.410)	.510 (.430-.560)	1005
Females	01-02	.106 (.096-.117)	.120 (.100-.140)	.260 (.230-.280)	.420 (.380-.470)	.610 (.520-.700)	1229
Females	03-04	.085 (.080-.092)	.110 (.094-.123)	.230 (.209-.252)	.386 (.349-.421)	.494 (.459-.541)	949
Mexican Americans	99-00	*	<LOD	<LOD	.280 (.200-.320)	.390 (.320-.450)	633
Mexican Americans	01-02	*	<LOD	.110 (.080-.160)	.260 (.200-.310)	.360 (.280-.420)	566
Mexican Americans	03-04	.037 (.030-.047)	.035 (.024-.051)	.086 (.059-.118)	.191 (.138-.313)	.343 (.191-.405)	427
Non-Hispanic blacks	99-00	*	<LOD	.250 (.190-.300)	.500 (.350-.660)	.730 (.530-1.04)	414
Non-Hispanic blacks	01-02	.110 (.092-.131)	.120 (.090-.140)	.290 (.220-.350)	.580 (.440-.650)	.720 (.520-1.01)	514
Non-Hispanic blacks	03-04	.086 (.072-.102)	.098 (.070-.126)	.248 (.194-.327)	.580 (.373-.824)	.919 (.592-1.12)	464
Non-Hispanic whites	99-00	*	<LOD	.260 (.240-.300)	.430 (.380-.470)	.540 (.480-.600)	719
Non-Hispanic whites	01-02	.132 (.118-.148)	.160 (.140-.180)	.290 (.260-.330)	.470 (.410-.530)	.620 (.530-.730)	1059
Non-Hispanic whites	03-04	.104 (.097-.112)	.132 (.115-.151)	.253 (.235-.280)	.409 (.382-.449)	.512 (.478-.572)	883

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (lipid adjusted) (1999 – 2004)

CAS Number 52663-69-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1928
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2306
Total population	03-04	1.45 (1.38-1.54)	1.60 (1.50-1.77)	3.29 (3.15-3.54)	5.86 (5.50-6.29)	7.90 (7.50-8.74)	1886
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	668
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	757
Age 12-19 years	03-04	*	.440 (<LOD-.500)	.730 (.660-.840)	1.30 (.990-1.62)	1.91 (1.50-2.24)	590
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1260
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1549
Age 20+ years	03-04	1.77 (1.67-1.88)	1.88 (1.73-2.09)	3.70 (3.34-4.00)	6.25 (5.71-6.83)	8.40 (7.70-9.55)	1296
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	919
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1074
Males	03-04	1.47 (1.34-1.61)	1.54 (1.40-1.77)	3.29 (3.10-3.54)	5.80 (5.30-6.50)	7.90 (7.20-9.20)	940
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1009
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1232
Females	03-04	1.44 (1.34-1.55)	1.69 (1.50-1.82)	3.30 (3.05-3.80)	5.88 (5.21-6.30)	7.90 (7.31-9.24)	946
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	635
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	567
Mexican Americans	03-04	.703 (.579-.854)	.700 (.600-.890)	1.40 (1.19-1.90)	2.62 (2.20-3.47)	3.73 (2.60-5.60)	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	12.7 (<LOD-23.1)	413
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	13.0 (<LOD-14.9)	514
Non-Hispanic blacks	03-04	1.64 (1.41-1.90)	1.60 (1.20-2.00)	4.31 (3.25-5.63)	11.0 (6.69-13.7)	14.8 (11.3-17.4)	459
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	722
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1061
Non-Hispanic whites	03-04	1.56 (1.43-1.69)	1.74 (1.55-1.90)	3.30 (3.14-3.73)	5.71 (5.20-6.29)	7.59 (6.70-8.04)	883

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (whole weight) (1999 – 2004)

CAS Number 52663-69-1

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1928
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2306
Total population	03-04	.009 (.008-.009)	.010 (.009-.011)	.021 (.019-.024)	.039 (.036-.042)	.054 (.048-.059)	1886
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	668
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	757
Age 12-19 years	03-04	*	.002 (<LOD-.003)	.004 (.004-.004)	.007 (.005-.009)	.009 (.007-.010)	590
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1260
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1549
Age 20+ years	03-04	.011 (.010-.012)	.012 (.011-.014)	.024 (.022-.027)	.042 (.038-.045)	.057 (.052-.064)	1296
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	919
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1074
Males	03-04	.009 (.008-.010)	.010 (.009-.011)	.022 (.019-.025)	.038 (.035-.042)	.052 (.043-.064)	940
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1009
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1232
Females	03-04	.009 (.008-.009)	.010 (.009-.012)	.021 (.019-.023)	.042 (.036-.044)	.055 (.049-.061)	946
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	635
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	567
Mexican Americans	03-04	.004 (.003-.005)	.005 (.004-.006)	.009 (.007-.013)	.019 (.013-.029)	.029 (.017-.044)	423
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	.070 (<LOD-.150)	413
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	.080 (<LOD-.110)	514
Non-Hispanic blacks	03-04	.009 (.008-.011)	.009 (.008-.012)	.027 (.019-.037)	.065 (.043-.084)	.090 (.058-.120)	459
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	722
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1061
Non-Hispanic whites	03-04	.010 (.009-.010)	.011 (.010-.012)	.022 (.019-.025)	.038 (.035-.042)	.049 (.046-.055)	883

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (lipid adjusted) (1999 – 2004)

CAS Number 52663-68-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	17.7 (15.6-20.4)	24.8 (22.0-27.7)	1930
Total population	01-02	*	<LOD	12.2 (10.6-13.8)	21.7 (19.6-23.7)	28.1 (26.8-29.7)	2307
Total population	03-04	4.23 (3.96-4.50)	4.60 (4.20-5.23)	10.1 (9.42-10.5)	17.2 (16.1-18.1)	24.3 (20.5-27.8)	1889
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	667
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	1.00 (.859-1.17)	1.00 (.880-1.10)	1.66 (1.50-1.99)	3.20 (2.50-4.34)	5.00 (3.70-6.07)	594
Age 20+ years	99-00	*	<LOD	<LOD	19.3 (16.8-21.8)	26.0 (24.1-29.0)	1263
Age 20+ years	01-02	*	<LOD	13.3 (12.0-15.2)	23.0 (20.9-24.7)	29.2 (27.3-32.0)	1549
Age 20+ years	03-04	5.20 (4.83-5.60)	5.71 (5.01-6.19)	10.9 (10.3-11.7)	18.1 (16.9-19.5)	25.9 (22.1-32.1)	1295
Males	99-00	*	<LOD	<LOD	17.8 (15.8-19.6)	25.9 (21.6-29.8)	917
Males	01-02	*	<LOD	12.7 (<LOD-15.8)	22.5 (19.4-24.1)	27.7 (25.2-30.3)	1075
Males	03-04	4.34 (3.97-4.75)	4.50 (4.00-5.40)	10.4 (9.21-10.9)	17.9 (16.1-19.5)	25.1 (20.4-30.9)	939
Females	99-00	*	<LOD	<LOD	17.7 (15.1-21.7)	24.2 (21.6-27.0)	1013
Females	01-02	*	<LOD	11.9 (<LOD-13.0)	21.3 (18.5-23.5)	28.5 (26.2-31.3)	1232
Females	03-04	4.12 (3.84-4.41)	4.67 (4.10-5.30)	9.85 (8.83-10.5)	16.4 (15.3-17.9)	24.2 (19.1-27.8)	950
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	17.6 (15.1-19.1)	636
Mexican Americans	01-02	*	<LOD	<LOD	10.8 (<LOD-13.4)	15.7 (12.7-18.2)	567
Mexican Americans	03-04	1.79 (1.47-2.20)	1.58 (1.26-2.00)	3.96 (2.70-5.90)	7.86 (5.96-10.3)	11.6 (9.41-14.9)	426
Non-Hispanic blacks	99-00	*	<LOD	15.5 (<LOD-21.1)	31.6 (26.0-39.0)	47.1 (36.6-72.1)	412
Non-Hispanic blacks	01-02	*	<LOD	16.5 (12.3-21.0)	30.3 (22.9-40.6)	44.8 (30.3-61.9)	515
Non-Hispanic blacks	03-04	5.09 (4.39-5.90)	5.40 (4.20-6.21)	13.9 (10.6-17.7)	31.7 (22.7-46.4)	51.5 (31.7-76.5)	458
Non-Hispanic whites	99-00	*	<LOD	<LOD	16.8 (14.9-18.6)	22.0 (19.1-25.2)	727
Non-Hispanic whites	01-02	*	<LOD	12.5 (10.8-14.6)	21.7 (18.9-23.7)	27.4 (25.2-29.5)	1061
Non-Hispanic whites	03-04	4.47 (4.17-4.79)	5.00 (4.40-5.70)	10.1 (9.26-10.8)	16.5 (15.3-17.9)	21.1 (19.1-24.2)	884

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (whole weight) (1999 – 2004)

CAS Number 52663-68-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	.120 (.110-.130)	.170 (.140-.180)	1930
Total population	01-02	*	<LOD	.080 (.070-.090)	.140 (.130-.160)	.200 (.180-.220)	2307
Total population	03-04	.026 (.024-.028)	.029 (.027-.032)	.065 (.061-.069)	.115 (.106-.125)	.167 (.139-.197)	1889
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	667
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	758
Age 12-19 years	03-04	.005 (.004-.006)	.005 (.004-.006)	.009 (.007-.010)	.016 (.013-.019)	.023 (.016-.029)	594
Age 20+ years	99-00	*	<LOD	<LOD	.130 (.110-.140)	.180 (.160-.190)	1263
Age 20+ years	01-02	*	<LOD	.090 (.080-.100)	.150 (.130-.180)	.210 (.190-.230)	1549
Age 20+ years	03-04	.033 (.030-.035)	.036 (.032-.040)	.071 (.067-.075)	.124 (.112-.139)	.172 (.143-.215)	1295
Males	99-00	*	<LOD	<LOD	.120 (.100-.140)	.180 (.140-.200)	917
Males	01-02	*	<LOD	.080 (<LOD-.100)	.150 (.130-.160)	.190 (.170-.230)	1075
Males	03-04	.027 (.024-.030)	.030 (.026-.035)	.067 (.061-.072)	.116 (.102-.137)	.160 (.137-.215)	939
Females	99-00	*	<LOD	<LOD	.120 (.110-.130)	.160 (.140-.180)	1013
Females	01-02	*	<LOD	.080 (<LOD-.090)	.140 (.120-.150)	.200 (.180-.220)	1232
Females	03-04	.025 (.023-.027)	.029 (.026-.033)	.063 (.056-.070)	.115 (.104-.125)	.168 (.141-.191)	950
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	.120 (.100-.130)	636
Mexican Americans	01-02	*	<LOD	<LOD	.080 (<LOD-.100)	.100 (.090-.120)	567
Mexican Americans	03-04	.011 (.009-.013)	.010 (.007-.015)	.025 (.018-.038)	.057 (.042-.079)	.094 (.059-.110)	426
Non-Hispanic blacks	99-00	*	<LOD	.090 (<LOD-.130)	.200 (.160-.230)	.290 (.210-.530)	412
Non-Hispanic blacks	01-02	*	<LOD	.100 (.070-.120)	.190 (.150-.260)	.290 (.190-.380)	515
Non-Hispanic blacks	03-04	.029 (.025-.034)	.032 (.024-.037)	.083 (.070-.109)	.191 (.140-.273)	.330 (.228-.468)	458
Non-Hispanic whites	99-00	*	<LOD	<LOD	.110 (.100-.130)	.150 (.130-.170)	727
Non-Hispanic whites	01-02	*	<LOD	.080 (.070-.090)	.140 (.120-.160)	.190 (.170-.220)	1061
Non-Hispanic whites	03-04	.028 (.026-.030)	.032 (.029-.036)	.065 (.061-.071)	.111 (.101-.124)	.153 (.132-.172)	884

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (lipid adjusted) (2001 – 2004)

CAS Number 35694-08-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	11.1 (<LOD-11.9)	18.2 (16.5-19.5)	23.7 (21.0-27.0)	2279
Total population	03-04	2.69 (2.53-2.85)	4.19 (3.55-4.70)	8.47 (7.79-9.06)	14.3 (13.3-16.0)	19.1 (17.6-20.8)	1835
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	746
Age 12-19 years	03-04	*	<LOD	1.11 (.700-1.57)	2.40 (1.70-3.57)	5.18 (2.80-6.81)	572
Age 20+ years	01-02	*	<LOD	12.0 (11.0-13.3)	19.1 (17.7-20.5)	25.3 (22.7-28.0)	1533
Age 20+ years	03-04	3.64 (3.40-3.89)	4.95 (4.56-5.42)	9.30 (8.62-9.90)	15.3 (13.9-17.1)	20.1 (18.1-21.9)	1263
Males	01-02	*	<LOD	12.3 (10.6-14.1)	19.2 (17.2-21.2)	25.2 (21.7-29.0)	1059
Males	03-04	2.95 (2.61-3.35)	4.47 (3.55-5.20)	9.60 (8.30-10.9)	17.1 (14.2-18.8)	21.8 (19.8-25.6)	913
Females	01-02	*	<LOD	<LOD	17.0 (14.7-18.8)	21.9 (19.3-26.2)	1220
Females	03-04	2.45 (2.28-2.64)	4.00 (3.39-4.49)	7.50 (7.01-8.39)	12.7 (11.2-13.6)	16.6 (13.7-18.6)	922
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	14.3 (10.5-17.6)	561
Mexican Americans	03-04	.845 (.582-1.23)	.900 (.640-1.49)	2.90 (1.79-4.76)	7.21 (4.80-8.90)	9.50 (7.40-15.0)	410
Non-Hispanic blacks	01-02	*	<LOD	12.3 (<LOD-15.3)	22.6 (18.0-27.5)	29.8 (23.7-41.1)	508
Non-Hispanic blacks	03-04	2.45 (1.94-3.08)	3.62 (2.70-4.49)	8.83 (6.80-11.2)	18.1 (13.0-23.2)	28.3 (18.9-35.6)	450
Non-Hispanic whites	01-02	*	<LOD	11.9 (10.9-13.1)	18.8 (17.1-20.2)	24.1 (20.9-28.0)	1048
Non-Hispanic whites	03-04	3.25 (2.97-3.56)	4.90 (4.19-5.42)	9.08 (8.36-9.80)	14.7 (13.5-16.6)	19.1 (17.4-21.2)	861

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (whole weight) (2001 – 2004)

CAS Number 35694-08-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	.070 (<LOD-.080)	.120 (.110-.140)	.160 (.150-.190)	2279
Total population	03-04	.016 (.015-.017)	.026 (.022-.028)	.056 (.052-.060)	.096 (.091-.103)	.129 (.116-.139)	1835
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	746
Age 12-19 years	03-04	*	<LOD	.006 (.004-.008)	.013 (.009-.020)	.023 (.013-.035)	572
Age 20+ years	01-02	*	<LOD	.080 (.070-.090)	.130 (.110-.150)	.170 (.150-.200)	1533
Age 20+ years	03-04	.023 (.021-.024)	.031 (.027-.035)	.061 (.057-.065)	.103 (.094-.113)	.133 (.122-.145)	1263
Males	01-02	*	<LOD	.080 (.070-.090)	.140 (.110-.160)	.170 (.150-.210)	1059
Males	03-04	.018 (.016-.021)	.027 (.023-.034)	.061 (.054-.069)	.106 (.095-.121)	.142 (.129-.166)	913
Females	01-02	*	<LOD	<LOD	.110 (.090-.130)	.150 (.130-.180)	1220
Females	03-04	.015 (.014-.016)	.024 (.020-.027)	.051 (.047-.056)	.088 (.080-.096)	.112 (.103-.117)	922
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	.100 (.080-.110)	561
Mexican Americans	03-04	.005 (.004-.008)	.006 (.004-.010)	.019 (.012-.031)	.049 (.033-.064)	.081 (.051-.118)	410
Non-Hispanic blacks	01-02	*	<LOD	.080 (<LOD-.090)	.150 (.100-.180)	.200 (.140-.250)	508
Non-Hispanic blacks	03-04	.014 (.011-.018)	.020 (.014-.026)	.054 (.045-.063)	.120 (.081-.155)	.172 (.123-.202)	450
Non-Hispanic whites	01-02	*	<LOD	.080 (.070-.090)	.130 (.110-.150)	.170 (.150-.190)	1048
Non-Hispanic whites	03-04	.020 (.018-.022)	.029 (.026-.034)	.061 (.056-.066)	.099 (.090-.106)	.132 (.116-.143)	861

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195) (lipid adjusted) (2001 – 2004)

CAS Number 52663-78-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2230
Total population	03-04	*	.900 (<LOD-1.01)	1.98 (1.80-2.10)	3.40 (3.10-3.60)	4.51 (3.90-5.18)	1820
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	716
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	1.74 (.720-3.82)	567
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1514
Age 20+ years	03-04	.800 (.721-.888)	1.10 (.980-1.20)	2.10 (2.00-2.30)	3.53 (3.20-3.74)	4.68 (4.12-5.19)	1253
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1035
Males	03-04	*	.800 (<LOD-1.00)	2.08 (1.82-2.20)	3.50 (3.12-3.70)	4.60 (3.82-5.40)	904
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1195
Females	03-04	*	.970 (<LOD-1.10)	1.85 (1.64-2.09)	3.30 (2.86-3.60)	4.50 (3.57-5.25)	916
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	544
Mexican Americans	03-04	*	<LOD	<LOD	1.80 (1.11-2.40)	2.40 (1.80-3.50)	407
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	490
Non-Hispanic blacks	03-04	.709 (<LOD-.870)	.820 (<LOD-1.14)	2.00 (1.65-2.57)	4.18 (3.16-5.30)	6.90 (4.18-8.10)	444
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1037
Non-Hispanic whites	03-04	.749 (<LOD-.850)	1.00 (.800-1.18)	2.10 (1.90-2.30)	3.40 (3.10-3.61)	4.44 (3.80-5.19)	856

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 28.1 and 0.7.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195) (whole weight) (2001 – 2004)

CAS Number 52663-78-2

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2230
Total population	03-04	*	.005 (<LOD-.006)	.012 (.012-.013)	.022 (.020-.025)	.031 (.027-.034)	1820
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	716
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	.007 (.004-.017)	567
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1514
Age 20+ years	03-04	.005 (.004-.006)	.007 (.006-.007)	.014 (.012-.015)	.023 (.021-.026)	.032 (.028-.035)	1253
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1035
Males	03-04	*	.005 (<LOD-.006)	.013 (.012-.014)	.022 (.020-.025)	.031 (.025-.035)	904
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1195
Females	03-04	*	.006 (<LOD-.007)	.012 (.011-.013)	.021 (.019-.025)	.031 (.026-.035)	916
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	544
Mexican Americans	03-04	*	<LOD	<LOD	.012 (.008-.018)	.018 (.013-.025)	407
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	490
Non-Hispanic blacks	03-04	.004 (<LOD-.005)	.004 (<LOD-.006)	.012 (.010-.016)	.027 (.019-.034)	.041 (.029-.048)	444
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1037
Non-Hispanic whites	03-04	.005 (<LOD-.005)	.006 (.005-.007)	.013 (.012-.014)	.022 (.020-.025)	.030 (.027-.033)	856

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' & 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (lipid adjusted) (2001 – 2004)

CAS Number 42740-50-1 and 52663-76-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	14.2 (13.0-15.7)	19.2 (17.4-20.9)	2299
Total population	03-04	2.61 (2.44-2.79)	3.40 (3.01-3.80)	6.70 (6.16-7.23)	11.8 (10.8-12.7)	15.0 (13.2-17.4)	1878
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	755
Age 12-19 years	03-04	.437 (<LOD-.546)	.520 (.400-.700)	1.10 (.900-1.42)	2.41 (1.86-3.19)	3.59 (2.93-4.20)	587
Age 20+ years	01-02	*	<LOD	<LOD	15.0 (13.7-17.0)	19.9 (18.2-21.4)	1544
Age 20+ years	03-04	3.37 (3.15-3.61)	4.07 (3.74-4.46)	7.30 (6.79-8.20)	12.4 (11.5-13.2)	15.9 (13.4-19.5)	1291
Males	01-02	*	<LOD	<LOD	14.6 (13.3-16.5)	19.4 (16.3-21.2)	1071
Males	03-04	2.77 (2.49-3.08)	3.45 (3.07-3.98)	6.92 (6.12-7.71)	12.5 (11.2-13.7)	16.3 (13.7-23.1)	935
Females	01-02	*	<LOD	<LOD	13.8 (11.9-15.9)	19.1 (17.0-21.3)	1228
Females	03-04	2.46 (2.27-2.66)	3.32 (2.83-3.80)	6.68 (6.12-7.20)	11.1 (9.74-12.3)	13.4 (12.8-14.9)	943
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	11.1 (<LOD-12.5)	565
Mexican Americans	03-04	.947 (.689-1.30)	1.00 (.700-1.50)	2.80 (1.60-4.30)	5.90 (4.30-7.40)	8.35 (6.00-12.3)	424
Non-Hispanic blacks	01-02	*	<LOD	<LOD	17.6 (14.2-21.0)	23.1 (19.6-30.2)	513
Non-Hispanic blacks	03-04	2.45 (2.06-2.90)	2.90 (2.33-3.80)	7.18 (5.80-9.00)	13.8 (11.5-16.8)	21.6 (14.0-32.3)	453
Non-Hispanic whites	01-02	*	<LOD	<LOD	14.7 (13.6-16.5)	19.6 (18.1-21.3)	1058
Non-Hispanic whites	03-04	3.01 (2.76-3.27)	3.88 (3.44-4.20)	7.10 (6.32-8.20)	11.8 (10.8-13.1)	15.4 (12.9-19.0)	882

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' & 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (whole weight) (2001 – 2004)

CAS Number 42740-50-1 and 52663-76-0

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	.100 (.090-.110)	.130 (.110-.140)	2299
Total population	03-04	.016 (.015-.017)	.022 (.019-.025)	.044 (.042-.048)	.082 (.071-.087)	.101 (.091-.112)	1878
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	755
Age 12-19 years	03-04	.002 (<LOD-.003)	.003 (.002-.004)	.006 (.005-.007)	.013 (.009-.016)	.016 (.014-.025)	587
Age 20+ years	01-02	*	<LOD	<LOD	.100 (.090-.110)	.130 (.120-.150)	1544
Age 20+ years	03-04	.021 (.020-.023)	.026 (.024-.028)	.049 (.045-.052)	.084 (.077-.090)	.104 (.092-.123)	1291
Males	01-02	*	<LOD	<LOD	.100 (.090-.120)	.130 (.110-.150)	1071
Males	03-04	.017 (.015-.019)	.023 (.020-.026)	.045 (.042-.050)	.084 (.077-.091)	.106 (.093-.127)	935
Females	01-02	*	<LOD	<LOD	.090 (.080-.100)	.130 (.110-.140)	1228
Females	03-04	.015 (.014-.016)	.020 (.017-.023)	.043 (.038-.047)	.076 (.066-.084)	.093 (.085-.111)	943
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	.070 (<LOD-.090)	565
Mexican Americans	03-04	.006 (.004-.008)	.007 (.004-.010)	.017 (.011-.026)	.038 (.028-.054)	.058 (.035-.087)	424
Non-Hispanic blacks	01-02	*	<LOD	<LOD	.110 (.090-.140)	.150 (.110-.210)	513
Non-Hispanic blacks	03-04	.014 (.012-.017)	.017 (.012-.022)	.046 (.038-.054)	.090 (.065-.111)	.141 (.094-.209)	453
Non-Hispanic whites	01-02	*	<LOD	<LOD	.100 (.090-.110)	.130 (.110-.140)	1058
Non-Hispanic whites	03-04	.019 (.017-.020)	.025 (.022-.028)	.048 (.043-.052)	.084 (.070-.090)	.100 (.090-.120)	882

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (lipid adjusted) (2001 – 2004)

CAS Number 52663-73-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	17.0 (15.4-18.1)	22.4 (19.9-25.9)	2292
Total population	03-04	2.81 (2.64-3.00)	3.80 (3.26-4.26)	8.30 (7.70-9.08)	14.9 (13.8-15.7)	18.9 (17.9-21.3)	1861
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	756
Age 12-19 years	03-04	.416 (<LOD-.522)	.500 (<LOD-.700)	1.17 (.890-1.59)	2.43 (2.02-2.73)	3.92 (2.90-4.10)	579
Age 20+ years	01-02	*	<LOD	10.6 (<LOD-11.8)	17.9 (16.2-19.2)	24.4 (20.7-27.4)	1536
Age 20+ years	03-04	3.71 (3.41-4.02)	4.60 (4.10-5.08)	9.40 (8.73-10.0)	15.7 (14.7-16.9)	20.6 (18.3-23.6)	1282
Males	01-02	*	<LOD	<LOD	17.3 (15.4-18.7)	21.3 (19.3-24.6)	1066
Males	03-04	3.01 (2.68-3.39)	3.95 (3.30-4.67)	9.10 (7.60-9.94)	16.6 (14.0-17.3)	22.1 (18.1-27.4)	925
Females	01-02	*	<LOD	<LOD	16.2 (14.5-17.9)	22.9 (19.4-27.3)	1226
Females	03-04	2.63 (2.49-2.79)	3.70 (3.20-4.00)	7.70 (6.92-8.81)	14.0 (11.6-15.3)	17.0 (15.7-18.9)	936
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	12.3 (<LOD-14.2)	565
Mexican Americans	03-04	.943 (.664-1.34)	1.00 (.600-1.50)	3.35 (1.50-5.33)	7.37 (5.10-10.2)	10.2 (7.40-13.5)	418
Non-Hispanic blacks	01-02	*	<LOD	12.5 (<LOD-15.3)	21.9 (17.0-28.1)	30.7 (22.4-37.4)	513
Non-Hispanic blacks	03-04	3.03 (2.46-3.74)	3.60 (2.70-4.70)	10.0 (7.70-13.7)	21.3 (15.9-30.4)	35.1 (21.3-43.3)	452
Non-Hispanic whites	01-02	*	<LOD	<LOD	17.3 (15.9-18.9)	22.7 (19.8-26.3)	1051
Non-Hispanic whites	03-04	3.24 (3.03-3.47)	4.19 (3.78-4.69)	9.08 (7.88-9.86)	14.8 (13.5-16.3)	18.6 (16.9-21.7)	871

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (whole weight) (2001 – 2004)

CAS Number 52663-73-7

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	.110 (.100-.130)	.150 (.140-.170)	2292
Total population	03-04	.017 (.016-.018)	.023 (.020-.027)	.056 (.053-.060)	.100 (.091-.106)	.127 (.119-.144)	1861
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	756
Age 12-19 years	03-04	.002 (<LOD-.003)	.002 (<LOD-.003)	.006 (.005-.008)	.012 (.009-.015)	.016 (.015-.019)	579
Age 20+ years	01-02	*	<LOD	.070 (<LOD-.080)	.120 (.110-.140)	.160 (.140-.180)	1536
Age 20+ years	03-04	.023 (.021-.025)	.029 (.026-.033)	.062 (.058-.067)	.106 (.097-.113)	.135 (.120-.158)	1282
Males	01-02	*	<LOD	<LOD	.110 (.100-.130)	.150 (.130-.180)	1066
Males	03-04	.019 (.016-.021)	.025 (.020-.030)	.059 (.053-.068)	.105 (.090-.113)	.138 (.120-.162)	925
Females	01-02	*	<LOD	<LOD	.110 (.100-.130)	.150 (.130-.170)	1226
Females	03-04	.016 (.015-.017)	.022 (.019-.025)	.054 (.047-.058)	.094 (.085-.105)	.120 (.108-.133)	936
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	.090 (<LOD-.110)	565
Mexican Americans	03-04	.006 (.004-.008)	.007 (.004-.010)	.019 (.011-.031)	.051 (.029-.079)	.079 (.051-.093)	418
Non-Hispanic blacks	01-02	*	<LOD	.070 (<LOD-.090)	.140 (.100-.180)	.190 (.130-.300)	513
Non-Hispanic blacks	03-04	.017 (.014-.021)	.021 (.015-.026)	.064 (.054-.073)	.135 (.102-.173)	.207 (.147-.297)	452
Non-Hispanic whites	01-02	*	<LOD	<LOD	.120 (.100-.130)	.150 (.130-.180)	1051
Non-Hispanic whites	03-04	.020 (.019-.022)	.027 (.023-.030)	.059 (.054-.065)	.101 (.087-.108)	.125 (.108-.144)	871

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (lipid adjusted) (2001 – 2004)

CAS Number 40186-72-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2208
Total population	03-04	2.13 (1.97-2.31)	2.34 (2.00-2.60)	5.00 (4.69-5.50)	9.20 (8.55-9.79)	13.7 (11.5-15.6)	1867
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	723
Age 12-19 years	03-04	*	<LOD	.900 (.750-1.20)	1.75 (1.23-2.92)	3.12 (1.60-6.91)	585
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1485
Age 20+ years	03-04	2.59 (2.37-2.83)	2.80 (2.42-3.06)	5.53 (5.10-6.10)	9.61 (9.03-11.0)	14.2 (12.2-17.1)	1282
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1033
Males	03-04	2.23 (2.03-2.45)	2.30 (1.90-2.70)	5.10 (4.78-5.53)	9.31 (8.18-10.8)	13.8 (10.8-15.7)	933
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1175
Females	03-04	2.05 (1.86-2.25)	2.34 (1.95-2.78)	5.00 (4.30-5.70)	9.00 (8.00-9.79)	13.6 (11.2-16.5)	934
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	533
Mexican Americans	03-04	.861 (<LOD-1.15)	.730 (<LOD-1.10)	1.70 (1.00-3.14)	4.40 (2.61-6.20)	6.20 (4.40-8.40)	421
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	483
Non-Hispanic blacks	03-04	2.27 (1.98-2.60)	2.26 (1.85-2.51)	5.60 (4.30-7.40)	11.5 (9.49-16.5)	20.9 (12.1-31.7)	456
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1034
Non-Hispanic whites	03-04	2.40 (2.19-2.63)	2.70 (2.37-3.01)	5.37 (4.88-6.06)	9.20 (8.65-10.1)	13.8 (11.2-16.6)	872

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 28.1 and 0.7.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (whole weight) (2001 – 2004)

CAS Number 40186-72-9

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2208
Total population	03-04	.013 (.012-.014)	.015 (.012-.017)	.034 (.031-.037)	.060 (.054-.068)	.086 (.077-.104)	1867
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	723
Age 12-19 years	03-04	*	<LOD	.005 (.004-.006)	.010 (.006-.013)	.014 (.008-.035)	585
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1485
Age 20+ years	03-04	.016 (.015-.018)	.017 (.016-.020)	.038 (.034-.042)	.066 (.059-.074)	.090 (.081-.112)	1282
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1033
Males	03-04	.014 (.012-.015)	.015 (.012-.018)	.034 (.032-.038)	.060 (.051-.070)	.082 (.070-.097)	933
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1175
Females	03-04	.012 (.011-.014)	.014 (.012-.016)	.035 (.029-.038)	.061 (.054-.069)	.088 (.078-.118)	934
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	533
Mexican Americans	03-04	.005 (<LOD-.007)	.005 (<LOD-.007)	.011 (.008-.018)	.031 (.019-.044)	.044 (.030-.062)	421
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	483
Non-Hispanic blacks	03-04	.013 (.011-.015)	.012 (.010-.014)	.035 (.028-.045)	.078 (.052-.107)	.128 (.080-.213)	456
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1034
Non-Hispanic whites	03-04	.015 (.013-.016)	.017 (.015-.020)	.036 (.033-.040)	.063 (.058-.069)	.088 (.077-.107)	872

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (lipid adjusted) (2003 – 2004)

CAS Number 2051-24-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	1.40 (1.21-1.61)	1.18 (1.00-1.48)	3.20 (2.67-4.01)	7.58 (6.20-8.81)	11.1 (9.00-15.7)	1854
Age 12-19 years	03-04	*	<LOD	<LOD	1.12 (.800-4.60)	3.49 (1.12-6.64)	578
Age 20+ years	03-04	1.63 (1.42-1.88)	1.40 (1.18-1.70)	3.80 (3.04-4.44)	8.09 (6.60-9.30)	12.3 (9.05-18.0)	1276
Males	03-04	1.37 (1.18-1.60)	1.15 (1.00-1.50)	3.00 (2.70-3.58)	6.22 (4.97-8.20)	9.10 (7.09-13.0)	925
Females	03-04	1.42 (1.22-1.66)	1.20 (1.00-1.50)	3.46 (2.45-4.61)	8.78 (7.45-9.47)	13.9 (10.0-18.7)	929
Mexican Americans	03-04	*	<LOD	1.10 (.770-1.60)	2.40 (1.60-3.60)	3.71 (2.40-4.97)	416
Non-Hispanic blacks	03-04	1.56 (1.37-1.78)	1.35 (1.10-1.52)	3.40 (2.62-4.82)	9.83 (6.70-13.6)	18.0 (11.8-27.7)	455
Non-Hispanic whites	03-04	1.53 (1.31-1.79)	1.30 (1.09-1.70)	3.89 (3.04-4.50)	7.95 (6.49-9.09)	11.3 (9.07-16.3)	864

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.7.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (whole weight) (2003 – 2004)

CAS Number 2051-24-3

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	.009 (.007-.010)	.008 (.006-.009)	.021 (.017-.026)	.049 (.040-.058)	.073 (.059-.097)	1854
Age 12-19 years	03-04	*	<LOD	<LOD	.006 (.004-.018)	.017 (.005-.033)	578
Age 20+ years	03-04	.010 (.009-.012)	.009 (.008-.011)	.024 (.020-.028)	.053 (.044-.063)	.077 (.065-.105)	1276
Males	03-04	.008 (.007-.010)	.008 (.006-.010)	.019 (.017-.023)	.039 (.032-.051)	.063 (.042-.077)	925
Females	03-04	.009 (.007-.010)	.008 (.006-.009)	.024 (.016-.032)	.057 (.049-.064)	.092 (.068-.134)	929
Mexican Americans	03-04	*	<LOD	.007 (.005-.010)	.018 (.010-.023)	.024 (.018-.035)	416
Non-Hispanic blacks	03-04	.009 (.008-.010)	.008 (.006-.009)	.022 (.018-.027)	.065 (.039-.077)	.097 (.065-.144)	455
Non-Hispanic whites	03-04	.009 (.008-.011)	.009 (.007-.011)	.024 (.020-.029)	.053 (.044-.061)	.076 (.063-.099)	864

<LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Metals and Metalloids

Urinary Antimony (1999 – 2010)

CAS Number 7440-36-0

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.132 (.120-.145)	.130 (.120-.150)	.220 (.200-.230)	.330 (.300-.350)	.430 (.390-.470)	2276
Total population	01-02	.134 (.126-.142)	.130 (.130-.140)	.190 (.180-.200)	.270 (.250-.310)	.350 (.320-.400)	2690
Total population	03-04	*	.080 (<LOD-.090)	.130 (.120-.150)	.200 (.190-.220)	.280 (.250-.320)	2558
Total population	05-06	.073 (.066-.081)	.070 (.070-.080)	.120 (.110-.140)	.220 (.180-.250)	.300 (.270-.360)	2576
Total population	07-08	.061 (.057-.066)	.060 (.060-.060)	.100 (.090-.110)	.170 (.140-.200)	.240 (.220-.260)	2627
Total population	09-10	.056 (.053-.059)	.050 (.050-.060)	.090 (.090-.100)	.170 (.140-.180)	.230 (.200-.280)	2847
Age 6-11 years	99-00	.176 (.154-.200)	.190 (.160-.210)	.260 (.230-.280)	.350 (.300-.400)	.440 (.320-.600)	316
Age 6-11 years	01-02	.146 (.134-.160)	.150 (.130-.160)	.200 (.180-.210)	.270 (.240-.330)	.340 (.280-.440)	368
Age 6-11 years	03-04	.099 (.087-.114)	.100 (.070-.120)	.160 (.120-.200)	.240 (.190-.310)	.310 (.230-.330)	290
Age 6-11 years	05-06	.075 (.063-.088)	.080 (.060-.090)	.110 (.090-.130)	.190 (.120-.260)	.240 (.170-.340)	355
Age 6-11 years	07-08	.068 (.061-.077)	.070 (.060-.080)	.110 (.090-.130)	.170 (.150-.210)	.230 (.180-.280)	394
Age 6-11 years	09-10	.069 (.061-.079)	.070 (.060-.080)	.120 (.100-.150)	.220 (.150-.260)	.260 (.230-.350)	378
Age 12-19 years	99-00	.158 (.141-.178)	.170 (.150-.180)	.240 (.210-.270)	.350 (.290-.420)	.460 (.350-.510)	663
Age 12-19 years	01-02	.169 (.156-.184)	.160 (.150-.180)	.240 (.220-.260)	.350 (.320-.410)	.460 (.400-.500)	762
Age 12-19 years	03-04	.105 (.095-.115)	.100 (.090-.120)	.150 (.140-.160)	.230 (.200-.270)	.290 (.250-.370)	725
Age 12-19 years	05-06	.092 (.083-.101)	.090 (.080-.100)	.140 (.130-.160)	.240 (.200-.270)	.280 (.250-.320)	701
Age 12-19 years	07-08	.079 (.069-.091)	.080 (.070-.090)	.130 (.110-.140)	.210 (.150-.230)	.230 (.210-.340)	376
Age 12-19 years	09-10	.063 (.056-.071)	.060 (.050-.070)	.100 (.090-.120)	.180 (.150-.210)	.270 (.180-.370)	451
Age 20+ years	99-00	.123 (.112-.137)	.120 (.110-.130)	.200 (.180-.220)	.310 (.290-.350)	.430 (.390-.470)	1297
Age 20+ years	01-02	.128 (.119-.136)	.130 (.120-.130)	.180 (.170-.190)	.250 (.220-.300)	.330 (.280-.390)	1560
Age 20+ years	03-04	*	.070 (<LOD-.080)	.120 (.100-.140)	.190 (.170-.210)	.270 (.220-.320)	1543
Age 20+ years	05-06	.070 (.064-.078)	.070 (.060-.080)	.120 (.110-.140)	.220 (.180-.270)	.320 (.260-.420)	1520
Age 20+ years	07-08	.058 (.054-.062)	.060 (.050-.060)	.090 (.090-.100)	.160 (.130-.190)	.240 (.210-.270)	1857
Age 20+ years	09-10	.054 (.051-.057)	.050 (.050-.050)	.090 (.080-.090)	.150 (.140-.180)	.220 (.190-.270)	2018
Males	99-00	.143 (.131-.157)	.150 (.130-.160)	.240 (.220-.260)	.350 (.330-.390)	.470 (.390-.570)	1132
Males	01-02	.145 (.136-.154)	.140 (.130-.150)	.200 (.190-.210)	.310 (.280-.330)	.390 (.350-.440)	1335
Males	03-04	.095 (.088-.103)	.090 (.080-.100)	.140 (.130-.160)	.220 (.200-.250)	.320 (.270-.350)	1281
Males	05-06	.085 (.076-.095)	.080 (.080-.090)	.140 (.120-.160)	.250 (.210-.290)	.350 (.260-.460)	1271
Males	07-08	.068 (.062-.076)	.070 (.060-.070)	.110 (.100-.120)	.210 (.170-.230)	.280 (.230-.340)	1327
Males	09-10	.060 (.055-.065)	.060 (.050-.070)	.100 (.090-.110)	.170 (.150-.200)	.250 (.200-.290)	1397
Females	99-00	.122 (.109-.137)	.120 (.110-.140)	.200 (.180-.220)	.300 (.280-.340)	.400 (.350-.460)	1144
Females	01-02	.125 (.117-.133)	.120 (.120-.130)	.180 (.160-.190)	.240 (.220-.280)	.320 (.260-.360)	1355
Females	03-04	*	<LOD	.120 (.090-.140)	.180 (.150-.220)	.230 (.190-.330)	1277
Females	05-06	.063 (.057-.071)	.060 (.050-.070)	.100 (.090-.120)	.180 (.150-.230)	.270 (.200-.330)	1305
Females	07-08	.055 (.052-.058)	.050 (.050-.060)	.090 (.080-.100)	.130 (.120-.150)	.200 (.170-.230)	1300
Females	09-10	.052 (.049-.056)	.050 (.040-.050)	.090 (.080-.090)	.150 (.130-.170)	.220 (.190-.270)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.04, 0.04, 0.07, 0.032, 0.032, and 0.032 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Antimony_BiomonitoringSummary.html

Urinary Antimony (1999 – 2010)

CAS Number 7440-36-0

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.132 (.108-.161)	.140 (.120-.170)	.210 (.180-.240)	.300 (.260-.390)	.430 (.330-.560)	787
Mexican Americans	01-02	.142 (.130-.154)	.130 (.130-.150)	.200 (.170-.230)	.260 (.240-.320)	.360 (.300-.400)	683
Mexican Americans	03-04	.093 (.079-.110)	.090 (<LOD-.120)	.140 (.120-.160)	.190 (.160-.260)	.270 (.210-.330)	618
Mexican Americans	05-06	.093 (.082-.105)	.090 (.080-.100)	.150 (.140-.170)	.250 (.210-.340)	.470 (.270-.850)	652
Mexican Americans	07-08	.069 (.060-.079)	.070 (.060-.080)	.110 (.100-.120)	.190 (.150-.250)	.270 (.220-.390)	515
Mexican Americans	09-10	.063 (.060-.067)	.060 (.060-.070)	.110 (.090-.120)	.170 (.150-.200)	.250 (.200-.270)	613
Non-Hispanic blacks	99-00	.175 (.148-.207)	.180 (.150-.200)	.260 (.230-.300)	.400 (.310-.490)	.490 (.410-.710)	554
Non-Hispanic blacks	01-02	.180 (.164-.197)	.170 (.160-.190)	.250 (.220-.280)	.360 (.320-.410)	.460 (.370-.530)	667
Non-Hispanic blacks	03-04	.108 (.098-.119)	.110 (.100-.120)	.160 (.150-.190)	.230 (.200-.280)	.310 (.250-.360)	723
Non-Hispanic blacks	05-06	.088 (.077-.100)	.090 (.080-.100)	.140 (.130-.170)	.210 (.190-.250)	.280 (.240-.320)	692
Non-Hispanic blacks	07-08	.085 (.079-.092)	.080 (.080-.090)	.130 (.120-.140)	.210 (.180-.250)	.290 (.250-.370)	589
Non-Hispanic blacks	09-10	.073 (.065-.081)	.070 (.060-.080)	.120 (.110-.140)	.190 (.160-.250)	.280 (.220-.350)	544
Non-Hispanic whites	99-00	.128 (.115-.144)	.130 (.110-.140)	.210 (.190-.230)	.330 (.280-.350)	.400 (.360-.500)	768
Non-Hispanic whites	01-02	.126 (.117-.135)	.130 (.120-.130)	.180 (.170-.190)	.250 (.230-.300)	.340 (.310-.390)	1132
Non-Hispanic whites	03-04	*	.070 (<LOD-.080)	.130 (.110-.140)	.190 (.170-.210)	.280 (.230-.320)	1074
Non-Hispanic whites	05-06	.069 (.062-.077)	.070 (.060-.080)	.110 (.100-.130)	.210 (.170-.260)	.300 (.240-.380)	1041
Non-Hispanic whites	07-08	.057 (.052-.063)	.060 (.050-.060)	.090 (.080-.110)	.150 (.130-.200)	.230 (.190-.260)	1095
Non-Hispanic whites	09-10	.053 (.050-.057)	.050 (.040-.050)	.090 (.080-.090)	.160 (.130-.190)	.230 (.190-.280)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.04, 0.04, 0.07, 0.032, 0.032, and 0.032 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Antimony_BiomonitoringSummary.html

Urinary Antimony (creatinine corrected) (1999 – 2010)

CAS Number 7440-36-0

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.124 (.108-.143)	.119 (.102-.143)	.185 (.164-.214)	.276 (.233-.333)	.385 (.333-.430)	2276
Total population	01-02	.126 (.119-.134)	.120 (.115-.126)	.173 (.162-.188)	.267 (.242-.300)	.364 (.320-.414)	2689
Total population	03-04	*	.080 (<LOD-.086)	.135 (.119-.143)	.208 (.192-.230)	.277 (.250-.294)	2558
Total population	05-06	.072 (.068-.077)	.070 (.060-.070)	.100 (.100-.110)	.160 (.150-.190)	.230 (.190-.290)	2576
Total population	07-08	.064 (.060-.068)	.060 (.060-.060)	.090 (.080-.100)	.140 (.140-.160)	.200 (.170-.230)	2627
Total population	09-10	.060 (.056-.064)	.060 (.050-.060)	.090 (.080-.090)	.140 (.120-.160)	.200 (.180-.230)	2847
Age 6-11 years	99-00	.191 (.147-.248)	.185 (.156-.220)	.250 (.200-.417)	.447 (.271-.741)	.741 (.333-1.30)	316
Age 6-11 years	01-02	.178 (.159-.200)	.173 (.150-.193)	.228 (.200-.272)	.338 (.265-.480)	.471 (.313-.727)	368
Age 6-11 years	03-04	.116 (.103-.130)	.118 (.098-.136)	.167 (.146-.187)	.256 (.194-.317)	.333 (.250-.500)	290
Age 6-11 years	05-06	.092 (.081-.104)	.090 (.080-.110)	.130 (.110-.150)	.180 (.150-.210)	.220 (.180-.270)	355
Age 6-11 years	07-08	.089 (.079-.100)	.090 (.070-.100)	.120 (.110-.140)	.200 (.150-.240)	.300 (.200-.370)	394
Age 6-11 years	09-10	.094 (.084-.106)	.090 (.080-.100)	.140 (.120-.160)	.200 (.170-.250)	.280 (.220-.320)	378
Age 12-19 years	99-00	.121 (.104-.140)	.120 (.095-.146)	.176 (.146-.207)	.259 (.206-.310)	.310 (.228-.421)	663
Age 12-19 years	01-02	.121 (.112-.131)	.115 (.106-.127)	.160 (.138-.186)	.224 (.199-.245)	.266 (.244-.310)	762
Age 12-19 years	03-04	.075 (.068-.082)	.068 (.061-.077)	.100 (.092-.113)	.156 (.126-.173)	.193 (.172-.255)	725
Age 12-19 years	05-06	.070 (.065-.076)	.070 (.060-.080)	.100 (.090-.110)	.140 (.120-.150)	.170 (.150-.250)	701
Age 12-19 years	07-08	.062 (.054-.070)	.060 (.050-.070)	.090 (.070-.100)	.120 (.100-.160)	.160 (.110-.240)	376
Age 12-19 years	09-10	.059 (.053-.066)	.060 (.050-.060)	.090 (.070-.100)	.130 (.110-.170)	.180 (.150-.220)	451
Age 20+ years	99-00	.118 (.104-.135)	.111 (.097-.135)	.175 (.149-.209)	.263 (.227-.320)	.352 (.320-.391)	1297
Age 20+ years	01-02	.122 (.115-.129)	.115 (.108-.121)	.167 (.153-.181)	.265 (.241-.300)	.364 (.318-.405)	1559
Age 20+ years	03-04	*	.079 (<LOD-.087)	.135 (.116-.145)	.209 (.195-.233)	.278 (.250-.294)	1543
Age 20+ years	05-06	.070 (.066-.075)	.060 (.060-.070)	.100 (.090-.110)	.170 (.150-.190)	.250 (.190-.300)	1520
Age 20+ years	07-08	.062 (.058-.066)	.060 (.050-.060)	.090 (.080-.100)	.140 (.130-.160)	.200 (.160-.240)	1857
Age 20+ years	09-10	.057 (.053-.061)	.050 (.050-.060)	.080 (.080-.090)	.130 (.120-.140)	.190 (.160-.220)	2018
Males	99-00	.112 (.099-.127)	.109 (.095-.127)	.164 (.146-.181)	.226 (.204-.268)	.320 (.235-.391)	1132
Males	01-02	.114 (.107-.123)	.108 (.103-.115)	.153 (.138-.171)	.228 (.205-.250)	.333 (.281-.438)	1334
Males	03-04	.080 (.076-.084)	.075 (.069-.081)	.122 (.111-.132)	.192 (.173-.209)	.253 (.230-.278)	1281
Males	05-06	.070 (.064-.077)	.060 (.060-.070)	.100 (.090-.120)	.160 (.130-.220)	.250 (.170-.310)	1271
Males	07-08	.061 (.057-.066)	.060 (.050-.060)	.090 (.080-.100)	.140 (.130-.160)	.210 (.160-.260)	1327
Males	09-10	.055 (.050-.060)	.050 (.050-.060)	.080 (.070-.100)	.130 (.120-.150)	.190 (.160-.210)	1397
Females	99-00	.137 (.117-.161)	.131 (.108-.164)	.213 (.176-.247)	.320 (.263-.417)	.429 (.357-.485)	1144
Females	01-02	.139 (.131-.148)	.132 (.124-.140)	.196 (.178-.211)	.295 (.267-.317)	.371 (.333-.444)	1355
Females	03-04	*	<LOD	.143 (.125-.161)	.225 (.188-.261)	.288 (.250-.333)	1277
Females	05-06	.074 (.070-.078)	.070 (.070-.070)	.110 (.100-.110)	.170 (.150-.190)	.220 (.180-.300)	1305
Females	07-08	.067 (.062-.071)	.060 (.060-.070)	.100 (.090-.100)	.140 (.130-.160)	.200 (.160-.230)	1300
Females	09-10	.064 (.060-.069)	.060 (.060-.070)	.090 (.090-.100)	.150 (.130-.170)	.220 (.180-.260)	1450

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Antimony_BiomonitoringSummary.html

Urinary Antimony (creatinine corrected) (1999 – 2010)

CAS Number 7440-36-0

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.120 (.107-.135)	.114 (.105-.129)	.167 (.148-.203)	.250 (.209-.315)	.333 (.280-.357)	787
Mexican Americans	01-02	.138 (.128-.149)	.130 (.117-.143)	.182 (.159-.203)	.269 (.229-.308)	.338 (.308-.429)	682
Mexican Americans	03-04	.086 (.076-.098)	.082 (<LOD-.092)	.129 (.107-.151)	.189 (.154-.238)	.238 (.185-.321)	618
Mexican Americans	05-06	.087 (.076-.099)	.080 (.070-.080)	.120 (.110-.130)	.190 (.150-.310)	.370 (.200-.800)	652
Mexican Americans	07-08	.069 (.059-.081)	.060 (.050-.080)	.100 (.080-.120)	.160 (.130-.180)	.200 (.160-.360)	515
Mexican Americans	09-10	.066 (.063-.071)	.060 (.060-.060)	.100 (.080-.110)	.160 (.130-.190)	.240 (.190-.280)	613
Non-Hispanic blacks	99-00	.114 (.099-.133)	.112 (.098-.130)	.163 (.144-.183)	.236 (.195-.338)	.343 (.255-.425)	554
Non-Hispanic blacks	01-02	.123 (.113-.134)	.115 (.106-.127)	.163 (.150-.181)	.233 (.208-.267)	.300 (.248-.373)	667
Non-Hispanic blacks	03-04	.078 (.071-.085)	.074 (.069-.082)	.109 (.096-.124)	.170 (.148-.192)	.222 (.179-.257)	723
Non-Hispanic blacks	05-06	.064 (.058-.071)	.060 (.050-.070)	.090 (.080-.090)	.130 (.120-.150)	.190 (.150-.220)	692
Non-Hispanic blacks	07-08	.062 (.059-.066)	.060 (.050-.070)	.090 (.080-.090)	.140 (.120-.160)	.180 (.160-.220)	589
Non-Hispanic blacks	09-10	.058 (.053-.063)	.060 (.050-.060)	.080 (.070-.090)	.130 (.110-.160)	.170 (.150-.190)	544
Non-Hispanic whites	99-00	.129 (.109-.152)	.125 (.102-.152)	.195 (.167-.225)	.298 (.239-.352)	.400 (.333-.444)	768
Non-Hispanic whites	01-02	.127 (.117-.138)	.120 (.113-.130)	.176 (.159-.198)	.280 (.241-.317)	.380 (.318-.471)	1132
Non-Hispanic whites	03-04	*	.081 (<LOD-.089)	.139 (.124-.147)	.217 (.200-.238)	.286 (.253-.333)	1074
Non-Hispanic whites	05-06	.072 (.068-.077)	.070 (.060-.070)	.110 (.100-.110)	.170 (.150-.190)	.230 (.190-.280)	1041
Non-Hispanic whites	07-08	.064 (.060-.069)	.060 (.050-.070)	.090 (.080-.100)	.140 (.140-.160)	.210 (.170-.230)	1095
Non-Hispanic whites	09-10	.060 (.055-.065)	.060 (.050-.060)	.090 (.080-.100)	.140 (.120-.170)	.200 (.170-.250)	1225

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Antimony_BiomonitoringSummary.html

Urinary Total Arsenic (2003 – 2010)

CAS Number 7440-38-2

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	8.30 (7.19-9.57)	7.70 (6.90-8.90)	16.0 (14.1-18.7)	37.4 (31.6-43.5)	65.4 (48.7-83.3)	2557
Total population	05-06	9.29 (8.05-10.7)	8.65 (7.48-9.99)	17.1 (14.9-20.6)	41.1 (33.3-49.7)	66.7 (53.7-87.0)	2576
Total population	07-08	8.10 (7.44-8.83)	7.49 (6.90-8.12)	14.9 (13.2-17.0)	33.3 (29.8-38.7)	50.8 (42.3-65.1)	2605
Total population	09-10	9.28 (8.47-10.2)	8.15 (7.20-8.98)	18.0 (15.3-20.8)	44.6 (39.0-55.1)	85.6 (64.7-114)	2860
Age 6-11 years	03-04	7.08 (5.66-8.84)	6.80 (5.90-7.70)	10.9 (8.90-14.2)	24.6 (13.8-61.8)	46.9 (17.5-178)	290
Age 6-11 years	05-06	7.19 (5.81-8.90)	6.96 (5.32-8.88)	11.5 (9.19-16.0)	19.6 (13.1-51.5)	34.1 (19.6-58.5)	355
Age 6-11 years	07-08	6.85 (5.98-7.83)	6.40 (5.74-7.23)	10.8 (9.75-12.3)	22.5 (16.9-34.7)	41.0 (21.1-52.8)	390
Age 6-11 years	09-10	6.63 (5.74-7.66)	5.94 (5.14-7.19)	10.8 (9.37-12.5)	26.0 (18.2-33.4)	37.7 (27.8-65.6)	378
Age 12-19 years	03-04	8.55 (7.34-9.97)	8.10 (6.80-9.40)	15.2 (12.2-17.8)	30.5 (23.1-40.4)	46.1 (32.9-62.5)	725
Age 12-19 years	05-06	8.19 (6.87-9.77)	7.92 (6.37-9.50)	14.0 (11.6-18.1)	28.2 (22.9-32.9)	41.9 (32.7-48.0)	701
Age 12-19 years	07-08	7.09 (6.17-8.14)	6.87 (5.88-7.86)	11.4 (9.41-13.7)	20.4 (16.1-26.6)	38.2 (21.6-53.3)	373
Age 12-19 years	09-10	6.45 (5.58-7.47)	6.11 (5.26-6.89)	10.8 (8.59-13.7)	25.9 (16.2-32.9)	38.8 (27.8-55.1)	454
Age 20+ years	03-04	8.41 (7.25-9.77)	7.90 (7.00-9.10)	17.0 (15.0-19.7)	40.5 (34.9-46.2)	66.2 (51.2-93.1)	1542
Age 20+ years	05-06	9.76 (8.43-11.3)	9.12 (7.85-10.4)	18.9 (15.8-22.9)	44.2 (35.2-56.1)	71.4 (57.7-98.3)	1520
Age 20+ years	07-08	8.43 (7.70-9.22)	7.94 (7.09-8.67)	16.2 (14.5-18.6)	35.2 (30.4-42.3)	59.0 (44.2-75.6)	1842
Age 20+ years	09-10	10.2 (9.14-11.3)	8.75 (7.95-9.81)	20.4 (17.2-24.1)	52.1 (42.4-66.1)	93.1 (74.2-127)	2028
Males	03-04	9.50 (8.34-10.8)	8.90 (7.70-9.80)	17.6 (15.2-20.1)	41.6 (32.5-52.8)	65.8 (48.7-95.4)	1281
Males	05-06	10.1 (8.61-11.8)	8.95 (8.05-10.0)	18.3 (15.5-22.9)	40.8 (31.0-52.6)	63.7 (46.4-78.7)	1271
Males	07-08	9.25 (8.28-10.3)	8.50 (7.37-9.53)	17.0 (14.6-19.4)	36.0 (32.1-44.2)	62.5 (44.3-84.6)	1318
Males	09-10	10.1 (9.06-11.3)	8.80 (7.80-9.75)	20.4 (16.1-23.9)	47.4 (42.1-64.1)	89.1 (71.6-114)	1401
Females	03-04	7.30 (6.02-8.84)	6.90 (5.90-8.30)	15.0 (11.3-19.5)	33.4 (26.5-41.7)	60.5 (40.8-77.1)	1276
Females	05-06	8.60 (7.38-10.0)	8.18 (6.64-9.97)	15.9 (13.7-19.9)	41.5 (32.2-53.7)	72.6 (54.8-122)	1305
Females	07-08	7.14 (6.51-7.82)	6.54 (6.09-7.14)	12.7 (11.6-14.4)	30.1 (26.0-34.0)	49.1 (40.1-57.5)	1287
Females	09-10	8.55 (7.44-9.83)	7.63 (6.45-8.62)	15.8 (13.1-19.9)	41.5 (31.7-55.5)	81.5 (54.3-132)	1459
Mexican Americans	03-04	9.29 (8.12-10.6)	9.20 (8.10-10.3)	16.2 (13.5-19.9)	34.4 (24.0-60.5)	68.2 (41.3-111)	618
Mexican Americans	05-06	9.55 (8.54-10.7)	9.11 (7.99-10.3)	15.6 (14.0-17.1)	29.2 (21.4-56.8)	67.6 (41.7-81.4)	652
Mexican Americans	07-08	8.98 (8.13-9.92)	8.84 (7.80-9.48)	15.4 (12.3-19.7)	35.2 (25.0-46.0)	53.0 (44.2-77.4)	510
Mexican Americans	09-10	8.47 (7.30-9.84)	7.96 (6.87-9.08)	13.9 (11.3-17.7)	34.7 (25.0-53.2)	60.9 (49.3-78.7)	613
Non-Hispanic blacks	03-04	11.6 (9.50-14.1)	10.4 (7.90-11.8)	21.5 (14.9-34.4)	43.5 (36.2-61.8)	78.0 (43.6-141)	722
Non-Hispanic blacks	05-06	11.0 (8.60-14.0)	9.55 (6.99-13.3)	21.9 (14.9-28.9)	44.9 (31.1-71.4)	82.3 (49.2-164)	692
Non-Hispanic blacks	07-08	10.5 (9.40-11.7)	9.21 (8.22-10.4)	18.4 (16.1-21.5)	42.4 (32.9-52.8)	65.6 (45.5-112)	585
Non-Hispanic blacks	09-10	10.9 (9.46-12.5)	9.26 (7.70-11.4)	21.7 (17.6-24.2)	49.1 (32.2-81.7)	84.8 (51.3-174)	546
Non-Hispanic whites	03-04	7.12 (6.13-8.27)	7.00 (6.10-7.90)	13.7 (11.3-15.8)	29.0 (22.6-35.9)	53.1 (38.4-65.6)	1074
Non-Hispanic whites	05-06	8.66 (7.20-10.4)	8.05 (6.52-9.66)	16.3 (13.4-20.6)	40.8 (29.4-50.2)	58.5 (46.0-88.0)	1041
Non-Hispanic whites	07-08	6.98 (6.31-7.71)	6.46 (5.93-7.29)	12.4 (11.3-14.3)	28.3 (21.6-32.6)	42.1 (32.3-50.0)	1088
Non-Hispanic whites	09-10	8.18 (7.46-8.96)	7.24 (6.46-8.21)	14.8 (12.7-17.4)	38.9 (31.7-44.4)	66.3 (49.3-88.7)	1224

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.74, 0.74, 0.74, and 0.74 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Total Arsenic (creatinine corrected) (2003 – 2010)

CAS Number 7440-38-2

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	8.24 (7.07-9.59)	7.04 (5.93-8.51)	14.1 (11.6-17.2)	30.4 (26.0-38.7)	50.4 (40.3-64.5)	2557
Total population	05-06	9.15 (7.93-10.6)	7.70 (6.55-8.98)	15.2 (11.7-19.4)	35.1 (26.5-44.7)	62.8 (44.7-85.0)	2576
Total population	07-08	8.46 (7.78-9.21)	7.06 (6.56-7.74)	13.8 (12.5-15.2)	28.9 (24.2-36.7)	49.0 (38.8-70.5)	2605
Total population	09-10	9.90 (9.06-10.8)	7.90 (6.98-8.97)	17.6 (15.4-20.2)	45.2 (36.6-53.3)	80.8 (60.5-94.4)	2860
Age 6-11 years	03-04	8.25 (6.58-10.3)	7.18 (5.93-9.45)	11.7 (9.10-16.3)	22.2 (12.0-69.5)	40.1 (14.7-188)	290
Age 6-11 years	05-06	8.88 (7.05-11.2)	7.87 (6.19-9.42)	11.8 (9.32-18.9)	24.5 (13.0-62.8)	45.4 (22.9-80.9)	355
Age 6-11 years	07-08	8.87 (8.06-9.77)	7.53 (6.73-7.88)	13.4 (10.2-16.0)	26.7 (19.9-34.0)	37.2 (28.6-71.4)	390
Age 6-11 years	09-10	8.97 (7.93-10.2)	7.42 (6.70-8.32)	11.0 (9.90-14.0)	33.5 (17.0-54.6)	60.8 (36.6-84.9)	378
Age 12-19 years	03-04	6.11 (5.23-7.13)	5.06 (4.47-6.04)	9.66 (7.44-11.2)	17.8 (12.0-26.0)	27.8 (20.7-35.9)	725
Age 12-19 years	05-06	6.30 (5.56-7.14)	5.19 (4.80-6.19)	9.62 (8.12-11.1)	19.4 (13.9-25.8)	28.0 (21.9-33.2)	701
Age 12-19 years	07-08	5.50 (4.91-6.16)	4.96 (4.25-5.40)	7.69 (6.09-9.31)	16.8 (10.8-21.1)	22.5 (16.8-29.1)	373
Age 12-19 years	09-10	6.06 (5.34-6.87)	4.95 (4.39-5.81)	9.18 (7.00-11.0)	19.2 (14.5-21.3)	28.4 (20.8-35.7)	454
Age 20+ years	03-04	8.64 (7.38-10.1)	7.47 (6.20-9.01)	15.4 (12.7-18.8)	33.8 (27.3-41.2)	53.9 (45.4-64.5)	1542
Age 20+ years	05-06	9.75 (8.46-11.2)	8.22 (6.98-9.75)	17.0 (12.8-21.3)	41.0 (29.6-52.5)	68.4 (52.8-89.7)	1520
Age 20+ years	07-08	9.00 (8.20-9.88)	7.55 (6.79-8.53)	14.9 (13.1-17.1)	32.5 (25.8-41.0)	59.4 (41.0-86.2)	1842
Age 20+ years	09-10	10.8 (9.71-12.0)	8.73 (7.69-9.71)	20.1 (16.5-24.2)	50.8 (40.5-59.7)	87.3 (70.0-105)	2028
Males	03-04	8.00 (6.81-9.40)	6.75 (5.66-8.35)	13.7 (11.0-18.0)	28.7 (25.1-36.4)	45.6 (35.3-62.1)	1281
Males	05-06	8.26 (7.09-9.63)	7.16 (5.87-8.54)	12.9 (10.2-18.0)	28.8 (22.9-36.3)	46.1 (35.1-66.5)	1271
Males	07-08	8.30 (7.49-9.18)	6.79 (6.39-7.61)	13.2 (11.8-15.2)	28.9 (23.5-38.5)	47.7 (35.7-68.1)	1318
Males	09-10	9.21 (8.55-9.93)	7.22 (6.43-8.67)	17.0 (14.9-18.6)	41.8 (35.4-47.9)	66.9 (52.0-81.5)	1401
Females	03-04	8.47 (7.12-10.1)	7.33 (6.10-8.75)	14.4 (11.7-17.7)	32.3 (24.2-46.6)	58.4 (42.8-75.0)	1276
Females	05-06	10.1 (8.72-11.7)	8.29 (7.23-9.87)	17.4 (13.0-21.4)	43.8 (29.2-61.5)	74.1 (55.0-96.2)	1305
Females	07-08	8.63 (7.91-9.41)	7.13 (6.53-8.33)	14.1 (12.3-16.9)	27.9 (24.1-37.0)	51.4 (39.7-83.3)	1287
Females	09-10	10.6 (9.36-12.0)	8.38 (7.40-9.41)	18.6 (14.9-23.9)	50.8 (35.1-72.9)	87.8 (66.8-109)	1459
Mexican Americans	03-04	8.61 (7.33-10.1)	7.76 (6.30-9.44)	12.6 (10.2-15.9)	24.0 (17.7-34.8)	42.4 (24.8-62.4)	618
Mexican Americans	05-06	8.98 (7.89-10.2)	7.48 (6.72-8.87)	12.8 (11.0-16.3)	28.1 (21.1-35.5)	49.1 (31.0-108)	652
Mexican Americans	07-08	8.88 (7.71-10.2)	7.38 (6.51-8.63)	14.1 (10.6-17.8)	28.6 (22.5-35.3)	48.2 (31.1-75.7)	510
Mexican Americans	09-10	8.88 (7.87-10.0)	7.62 (6.69-8.45)	13.2 (10.7-17.2)	31.4 (23.7-38.5)	49.8 (37.5-68.9)	613
Non-Hispanic blacks	03-04	8.31 (6.99-9.88)	6.88 (5.66-8.41)	13.8 (11.5-17.0)	27.6 (17.9-56.0)	54.3 (27.5-120)	722
Non-Hispanic blacks	05-06	7.96 (6.40-9.92)	6.48 (5.21-8.30)	13.4 (10.0-18.6)	32.5 (18.7-66.5)	71.4 (35.6-98.8)	692
Non-Hispanic blacks	07-08	7.72 (6.98-8.54)	6.60 (6.01-7.56)	13.4 (11.5-15.4)	25.7 (22.1-30.0)	42.7 (31.4-60.3)	585
Non-Hispanic blacks	09-10	8.67 (7.54-9.98)	7.26 (5.96-9.02)	15.6 (12.4-21.3)	38.7 (31.5-48.7)	63.9 (43.1-102)	546
Non-Hispanic whites	03-04	7.50 (6.25-9.01)	6.32 (5.28-7.96)	12.5 (9.86-17.1)	26.8 (21.8-32.0)	40.0 (31.3-53.9)	1074
Non-Hispanic whites	05-06	9.01 (7.57-10.7)	7.68 (6.18-9.56)	14.3 (11.1-20.8)	31.9 (24.1-46.1)	59.4 (37.9-96.2)	1041
Non-Hispanic whites	07-08	7.82 (7.05-8.68)	6.72 (6.00-7.54)	12.5 (11.1-13.9)	24.6 (19.6-32.3)	43.1 (29.1-64.0)	1088
Non-Hispanic whites	09-10	9.14 (8.35-10.0)	7.10 (6.43-8.06)	15.8 (13.7-18.4)	40.9 (30.4-50.8)	66.4 (50.9-90.0)	1224

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Inorganic-related Arsenic Species (2003 – 2010)

CAS Number 7440-38-2

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	6.52 (6.03-7.04)	6.10 (5.50-6.40)	8.60 (8.00-9.50)	14.0 (12.5-15.4)	19.1 (15.8-22.9)	2572
Total population	05-06	6.84 (6.35-7.38)	6.40 (5.88-6.85)	9.00 (8.19-10.0)	13.9 (12.0-16.5)	18.5 (15.8-21.7)	2588
Total population	07-08	6.47 (6.20-6.76)	6.02 (5.74-6.26)	8.55 (8.03-9.22)	12.9 (11.8-14.0)	16.8 (14.7-18.9)	2576
Total population	09-10	6.56 (6.23-6.90)	5.87 (5.57-6.09)	8.80 (8.14-9.47)	14.6 (12.3-17.2)	20.8 (17.8-24.5)	2852
Age 6-11 years	03-04	6.46 (5.67-7.35)	6.10 (5.80-6.90)	8.50 (7.10-10.0)	12.1 (10.0-14.7)	15.0 (10.7-26.3)	292
Age 6-11 years	05-06	6.71 (6.13-7.35)	6.27 (5.44-6.98)	8.46 (7.48-9.72)	13.5 (9.72-16.1)	16.1 (14.0-18.3)	354
Age 6-11 years	07-08	6.70 (6.15-7.31)	6.08 (5.77-6.44)	8.78 (7.72-10.3)	13.9 (10.9-16.5)	18.3 (12.2-42.3)	390
Age 6-11 years	09-10	6.29 (5.85-6.75)	5.80 (5.11-6.32)	8.34 (7.67-9.07)	13.2 (10.7-14.6)	16.0 (14.0-17.9)	379
Age 12-19 years	03-04	6.72 (6.08-7.42)	6.10 (5.90-7.00)	8.80 (7.70-10.4)	13.1 (10.6-16.6)	16.7 (14.5-20.3)	729
Age 12-19 years	05-06	6.82 (6.18-7.53)	6.38 (5.67-7.45)	8.78 (7.77-10.4)	13.1 (10.9-15.4)	16.4 (13.3-17.7)	703
Age 12-19 years	07-08	6.42 (5.89-6.99)	6.34 (5.60-6.95)	8.15 (7.33-9.69)	11.8 (10.5-13.4)	14.6 (12.0-18.1)	366
Age 12-19 years	09-10	5.84 (5.43-6.27)	5.31 (4.89-5.85)	7.67 (6.79-8.60)	11.4 (9.66-13.1)	13.9 (11.8-17.0)	453
Age 20+ years	03-04	6.49 (6.02-7.00)	6.00 (5.30-6.20)	8.60 (8.10-9.40)	14.1 (12.7-15.6)	19.5 (16.8-24.9)	1550
Age 20+ years	05-06	6.86 (6.34-7.42)	6.43 (5.83-6.87)	9.10 (8.22-10.2)	14.1 (12.0-17.3)	19.9 (15.8-24.0)	1531
Age 20+ years	07-08	6.46 (6.17-6.76)	5.95 (5.71-6.18)	8.57 (8.00-9.40)	13.0 (11.8-14.2)	17.2 (15.0-19.2)	1820
Age 20+ years	09-10	6.70 (6.33-7.10)	5.95 (5.71-6.20)	9.12 (8.20-9.87)	15.4 (12.6-19.6)	23.2 (19.4-27.4)	2020
Males	03-04	7.03 (6.38-7.74)	6.40 (6.00-7.10)	9.20 (8.30-10.5)	14.8 (12.7-18.1)	21.3 (16.0-28.1)	1283
Males	05-06	7.10 (6.56-7.68)	6.59 (6.10-7.05)	9.37 (8.22-10.5)	14.3 (11.6-17.7)	18.4 (14.9-23.1)	1276
Males	07-08	6.94 (6.54-7.36)	6.44 (6.13-6.87)	9.22 (8.53-9.89)	13.5 (12.4-15.2)	18.3 (14.9-26.4)	1289
Males	09-10	6.80 (6.30-7.34)	6.09 (5.71-6.54)	9.06 (8.27-9.89)	15.0 (12.0-20.4)	23.5 (16.3-29.4)	1396
Females	03-04	6.08 (5.62-6.57)	5.50 (5.10-6.10)	8.10 (7.10-9.10)	12.7 (11.1-14.9)	17.3 (14.6-21.9)	1289
Females	05-06	6.60 (6.11-7.14)	6.14 (5.47-6.81)	8.77 (8.06-9.51)	13.3 (11.7-16.2)	18.6 (15.8-22.0)	1312
Females	07-08	6.06 (5.81-6.33)	5.66 (5.42-5.84)	7.96 (7.35-8.59)	11.9 (10.7-13.7)	15.8 (14.0-16.8)	1287
Females	09-10	6.33 (5.98-6.70)	5.64 (5.21-5.95)	8.36 (7.70-9.60)	14.2 (12.1-16.2)	19.6 (17.8-21.1)	1456
Mexican Americans	03-04	7.72 (7.09-8.41)	7.10 (6.50-8.00)	10.1 (9.10-11.8)	15.5 (12.8-20.5)	22.7 (16.5-29.4)	622
Mexican Americans	05-06	7.27 (6.94-7.62)	7.05 (6.69-7.42)	9.83 (9.21-10.5)	12.5 (11.7-14.5)	16.1 (13.9-18.5)	651
Mexican Americans	07-08	7.22 (6.80-7.66)	7.02 (6.43-7.46)	9.89 (9.18-10.3)	12.7 (11.3-14.3)	15.3 (13.6-23.3)	513
Mexican Americans	09-10	6.76 (6.19-7.38)	6.31 (5.48-7.19)	9.12 (8.06-10.3)	14.1 (11.9-16.5)	19.8 (15.8-22.2)	618
Non-Hispanic blacks	03-04	7.04 (6.42-7.73)	6.50 (6.10-7.30)	9.30 (8.70-10.3)	15.7 (12.3-18.1)	19.4 (17.1-21.4)	725
Non-Hispanic blacks	05-06	7.05 (6.36-7.82)	6.48 (5.73-7.16)	8.85 (7.77-9.80)	14.0 (11.0-16.5)	17.9 (14.5-31.0)	695
Non-Hispanic blacks	07-08	7.06 (6.76-7.38)	6.45 (6.00-6.81)	9.43 (8.55-10.3)	14.5 (13.3-15.8)	18.5 (15.8-23.5)	586
Non-Hispanic blacks	09-10	7.03 (6.44-7.67)	6.28 (5.66-6.92)	9.84 (8.48-11.4)	16.0 (12.7-19.9)	22.2 (17.8-33.5)	543
Non-Hispanic whites	03-04	5.96 (5.54-6.41)	5.50 (5.10-6.10)	7.70 (7.10-8.50)	12.0 (9.80-13.7)	15.1 (12.8-18.1)	1081
Non-Hispanic whites	05-06	6.55 (5.96-7.20)	6.10 (5.42-6.83)	8.50 (7.74-9.73)	13.3 (11.1-16.2)	17.3 (14.1-21.4)	1050
Non-Hispanic whites	07-08	5.95 (5.69-6.23)	5.66 (5.35-5.96)	7.72 (7.26-8.25)	11.1 (10.3-12.2)	14.0 (12.5-16.1)	1063
Non-Hispanic whites	09-10	5.96 (5.75-6.18)	5.46 (5.22-5.65)	7.89 (7.56-8.19)	11.5 (10.1-13.3)	15.3 (13.3-18.8)	1210

**See Calculation of Inorganic-related Arsenic Species for additional information.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Inorganic-related Arsenic Species (creatinine corrected) (2003 – 2010)

CAS Number 7440-38-2

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	6.47 (5.84-7.16)	5.95 (5.40-6.62)	9.64 (8.25-11.4)	15.7 (13.3-18.5)	20.0 (17.4-23.9)	2569
Total population	05-06	6.72 (6.30-7.17)	6.21 (5.81-6.58)	9.75 (8.81-11.0)	16.2 (14.2-18.0)	21.3 (18.7-24.3)	2588
Total population	07-08	6.75 (6.41-7.12)	6.42 (5.97-6.88)	9.77 (9.03-10.6)	15.5 (14.2-17.0)	21.2 (18.1-23.3)	2576
Total population	09-10	6.94 (6.55-7.36)	6.55 (6.04-7.00)	10.3 (9.58-11.0)	16.4 (14.9-17.9)	22.5 (19.0-26.5)	2851
Age 6-11 years	03-04	7.52 (6.45-8.77)	6.51 (6.05-8.30)	10.5 (8.06-13.5)	16.8 (12.4-19.7)	19.2 (14.3-41.3)	292
Age 6-11 years	05-06	8.28 (7.20-9.52)	7.73 (6.44-8.96)	10.7 (8.86-14.1)	17.4 (13.6-22.1)	24.0 (18.8-26.2)	354
Age 6-11 years	07-08	8.81 (7.92-9.80)	8.09 (7.23-9.44)	12.1 (10.8-13.9)	18.3 (15.5-23.4)	24.5 (18.4-37.9)	390
Age 6-11 years	09-10	8.47 (7.76-9.25)	7.92 (7.20-8.73)	10.7 (9.71-12.6)	17.0 (13.8-22.3)	24.9 (14.8-42.2)	378
Age 12-19 years	03-04	4.79 (4.33-5.29)	4.46 (3.98-5.00)	6.31 (5.46-7.44)	8.96 (8.17-11.4)	12.8 (10.2-15.7)	728
Age 12-19 years	05-06	5.24 (4.95-5.55)	4.97 (4.61-5.44)	7.23 (6.71-7.72)	10.7 (9.48-11.6)	13.3 (11.5-15.5)	703
Age 12-19 years	07-08	5.00 (4.64-5.39)	4.72 (4.47-5.13)	6.68 (5.85-7.49)	9.85 (7.88-11.8)	12.1 (10.2-14.8)	366
Age 12-19 years	09-10	5.44 (4.97-5.95)	4.83 (4.46-5.50)	8.10 (6.54-9.23)	12.1 (10.4-15.1)	16.6 (13.6-20.5)	453
Age 20+ years	03-04	6.67 (6.00-7.41)	6.12 (5.54-7.03)	10.2 (8.51-12.0)	15.9 (13.8-19.2)	21.2 (18.2-25.5)	1548
Age 20+ years	05-06	6.82 (6.39-7.28)	6.27 (5.80-6.79)	10.3 (9.07-11.5)	16.7 (14.5-18.9)	22.2 (19.3-25.9)	1531
Age 20+ years	07-08	6.87 (6.48-7.29)	6.54 (6.14-7.08)	9.90 (9.10-11.1)	16.2 (14.2-18.0)	21.3 (18.2-24.3)	1820
Age 20+ years	09-10	7.06 (6.61-7.53)	6.67 (6.13-7.09)	10.6 (9.71-11.4)	17.0 (15.0-18.9)	23.3 (19.5-27.5)	2020
Males	03-04	5.93 (5.19-6.78)	5.43 (4.73-6.14)	8.57 (7.19-10.7)	13.7 (11.4-17.4)	19.4 (14.7-25.6)	1283
Males	05-06	5.83 (5.41-6.28)	5.43 (5.00-5.90)	8.27 (7.26-9.46)	12.9 (11.3-15.5)	18.0 (14.2-20.4)	1276
Males	07-08	6.21 (5.91-6.53)	5.89 (5.47-6.27)	8.87 (8.27-9.71)	14.3 (12.7-16.6)	18.9 (17.0-21.3)	1289
Males	09-10	6.17 (5.82-6.54)	5.70 (5.34-6.30)	8.95 (8.40-9.46)	14.3 (12.5-15.8)	18.1 (16.0-22.0)	1395
Females	03-04	7.02 (6.45-7.64)	6.59 (5.94-7.20)	10.5 (8.95-12.4)	16.8 (14.9-19.1)	20.6 (18.0-25.4)	1285
Females	05-06	7.70 (7.22-8.21)	7.11 (6.54-7.73)	11.4 (10.3-13.1)	17.9 (16.2-20.0)	25.7 (22.1-28.5)	1312
Females	07-08	7.30 (6.85-7.77)	7.00 (6.44-7.48)	10.4 (9.59-11.5)	16.2 (13.7-20.1)	22.7 (18.9-28.3)	1287
Females	09-10	7.77 (7.27-8.31)	7.29 (6.80-7.91)	11.7 (10.9-12.5)	18.9 (16.3-22.0)	26.5 (20.4-34.0)	1456
Mexican Americans	03-04	7.16 (6.29-8.15)	6.78 (5.58-8.01)	10.4 (8.19-12.7)	15.6 (13.3-18.9)	20.0 (16.1-29.9)	621
Mexican Americans	05-06	6.83 (6.38-7.32)	6.55 (5.94-7.34)	9.40 (8.51-10.6)	13.6 (11.6-15.9)	16.2 (14.3-20.0)	651
Mexican Americans	07-08	7.19 (6.39-8.10)	7.07 (6.17-7.76)	9.73 (8.28-11.4)	15.4 (12.9-19.2)	21.3 (17.8-24.3)	513
Mexican Americans	09-10	7.04 (6.44-7.69)	6.92 (6.15-7.70)	10.3 (9.19-10.9)	14.7 (13.3-16.2)	18.9 (16.9-20.6)	618
Non-Hispanic blacks	03-04	5.08 (4.63-5.56)	4.72 (4.34-5.25)	7.04 (6.23-8.00)	10.7 (8.71-14.3)	15.0 (11.4-19.1)	725
Non-Hispanic blacks	05-06	5.08 (4.63-5.57)	4.73 (4.33-5.21)	6.82 (6.13-7.61)	10.6 (8.32-13.5)	15.1 (11.2-25.0)	695
Non-Hispanic blacks	07-08	5.19 (4.86-5.55)	4.79 (4.41-5.39)	7.28 (6.97-7.97)	11.2 (10.2-12.2)	14.7 (12.2-18.9)	586
Non-Hispanic blacks	09-10	5.58 (5.10-6.10)	5.01 (4.58-5.42)	8.50 (6.94-10.4)	13.6 (12.6-15.5)	19.0 (14.6-23.1)	542
Non-Hispanic whites	03-04	6.28 (5.55-7.10)	5.82 (5.19-6.53)	9.10 (7.74-11.4)	14.8 (11.4-18.8)	19.4 (15.8-23.6)	1079
Non-Hispanic whites	05-06	6.78 (6.30-7.31)	6.26 (5.79-6.78)	10.2 (8.85-11.4)	16.2 (13.8-18.2)	20.8 (17.9-24.6)	1050
Non-Hispanic whites	07-08	6.66 (6.29-7.06)	6.37 (5.73-6.95)	9.64 (8.88-10.2)	14.8 (12.8-16.5)	20.0 (16.5-22.7)	1063
Non-Hispanic whites	09-10	6.61 (6.20-7.05)	6.31 (5.76-6.81)	9.44 (8.75-10.0)	14.7 (13.6-15.8)	18.9 (17.0-22.0)	1210

**See Calculation of Inorganic-related Arsenic Species for additional information.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenic (V) acid (2003 – 2010)

CAS Number 7440-38-2

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	1.10 (<LOD-1.50)	2568
Total population	05-06	*	<LOD	<LOD	<LOD	1.06 (<LOD-1.43)	2588
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2576
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2852
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	1.10 (<LOD-1.30)	292
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	354
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	390
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	379
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	1.20 (<LOD-1.60)	728
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	1.00 (<LOD-1.30)	703
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	366
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	453
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	1.10 (<LOD-1.50)	1548
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	1.09 (<LOD-1.71)	1531
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1820
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	2020
Males	03-04	*	<LOD	<LOD	<LOD	1.20 (<LOD-1.50)	1284
Males	05-06	*	<LOD	<LOD	<LOD	1.14 (<LOD-1.71)	1276
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1289
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1396
Females	03-04	*	<LOD	<LOD	<LOD	1.10 (<LOD-1.30)	1284
Females	05-06	*	<LOD	<LOD	<LOD	1.01 (<LOD-1.22)	1312
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1287
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1456
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	1.20 (<LOD-1.60)	621
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	651
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	513
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	618
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	1.20 (<LOD-1.80)	725
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	695
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	586
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	543
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	1.10 (<LOD-1.50)	1078
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	1.10 (<LOD-1.74)	1050
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1063
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1210

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 1.0, 1.0, 1.0, and 1.0 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenic (V) acid (creatinine corrected) (2003 – 2010)

CAS Number 7440-38-2

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	3.04 (<LOD-3.50)	2568
Total population	05-06	*	<LOD	<LOD	<LOD	3.23 (<LOD-3.55)	2588
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2576
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2851
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	2.80 (<LOD-4.00)	292
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	354
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	390
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	378
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	1.75 (<LOD-2.41)	728
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	1.69 (<LOD-2.73)	703
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	366
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	453
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	3.18 (<LOD-3.70)	1548
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	3.38 (<LOD-3.94)	1531
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1820
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	2020
Males	03-04	*	<LOD	<LOD	<LOD	2.61 (<LOD-3.18)	1284
Males	05-06	*	<LOD	<LOD	<LOD	2.14 (<LOD-2.73)	1276
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1289
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1395
Females	03-04	*	<LOD	<LOD	<LOD	3.33 (<LOD-3.89)	1284
Females	05-06	*	<LOD	<LOD	<LOD	3.55 (<LOD-4.44)	1312
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1287
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1456
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	2.69 (<LOD-3.50)	621
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	651
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	513
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	618
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	1.75 (<LOD-2.19)	725
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	695
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	586
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	542
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	3.33 (<LOD-3.95)	1078
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	3.38 (<LOD-3.80)	1050
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1063
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1210

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenobetaine (2003 – 2010)

CAS Number 64436-13-1

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	1.55 (1.31-1.83)	1.00 (.800-1.40)	5.20 (4.00-6.50)	16.8 (12.7-22.3)	35.0 (27.6-44.6)	2568
Total population	05-06	1.86 (1.43-2.41)	1.53 (.980-2.26)	6.73 (4.80-8.91)	22.6 (16.5-30.3)	40.6 (30.7-59.4)	2588
Total population	07-08	*	.670 (.510-.910)	4.26 (3.53-4.88)	16.6 (12.5-20.2)	29.5 (22.8-37.1)	2576
Total population	09-10	1.59 (1.38-1.83)	.940 (.720-1.26)	6.18 (4.67-7.87)	23.5 (19.8-30.1)	50.4 (35.7-63.2)	2870
Age 6-11 years	03-04	*	<LOD	1.80 (.800-4.00)	8.80 (3.90-29.9)	29.9 (6.20-190)	292
Age 6-11 years	05-06	*	<LOD	2.22 (.620-5.35)	7.14 (2.34-29.9)	18.9 (5.46-45.0)	354
Age 6-11 years	07-08	*	<LOD	1.24 (.780-2.42)	6.71 (3.37-8.38)	13.0 (7.22-25.2)	390
Age 6-11 years	09-10	*	<LOD	1.20 (.590-3.12)	7.98 (5.20-15.7)	19.4 (9.25-47.9)	380
Age 12-19 years	03-04	*	.600 (.400-.800)	3.20 (2.00-4.70)	13.9 (7.20-25.1)	31.8 (17.2-35.8)	728
Age 12-19 years	05-06	*	.550 (<LOD-1.14)	3.76 (1.95-7.16)	12.4 (9.15-20.4)	25.6 (16.4-32.4)	703
Age 12-19 years	07-08	*	<LOD	1.72 (.780-2.62)	4.88 (3.49-9.17)	10.4 (6.81-23.6)	366
Age 12-19 years	09-10	*	<LOD	2.07 (1.26-3.60)	11.0 (5.35-16.7)	17.8 (12.8-24.0)	455
Age 20+ years	03-04	1.74 (1.48-2.05)	1.30 (1.00-1.60)	6.10 (4.90-7.10)	18.5 (14.0-23.5)	35.5 (26.8-50.5)	1548
Age 20+ years	05-06	2.20 (1.71-2.84)	1.89 (1.41-2.64)	8.14 (5.86-10.4)	27.6 (18.7-35.7)	43.9 (36.0-67.9)	1531
Age 20+ years	07-08	1.46 (1.28-1.67)	.960 (.750-1.22)	5.08 (4.30-6.20)	19.1 (14.3-23.7)	31.7 (23.9-46.1)	1820
Age 20+ years	09-10	1.92 (1.63-2.26)	1.33 (.960-1.91)	7.60 (6.06-9.90)	28.2 (21.9-34.9)	59.5 (45.7-76.7)	2035
Males	03-04	1.66 (1.43-1.93)	1.20 (.900-1.50)	5.80 (4.40-7.10)	18.6 (13.9-23.7)	35.0 (26.8-40.5)	1284
Males	05-06	1.83 (1.40-2.40)	1.44 (.920-2.04)	6.63 (5.06-8.66)	23.2 (12.8-33.4)	37.1 (28.5-51.3)	1276
Males	07-08	*	.910 (.660-1.26)	5.07 (4.01-6.81)	19.1 (13.8-22.6)	30.3 (22.8-46.1)	1289
Males	09-10	1.71 (1.48-1.97)	.990 (.780-1.33)	7.14 (5.38-9.86)	26.8 (21.5-31.8)	57.4 (36.4-64.6)	1402
Females	03-04	1.45 (1.17-1.80)	.900 (.700-1.40)	4.70 (3.40-6.20)	15.6 (11.1-25.3)	32.7 (21.1-51.3)	1284
Females	05-06	1.88 (1.42-2.50)	1.64 (.950-2.51)	6.81 (4.03-9.88)	21.8 (17.3-30.1)	43.3 (33.8-67.9)	1312
Females	07-08	*	.530 (.410-.650)	3.52 (2.94-4.35)	14.0 (10.9-17.5)	29.5 (19.4-34.0)	1287
Females	09-10	1.49 (1.20-1.84)	.890 (.590-1.35)	5.54 (3.56-7.74)	21.2 (14.7-32.7)	47.1 (32.5-76.4)	1468
Mexican Americans	03-04	1.19 (.871-1.62)	.800 (.500-1.30)	3.20 (1.80-5.20)	10.2 (6.70-21.4)	31.4 (16.3-39.1)	621
Mexican Americans	05-06	1.44 (1.23-1.69)	1.04 (.770-1.35)	3.90 (3.03-5.06)	16.8 (11.1-32.0)	41.4 (23.4-57.9)	651
Mexican Americans	07-08	*	.560 (<LOD-.910)	3.27 (2.00-5.65)	16.9 (9.73-20.8)	29.6 (19.3-40.5)	513
Mexican Americans	09-10	*	.640 (.440-.800)	3.58 (1.80-5.89)	15.5 (7.83-24.6)	31.9 (18.7-44.7)	617
Non-Hispanic blacks	03-04	2.29 (1.60-3.28)	2.00 (1.20-3.50)	7.70 (5.00-12.0)	23.7 (13.2-38.7)	45.6 (25.1-94.0)	725
Non-Hispanic blacks	05-06	2.55 (1.64-3.99)	2.42 (1.15-4.58)	8.74 (6.01-14.4)	23.8 (15.9-48.9)	59.6 (30.5-121)	695
Non-Hispanic blacks	07-08	1.58 (1.31-1.90)	1.11 (.750-1.60)	5.88 (4.12-8.13)	21.9 (16.4-24.9)	35.9 (25.4-47.7)	586
Non-Hispanic blacks	09-10	1.99 (1.60-2.47)	1.79 (1.05-2.41)	7.61 (5.34-10.0)	25.5 (15.4-37.6)	51.2 (31.0-90.9)	546
Non-Hispanic whites	03-04	1.37 (1.11-1.68)	.800 (.700-1.20)	4.30 (2.50-6.30)	13.3 (9.70-21.4)	29.3 (21.4-35.5)	1078
Non-Hispanic whites	05-06	1.74 (1.27-2.40)	1.41 (.750-2.27)	6.40 (3.93-9.04)	22.4 (14.1-30.1)	38.4 (27.8-66.8)	1050
Non-Hispanic whites	07-08	*	.530 (<LOD-.780)	3.63 (3.06-4.38)	12.6 (9.08-17.1)	24.3 (17.6-30.3)	1063
Non-Hispanic whites	09-10	1.43 (1.24-1.65)	.800 (.610-1.18)	5.40 (3.77-7.27)	20.6 (17.7-24.5)	41.3 (30.6-59.5)	1226

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.4, 0.4, 0.4, and 0.4 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenobetaine (creatinine corrected) (2003 – 2010)

CAS Number 64436-13-1

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	1.54 (1.30-1.82)	1.16 (.959-1.43)	5.00 (3.62-6.91)	16.2 (12.5-20.3)	29.4 (24.0-36.4)	2568
Total population	05-06	1.82 (1.40-2.37)	1.64 (1.10-2.41)	6.64 (4.48-8.79)	20.3 (14.5-28.1)	37.0 (27.5-58.3)	2588
Total population	07-08	*	1.00 (.850-1.18)	4.07 (3.36-4.98)	14.7 (11.1-17.8)	27.7 (18.9-45.4)	2576
Total population	09-10	1.69 (1.45-1.97)	1.23 (.980-1.47)	6.48 (4.90-8.00)	23.6 (18.5-30.7)	49.6 (36.6-61.3)	2869
Age 6-11 years	03-04	*	<LOD	2.00 (1.15-4.83)	12.2 (4.13-39.7)	29.6 (6.80-153)	292
Age 6-11 years	05-06	*	<LOD	2.88 (1.04-6.25)	8.77 (2.88-40.5)	23.6 (6.86-74.8)	354
Age 6-11 years	07-08	*	<LOD	2.11 (1.27-3.79)	8.98 (4.76-14.8)	16.4 (8.98-23.8)	390
Age 6-11 years	09-10	*	<LOD	1.70 (1.21-3.02)	9.52 (5.08-20.7)	24.9 (9.81-50.7)	379
Age 12-19 years	03-04	*	.531 (.400-.638)	2.14 (1.39-3.51)	9.29 (4.29-14.7)	17.3 (10.4-28.7)	728
Age 12-19 years	05-06	*	.620 (<LOD-.800)	2.82 (1.58-4.77)	10.5 (7.03-13.7)	15.4 (11.8-22.3)	703
Age 12-19 years	07-08	*	<LOD	1.28 (.650-1.72)	5.17 (2.31-6.53)	9.88 (5.72-16.0)	366
Age 12-19 years	09-10	*	<LOD	2.25 (1.17-3.76)	8.69 (5.03-12.8)	14.0 (9.82-15.5)	455
Age 20+ years	03-04	1.79 (1.51-2.12)	1.47 (1.15-1.88)	5.91 (4.32-7.72)	17.2 (13.4-21.8)	30.1 (26.1-36.4)	1548
Age 20+ years	05-06	2.19 (1.70-2.82)	2.13 (1.40-2.83)	7.79 (5.38-10.2)	24.4 (16.6-32.9)	43.1 (30.5-71.4)	1531
Age 20+ years	07-08	1.55 (1.36-1.78)	1.29 (1.13-1.52)	5.27 (3.91-6.40)	16.6 (12.2-21.6)	33.4 (21.0-55.9)	1820
Age 20+ years	09-10	2.03 (1.70-2.42)	1.52 (1.18-2.16)	7.65 (6.04-10.4)	27.7 (22.1-35.9)	57.0 (39.7-71.9)	2035
Males	03-04	1.40 (1.18-1.67)	1.11 (.909-1.28)	4.78 (3.61-6.70)	14.4 (11.1-18.5)	26.5 (18.6-29.9)	1284
Males	05-06	1.50 (1.15-1.96)	1.25 (.800-1.93)	5.11 (3.41-7.54)	15.3 (11.2-20.8)	30.5 (19.6-44.0)	1276
Males	07-08	*	1.04 (.870-1.25)	4.11 (3.16-5.30)	14.9 (10.1-17.9)	27.0 (17.8-49.2)	1289
Males	09-10	1.56 (1.35-1.80)	1.04 (.880-1.34)	6.20 (4.34-7.79)	23.4 (18.7-27.6)	39.2 (32.0-54.8)	1401
Females	03-04	1.68 (1.37-2.05)	1.25 (.938-1.67)	5.58 (3.50-7.43)	17.2 (12.3-24.5)	32.9 (25.6-46.3)	1284
Females	05-06	2.20 (1.65-2.93)	2.04 (1.30-2.92)	7.86 (5.38-10.8)	26.4 (16.6-35.6)	46.2 (30.3-74.3)	1312
Females	07-08	*	.980 (.800-1.18)	4.06 (3.35-5.29)	14.6 (11.1-17.8)	29.6 (18.2-50.0)	1287
Females	09-10	1.83 (1.48-2.26)	1.36 (1.04-1.75)	6.65 (4.68-9.21)	24.1 (16.5-37.3)	57.0 (36.3-71.3)	1468
Mexican Americans	03-04	1.10 (.786-1.55)	.877 (.612-1.40)	2.93 (1.78-5.21)	8.88 (5.50-15.4)	19.0 (9.64-29.4)	621
Mexican Americans	05-06	1.35 (1.13-1.62)	.970 (.810-1.19)	4.21 (2.79-5.68)	16.6 (10.5-21.3)	36.9 (18.4-69.5)	651
Mexican Americans	07-08	*	.780 (<LOD-1.21)	3.04 (1.99-5.09)	13.7 (9.09-16.7)	28.9 (16.2-46.7)	513
Mexican Americans	09-10	*	.790 (.670-.940)	3.64 (2.28-4.41)	13.5 (7.78-19.1)	26.8 (16.5-42.0)	617
Non-Hispanic blacks	03-04	1.65 (1.19-2.30)	1.53 (.901-2.45)	5.81 (4.25-7.82)	13.6 (9.76-27.9)	32.9 (13.4-82.1)	725
Non-Hispanic blacks	05-06	1.84 (1.20-2.83)	1.71 (.910-2.95)	6.07 (3.83-9.25)	19.4 (10.4-45.2)	47.5 (25.3-62.0)	695
Non-Hispanic blacks	07-08	1.16 (.955-1.41)	.830 (.620-1.12)	4.44 (3.23-6.58)	14.9 (10.5-17.6)	25.1 (17.4-40.0)	586
Non-Hispanic blacks	09-10	1.59 (1.29-1.96)	1.30 (.850-2.04)	5.92 (4.20-8.40)	19.5 (13.5-27.1)	37.9 (26.1-51.7)	545
Non-Hispanic whites	03-04	1.44 (1.15-1.80)	1.05 (.833-1.36)	4.47 (2.73-6.83)	14.3 (10.9-18.6)	26.5 (18.6-32.0)	1078
Non-Hispanic whites	05-06	1.81 (1.32-2.47)	1.65 (.970-2.55)	6.65 (3.95-9.34)	19.7 (12.6-30.5)	36.6 (25.1-71.4)	1050
Non-Hispanic whites	07-08	*	.970 (<LOD-1.18)	3.56 (2.93-4.53)	11.6 (8.98-16.6)	23.8 (15.5-41.7)	1063
Non-Hispanic whites	09-10	1.60 (1.36-1.87)	1.15 (.900-1.43)	5.85 (4.33-7.65)	22.8 (15.6-29.4)	38.5 (32.0-57.0)	1226

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenocholine (2003 – 2010)

CAS Number 96055-45-7

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2568
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2588
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2576
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2871
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	292
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	354
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	390
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	380
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	728
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	703
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	366
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	456
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1548
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1531
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1820
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	2035
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1284
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1276
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1289
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1403
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1284
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1312
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1287
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1468
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	621
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	651
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	513
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	618
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	725
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	695
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	586
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	546
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1078
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1050
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1063
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1226

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.6, 0.6, 0.6, and 0.6 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenocholine (creatinine corrected) (2003 – 2010)

CAS Number 96055-45-7

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2568
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2588
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2576
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2870
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	292
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	354
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	390
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	379
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	728
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	703
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	366
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	456
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1548
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1531
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1820
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	2035
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1284
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1276
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1289
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1402
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1284
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1312
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1287
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1468
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	621
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	651
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	513
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	618
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	725
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	695
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	586
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	545
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1078
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1050
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1063
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1226

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenous (III) acid (2003 – 2010)

CAS Number 13464-58-9

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2568
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2588
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2576
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2871
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	292
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	354
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	390
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	380
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	1.40 (<LOD-1.70)	728
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	1.20 (<LOD-1.40)	703
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	366
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	456
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1548
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1531
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1820
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	2035
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1284
Males	05-06	*	<LOD	<LOD	<LOD	1.26 (<LOD-1.73)	1276
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1289
Males	09-10	*	<LOD	<LOD	<LOD	1.24 (<LOD-1.50)	1403
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1284
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1312
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1287
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1468
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	2.00 (<LOD-3.00)	621
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	651
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	1.20 (<LOD-1.76)	513
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	618
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	1.20 (<LOD-1.80)	725
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	695
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	586
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	546
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1078
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1050
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1063
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1226

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 1.2, 1.2, 1.2, and 1.2 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenous (III) acid (creatinine corrected) (2003 – 2010)

CAS Number 13464-58-9

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2568
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2588
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2576
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2870
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	292
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	354
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	390
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	379
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	1.95 (<LOD-2.76)	728
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	2.02 (<LOD-3.04)	703
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	366
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	456
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1548
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1531
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1820
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	2035
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1284
Males	05-06	*	<LOD	<LOD	<LOD	2.43 (<LOD-3.15)	1276
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1289
Males	09-10	*	<LOD	<LOD	<LOD	2.93 (<LOD-3.54)	1402
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1284
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1312
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1287
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1468
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	3.08 (<LOD-4.44)	621
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	651
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	3.54 (<LOD-4.72)	513
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	618
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	2.00 (<LOD-2.29)	725
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	695
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	586
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	545
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1078
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1050
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1063
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1226

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Dimethylarsinic acid (2003 – 2010)

CAS Number 917-76-0

Metabolite of Arsenic

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	3.71 (3.33-4.14)	3.90 (3.00-4.00)	6.00 (5.00-7.00)	11.0 (9.20-12.0)	16.0 (13.0-17.8)	2568
Total population	05-06	3.95 (3.59-4.35)	3.90 (3.46-4.31)	6.17 (5.53-7.04)	10.3 (9.00-12.2)	15.0 (12.2-17.8)	2588
Total population	07-08	3.67 (3.44-3.91)	3.58 (3.44-3.84)	5.96 (5.44-6.57)	9.78 (8.72-11.2)	13.3 (11.8-15.3)	2576
Total population	09-10	3.67 (3.43-3.93)	3.50 (3.25-3.76)	6.16 (5.59-6.73)	11.5 (9.35-13.7)	17.4 (14.0-21.0)	2871
Age 6-11 years	03-04	3.73 (3.12-4.45)	4.00 (3.00-4.00)	6.00 (5.00-7.00)	9.00 (7.00-12.0)	12.0 (8.00-22.0)	292
Age 6-11 years	05-06	3.96 (3.49-4.49)	3.94 (3.20-4.71)	5.94 (5.01-7.10)	10.5 (7.10-12.1)	13.0 (10.7-15.3)	354
Age 6-11 years	07-08	3.86 (3.45-4.32)	3.76 (3.47-4.01)	6.10 (5.29-6.99)	10.4 (7.57-13.9)	15.2 (9.32-39.2)	390
Age 6-11 years	09-10	3.53 (3.17-3.92)	3.27 (2.81-3.87)	5.76 (5.07-6.53)	10.7 (7.84-11.9)	12.8 (11.0-14.4)	380
Age 12-19 years	03-04	3.85 (3.34-4.42)	4.00 (3.00-4.00)	6.00 (5.00-7.10)	9.30 (7.70-12.0)	13.0 (10.0-16.0)	728
Age 12-19 years	05-06	3.97 (3.46-4.55)	3.97 (3.31-4.64)	5.74 (5.11-7.10)	9.43 (7.63-11.6)	12.0 (10.7-13.9)	703
Age 12-19 years	07-08	3.60 (3.16-4.09)	3.66 (3.24-4.26)	5.53 (4.75-6.72)	8.90 (7.33-9.95)	10.7 (9.08-13.3)	366
Age 12-19 years	09-10	3.08 (2.77-3.43)	2.89 (2.64-3.29)	5.05 (4.44-5.77)	7.89 (6.87-10.1)	11.3 (8.75-13.8)	456
Age 20+ years	03-04	3.69 (3.31-4.11)	3.70 (3.00-4.00)	6.00 (5.00-7.00)	11.0 (10.0-12.0)	16.0 (13.0-19.0)	1548
Age 20+ years	05-06	3.95 (3.58-4.36)	3.87 (3.46-4.32)	6.30 (5.59-7.28)	10.3 (9.25-13.3)	16.2 (12.5-19.4)	1531
Age 20+ years	07-08	3.66 (3.43-3.91)	3.56 (3.41-3.80)	5.97 (5.44-6.63)	9.89 (8.72-11.4)	13.8 (11.8-15.5)	1820
Age 20+ years	09-10	3.79 (3.51-4.09)	3.60 (3.33-3.87)	6.40 (5.71-7.03)	12.1 (9.52-16.0)	18.2 (15.8-23.6)	2035
Males	03-04	4.12 (3.60-4.71)	4.00 (3.70-4.30)	6.00 (5.60-7.70)	11.0 (9.00-15.0)	17.0 (12.1-22.0)	1284
Males	05-06	4.17 (3.79-4.59)	4.04 (3.68-4.43)	6.32 (5.41-7.61)	10.5 (8.68-13.3)	14.8 (11.8-19.2)	1276
Males	07-08	4.05 (3.73-4.40)	3.96 (3.63-4.27)	6.53 (5.77-7.15)	10.3 (9.31-12.0)	14.6 (11.6-20.2)	1289
Males	09-10	3.89 (3.50-4.32)	3.71 (3.35-4.11)	6.33 (5.80-7.02)	11.6 (8.80-17.3)	19.2 (13.0-24.7)	1403
Females	03-04	3.37 (3.00-3.78)	3.00 (3.00-4.00)	5.50 (4.80-6.20)	10.0 (8.00-11.0)	14.0 (11.0-17.7)	1284
Females	05-06	3.75 (3.37-4.18)	3.70 (3.28-4.21)	6.03 (5.46-6.99)	9.95 (8.81-12.2)	15.5 (11.6-19.0)	1312
Females	07-08	3.34 (3.13-3.57)	3.37 (3.15-3.53)	5.48 (5.00-6.05)	8.99 (7.97-10.4)	11.9 (10.7-13.9)	1287
Females	09-10	3.48 (3.22-3.76)	3.28 (2.95-3.63)	5.85 (5.21-6.69)	11.5 (9.42-13.3)	16.1 (13.8-17.7)	1468
Mexican Americans	03-04	4.72 (4.27-5.22)	4.80 (4.00-5.00)	7.00 (6.00-9.00)	12.0 (10.0-16.0)	17.0 (12.0-25.0)	621
Mexican Americans	05-06	4.43 (4.15-4.72)	4.66 (4.26-5.13)	6.93 (6.38-7.58)	9.51 (8.70-11.1)	13.1 (10.3-15.1)	651
Mexican Americans	07-08	4.36 (4.05-4.69)	4.62 (4.07-5.07)	7.14 (6.23-7.76)	9.67 (8.39-10.8)	11.7 (9.96-17.6)	513
Mexican Americans	09-10	3.90 (3.45-4.40)	3.98 (3.18-4.63)	6.53 (5.61-7.15)	10.7 (8.95-13.2)	16.2 (13.1-19.2)	618
Non-Hispanic blacks	03-04	4.27 (3.71-4.92)	4.00 (3.50-5.00)	7.00 (6.00-8.00)	11.6 (9.00-15.0)	16.0 (14.0-18.7)	725
Non-Hispanic blacks	05-06	4.28 (3.68-4.98)	4.02 (3.37-4.82)	6.42 (5.31-7.36)	10.9 (8.22-13.1)	15.2 (11.5-27.1)	695
Non-Hispanic blacks	07-08	4.19 (3.92-4.49)	3.98 (3.63-4.27)	6.69 (5.80-7.43)	11.2 (10.1-12.5)	14.7 (12.1-19.2)	586
Non-Hispanic blacks	09-10	4.09 (3.63-4.61)	3.93 (3.31-4.36)	7.13 (5.99-8.63)	12.3 (10.1-17.0)	18.2 (13.7-27.8)	546
Non-Hispanic whites	03-04	3.27 (2.95-3.62)	3.00 (3.00-3.80)	5.00 (4.60-6.00)	9.00 (7.00-10.0)	12.0 (9.50-15.0)	1078
Non-Hispanic whites	05-06	3.69 (3.28-4.15)	3.60 (3.19-4.08)	5.66 (5.10-6.70)	9.62 (8.11-11.8)	13.9 (10.6-17.8)	1050
Non-Hispanic whites	07-08	3.23 (3.01-3.48)	3.34 (3.04-3.53)	5.14 (4.77-5.59)	8.27 (7.48-9.07)	10.5 (9.25-13.2)	1063
Non-Hispanic whites	09-10	3.21 (3.07-3.37)	3.12 (2.91-3.29)	5.32 (5.00-5.66)	8.65 (7.23-10.1)	12.0 (10.1-14.4)	1226

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 1.7, 1.7, 1.7, and 1.7 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Dimethylarsinic acid (creatinine corrected) (2003 – 2010)

CAS Number 917-76-0

Metabolite of Arsenic

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	3.69 (3.24-4.19)	3.37 (2.94-3.91)	5.71 (4.69-6.74)	9.09 (7.61-11.5)	13.0 (10.7-16.0)	2568
Total population	05-06	3.88 (3.57-4.22)	3.66 (3.39-3.93)	5.71 (5.10-6.43)	9.57 (7.95-10.9)	12.3 (10.6-15.0)	2588
Total population	07-08	3.83 (3.60-4.07)	3.62 (3.37-3.93)	5.80 (5.33-6.32)	9.01 (8.00-9.97)	11.6 (9.97-14.4)	2576
Total population	09-10	3.90 (3.64-4.18)	3.53 (3.30-3.80)	6.03 (5.36-6.62)	10.2 (9.15-11.8)	14.9 (12.3-19.2)	2870
Age 6-11 years	03-04	4.34 (3.57-5.28)	4.03 (3.20-4.80)	6.32 (4.65-8.33)	10.3 (7.00-13.9)	13.9 (7.86-21.8)	292
Age 6-11 years	05-06	4.89 (4.22-5.65)	4.31 (3.64-5.69)	6.85 (5.71-7.69)	10.0 (7.54-14.7)	14.7 (10.0-18.8)	354
Age 6-11 years	07-08	5.07 (4.56-5.64)	4.54 (4.08-4.82)	6.90 (6.14-7.76)	12.0 (8.39-17.1)	20.9 (12.0-40.8)	390
Age 6-11 years	09-10	4.77 (4.34-5.23)	4.48 (4.12-4.85)	6.41 (5.66-6.82)	10.0 (7.63-15.3)	16.5 (9.33-27.0)	379
Age 12-19 years	03-04	2.74 (2.39-3.14)	2.55 (2.27-2.94)	3.77 (3.17-4.44)	5.88 (4.65-6.67)	7.18 (6.16-11.7)	728
Age 12-19 years	05-06	3.05 (2.78-3.34)	2.92 (2.55-3.29)	4.25 (3.87-4.84)	6.68 (5.49-8.06)	9.08 (7.11-10.6)	703
Age 12-19 years	07-08	2.80 (2.54-3.09)	2.69 (2.37-2.93)	3.91 (3.46-4.56)	6.27 (4.72-8.21)	8.21 (5.77-10.1)	366
Age 12-19 years	09-10	2.89 (2.61-3.20)	2.60 (2.36-2.86)	4.08 (3.43-4.80)	6.67 (5.71-8.57)	10.0 (7.61-12.6)	456
Age 20+ years	03-04	3.79 (3.34-4.31)	3.48 (3.00-4.00)	5.95 (4.86-7.05)	9.45 (8.00-12.0)	13.5 (11.1-18.6)	1548
Age 20+ years	05-06	3.93 (3.62-4.27)	3.71 (3.42-4.02)	5.82 (5.22-6.47)	9.74 (8.00-11.2)	12.6 (10.9-15.8)	1531
Age 20+ years	07-08	3.89 (3.64-4.16)	3.69 (3.44-4.02)	5.96 (5.47-6.58)	9.10 (8.00-10.0)	11.6 (9.74-14.5)	1820
Age 20+ years	09-10	4.00 (3.70-4.32)	3.61 (3.33-3.90)	6.25 (5.57-6.88)	10.8 (9.23-12.9)	16.1 (12.6-22.2)	2035
Males	03-04	3.48 (2.95-4.10)	3.16 (2.70-3.82)	5.46 (4.17-6.90)	8.59 (6.92-12.0)	12.3 (8.84-18.9)	1284
Males	05-06	3.43 (3.13-3.75)	3.24 (2.91-3.63)	5.11 (4.25-6.08)	7.90 (6.65-9.77)	11.0 (9.29-13.0)	1276
Males	07-08	3.63 (3.41-3.85)	3.44 (3.22-3.68)	5.33 (5.00-5.82)	8.31 (7.21-10.1)	12.1 (9.73-14.9)	1289
Males	09-10	3.54 (3.29-3.80)	3.20 (3.04-3.38)	5.31 (4.80-5.99)	9.24 (7.80-10.8)	13.3 (10.3-16.5)	1402
Females	03-04	3.89 (3.49-4.34)	3.57 (3.13-4.06)	5.78 (4.95-6.67)	9.32 (8.00-11.5)	13.7 (10.6-18.6)	1284
Females	05-06	4.37 (4.03-4.75)	4.03 (3.72-4.51)	6.26 (5.71-6.84)	10.0 (8.50-12.6)	14.4 (11.2-19.3)	1312
Females	07-08	4.02 (3.75-4.32)	3.80 (3.46-4.26)	6.15 (5.58-7.06)	9.23 (8.11-10.1)	10.9 (9.52-14.9)	1287
Females	09-10	4.28 (3.96-4.63)	4.00 (3.62-4.32)	6.55 (5.98-7.14)	11.0 (9.64-13.2)	17.2 (13.2-24.4)	1468
Mexican Americans	03-04	4.38 (3.80-5.05)	4.11 (3.29-4.90)	6.25 (4.84-8.15)	10.3 (8.00-11.8)	12.9 (11.1-15.2)	621
Mexican Americans	05-06	4.16 (3.83-4.52)	4.00 (3.65-4.36)	5.94 (5.40-6.49)	8.69 (7.23-9.65)	10.2 (9.52-13.2)	651
Mexican Americans	07-08	4.34 (3.87-4.88)	4.19 (3.66-4.83)	6.23 (5.31-7.44)	9.14 (8.00-11.0)	12.1 (10.1-15.1)	513
Mexican Americans	09-10	4.06 (3.63-4.54)	3.95 (3.33-4.44)	6.32 (5.36-7.10)	9.23 (8.10-10.6)	11.7 (10.2-14.8)	618
Non-Hispanic blacks	03-04	3.08 (2.69-3.52)	2.86 (2.60-3.24)	4.34 (3.82-5.05)	7.81 (5.82-9.45)	10.4 (7.61-16.9)	725
Non-Hispanic blacks	05-06	3.08 (2.70-3.52)	2.91 (2.52-3.32)	4.21 (3.75-4.91)	7.33 (5.40-10.7)	11.6 (7.66-17.9)	695
Non-Hispanic blacks	07-08	3.08 (2.87-3.31)	2.77 (2.56-3.13)	4.74 (4.31-5.22)	7.29 (6.58-8.26)	9.67 (8.26-11.0)	586
Non-Hispanic blacks	09-10	3.26 (2.90-3.66)	2.86 (2.47-3.34)	5.10 (4.43-6.06)	10.0 (7.39-11.7)	13.1 (11.1-15.2)	545
Non-Hispanic whites	03-04	3.44 (2.97-3.98)	3.17 (2.80-3.73)	5.16 (4.03-6.49)	8.00 (6.32-10.9)	11.1 (8.00-15.4)	1078
Non-Hispanic whites	05-06	3.82 (3.47-4.21)	3.64 (3.30-3.93)	5.71 (4.90-6.51)	9.23 (7.26-10.6)	11.6 (9.93-13.9)	1050
Non-Hispanic whites	07-08	3.62 (3.38-3.87)	3.48 (3.20-3.76)	5.38 (4.95-5.80)	8.00 (7.28-8.86)	10.0 (8.96-11.1)	1063
Non-Hispanic whites	09-10	3.58 (3.36-3.81)	3.31 (3.09-3.49)	5.30 (4.87-5.75)	8.12 (7.06-9.21)	11.5 (9.43-14.3)	1226

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Monomethylarsonic acid (2003 – 2010)

CAS Number 65513-69-1

Metabolite of Arsenic

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	1.20 (1.00-1.30)	1.90 (1.60-2.10)	2.40 (2.00-2.80)	2567
Total population	05-06	*	<LOD	1.19 (1.05-1.34)	1.72 (1.51-1.94)	2.12 (1.79-2.70)	2588
Total population	07-08	*	<LOD	1.11 (1.00-1.20)	1.61 (1.51-1.69)	2.09 (1.91-2.26)	2576
Total population	09-10	*	<LOD	1.02 (.920-1.10)	1.64 (1.41-1.83)	2.01 (1.82-2.28)	2871
Age 6-11 years	03-04	*	<LOD	1.00 (<LOD-1.40)	1.80 (1.30-2.60)	2.30 (1.70-2.90)	292
Age 6-11 years	05-06	*	<LOD	1.03 (<LOD-1.37)	1.54 (1.37-2.12)	2.12 (1.51-2.73)	354
Age 6-11 years	07-08	*	<LOD	1.05 (<LOD-1.28)	1.60 (1.32-1.83)	2.04 (1.64-2.86)	390
Age 6-11 years	09-10	*	<LOD	<LOD	1.38 (1.00-1.84)	1.81 (1.26-2.13)	380
Age 12-19 years	03-04	*	<LOD	1.50 (1.10-1.80)	2.20 (1.70-3.00)	2.90 (2.20-3.60)	728
Age 12-19 years	05-06	*	<LOD	1.31 (1.09-1.46)	1.99 (1.62-2.23)	2.41 (2.04-2.89)	703
Age 12-19 years	07-08	*	<LOD	1.26 (1.11-1.35)	1.83 (1.54-2.22)	2.31 (1.87-2.90)	366
Age 12-19 years	09-10	*	<LOD	1.10 (.910-1.25)	1.62 (1.33-1.92)	2.03 (1.74-2.30)	456
Age 20+ years	03-04	*	<LOD	1.20 (1.00-1.30)	1.80 (1.50-2.10)	2.30 (2.00-2.60)	1547
Age 20+ years	05-06	*	<LOD	1.20 (1.05-1.33)	1.70 (1.48-1.90)	2.06 (1.74-2.75)	1531
Age 20+ years	07-08	*	<LOD	1.08 (.970-1.17)	1.58 (1.44-1.71)	1.98 (1.82-2.21)	1820
Age 20+ years	09-10	*	<LOD	1.02 (.930-1.11)	1.65 (1.42-1.86)	2.03 (1.81-2.35)	2035
Males	03-04	*	<LOD	1.30 (1.10-1.60)	2.00 (1.80-2.40)	2.60 (2.10-3.00)	1283
Males	05-06	*	<LOD	1.31 (1.12-1.49)	1.79 (1.57-2.09)	2.23 (1.85-2.86)	1276
Males	07-08	*	<LOD	1.24 (1.13-1.35)	1.78 (1.63-1.94)	2.33 (1.97-2.71)	1289
Males	09-10	*	<LOD	1.07 (.970-1.23)	1.77 (1.47-2.01)	2.19 (1.83-2.68)	1403
Females	03-04	*	<LOD	1.00 (<LOD-1.20)	1.60 (1.30-1.90)	2.10 (1.70-2.60)	1284
Females	05-06	*	<LOD	1.08 (.920-1.24)	1.57 (1.36-1.90)	2.04 (1.67-2.50)	1312
Females	07-08	*	<LOD	.970 (<LOD-1.06)	1.42 (1.30-1.57)	1.81 (1.68-1.90)	1287
Females	09-10	*	<LOD	.950 (<LOD-1.06)	1.52 (1.27-1.74)	1.89 (1.66-2.12)	1468
Mexican Americans	03-04	*	<LOD	1.50 (1.20-1.90)	2.20 (1.70-2.80)	2.80 (2.00-4.40)	621
Mexican Americans	05-06	*	<LOD	1.19 (1.10-1.32)	1.73 (1.51-1.97)	2.04 (1.67-2.51)	651
Mexican Americans	07-08	*	<LOD	1.22 (1.02-1.35)	1.69 (1.43-2.12)	2.32 (1.75-2.85)	513
Mexican Americans	09-10	*	<LOD	1.02 (<LOD-1.37)	1.65 (1.38-1.90)	2.02 (1.65-2.33)	618
Non-Hispanic blacks	03-04	*	<LOD	1.10 (<LOD-1.30)	1.80 (1.40-2.00)	2.20 (1.70-2.70)	725
Non-Hispanic blacks	05-06	*	<LOD	1.02 (.950-1.07)	1.35 (1.29-1.44)	1.70 (1.50-1.88)	695
Non-Hispanic blacks	07-08	*	<LOD	1.21 (1.09-1.33)	1.79 (1.61-2.05)	2.32 (2.15-2.63)	586
Non-Hispanic blacks	09-10	*	<LOD	1.02 (<LOD-1.18)	1.51 (1.36-1.84)	1.88 (1.73-2.24)	546
Non-Hispanic whites	03-04	*	<LOD	1.10 (.900-1.30)	1.80 (1.40-2.00)	2.10 (1.80-2.50)	1077
Non-Hispanic whites	05-06	*	<LOD	1.22 (1.02-1.39)	1.75 (1.42-2.12)	2.14 (1.72-2.93)	1050
Non-Hispanic whites	07-08	*	<LOD	1.04 (.930-1.15)	1.50 (1.37-1.63)	1.91 (1.69-2.09)	1063
Non-Hispanic whites	09-10	*	<LOD	.940 (<LOD-1.04)	1.45 (1.24-1.76)	1.90 (1.65-2.12)	1226

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.9, 0.9, 0.9, and 0.9 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Monomethylarsonic acid (creatinine corrected) (2003 – 2010)

CAS Number 65513-69-1

Metabolite of Arsenic

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	1.33 (1.18-1.54)	2.22 (1.82-2.57)	2.86 (2.40-3.53)	2567
Total population	05-06	*	<LOD	1.28 (1.14-1.52)	2.37 (1.94-2.78)	3.13 (2.67-3.76)	2588
Total population	07-08	*	<LOD	1.31 (1.23-1.42)	2.24 (2.00-2.56)	3.19 (2.78-3.58)	2576
Total population	09-10	*	<LOD	1.36 (1.25-1.45)	2.16 (2.00-2.29)	2.91 (2.67-3.15)	2870
Age 6-11 years	03-04	*	<LOD	1.63 (<LOD-1.81)	2.31 (1.88-2.50)	2.52 (2.31-3.07)	292
Age 6-11 years	05-06	*	<LOD	1.44 (<LOD-1.83)	2.37 (1.65-3.20)	3.13 (2.29-4.92)	354
Age 6-11 years	07-08	*	<LOD	1.69 (<LOD-2.06)	2.46 (2.09-2.91)	3.20 (2.56-4.32)	390
Age 6-11 years	09-10	*	<LOD	<LOD	2.37 (2.07-2.78)	3.16 (2.55-3.76)	379
Age 12-19 years	03-04	*	<LOD	1.10 (.853-1.23)	1.53 (1.30-1.85)	2.07 (1.71-2.22)	728
Age 12-19 years	05-06	*	<LOD	1.05 (.930-1.14)	1.56 (1.49-1.73)	1.97 (1.78-2.13)	703
Age 12-19 years	07-08	*	<LOD	.970 (.880-1.07)	1.45 (1.19-1.73)	1.97 (1.49-2.34)	366
Age 12-19 years	09-10	*	<LOD	1.21 (1.02-1.45)	1.98 (1.60-2.56)	2.56 (1.94-4.57)	456
Age 20+ years	03-04	*	<LOD	1.36 (1.18-1.58)	2.28 (1.82-2.79)	3.00 (2.43-3.53)	1547
Age 20+ years	05-06	*	<LOD	1.31 (1.13-1.58)	2.46 (2.00-2.91)	3.20 (2.78-3.81)	1531
Age 20+ years	07-08	*	<LOD	1.32 (1.23-1.45)	2.35 (2.02-2.67)	3.38 (2.78-3.83)	1820
Age 20+ years	09-10	*	<LOD	1.36 (1.25-1.45)	2.18 (2.00-2.29)	2.91 (2.78-3.20)	2035
Males	03-04	*	<LOD	1.20 (1.05-1.36)	1.88 (1.53-2.34)	2.50 (2.07-3.45)	1283
Males	05-06	*	<LOD	1.11 (.950-1.28)	1.78 (1.47-2.29)	2.46 (1.88-3.32)	1276
Males	07-08	*	<LOD	1.18 (1.07-1.26)	2.06 (1.85-2.34)	2.71 (2.46-3.37)	1289
Males	09-10	*	<LOD	1.16 (1.07-1.25)	1.79 (1.64-1.99)	2.29 (2.08-2.78)	1402
Females	03-04	*	<LOD	1.50 (<LOD-1.77)	2.40 (1.96-2.86)	3.00 (2.61-3.53)	1284
Females	05-06	*	<LOD	1.58 (1.36-1.76)	2.78 (2.29-3.20)	3.56 (3.05-4.35)	1312
Females	07-08	*	<LOD	1.45 (<LOD-1.60)	2.41 (1.94-2.91)	3.56 (2.78-4.27)	1287
Females	09-10	*	<LOD	1.56 (<LOD-1.73)	2.46 (2.29-2.62)	3.37 (2.91-3.56)	1468
Mexican Americans	03-04	*	<LOD	1.46 (1.11-1.93)	2.30 (1.84-3.00)	3.16 (2.40-3.85)	621
Mexican Americans	05-06	*	<LOD	1.19 (1.08-1.35)	1.92 (1.60-2.13)	2.53 (2.06-2.91)	651
Mexican Americans	07-08	*	<LOD	1.28 (1.10-1.60)	2.27 (1.64-2.71)	3.05 (2.35-3.76)	513
Mexican Americans	09-10	*	<LOD	1.31 (<LOD-1.49)	2.00 (1.73-2.56)	3.05 (2.29-3.56)	618
Non-Hispanic blacks	03-04	*	<LOD	.816 (<LOD-.985)	1.37 (1.14-1.61)	1.88 (1.46-2.17)	725
Non-Hispanic blacks	05-06	*	<LOD	.790 (.720-.880)	1.11 (.980-1.34)	1.57 (1.23-1.98)	695
Non-Hispanic blacks	07-08	*	<LOD	.920 (.840-1.06)	1.45 (1.33-1.73)	2.09 (1.73-2.56)	586
Non-Hispanic blacks	09-10	*	<LOD	.970 (<LOD-1.08)	1.73 (1.39-1.94)	2.29 (1.83-2.91)	545
Non-Hispanic whites	03-04	*	<LOD	1.33 (1.15-1.62)	2.28 (1.73-2.86)	2.86 (2.35-3.75)	1077
Non-Hispanic whites	05-06	*	<LOD	1.35 (1.16-1.64)	2.50 (2.00-3.05)	3.20 (2.78-3.81)	1050
Non-Hispanic whites	07-08	*	<LOD	1.35 (1.23-1.52)	2.37 (2.04-2.78)	3.37 (2.78-4.00)	1063
Non-Hispanic whites	09-10	*	<LOD	1.36 (<LOD-1.52)	2.21 (1.99-2.37)	2.91 (2.67-3.20)	1226

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Trimethylarsine oxide (2003 – 2010)

CAS Number 4964-14-1

Geometric mean and selected percentiles of urine concentrations (in µg As/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2568
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2588
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2576
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2871
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	292
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	354
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	390
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	380
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	728
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	703
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	366
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	456
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1548
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1531
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1820
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	2035
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1284
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1276
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1289
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1403
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1284
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1312
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1287
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1468
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	621
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	651
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	513
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	618
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	725
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	695
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	586
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	546
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1078
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1050
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1063
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1226

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 1.0, 1.0, 1.0, and 1.0 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Trimethylarsine oxide (creatinine corrected) (2003 – 2010)

CAS Number 4964-14-1

Geometric mean and selected percentiles of urine concentrations (in µg As/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2568
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2588
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2576
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2870
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	292
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	354
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	390
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	379
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	728
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	703
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	366
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	456
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1548
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1531
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1820
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	2035
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1284
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1276
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1289
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1402
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1284
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1312
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1287
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1468
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	621
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	651
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	513
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	618
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	725
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	695
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	586
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	545
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1078
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1050
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1063
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1226

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Barium (1999 – 2010)

CAS Number 81-25-4

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	1.50 (1.35-1.66)	1.60 (1.50-1.90)	3.10 (2.70-3.40)	5.40 (4.60-6.10)	6.90 (6.20-8.40)	2180
Total population	01-02	1.52 (1.41-1.65)	1.63 (1.50-1.76)	3.12 (2.77-3.51)	5.24 (4.73-5.84)	7.48 (6.54-8.12)	2690
Total population	03-04	1.49 (1.36-1.64)	1.51 (1.35-1.72)	2.91 (2.64-3.28)	5.36 (4.86-5.71)	7.54 (6.93-8.63)	2558
Total population	05-06	1.52 (1.39-1.66)	1.58 (1.44-1.70)	2.99 (2.63-3.41)	5.34 (4.82-5.83)	7.10 (6.46-8.18)	2576
Total population	07-08	1.56 (1.45-1.69)	1.64 (1.49-1.80)	3.01 (2.72-3.34)	4.93 (4.39-5.69)	7.04 (6.07-8.20)	2627
Total population	09-10	1.47 (1.34-1.60)	1.48 (1.35-1.62)	2.81 (2.52-3.06)	4.66 (4.34-5.35)	6.78 (5.86-7.76)	2848
Age 6-11 years	99-00	2.15 (1.70-2.72)	2.20 (1.90-2.50)	4.00 (2.60-6.10)	6.40 (5.20-8.30)	8.30 (5.00-76.2)	297
Age 6-11 years	01-02	1.80 (1.44-2.26)	2.09 (1.74-2.49)	3.63 (2.86-4.39)	5.37 (4.26-7.38)	6.88 (5.37-8.49)	368
Age 6-11 years	03-04	2.21 (1.81-2.71)	2.50 (1.81-2.75)	4.76 (3.80-5.65)	8.63 (5.59-11.8)	11.8 (6.87-14.8)	290
Age 6-11 years	05-06	1.73 (1.53-1.97)	1.87 (1.61-2.03)	3.55 (2.41-4.30)	6.21 (4.30-7.32)	7.72 (6.26-8.92)	355
Age 6-11 years	07-08	1.75 (1.50-2.04)	1.86 (1.58-2.23)	3.41 (2.85-3.79)	5.57 (4.49-6.59)	7.32 (5.71-9.18)	394
Age 6-11 years	09-10	1.49 (1.28-1.74)	1.50 (1.22-1.68)	2.72 (2.19-3.13)	4.63 (4.02-5.37)	6.59 (5.24-7.72)	378
Age 12-19 years	99-00	1.97 (1.78-2.19)	2.00 (1.70-2.30)	3.50 (3.10-4.00)	5.90 (4.80-7.00)	9.70 (5.90-13.1)	621
Age 12-19 years	01-02	2.03 (1.76-2.34)	2.27 (1.96-2.53)	4.11 (3.48-4.72)	6.73 (5.55-7.87)	9.02 (7.25-11.4)	762
Age 12-19 years	03-04	2.16 (1.93-2.41)	2.35 (2.06-2.63)	4.11 (3.48-4.71)	7.18 (6.00-8.29)	9.63 (8.15-11.4)	725
Age 12-19 years	05-06	2.16 (1.92-2.42)	2.33 (1.99-2.56)	3.80 (3.60-4.21)	6.35 (5.48-7.49)	8.24 (6.06-10.5)	701
Age 12-19 years	07-08	2.18 (1.99-2.39)	2.31 (2.07-2.59)	3.62 (3.34-4.10)	6.19 (4.75-7.51)	8.20 (6.22-11.1)	376
Age 12-19 years	09-10	1.79 (1.52-2.09)	1.90 (1.46-2.45)	3.25 (2.82-4.14)	5.43 (4.45-6.07)	6.87 (5.73-8.16)	451
Age 20+ years	99-00	1.36 (1.24-1.51)	1.50 (1.30-1.70)	2.80 (2.60-3.20)	5.10 (4.30-5.50)	6.40 (5.70-8.40)	1262
Age 20+ years	01-02	1.43 (1.32-1.54)	1.50 (1.39-1.65)	2.85 (2.55-3.27)	4.86 (4.53-5.47)	7.14 (6.08-8.12)	1560
Age 20+ years	03-04	1.34 (1.20-1.50)	1.39 (1.19-1.56)	2.54 (2.21-2.91)	4.61 (3.99-5.30)	6.61 (5.57-7.43)	1543
Age 20+ years	05-06	1.42 (1.28-1.57)	1.43 (1.28-1.63)	2.75 (2.47-3.11)	5.12 (4.45-5.81)	6.83 (6.14-7.90)	1520
Age 20+ years	07-08	1.46 (1.35-1.58)	1.51 (1.39-1.67)	2.79 (2.54-3.15)	4.61 (4.19-5.42)	6.80 (5.50-8.37)	1857
Age 20+ years	09-10	1.42 (1.30-1.55)	1.43 (1.31-1.58)	2.67 (2.36-3.02)	4.58 (4.22-5.14)	6.80 (5.70-8.63)	2019
Males	99-00	1.70 (1.54-1.88)	1.90 (1.80-2.00)	3.20 (3.00-3.60)	5.50 (4.20-6.70)	7.50 (5.90-9.70)	1083
Males	01-02	1.64 (1.47-1.82)	1.80 (1.65-1.98)	3.15 (2.76-3.73)	5.52 (4.82-6.35)	7.87 (6.49-9.32)	1335
Males	03-04	1.62 (1.47-1.78)	1.69 (1.49-1.85)	3.09 (2.81-3.54)	5.65 (5.14-6.16)	8.56 (6.71-9.67)	1281
Males	05-06	1.66 (1.48-1.85)	1.71 (1.50-1.94)	3.21 (2.76-3.79)	5.48 (4.68-6.22)	7.10 (6.18-8.84)	1271
Males	07-08	1.62 (1.48-1.77)	1.80 (1.57-1.93)	3.14 (2.79-3.42)	5.00 (4.31-5.70)	6.84 (5.83-7.72)	1327
Males	09-10	1.53 (1.35-1.74)	1.57 (1.36-1.82)	3.01 (2.53-3.36)	4.83 (4.25-5.77)	6.81 (5.77-8.76)	1398
Females	99-00	1.33 (1.15-1.53)	1.50 (1.20-1.60)	2.80 (2.30-3.30)	5.20 (4.20-5.90)	6.80 (5.60-10.4)	1097
Females	01-02	1.43 (1.30-1.56)	1.44 (1.29-1.63)	3.11 (2.74-3.43)	4.93 (4.44-5.88)	7.15 (6.32-7.86)	1355
Females	03-04	1.38 (1.24-1.54)	1.39 (1.18-1.57)	2.71 (2.41-3.15)	4.95 (4.29-5.51)	6.87 (5.65-8.10)	1277
Females	05-06	1.40 (1.27-1.54)	1.42 (1.30-1.63)	2.70 (2.39-3.19)	5.21 (4.65-5.71)	7.09 (6.24-7.94)	1305
Females	07-08	1.51 (1.36-1.68)	1.54 (1.38-1.70)	2.84 (2.52-3.37)	4.87 (4.23-6.13)	7.18 (5.94-8.83)	1300
Females	09-10	1.40 (1.30-1.51)	1.38 (1.31-1.47)	2.61 (2.41-2.90)	4.58 (4.33-4.95)	6.59 (5.37-7.86)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.12, 0.12, 0.31, 0.12, 0.12, and 0.12 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Barium_BiomonitoringSummary.html

Urinary Barium (1999 – 2010)

CAS Number 81-25-4

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	1.35 (1.25-1.46)	1.40 (1.20-1.50)	2.60 (2.30-2.90)	4.50 (4.10-5.30)	6.30 (5.50-6.80)	692
Mexican Americans	01-02	1.21 (1.06-1.37)	1.25 (1.11-1.46)	2.56 (2.04-2.91)	4.35 (3.65-5.49)	6.43 (5.21-8.22)	683
Mexican Americans	03-04	1.40 (1.15-1.70)	1.45 (1.22-1.73)	2.62 (1.78-3.38)	4.07 (2.95-6.37)	6.01 (4.01-7.88)	618
Mexican Americans	05-06	1.33 (1.24-1.42)	1.36 (1.22-1.50)	2.63 (2.35-2.89)	4.47 (3.80-5.23)	6.21 (5.23-7.00)	652
Mexican Americans	07-08	1.33 (1.16-1.53)	1.37 (1.19-1.48)	2.60 (2.29-2.84)	4.21 (3.53-4.90)	5.79 (4.90-8.00)	515
Mexican Americans	09-10	1.24 (1.07-1.45)	1.18 (1.05-1.40)	2.25 (1.88-2.71)	4.15 (3.55-5.40)	6.35 (5.00-8.75)	613
Non-Hispanic blacks	99-00	1.34 (1.12-1.62)	1.40 (1.20-1.60)	2.50 (2.30-2.90)	5.10 (3.70-6.60)	7.40 (5.40-13.9)	540
Non-Hispanic blacks	01-02	1.30 (1.14-1.48)	1.42 (1.22-1.62)	2.61 (2.31-2.82)	4.30 (3.70-5.18)	5.99 (4.87-7.26)	667
Non-Hispanic blacks	03-04	1.27 (1.17-1.39)	1.38 (1.26-1.48)	2.34 (2.05-2.59)	3.77 (3.35-4.36)	5.86 (4.76-7.45)	723
Non-Hispanic blacks	05-06	1.25 (1.15-1.37)	1.31 (1.21-1.41)	2.40 (2.22-2.61)	4.24 (3.69-4.83)	6.19 (5.23-6.96)	692
Non-Hispanic blacks	07-08	1.17 (1.07-1.28)	1.23 (1.12-1.37)	2.14 (2.01-2.34)	3.70 (3.27-4.00)	5.00 (3.93-5.90)	589
Non-Hispanic blacks	09-10	1.22 (1.08-1.38)	1.22 (1.07-1.38)	2.13 (1.91-2.51)	3.76 (3.09-4.88)	5.50 (4.06-7.32)	544
Non-Hispanic whites	99-00	1.56 (1.36-1.80)	1.80 (1.60-2.00)	3.30 (2.80-3.70)	5.50 (4.50-6.30)	7.50 (6.20-8.80)	765
Non-Hispanic whites	01-02	1.61 (1.46-1.77)	1.68 (1.54-1.85)	3.31 (2.87-3.74)	5.66 (4.94-6.30)	7.73 (6.61-8.49)	1132
Non-Hispanic whites	03-04	1.56 (1.37-1.78)	1.61 (1.28-1.92)	3.12 (2.75-3.70)	5.57 (5.04-6.43)	8.08 (6.87-9.53)	1074
Non-Hispanic whites	05-06	1.59 (1.42-1.78)	1.66 (1.50-1.86)	3.08 (2.63-3.79)	5.50 (4.90-6.08)	7.10 (6.46-8.24)	1041
Non-Hispanic whites	07-08	1.71 (1.55-1.88)	1.82 (1.62-1.97)	3.36 (2.91-3.71)	5.38 (4.51-6.30)	7.18 (6.22-9.05)	1095
Non-Hispanic whites	09-10	1.56 (1.42-1.73)	1.60 (1.40-1.76)	3.00 (2.64-3.36)	4.89 (4.48-5.84)	7.16 (6.12-9.31)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.12, 0.12, 0.31, 0.12, 0.12, and 0.12 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Barium_BiomonitoringSummary.html

Urinary Barium (creatinine corrected) (1999 – 2010)

CAS Number 81-25-4

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	1.40 (1.26-1.56)	1.41 (1.28-1.54)	2.54 (2.20-2.91)	4.68 (3.85-5.47)	6.33 (5.47-8.09)	2180
Total population	01-02	1.44 (1.31-1.58)	1.49 (1.35-1.63)	2.76 (2.51-3.03)	4.58 (4.15-4.96)	6.24 (5.28-7.27)	2689
Total population	03-04	1.48 (1.37-1.60)	1.41 (1.31-1.58)	2.68 (2.44-2.89)	4.92 (4.39-5.45)	7.10 (6.29-7.77)	2558
Total population	05-06	1.50 (1.40-1.61)	1.48 (1.37-1.61)	2.75 (2.50-3.03)	4.65 (4.09-5.10)	6.38 (5.62-7.56)	2576
Total population	07-08	1.63 (1.51-1.75)	1.60 (1.51-1.72)	2.92 (2.72-3.16)	4.85 (4.40-5.57)	7.20 (5.94-8.59)	2627
Total population	09-10	1.56 (1.45-1.68)	1.55 (1.42-1.64)	2.72 (2.54-2.97)	4.69 (4.12-5.16)	6.24 (5.60-7.43)	2848
Age 6-11 years	99-00	2.37 (1.68-3.32)	2.38 (1.84-2.92)	4.47 (2.55-6.46)	10.2 (3.75-22.0)	11.4 (5.46-22.0)	297
Age 6-11 years	01-02	2.20 (1.91-2.52)	2.41 (2.19-2.83)	3.91 (3.29-4.51)	5.01 (4.58-6.00)	6.71 (5.20-8.47)	368
Age 6-11 years	03-04	2.58 (2.22-2.99)	3.00 (2.35-3.29)	4.45 (3.57-5.54)	6.69 (5.59-7.70)	10.3 (6.53-21.0)	290
Age 6-11 years	05-06	2.14 (1.85-2.48)	2.15 (1.76-2.51)	3.83 (3.10-4.73)	6.19 (4.84-7.83)	10.0 (5.76-11.1)	355
Age 6-11 years	07-08	2.28 (2.04-2.54)	2.41 (2.05-2.59)	4.43 (3.87-4.70)	6.58 (5.05-9.46)	9.89 (7.13-13.3)	394
Age 6-11 years	09-10	2.03 (1.78-2.30)	2.00 (1.77-2.40)	3.33 (2.81-3.79)	5.04 (4.17-7.39)	8.76 (5.93-10.8)	378
Age 12-19 years	99-00	1.51 (1.34-1.70)	1.40 (1.26-1.59)	2.48 (1.97-3.06)	4.36 (3.23-5.39)	7.62 (4.24-11.4)	621
Age 12-19 years	01-02	1.45 (1.33-1.59)	1.56 (1.31-1.77)	2.89 (2.68-3.12)	4.52 (3.84-5.20)	5.55 (4.81-6.10)	762
Age 12-19 years	03-04	1.54 (1.36-1.75)	1.59 (1.39-1.87)	2.60 (2.24-3.48)	4.97 (4.34-5.58)	6.47 (5.38-7.77)	725
Age 12-19 years	05-06	1.66 (1.50-1.84)	1.73 (1.52-1.93)	3.15 (2.76-3.42)	4.25 (3.88-4.56)	5.00 (4.46-6.68)	701
Age 12-19 years	07-08	1.71 (1.52-1.92)	1.70 (1.48-1.96)	3.03 (2.51-3.65)	4.80 (3.96-5.47)	6.17 (4.80-8.12)	376
Age 12-19 years	09-10	1.67 (1.48-1.88)	1.66 (1.54-1.84)	2.69 (2.24-3.18)	3.98 (3.40-5.29)	6.42 (4.61-9.33)	451
Age 20+ years	99-00	1.30 (1.19-1.42)	1.33 (1.20-1.46)	2.32 (2.08-2.62)	4.29 (3.63-4.96)	5.65 (5.28-6.33)	1262
Age 20+ years	01-02	1.37 (1.24-1.50)	1.40 (1.24-1.52)	2.53 (2.23-2.84)	4.38 (4.02-5.00)	6.55 (5.00-7.64)	1559
Age 20+ years	03-04	1.38 (1.26-1.50)	1.32 (1.22-1.41)	2.39 (2.13-2.70)	4.39 (3.77-5.16)	7.00 (5.45-8.50)	1543
Age 20+ years	05-06	1.42 (1.30-1.54)	1.39 (1.26-1.55)	2.59 (2.33-2.82)	4.53 (3.65-5.40)	6.34 (5.37-7.67)	1520
Age 20+ years	07-08	1.56 (1.44-1.69)	1.55 (1.40-1.66)	2.80 (2.55-3.04)	4.64 (4.05-5.43)	7.20 (5.78-8.65)	1857
Age 20+ years	09-10	1.50 (1.40-1.61)	1.46 (1.38-1.55)	2.67 (2.42-2.92)	4.71 (4.07-5.23)	6.03 (5.53-7.34)	2019
Males	99-00	1.32 (1.22-1.42)	1.36 (1.23-1.47)	2.39 (2.11-2.57)	4.24 (3.48-5.00)	5.61 (4.39-10.2)	1083
Males	01-02	1.30 (1.16-1.45)	1.34 (1.19-1.50)	2.46 (2.14-2.83)	4.51 (3.73-4.96)	5.42 (4.81-7.51)	1334
Males	03-04	1.36 (1.26-1.47)	1.31 (1.19-1.43)	2.60 (2.37-2.75)	4.36 (3.97-4.72)	6.01 (5.45-6.96)	1281
Males	05-06	1.36 (1.23-1.50)	1.38 (1.25-1.52)	2.36 (2.19-2.73)	4.24 (3.65-4.82)	5.69 (4.75-7.36)	1271
Males	07-08	1.45 (1.34-1.55)	1.50 (1.32-1.60)	2.59 (2.34-2.79)	4.30 (3.84-4.72)	5.56 (5.05-6.30)	1327
Males	09-10	1.40 (1.28-1.52)	1.38 (1.29-1.50)	2.39 (2.13-2.68)	4.05 (3.52-4.71)	5.55 (4.89-6.77)	1398
Females	99-00	1.49 (1.27-1.74)	1.48 (1.29-1.68)	2.65 (2.13-3.46)	4.91 (3.96-6.38)	7.36 (5.25-11.3)	1097
Females	01-02	1.59 (1.45-1.75)	1.64 (1.48-1.79)	2.98 (2.75-3.30)	4.76 (4.38-5.31)	6.97 (5.86-7.52)	1355
Females	03-04	1.60 (1.45-1.77)	1.55 (1.35-1.73)	2.78 (2.34-3.25)	5.50 (4.43-6.86)	7.88 (6.28-11.5)	1277
Females	05-06	1.65 (1.54-1.76)	1.63 (1.45-1.83)	3.09 (2.71-3.38)	4.87 (4.48-5.65)	7.48 (6.04-10.0)	1305
Females	07-08	1.83 (1.63-2.05)	1.74 (1.52-2.06)	3.22 (2.82-3.89)	5.94 (4.57-7.38)	8.15 (7.18-9.49)	1300
Females	09-10	1.73 (1.60-1.87)	1.71 (1.62-1.86)	3.06 (2.72-3.41)	5.06 (4.59-5.74)	6.58 (5.88-8.19)	1450

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Barium_BiomonitoringSummary.html

Urinary Barium (creatinine corrected) (1999 – 2010)

CAS Number 81-25-4

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	1.21 (1.10-1.33)	1.18 (1.05-1.38)	2.39 (2.10-2.59)	4.00 (3.33-4.80)	5.31 (4.80-6.51)	692
Mexican Americans	01-02	1.18 (1.03-1.34)	1.16 (1.00-1.38)	2.33 (1.90-2.61)	3.68 (3.29-4.10)	4.96 (4.24-6.80)	682
Mexican Americans	03-04	1.29 (1.08-1.55)	1.28 (1.03-1.53)	2.25 (1.73-2.97)	3.99 (2.79-5.03)	4.99 (4.24-6.56)	618
Mexican Americans	05-06	1.25 (1.17-1.33)	1.21 (1.09-1.33)	2.27 (1.84-2.61)	3.66 (3.07-4.35)	5.11 (4.00-5.95)	652
Mexican Americans	07-08	1.33 (1.16-1.53)	1.28 (1.14-1.49)	2.40 (1.87-2.90)	4.23 (3.45-4.87)	6.18 (4.75-7.27)	515
Mexican Americans	09-10	1.30 (1.18-1.44)	1.26 (1.14-1.41)	2.33 (1.98-2.79)	3.55 (3.11-4.42)	5.50 (4.27-6.58)	613
Non-Hispanic blacks	99-00	.881 (.703-1.11)	.905 (.710-1.06)	1.64 (1.36-2.00)	3.27 (2.26-4.76)	4.84 (3.57-10.8)	540
Non-Hispanic blacks	01-02	.891 (.777-1.02)	.921 (.754-1.11)	1.64 (1.44-2.03)	2.86 (2.48-3.37)	4.02 (3.52-4.68)	667
Non-Hispanic blacks	03-04	.915 (.832-1.01)	.963 (.880-1.04)	1.51 (1.39-1.75)	2.62 (2.29-3.04)	3.76 (3.22-4.72)	723
Non-Hispanic blacks	05-06	.909 (.845-.979)	.880 (.820-.970)	1.78 (1.56-1.97)	2.99 (2.63-3.14)	3.91 (3.39-4.73)	692
Non-Hispanic blacks	07-08	.858 (.807-.913)	.850 (.790-.920)	1.53 (1.34-1.61)	2.51 (2.01-3.03)	3.43 (2.83-5.05)	589
Non-Hispanic blacks	09-10	.965 (.853-1.09)	.930 (.860-1.05)	1.63 (1.40-1.85)	2.92 (2.33-3.34)	3.71 (3.24-4.69)	544
Non-Hispanic whites	99-00	1.56 (1.38-1.77)	1.55 (1.36-1.74)	2.72 (2.27-3.24)	5.00 (3.81-6.02)	6.60 (5.52-10.2)	765
Non-Hispanic whites	01-02	1.62 (1.49-1.76)	1.66 (1.49-1.82)	3.04 (2.76-3.32)	4.96 (4.55-5.41)	6.74 (5.57-7.64)	1132
Non-Hispanic whites	03-04	1.64 (1.49-1.82)	1.60 (1.40-1.76)	2.88 (2.56-3.26)	5.38 (4.67-6.28)	7.57 (6.69-9.27)	1074
Non-Hispanic whites	05-06	1.65 (1.52-1.80)	1.61 (1.46-1.83)	2.95 (2.70-3.26)	4.82 (4.32-5.65)	7.21 (5.69-8.51)	1041
Non-Hispanic whites	07-08	1.91 (1.74-2.10)	1.85 (1.65-2.09)	3.22 (2.84-3.76)	5.42 (4.55-6.91)	7.81 (6.33-9.45)	1095
Non-Hispanic whites	09-10	1.75 (1.59-1.92)	1.70 (1.58-1.86)	2.99 (2.67-3.33)	5.00 (4.14-5.69)	6.63 (5.69-8.50)	1225

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Barium_BiomonitoringSummary.html

Urinary Beryllium (1999 – 2010)‡

CAS Number 7440-41-7

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	2465
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2690
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2558
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2576
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2627
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2848
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	<LOD	340
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	368
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	290
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	355
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	394
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	378
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	719
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	.140 (<LOD-.170)	762
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	725
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	701
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	376
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	451
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1406
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1560
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1543
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1520
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1857
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	2019
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	1227
Males	01-02	*	<LOD	<LOD	<LOD	.130 (<LOD-.150)	1335
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1281
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1271
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1327
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1398
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1238
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1355
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1277
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1305
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1300
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.13, 0.13, 0.13, 0.072, 0.072, and 0.072 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Beryllium_BiomonitoringSummary.html

Urinary Beryllium (1999 – 2010)‡

CAS Number 7440-41-7

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	884
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	.130 (<LOD-.160)	683
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	618
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	652
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	515
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	613
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	568
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	667
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	723
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	692
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	589
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	544
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	822
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1132
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1074
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1041
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1095
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.13, 0.13, 0.13, 0.072, 0.072, and 0.072 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Beryllium_BiomonitoringSummary.html

Urinary Beryllium (creatinine corrected) (1999 – 2010)‡

CAS Number 7440-41-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	2465
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2689
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2558
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2576
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2627
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2848
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	<LOD	340
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	368
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	290
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	355
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	394
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	378
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	719
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	.231 (<LOD-.273)	762
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	725
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	701
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	376
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	451
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1406
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1559
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1543
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1520
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1857
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	2019
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	1227
Males	01-02	*	<LOD	<LOD	<LOD	.281 (<LOD-.333)	1334
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1281
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1271
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1327
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1398
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1238
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1355
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1277
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1305
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1300
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1450

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Beryllium_BiomonitoringSummary.html

Urinary Beryllium (creatinine corrected) (1999 – 2010)‡

CAS Number 7440-41-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	884
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	.346 (<LOD-.391)	682
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	618
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	652
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	515
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	613
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	568
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	667
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	723
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	692
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	589
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	544
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	822
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1132
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1074
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1041
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1095
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1225

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Beryllium_BiomonitoringSummary.html

Blood Cadmium (1999 – 2010)

CAS Number 81271-94-5

Geometric mean and selected percentiles of blood concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.412 (.378-.449)	.400 (.300-.400)	.600 (.500-.700)	1.00 (1.00-1.10)	1.40 (1.30-1.40)	7970
Total population	01-02	*	.300 (.300-.400)	.500 (.500-.600)	1.00 (.900-1.10)	1.40 (1.20-1.70)	8945
Total population	03-04	.304 (.289-.320)	.300 (.300-.300)	.500 (.500-.600)	1.10 (1.00-1.20)	1.60 (1.50-1.60)	8372
Total population	05-06	.310 (.294-.327)	.270 (.250-.280)	.510 (.460-.560)	1.02 (.910-1.13)	1.53 (1.34-1.75)	8407
Total population	07-08	.315 (.300-.331)	.270 (.260-.280)	.500 (.460-.560)	1.00 (.900-1.13)	1.52 (1.30-1.77)	8266
Total population	09-10	.302 (.293-.311)	.260 (.250-.270)	.480 (.460-.510)	.960 (.880-1.01)	1.40 (1.29-1.53)	8793
Age 1-5 years	99-00	*	<LOD	.300 (<LOD-.400)	.400 (.300-.400)	.400 (.300-.700)	723
Age 1-5 years	01-02	*	<LOD	<LOD	<LOD	.300 (.300-.300)	898
Age 1-5 years	03-04	*	<LOD	<LOD	.200 (.200-.300)	.200 (.200-.400)	910
Age 1-5 years	05-06	*	<LOD	<LOD	<LOD	.230 (.210-.250)	968
Age 1-5 years	07-08	*	<LOD	<LOD	.210 (<LOD-.230)	.240 (.220-.260)	817
Age 1-5 years	09-10	*	<LOD	<LOD	.200 (<LOD-.210)	.220 (.200-.240)	836
Age 6-11 years	99-00	*	<LOD	.300 (<LOD-.400)	.400 (.300-.500)	.500 (.400-.500)	905
Age 6-11 years	01-02	*	<LOD	<LOD	.300 (.300-.300)	.400 (.400-.400)	1044
Age 6-11 years	03-04	*	<LOD	.200 (<LOD-.200)	.300 (.200-.300)	.300 (.300-.300)	856
Age 6-11 years	05-06	*	<LOD	<LOD	.220 (.200-.240)	.260 (.230-.280)	934
Age 6-11 years	07-08	*	<LOD	<LOD	.230 (.210-.240)	.260 (.240-.280)	1011
Age 6-11 years	09-10	*	<LOD	<LOD	.210 (.200-.240)	.240 (.220-.280)	1009
Age 12-19 years	99-00	.333 (.304-.366)	.300 (.300-.400)	.400 (.400-.500)	.800 (.600-1.00)	1.10 (.900-1.20)	2135
Age 12-19 years	01-02	*	<LOD	.300 (.300-.400)	.500 (.400-.700)	.900 (.700-1.20)	2231
Age 12-19 years	03-04	*	.200 (<LOD-.200)	.300 (.300-.300)	.600 (.500-.700)	.900 (.800-1.10)	2081
Age 12-19 years	05-06	*	<LOD	.250 (.240-.270)	.520 (.410-.680)	.960 (.820-1.08)	1996
Age 12-19 years	07-08	*	<LOD	.260 (.240-.270)	.520 (.400-.670)	.900 (.730-1.19)	1074
Age 12-19 years	09-10	*	<LOD	.240 (.220-.260)	.340 (.310-.450)	.620 (.460-.850)	1183
Age 20+ years	99-00	.468 (.426-.513)	.400 (.400-.500)	.700 (.600-.800)	1.10 (1.00-1.20)	1.50 (1.40-1.60)	4207
Age 20+ years	01-02	.425 (.400-.452)	.400 (.400-.400)	.600 (.600-.700)	1.10 (1.00-1.30)	1.60 (1.40-1.90)	4772
Age 20+ years	03-04	.378 (.359-.398)	.400 (.300-.400)	.600 (.600-.700)	1.20 (1.20-1.30)	1.80 (1.60-1.90)	4525
Age 20+ years	05-06	.373 (.352-.395)	.330 (.310-.350)	.610 (.570-.660)	1.17 (1.06-1.26)	1.72 (1.53-1.95)	4509
Age 20+ years	07-08	.376 (.354-.399)	.330 (.310-.350)	.600 (.550-.670)	1.16 (1.02-1.30)	1.70 (1.50-1.96)	5364
Age 20+ years	09-10	.358 (.347-.370)	.320 (.310-.330)	.580 (.550-.600)	1.10 (1.00-1.18)	1.55 (1.43-1.72)	5765

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.3, 0.3, 0.14, 0.2, 0.2, and 0.2 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cadmium_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Cadmium_FactSheet.html

Blood Cadmium (1999 – 2010)

CAS Number 81271-94-5

Geometric mean and selected percentiles of blood concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Males	99-00	.403 (.368-.441)	.400 (.300-.400)	.600 (.500-.700)	1.00 (.900-1.10)	1.40 (1.30-1.50)	3913
Males	01-02	*	.300 (<LOD-.300)	.500 (.500-.600)	1.00 (.900-1.10)	1.50 (1.20-1.80)	4339
Males	03-04	.283 (.266-.300)	.300 (.200-.300)	.500 (.500-.500)	1.10 (1.00-1.20)	1.60 (1.50-1.60)	4131
Males	05-06	*	.240 (.220-.260)	.470 (.420-.530)	1.02 (.910-1.12)	1.53 (1.27-1.86)	4092
Males	07-08	.299 (.283-.317)	.250 (.230-.260)	.470 (.420-.540)	1.05 (.930-1.19)	1.60 (1.30-1.90)	4147
Males	09-10	.279 (.268-.289)	.230 (.220-.240)	.410 (.390-.460)	.920 (.830-1.00)	1.45 (1.30-1.58)	4366
Females	99-00	.421 (.386-.460)	.400 (.400-.400)	.600 (.500-.700)	1.00 (1.00-1.10)	1.30 (1.20-1.40)	4057
Females	01-02	.382 (.362-.403)	.400 (.300-.400)	.600 (.500-.600)	1.00 (.900-1.10)	1.40 (1.20-1.70)	4606
Females	03-04	.326 (.309-.344)	.300 (.300-.300)	.600 (.500-.600)	1.10 (1.00-1.20)	1.60 (1.50-1.70)	4241
Females	05-06	.329 (.311-.349)	.290 (.280-.310)	.530 (.480-.580)	1.02 (.870-1.18)	1.54 (1.33-1.79)	4315
Females	07-08	.331 (.316-.348)	.290 (.280-.310)	.530 (.480-.570)	.980 (.860-1.10)	1.43 (1.29-1.63)	4119
Females	09-10	.326 (.314-.339)	.290 (.280-.310)	.520 (.490-.550)	.960 (.880-1.10)	1.40 (1.20-1.53)	4427
Mexican Americans	99-00	.395 (.367-.424)	.400 (.400-.400)	.500 (.500-.600)	.800 (.700-1.00)	1.20 (.900-1.30)	2742
Mexican Americans	01-02	*	<LOD	.400 (.400-.500)	.600 (.500-.800)	1.00 (.700-1.30)	2268
Mexican Americans	03-04	.235 (.216-.255)	.200 (.200-.300)	.400 (.300-.400)	.600 (.500-.800)	1.00 (.800-1.50)	2085
Mexican Americans	05-06	*	.220 (.200-.240)	.350 (.300-.400)	.580 (.510-.680)	.820 (.710-1.00)	2236
Mexican Americans	07-08	*	.220 (.210-.230)	.350 (.320-.370)	.570 (.510-.660)	.840 (.690-1.02)	1712
Mexican Americans	09-10	*	.220 (.200-.230)	.330 (.300-.370)	.580 (.500-.670)	.800 (.690-.960)	1966
Non-Hispanic blacks	99-00	.393 (.361-.427)	.400 (.300-.400)	.600 (.500-.600)	1.00 (.900-1.20)	1.40 (1.20-1.60)	1842
Non-Hispanic blacks	01-02	*	.300 (<LOD-.300)	.500 (.500-.600)	1.00 (.900-1.10)	1.40 (1.20-1.70)	2219
Non-Hispanic blacks	03-04	.304 (.275-.337)	.300 (.300-.300)	.500 (.400-.600)	1.00 (.900-1.20)	1.50 (1.30-1.70)	2292
Non-Hispanic blacks	05-06	.307 (.290-.326)	.260 (.250-.280)	.490 (.440-.570)	1.03 (.880-1.21)	1.50 (1.23-1.79)	2193
Non-Hispanic blacks	07-08	.333 (.316-.352)	.280 (.270-.300)	.550 (.480-.620)	1.20 (1.01-1.36)	1.81 (1.45-2.13)	1746
Non-Hispanic blacks	09-10	.328 (.310-.347)	.280 (.260-.290)	.550 (.490-.640)	1.10 (1.00-1.20)	1.52 (1.38-1.73)	1593
Non-Hispanic whites	99-00	.420 (.376-.470)	.400 (.300-.500)	.600 (.500-.700)	1.10 (1.00-1.20)	1.40 (1.30-1.50)	2716
Non-Hispanic whites	01-02	*	.300 (.300-.400)	.600 (.500-.600)	1.00 (.900-1.20)	1.50 (1.30-1.80)	3806
Non-Hispanic whites	03-04	.313 (.296-.331)	.300 (.300-.300)	.600 (.500-.600)	1.10 (1.00-1.20)	1.60 (1.50-1.70)	3478
Non-Hispanic whites	05-06	.321 (.300-.343)	.270 (.250-.300)	.540 (.470-.610)	1.08 (.930-1.23)	1.64 (1.40-1.94)	3310
Non-Hispanic whites	07-08	.321 (.303-.341)	.270 (.260-.290)	.520 (.470-.580)	1.05 (.920-1.20)	1.55 (1.30-1.80)	3461
Non-Hispanic whites	09-10	.307 (.297-.318)	.270 (.260-.280)	.490 (.460-.540)	.990 (.900-1.10)	1.50 (1.36-1.60)	3760

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.3, 0.3, 0.14, 0.2, 0.2, and 0.2 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cadmium_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Cadmium_FactSheet.html

Urinary Cadmium (1999 – 2010)

CAS Number 81271-94-5

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00**	.193 (.169-.220)	.232 (.214-.249)	.475 (.436-.519)	.858 (.763-.980)	1.20 (1.06-1.34)	2257
Total population	01-02**	.210 (.189-.235)	.230 (.207-.255)	.458 (.423-.482)	.839 (.753-.919)	1.20 (1.07-1.28)	2690
Total population	03-04	.211 (.196-.226)	.210 (.200-.230)	.450 (.400-.500)	.800 (.730-.880)	1.15 (.980-1.26)	2543
Total population	05-06	.191 (.170-.216)	.200 (.170-.220)	.400 (.360-.460)	.780 (.700-.860)	1.05 (.960-1.17)	2576
Total population	07-08	.185 (.172-.198)	.180 (.170-.200)	.380 (.360-.400)	.700 (.650-.770)	1.00 (.920-1.12)	2627
Total population	09-10	.179 (.169-.190)	.180 (.170-.200)	.370 (.340-.400)	.690 (.630-.770)	1.03 (.910-1.13)	2848
Age 6-11 years	99-00**	*	.078 (.061-.101)	.141 (.115-.173)	.219 (.178-.233)	.279 (.211-.507)	310
Age 6-11 years	01-02**	.061 (<LOD-.081)	.077 (.067-.092)	.140 (.112-.160)	.219 (.184-.262)	.282 (.260-.326)	368
Age 6-11 years	03-04	.077 (.065-.090)	.080 (.060-.090)	.120 (.100-.160)	.180 (.160-.310)	.310 (.170-.610)	287
Age 6-11 years	05-06	.066 (.056-.078)	.060 (.050-.080)	.110 (.090-.130)	.180 (.130-.240)	.240 (.160-.290)	355
Age 6-11 years	07-08	.064 (.058-.071)	.060 (.050-.070)	.110 (.090-.130)	.180 (.140-.210)	.230 (.180-.310)	394
Age 6-11 years	09-10	.057 (.053-.061)	.060 (.050-.060)	.090 (.080-.100)	.130 (.120-.160)	.170 (.140-.230)	378
Age 12-19 years	99-00**	.092 (.067-.126)	.128 (.107-.148)	.203 (.183-.232)	.329 (.272-.372)	.426 (.366-.596)	648
Age 12-19 years	01-02**	.109 (.087-.136)	.135 (.114-.157)	.210 (.189-.247)	.327 (.289-.366)	.452 (.366-.480)	762
Age 12-19 years	03-04	.121 (.109-.134)	.130 (.110-.150)	.200 (.170-.210)	.300 (.260-.360)	.390 (.330-.490)	724
Age 12-19 years	05-06	.099 (.090-.109)	.110 (.100-.120)	.170 (.150-.190)	.240 (.210-.280)	.310 (.250-.430)	701
Age 12-19 years	07-08	.089 (.080-.100)	.080 (.070-.110)	.160 (.140-.170)	.260 (.200-.300)	.330 (.280-.410)	376
Age 12-19 years	09-10	.081 (.076-.086)	.080 (.070-.080)	.140 (.120-.150)	.220 (.180-.250)	.280 (.240-.300)	451
Age 20+ years	99-00**	.281 (.253-.313)	.306 (.261-.339)	.551 (.510-.623)	.980 (.836-1.13)	1.32 (1.13-1.57)	1299
Age 20+ years	01-02**	.273 (.249-.299)	.280 (.261-.308)	.545 (.493-.607)	.972 (.855-1.06)	1.28 (1.20-1.43)	1560
Age 20+ years	03-04	.260 (.238-.284)	.270 (.240-.300)	.530 (.470-.580)	.890 (.800-.990)	1.25 (1.09-1.46)	1532
Age 20+ years	05-06	.241 (.213-.272)	.250 (.220-.290)	.490 (.440-.560)	.860 (.790-.930)	1.21 (1.06-1.32)	1520
Age 20+ years	07-08	.232 (.215-.251)	.240 (.210-.260)	.450 (.410-.490)	.790 (.730-.870)	1.13 (.990-1.44)	1857
Age 20+ years	09-10	.229 (.213-.245)	.230 (.210-.260)	.430 (.400-.470)	.790 (.700-.910)	1.13 (1.03-1.28)	2019
Males	99-00**	.199 (.165-.241)	.227 (.193-.263)	.462 (.381-.539)	.892 (.748-1.15)	1.41 (.980-1.83)	1121
Males	01-02**	.201 (.177-.229)	.223 (.191-.257)	.445 (.393-.481)	.875 (.741-1.03)	1.22 (1.12-1.38)	1335
Males	03-04	.206 (.190-.222)	.210 (.190-.230)	.440 (.390-.490)	.790 (.700-.870)	1.01 (.890-1.25)	1277
Males	05-06	.195 (.176-.217)	.210 (.190-.230)	.400 (.360-.440)	.800 (.730-.890)	1.17 (1.01-1.30)	1271
Males	07-08	.179 (.162-.197)	.180 (.160-.200)	.360 (.320-.400)	.670 (.540-.780)	.950 (.800-1.16)	1327
Males	09-10	.170 (.157-.185)	.180 (.150-.200)	.350 (.310-.380)	.650 (.560-.700)	.950 (.770-1.14)	1398
Females	99-00**	.187 (.153-.229)	.239 (.220-.255)	.492 (.456-.540)	.818 (.705-.980)	1.10 (1.01-1.19)	1136
Females	01-02**	.219 (.192-.251)	.234 (.202-.265)	.466 (.433-.519)	.817 (.733-.886)	1.17 (.918-1.36)	1355
Females	03-04	.216 (.195-.238)	.210 (.200-.240)	.450 (.400-.530)	.820 (.700-.960)	1.20 (1.02-1.37)	1266
Females	05-06	.188 (.160-.221)	.190 (.160-.220)	.400 (.350-.480)	.750 (.640-.860)	.980 (.830-1.20)	1305
Females	07-08	.191 (.177-.207)	.190 (.170-.200)	.400 (.370-.430)	.740 (.660-.840)	1.09 (.940-1.38)	1300
Females	09-10	.188 (.172-.206)	.200 (.170-.210)	.400 (.360-.440)	.740 (.620-.880)	1.07 (.910-1.31)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.06, 0.06, 0.06, 0.042, 0.042, and 0.042 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**All results are corrected for molybdenum oxide interference in the ICP-MS method.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cadmium_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Cadmium_FactSheet.html

Urinary Cadmium (1999 – 2010)

CAS Number 81271-94-5

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00**	.191 (.157-.233)	.202 (.167-.221)	.447 (.351-.551)	.813 (.686-.977)	1.12 (.886-1.38)	780
Mexican Americans	01-02**	.160 (.135-.189)	.181 (.171-.198)	.322 (.285-.362)	.559 (.430-.733)	.766 (.633-1.15)	683
Mexican Americans	03-04	.175 (.151-.203)	.170 (.150-.210)	.350 (.290-.430)	.680 (.520-.820)	1.04 (.820-1.20)	614
Mexican Americans	05-06	.173 (.152-.196)	.180 (.160-.200)	.340 (.300-.380)	.560 (.500-.630)	.780 (.660-.900)	652
Mexican Americans	07-08	.159 (.139-.181)	.170 (.140-.200)	.320 (.290-.370)	.570 (.510-.620)	.710 (.630-.830)	515
Mexican Americans	09-10	.153 (.136-.173)	.150 (.130-.170)	.300 (.240-.360)	.530 (.440-.680)	.790 (.610-.840)	613
Non-Hispanic blacks	99-00**	.283 (.208-.387)	.316 (.243-.412)	.633 (.498-.806)	1.22 (.892-1.38)	1.48 (1.30-1.72)	546
Non-Hispanic blacks	01-02**	.277 (.229-.336)	.302 (.257-.354)	.589 (.476-.713)	1.04 (.843-1.38)	1.51 (1.28-1.74)	667
Non-Hispanic blacks	03-04	.265 (.237-.295)	.270 (.220-.320)	.550 (.440-.640)	.960 (.810-1.17)	1.52 (1.06-1.82)	717
Non-Hispanic blacks	05-06	.236 (.218-.254)	.240 (.210-.260)	.480 (.420-.530)	.830 (.670-.930)	1.04 (.870-1.26)	692
Non-Hispanic blacks	07-08	.246 (.218-.277)	.260 (.220-.300)	.460 (.420-.530)	.840 (.690-.980)	1.40 (.900-1.85)	589
Non-Hispanic blacks	09-10	.234 (.211-.260)	.240 (.220-.270)	.450 (.410-.540)	.910 (.750-1.06)	1.42 (.990-1.74)	544
Non-Hispanic whites	99-00**	.175 (.148-.206)	.220 (.194-.246)	.455 (.388-.510)	.848 (.714-1.01)	1.17 (.963-1.47)	760
Non-Hispanic whites	01-02**	.204 (.179-.231)	.221 (.191-.255)	.445 (.394-.479)	.817 (.717-.875)	1.17 (.989-1.24)	1132
Non-Hispanic whites	03-04	.209 (.192-.226)	.200 (.190-.220)	.440 (.390-.500)	.790 (.700-.860)	1.13 (.940-1.26)	1070
Non-Hispanic whites	05-06	.185 (.159-.216)	.200 (.160-.230)	.400 (.330-.480)	.780 (.670-.920)	1.05 (.940-1.25)	1041
Non-Hispanic whites	07-08	.177 (.161-.195)	.170 (.150-.190)	.370 (.320-.400)	.690 (.620-.780)	1.00 (.880-1.13)	1095
Non-Hispanic whites	09-10	.171 (.158-.186)	.180 (.150-.200)	.350 (.320-.390)	.680 (.590-.780)	1.05 (.880-1.18)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.06, 0.06, 0.06, 0.042, 0.042, and 0.042 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result

.**All results are corrected for molybdenum oxide interference in the ICP-MS method.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cadmium_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Cadmium_FactSheet.html

Urinary Cadmium (creatinine corrected) (1999 – 2010)

CAS Number 81271-94-5

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00**	.181 (.157-.209)	.219 (.199-.238)	.423 (.391-.446)	.712 (.645-.757)	.941 (.826-1.07)	2257
Total population	01-02**	.199 (.181-.218)	.212 (.194-.232)	.404 (.377-.440)	.690 (.630-.754)	.919 (.813-.998)	2689
Total population	03-04	.210 (.201-.219)	.208 (.189-.226)	.412 (.381-.438)	.678 (.650-.716)	.940 (.833-1.04)	2543
Total population	05-06	.189 (.169-.210)	.180 (.160-.200)	.370 (.310-.430)	.650 (.590-.720)	.910 (.770-1.08)	2576
Total population	07-08	.193 (.177-.210)	.190 (.180-.210)	.370 (.330-.410)	.660 (.580-.740)	.960 (.840-1.06)	2627
Total population	09-10	.191 (.184-.199)	.180 (.170-.190)	.370 (.340-.400)	.680 (.630-.730)	.910 (.840-1.00)	2848
Age 6-11 years	99-00**	*	.085 (.063-.107)	.148 (.123-.182)	.210 (.171-.316)	.316 (.184-.607)	310
Age 6-11 years	01-02**	.075 (<LOD-.094)	.100 (.083-.112)	.166 (.136-.192)	.233 (.206-.281)	.318 (.221-.440)	368
Age 6-11 years	03-04	.090 (.078-.104)	.091 (.075-.104)	.126 (.111-.156)	.200 (.147-.350)	.308 (.178-.415)	287
Age 6-11 years	05-06	.081 (.072-.092)	.080 (.070-.090)	.130 (.110-.140)	.170 (.150-.190)	.200 (.180-.240)	355
Age 6-11 years	07-08	.084 (.076-.092)	.080 (.080-.090)	.120 (.110-.140)	.170 (.150-.240)	.260 (.180-.430)	394
Age 6-11 years	09-10	.077 (.070-.085)	.080 (.070-.090)	.110 (.100-.130)	.160 (.130-.220)	.230 (.140-.280)	378
Age 12-19 years	99-00**	.071 (.051-.098)	.093 (.084-.106)	.147 (.130-.163)	.215 (.204-.240)	.283 (.222-.404)	648
Age 12-19 years	01-02**	.078 (.067-.091)	.091 (.085-.101)	.137 (.123-.143)	.191 (.175-.234)	.280 (.234-.321)	762
Age 12-19 years	03-04	.086 (.077-.096)	.084 (.074-.097)	.122 (.113-.135)	.176 (.154-.198)	.234 (.187-.274)	724
Age 12-19 years	05-06	.076 (.071-.081)	.080 (.070-.090)	.120 (.110-.130)	.150 (.140-.180)	.210 (.160-.240)	701
Age 12-19 years	07-08	.070 (.062-.079)	.070 (.070-.080)	.110 (.100-.110)	.150 (.140-.160)	.180 (.160-.210)	376
Age 12-19 years	09-10	.076 (.068-.084)	.080 (.070-.090)	.120 (.100-.130)	.160 (.140-.180)	.190 (.170-.270)	451
Age 20+ years	99-00**	.267 (.247-.289)	.288 (.261-.304)	.484 (.433-.545)	.769 (.727-.818)	1.07 (.927-1.17)	1299
Age 20+ years	01-02**	.261 (.236-.289)	.273 (.247-.303)	.481 (.426-.518)	.779 (.691-.850)	.979 (.874-1.12)	1559
Age 20+ years	03-04	.268 (.255-.281)	.270 (.247-.292)	.490 (.444-.538)	.767 (.688-.830)	1.02 (.909-1.14)	1532
Age 20+ years	05-06	.240 (.216-.267)	.230 (.200-.260)	.440 (.400-.500)	.730 (.660-.820)	1.02 (.850-1.18)	1520
Age 20+ years	07-08	.247 (.227-.270)	.240 (.220-.270)	.430 (.390-.470)	.740 (.670-.840)	1.05 (.930-1.16)	1857
Age 20+ years	09-10	.242 (.232-.253)	.230 (.220-.250)	.440 (.420-.460)	.760 (.700-.820)	1.01 (.910-1.14)	2019
Males	99-00**	.154 (.131-.182)	.176 (.158-.191)	.329 (.293-.382)	.617 (.537-.700)	.789 (.696-.929)	1121
Males	01-02**	.159 (.143-.177)	.168 (.157-.182)	.335 (.304-.364)	.536 (.491-.653)	.757 (.690-.856)	1334
Males	03-04	.173 (.161-.187)	.162 (.143-.185)	.325 (.300-.352)	.591 (.560-.631)	.740 (.678-.795)	1277
Males	05-06	.160 (.145-.177)	.150 (.130-.160)	.300 (.260-.340)	.620 (.560-.670)	.820 (.710-.990)	1271
Males	07-08	.160 (.146-.175)	.160 (.140-.180)	.290 (.260-.330)	.520 (.440-.650)	.740 (.600-.960)	1327
Males	09-10	.155 (.149-.161)	.140 (.140-.160)	.280 (.250-.300)	.540 (.510-.600)	.800 (.670-.900)	1398
Females	99-00**	.211 (.170-.261)	.267 (.239-.308)	.473 (.423-.551)	.783 (.690-.917)	1.09 (.813-1.38)	1136
Females	01-02**	.245 (.216-.278)	.263 (.228-.297)	.479 (.414-.541)	.792 (.687-.884)	.985 (.876-1.16)	1355
Females	03-04	.252 (.238-.266)	.253 (.227-.288)	.487 (.438-.533)	.802 (.716-.906)	1.06 (.940-1.21)	1266
Females	05-06	.220 (.193-.252)	.220 (.180-.250)	.420 (.370-.470)	.690 (.590-.850)	.990 (.780-1.31)	1305
Females	07-08	.231 (.210-.254)	.230 (.200-.270)	.440 (.390-.480)	.770 (.700-.860)	1.08 (.970-1.16)	1300
Females	09-10	.233 (.218-.248)	.240 (.220-.260)	.450 (.420-.490)	.770 (.680-.860)	1.09 (.910-1.19)	1450

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**All results are corrected for molybdenum oxide interference in the ICP-MS method.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cadmium_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Cadmium_FactSheet.html

Urinary Cadmium (creatinine corrected) (1999 – 2010)

CAS Number 81271-94-5

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00**	.175 (.137-.223)	.181 (.144-.225)	.331 (.266-.418)	.622 (.441-.828)	.856 (.674-1.13)	780
Mexican Americans	01-02**	.156 (.136-.178)	.170 (.150-.184)	.282 (.263-.340)	.501 (.388-.614)	.693 (.507-.839)	682
Mexican Americans	03-04	.163 (.147-.181)	.159 (.140-.183)	.296 (.256-.311)	.531 (.418-.667)	.718 (.562-.950)	614
Mexican Americans	05-06	.162 (.146-.181)	.150 (.140-.170)	.280 (.220-.340)	.480 (.430-.510)	.570 (.520-.640)	652
Mexican Americans	07-08	.159 (.141-.178)	.160 (.130-.180)	.270 (.220-.330)	.480 (.370-.620)	.720 (.520-.950)	515
Mexican Americans	09-10	.161 (.149-.173)	.150 (.130-.170)	.280 (.240-.320)	.510 (.410-.630)	.720 (.540-.890)	613
Non-Hispanic blacks	99-00**	.183 (.140-.240)	.202 (.168-.241)	.414 (.343-.472)	.663 (.516-.827)	.873 (.722-.962)	546
Non-Hispanic blacks	01-02**	.190 (.156-.232)	.196 (.174-.225)	.387 (.336-.449)	.686 (.559-.850)	.917 (.725-1.08)	667
Non-Hispanic blacks	03-04	.190 (.173-.210)	.185 (.168-.207)	.338 (.288-.431)	.700 (.500-.818)	.865 (.708-1.10)	717
Non-Hispanic blacks	05-06	.171 (.159-.183)	.160 (.140-.180)	.320 (.290-.370)	.550 (.500-.580)	.700 (.610-.730)	692
Non-Hispanic blacks	07-08	.180 (.164-.197)	.170 (.160-.190)	.330 (.290-.390)	.600 (.470-.700)	.770 (.690-.900)	589
Non-Hispanic blacks	09-10	.186 (.170-.203)	.180 (.160-.200)	.360 (.310-.430)	.680 (.570-.760)	.860 (.740-1.04)	544
Non-Hispanic whites	99-00**	.175 (.146-.209)	.219 (.191-.250)	.432 (.387-.470)	.729 (.666-.783)	1.00 (.826-1.16)	760
Non-Hispanic whites	01-02**	.205 (.184-.229)	.224 (.208-.242)	.421 (.382-.470)	.719 (.668-.784)	.931 (.806-1.05)	1132
Non-Hispanic whites	03-04	.220 (.207-.235)	.221 (.197-.253)	.434 (.398-.476)	.687 (.647-.767)	1.00 (.830-1.08)	1070
Non-Hispanic whites	05-06	.193 (.169-.221)	.180 (.160-.220)	.390 (.310-.480)	.680 (.630-.750)	.930 (.800-1.07)	1041
Non-Hispanic whites	07-08	.199 (.178-.222)	.200 (.180-.230)	.380 (.340-.440)	.700 (.630-.810)	1.03 (.880-1.13)	1095
Non-Hispanic whites	09-10	.192 (.183-.201)	.180 (.170-.200)	.390 (.340-.420)	.700 (.630-.760)	.910 (.840-1.02)	1225

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**All results are corrected for molybdenum oxide interference in the ICP-MS method.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cadmium_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Cadmium_FactSheet.html

Urinary Cesium (1999 – 2010)

CAS Number 7440-46-2

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	4.35 (4.00-4.74)	4.90 (4.40-5.40)	7.10 (6.60-7.70)	9.60 (8.80-10.3)	11.5 (10.2-13.0)	2464
Total population	01-02	4.81 (4.40-5.26)	5.49 (5.12-5.90)	7.91 (7.47-8.39)	10.4 (9.56-11.4)	12.6 (11.1-13.8)	2690
Total population	03-04	4.67 (4.39-4.97)	5.14 (4.84-5.49)	7.68 (7.20-8.21)	10.6 (9.55-11.4)	12.7 (11.5-13.9)	2558
Total population	05-06	4.69 (4.41-4.98)	5.19 (4.91-5.43)	7.68 (7.21-8.09)	10.1 (9.65-10.9)	12.6 (12.0-13.4)	2576
Total population	07-08	4.42 (4.25-4.60)	4.90 (4.64-5.12)	7.02 (6.79-7.38)	9.46 (9.04-9.86)	11.3 (10.5-11.8)	2627
Total population	09-10	4.06 (3.87-4.26)	4.47 (4.22-4.66)	6.54 (6.35-6.75)	8.98 (8.25-9.68)	11.0 (10.1-11.6)	2848
Age 6-11 years	99-00	4.87 (4.08-5.81)	5.70 (4.60-6.70)	7.30 (6.70-8.00)	9.00 (7.90-10.1)	9.70 (9.00-10.8)	340
Age 6-11 years	01-02	4.87 (4.08-5.82)	5.64 (4.69-6.56)	7.96 (6.77-8.84)	9.88 (8.64-10.6)	11.1 (10.2-12.4)	368
Age 6-11 years	03-04	5.21 (4.74-5.71)	5.50 (4.76-6.37)	8.08 (7.10-8.83)	11.5 (8.86-12.9)	12.9 (10.8-13.6)	290
Age 6-11 years	05-06	4.74 (4.31-5.21)	5.38 (4.67-5.60)	7.00 (6.38-7.50)	9.30 (8.60-9.95)	11.2 (9.62-12.9)	355
Age 6-11 years	07-08	4.58 (4.22-4.96)	5.10 (4.50-5.44)	6.91 (6.45-7.47)	8.25 (7.77-8.93)	9.88 (8.47-10.9)	394
Age 6-11 years	09-10	4.21 (3.84-4.62)	4.58 (4.01-5.12)	6.68 (6.25-6.98)	8.28 (7.47-9.11)	9.56 (8.68-11.9)	378
Age 12-19 years	99-00	4.55 (4.09-5.05)	5.20 (4.40-5.60)	6.90 (6.10-7.80)	8.80 (8.10-9.50)	10.7 (8.90-12.5)	718
Age 12-19 years	01-02	5.22 (4.57-5.95)	5.62 (5.16-6.12)	7.55 (7.13-8.04)	9.77 (9.12-11.1)	12.0 (10.0-15.0)	762
Age 12-19 years	03-04	5.04 (4.59-5.54)	5.70 (5.16-6.07)	7.53 (6.91-8.37)	9.71 (8.80-10.4)	11.6 (9.92-13.2)	725
Age 12-19 years	05-06	4.76 (4.24-5.34)	5.27 (4.80-5.74)	7.50 (6.71-8.04)	9.60 (8.52-10.5)	10.6 (9.68-11.8)	701
Age 12-19 years	07-08	4.58 (4.10-5.13)	5.14 (4.30-5.76)	6.93 (6.33-7.37)	9.20 (7.67-9.91)	10.6 (8.91-15.1)	376
Age 12-19 years	09-10	3.70 (3.39-4.02)	4.11 (3.54-4.70)	6.17 (5.72-6.47)	8.20 (7.16-8.79)	9.52 (8.66-10.6)	451
Age 20+ years	99-00	4.26 (3.94-4.62)	4.80 (4.40-5.30)	7.10 (6.50-7.60)	9.80 (8.90-10.7)	11.7 (10.2-13.4)	1406
Age 20+ years	01-02	4.74 (4.32-5.20)	5.43 (5.05-5.87)	7.97 (7.43-8.52)	10.6 (9.73-11.5)	12.9 (11.2-14.2)	1560
Age 20+ years	03-04	4.56 (4.23-4.90)	5.03 (4.60-5.42)	7.66 (7.01-8.34)	10.7 (9.40-11.5)	12.9 (11.5-14.9)	1543
Age 20+ years	05-06	4.67 (4.38-4.99)	5.14 (4.84-5.44)	7.77 (7.32-8.30)	10.4 (9.72-11.5)	13.2 (12.4-13.9)	1520
Age 20+ years	07-08	4.38 (4.20-4.58)	4.79 (4.59-4.99)	7.12 (6.81-7.52)	9.69 (9.23-10.2)	11.4 (10.6-12.0)	1857
Age 20+ years	09-10	4.10 (3.88-4.34)	4.49 (4.21-4.71)	6.57 (6.33-6.84)	9.26 (8.37-10.1)	11.1 (10.3-11.9)	2019
Males	99-00	4.84 (4.35-5.38)	5.50 (4.60-6.00)	7.50 (7.00-8.20)	9.70 (8.80-11.3)	11.7 (10.3-13.0)	1226
Males	01-02	5.34 (4.89-5.84)	6.13 (5.61-6.64)	8.27 (7.84-9.08)	10.8 (10.1-12.1)	12.8 (11.3-15.0)	1335
Males	03-04	5.03 (4.73-5.36)	5.59 (5.17-6.00)	7.98 (7.31-8.63)	11.0 (9.53-11.8)	12.9 (11.5-16.1)	1281
Males	05-06	5.13 (4.78-5.51)	5.37 (5.03-5.71)	7.92 (7.61-8.41)	10.9 (9.96-11.6)	13.2 (12.4-13.9)	1271
Males	07-08	4.77 (4.59-4.96)	5.26 (4.98-5.43)	7.18 (6.93-7.54)	9.68 (8.93-10.6)	11.6 (10.6-12.6)	1327
Males	09-10	4.27 (4.00-4.55)	4.70 (4.46-5.00)	6.57 (6.39-6.81)	8.67 (7.91-9.57)	10.7 (9.66-11.3)	1398
Females	99-00	3.95 (3.63-4.29)	4.50 (4.20-4.90)	6.70 (6.20-7.30)	9.10 (8.30-10.0)	11.2 (9.90-12.9)	1238
Females	01-02	4.36 (3.95-4.81)	4.87 (4.45-5.25)	7.33 (6.71-8.01)	9.77 (9.07-11.0)	12.4 (10.4-13.8)	1355
Females	03-04	4.35 (4.03-4.70)	4.79 (4.25-5.26)	7.30 (6.87-7.81)	10.2 (9.40-11.0)	12.1 (11.2-13.6)	1277
Females	05-06	4.30 (3.98-4.65)	4.89 (4.58-5.25)	7.43 (6.99-7.83)	9.79 (9.30-10.5)	12.1 (10.6-13.1)	1305
Females	07-08	4.12 (3.88-4.37)	4.40 (4.17-4.74)	6.84 (6.32-7.36)	9.31 (8.69-9.76)	10.5 (9.93-11.7)	1300
Females	09-10	3.88 (3.63-4.14)	4.13 (3.83-4.55)	6.46 (5.95-6.90)	9.29 (8.62-10.0)	11.2 (10.3-12.1)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.14, 0.14, 0.2, 0.066, 0.066, and 0.066 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cesium_BiomonitoringSummary.html

Urinary Cesium (1999 – 2010)

CAS Number 7440-46-2

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	4.32 (3.82-4.89)	4.80 (4.30-5.20)	6.70 (6.40-7.20)	9.10 (8.00-9.90)	11.1 (9.60-12.7)	884
Mexican Americans	01-02	4.63 (4.10-5.24)	5.29 (4.59-5.89)	7.08 (6.42-7.99)	9.13 (7.86-11.3)	11.3 (8.81-14.9)	683
Mexican Americans	03-04	4.94 (4.64-5.27)	5.62 (5.01-6.09)	7.86 (7.15-8.46)	10.3 (8.99-11.3)	11.9 (10.7-14.7)	618
Mexican Americans	05-06	4.64 (4.41-4.88)	5.18 (4.91-5.55)	7.29 (6.74-7.73)	9.52 (8.76-9.98)	11.5 (9.88-11.9)	652
Mexican Americans	07-08	4.50 (4.06-4.99)	4.93 (4.40-5.56)	6.98 (6.38-7.49)	9.12 (8.25-9.82)	10.8 (9.45-12.1)	515
Mexican Americans	09-10	4.20 (3.95-4.48)	4.47 (4.16-4.87)	6.49 (6.00-7.01)	8.64 (7.81-9.40)	10.2 (9.15-11.4)	613
Non-Hispanic blacks	99-00	4.94 (4.33-5.64)	5.40 (4.80-6.40)	7.50 (6.90-8.40)	9.80 (8.80-10.8)	11.6 (9.80-13.1)	568
Non-Hispanic blacks	01-02	4.93 (4.70-5.17)	5.33 (5.05-5.64)	7.36 (6.97-7.59)	9.44 (8.71-9.68)	10.7 (10.1-12.3)	667
Non-Hispanic blacks	03-04	4.71 (4.47-4.97)	5.12 (4.71-5.49)	7.17 (6.72-7.60)	9.13 (8.52-9.99)	10.7 (9.99-11.4)	723
Non-Hispanic blacks	05-06	4.78 (4.42-5.18)	5.26 (5.03-5.44)	7.20 (6.63-7.66)	9.14 (8.26-10.6)	11.0 (9.63-13.7)	692
Non-Hispanic blacks	07-08	4.64 (4.29-5.01)	4.90 (4.48-5.31)	6.90 (6.35-7.42)	9.39 (8.29-10.3)	11.3 (9.59-12.6)	589
Non-Hispanic blacks	09-10	4.07 (3.82-4.35)	4.68 (4.29-4.84)	6.56 (6.19-7.01)	8.98 (8.12-9.31)	9.97 (9.27-11.3)	544
Non-Hispanic whites	99-00	4.25 (3.83-4.72)	4.80 (4.20-5.50)	7.20 (6.60-7.90)	9.70 (8.90-10.7)	11.8 (10.3-13.3)	821
Non-Hispanic whites	01-02	4.77 (4.27-5.32)	5.49 (4.99-6.05)	7.98 (7.45-8.61)	10.4 (9.54-11.4)	12.6 (11.0-13.8)	1132
Non-Hispanic whites	03-04	4.56 (4.22-4.94)	5.02 (4.59-5.42)	7.60 (7.00-8.23)	10.7 (9.26-11.8)	12.9 (11.5-14.7)	1074
Non-Hispanic whites	05-06	4.64 (4.25-5.05)	5.19 (4.76-5.49)	7.77 (7.18-8.46)	10.3 (9.62-11.5)	13.1 (12.1-13.9)	1041
Non-Hispanic whites	07-08	4.29 (4.07-4.53)	4.76 (4.48-5.08)	7.02 (6.67-7.49)	9.50 (8.91-9.93)	11.3 (10.3-12.2)	1095
Non-Hispanic whites	09-10	3.96 (3.73-4.20)	4.38 (4.10-4.64)	6.43 (6.15-6.63)	8.62 (7.86-9.29)	10.5 (9.35-11.5)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.14, 0.14, 0.2, 0.066, 0.066, and 0.066 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cesium_BiomonitoringSummary.html

Urinary Cesium (creatinine corrected) (1999 – 2010)

CAS Number 7440-46-2

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	4.10 (3.96-4.25)	4.13 (3.97-4.27)	5.41 (5.21-5.70)	7.14 (6.83-7.50)	8.64 (8.00-9.30)	2464
Total population	01-02	4.54 (4.30-4.79)	4.44 (4.20-4.64)	6.06 (5.66-6.47)	8.18 (7.62-8.95)	10.2 (8.84-11.7)	2689
Total population	03-04	4.64 (4.42-4.87)	4.42 (4.21-4.74)	6.11 (5.76-6.48)	8.51 (7.99-9.15)	10.6 (9.75-11.0)	2558
Total population	05-06	4.62 (4.37-4.88)	4.51 (4.20-4.76)	6.19 (5.90-6.55)	8.84 (8.14-9.24)	10.8 (9.71-12.1)	2576
Total population	07-08	4.62 (4.42-4.82)	4.58 (4.36-4.79)	6.23 (5.96-6.61)	8.67 (7.79-9.52)	10.6 (9.78-11.2)	2627
Total population	09-10	4.33 (4.17-4.49)	4.28 (4.12-4.45)	6.00 (5.70-6.23)	8.06 (7.76-8.36)	9.75 (9.05-10.4)	2848
Age 6-11 years	99-00	5.34 (5.03-5.67)	5.42 (5.03-6.04)	6.63 (6.18-7.13)	8.23 (7.13-9.41)	9.90 (7.88-10.1)	340
Age 6-11 years	01-02	5.95 (5.48-6.46)	5.91 (5.43-6.53)	7.77 (7.00-8.28)	9.27 (8.35-11.9)	11.9 (9.38-12.3)	368
Age 6-11 years	03-04	6.07 (5.63-6.53)	6.02 (5.45-6.49)	8.30 (7.16-8.99)	10.8 (9.15-11.8)	11.9 (10.3-15.8)	290
Age 6-11 years	05-06	5.85 (5.41-6.34)	5.74 (5.21-6.41)	7.65 (6.67-9.11)	10.1 (9.38-10.8)	11.6 (10.1-14.9)	355
Age 6-11 years	07-08	5.96 (5.53-6.43)	6.12 (5.79-6.55)	7.88 (7.33-8.53)	10.7 (8.91-12.1)	12.5 (10.9-14.1)	394
Age 6-11 years	09-10	5.74 (5.30-6.22)	5.58 (5.15-6.12)	7.16 (6.71-7.87)	9.19 (8.13-10.4)	12.2 (8.69-14.8)	378
Age 12-19 years	99-00	3.43 (3.29-3.58)	3.54 (3.29-3.68)	4.35 (4.17-4.56)	5.31 (4.97-5.79)	6.67 (5.33-8.09)	718
Age 12-19 years	01-02	3.73 (3.41-4.08)	3.55 (3.36-3.74)	4.74 (4.40-5.14)	6.10 (5.35-7.63)	8.08 (6.44-9.82)	762
Age 12-19 years	03-04	3.60 (3.37-3.85)	3.51 (3.33-3.72)	4.53 (4.24-4.87)	6.08 (5.14-6.94)	7.27 (6.13-9.07)	725
Age 12-19 years	05-06	3.66 (3.40-3.93)	3.59 (3.40-3.83)	4.76 (4.30-5.20)	5.93 (5.62-6.62)	7.62 (6.03-8.07)	701
Age 12-19 years	07-08	3.58 (3.31-3.88)	3.70 (3.22-3.96)	4.98 (4.60-5.17)	6.36 (5.38-7.28)	7.93 (6.06-9.76)	376
Age 12-19 years	09-10	3.46 (3.27-3.65)	3.48 (3.23-3.74)	4.39 (4.16-4.70)	5.54 (5.01-6.32)	6.56 (5.95-7.35)	451
Age 20+ years	99-00	4.08 (3.88-4.29)	4.06 (3.85-4.29)	5.39 (5.04-5.85)	7.17 (6.84-7.58)	8.61 (7.91-9.30)	1406
Age 20+ years	01-02	4.54 (4.30-4.78)	4.43 (4.20-4.59)	5.94 (5.64-6.40)	8.15 (7.46-8.97)	10.2 (8.74-11.7)	1559
Age 20+ years	03-04	4.68 (4.46-4.91)	4.47 (4.27-4.80)	6.11 (5.83-6.43)	8.47 (7.76-9.17)	10.5 (9.68-11.2)	1543
Age 20+ years	05-06	4.67 (4.42-4.93)	4.54 (4.25-4.78)	6.24 (5.93-6.66)	8.92 (8.29-9.31)	11.2 (9.71-12.7)	1520
Age 20+ years	07-08	4.67 (4.46-4.88)	4.58 (4.34-4.82)	6.19 (5.93-6.61)	8.65 (7.79-9.52)	10.6 (9.68-11.3)	1857
Age 20+ years	09-10	4.34 (4.17-4.53)	4.28 (4.10-4.49)	6.07 (5.70-6.33)	8.20 (7.81-8.65)	9.80 (9.05-11.1)	2019
Males	99-00	3.78 (3.65-3.91)	3.78 (3.61-3.96)	4.96 (4.72-5.20)	6.50 (6.18-6.70)	7.71 (7.01-8.64)	1226
Males	01-02	4.22 (3.96-4.51)	4.10 (3.87-4.41)	5.60 (5.27-6.03)	7.67 (6.90-8.48)	9.46 (8.22-11.5)	1334
Males	03-04	4.24 (3.99-4.50)	4.12 (3.89-4.37)	5.66 (5.19-6.06)	7.66 (6.90-8.40)	9.00 (8.36-10.3)	1281
Males	05-06	4.21 (3.94-4.50)	4.11 (3.72-4.46)	5.75 (5.14-6.11)	7.68 (6.91-8.78)	9.33 (8.84-9.84)	1271
Males	07-08	4.27 (4.04-4.51)	4.19 (4.02-4.42)	5.81 (5.46-6.29)	7.84 (7.20-8.65)	9.61 (8.65-10.2)	1327
Males	09-10	3.89 (3.70-4.09)	3.85 (3.60-4.06)	5.29 (4.89-5.69)	7.02 (6.76-7.42)	8.38 (7.87-9.18)	1398
Females	99-00	4.43 (4.20-4.68)	4.45 (4.14-4.77)	5.92 (5.36-6.47)	7.70 (7.16-8.07)	9.41 (8.00-10.4)	1238
Females	01-02	4.86 (4.58-5.16)	4.72 (4.50-5.06)	6.54 (5.93-7.00)	8.50 (7.84-9.79)	10.3 (8.95-12.2)	1355
Females	03-04	5.05 (4.77-5.35)	4.77 (4.44-5.14)	6.58 (6.14-7.22)	9.43 (8.56-10.5)	11.3 (10.7-12.3)	1277
Females	05-06	5.05 (4.78-5.33)	4.86 (4.57-5.17)	6.72 (6.31-7.23)	9.65 (9.23-10.3)	12.6 (11.0-13.3)	1305
Females	07-08	4.98 (4.76-5.20)	4.90 (4.69-5.20)	6.72 (6.20-7.06)	9.50 (8.37-10.5)	11.3 (10.7-12.1)	1300
Females	09-10	4.79 (4.63-4.97)	4.69 (4.50-4.93)	6.57 (6.34-6.85)	8.88 (8.36-9.33)	10.5 (9.56-12.0)	1450

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cesium_BiomonitoringSummary.html

Urinary Cesium (creatinine corrected) (1999 – 2010)

CAS Number 7440-46-2

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	3.99 (3.73-4.25)	3.95 (3.65-4.17)	5.09 (4.79-5.39)	6.65 (6.08-7.10)	7.98 (7.20-8.95)	884
Mexican Americans	01-02	4.51 (4.00-5.08)	4.51 (3.82-4.95)	5.91 (5.31-6.64)	7.77 (6.60-10.0)	10.0 (7.60-20.5)	682
Mexican Americans	03-04	4.58 (4.16-5.05)	4.51 (4.10-4.92)	5.74 (5.42-6.09)	7.53 (6.59-8.91)	9.44 (8.24-10.6)	618
Mexican Americans	05-06	4.36 (4.10-4.64)	4.40 (3.97-4.73)	5.69 (5.24-6.22)	7.23 (6.69-7.80)	8.14 (7.65-9.33)	652
Mexican Americans	07-08	4.50 (4.22-4.79)	4.39 (3.96-4.86)	6.07 (5.57-6.59)	7.63 (7.30-7.89)	9.06 (7.89-10.5)	515
Mexican Americans	09-10	4.41 (4.17-4.65)	4.38 (4.04-4.59)	5.70 (5.34-6.07)	7.68 (7.17-8.24)	8.89 (8.50-9.52)	613
Non-Hispanic blacks	99-00	3.21 (2.90-3.56)	3.26 (3.05-3.44)	4.30 (4.00-4.55)	5.50 (5.00-5.98)	6.33 (5.91-7.04)	568
Non-Hispanic blacks	01-02	3.38 (3.19-3.57)	3.35 (3.05-3.60)	4.41 (4.15-4.78)	5.87 (5.63-6.29)	6.75 (6.41-7.03)	667
Non-Hispanic blacks	03-04	3.38 (3.21-3.56)	3.30 (3.08-3.50)	4.31 (4.02-4.62)	5.79 (5.12-6.47)	6.98 (6.38-7.18)	723
Non-Hispanic blacks	05-06	3.47 (3.34-3.60)	3.40 (3.21-3.60)	4.47 (4.25-4.68)	5.94 (5.52-6.31)	6.95 (6.20-7.51)	692
Non-Hispanic blacks	07-08	3.39 (3.21-3.58)	3.33 (3.18-3.54)	4.50 (4.21-4.78)	5.84 (5.41-6.18)	6.87 (5.94-7.58)	589
Non-Hispanic blacks	09-10	3.23 (3.05-3.42)	3.20 (2.99-3.46)	4.31 (4.12-4.59)	5.88 (5.30-6.28)	6.69 (6.32-7.89)	544
Non-Hispanic whites	99-00	4.26 (4.07-4.47)	4.28 (4.05-4.50)	5.66 (5.26-6.05)	7.27 (6.84-7.83)	8.75 (7.93-9.38)	821
Non-Hispanic whites	01-02	4.81 (4.55-5.08)	4.63 (4.42-4.96)	6.33 (5.91-6.68)	8.46 (7.84-9.39)	10.3 (9.04-11.8)	1132
Non-Hispanic whites	03-04	4.81 (4.52-5.12)	4.56 (4.31-4.98)	6.28 (5.95-6.71)	8.63 (7.99-9.28)	10.6 (9.43-11.0)	1074
Non-Hispanic whites	05-06	4.82 (4.50-5.17)	4.68 (4.32-5.04)	6.41 (6.00-6.81)	9.18 (8.67-9.53)	11.0 (9.71-12.7)	1041
Non-Hispanic whites	07-08	4.81 (4.54-5.09)	4.73 (4.42-5.12)	6.43 (6.01-6.80)	9.24 (8.20-9.82)	11.0 (10.2-11.7)	1095
Non-Hispanic whites	09-10	4.42 (4.23-4.63)	4.36 (4.15-4.54)	6.16 (5.82-6.51)	8.13 (7.68-8.65)	9.83 (8.79-11.4)	1225

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cesium_BiomonitoringSummary.html

Urinary Cobalt (1999 – 2010)

CAS Number 7440-48-4

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.375 (.336-.419)	.410 (.370-.450)	.630 (.570-.680)	.950 (.890-1.03)	1.32 (1.16-1.48)	2465
Total population	01-02	.379 (.355-.404)	.410 (.380-.430)	.610 (.570-.660)	.940 (.870-1.00)	1.28 (1.15-1.44)	2690
Total population	03-04	.316 (.291-.343)	.330 (.300-.350)	.520 (.490-.550)	.820 (.750-.890)	1.16 (1.08-1.26)	2558
Total population	05-06	.374 (.357-.392)	.390 (.370-.410)	.600 (.560-.630)	.880 (.840-.950)	1.33 (1.17-1.47)	2576
Total population	07-08	.369 (.351-.389)	.380 (.360-.390)	.580 (.550-.600)	.920 (.840-1.01)	1.32 (1.10-1.43)	2627
Total population	09-10	.369 (.341-.398)	.380 (.350-.400)	.600 (.560-.650)	.960 (.870-1.06)	1.40 (1.20-1.58)	2848
Age 6-11 years	99-00	.499 (.427-.583)	.530 (.450-.640)	.750 (.610-.900)	1.03 (.880-1.12)	1.22 (1.03-1.50)	340
Age 6-11 years	01-02	.452 (.377-.543)	.520 (.430-.610)	.710 (.670-.810)	1.07 (.940-1.21)	1.32 (1.17-1.53)	368
Age 6-11 years	03-04	.454 (.393-.523)	.460 (.410-.520)	.750 (.590-.900)	1.24 (.910-1.47)	1.68 (1.26-1.81)	290
Age 6-11 years	05-06	.424 (.383-.468)	.450 (.410-.490)	.660 (.580-.710)	.870 (.830-1.04)	1.16 (.910-1.39)	355
Age 6-11 years	07-08	.433 (.367-.509)	.450 (.360-.550)	.700 (.560-.810)	.960 (.790-1.28)	1.40 (.880-1.82)	394
Age 6-11 years	09-10	.424 (.379-.474)	.440 (.400-.490)	.670 (.610-.740)	.960 (.850-1.10)	1.14 (1.01-1.69)	378
Age 12-19 years	99-00	.519 (.463-.581)	.520 (.490-.570)	.820 (.670-.890)	1.17 (1.01-1.47)	1.52 (1.26-2.56)	719
Age 12-19 years	01-02	.515 (.469-.564)	.520 (.480-.570)	.750 (.690-.840)	1.24 (1.07-1.32)	1.59 (1.37-1.99)	762
Age 12-19 years	03-04	.461 (.428-.496)	.480 (.450-.520)	.740 (.650-.800)	1.03 (.940-1.23)	1.60 (1.14-1.92)	725
Age 12-19 years	05-06	.510 (.451-.577)	.500 (.460-.570)	.820 (.690-.980)	1.30 (1.08-1.40)	1.74 (1.39-2.08)	701
Age 12-19 years	07-08	.529 (.478-.585)	.510 (.450-.570)	.820 (.690-.960)	1.36 (1.09-1.53)	1.70 (1.40-1.78)	376
Age 12-19 years	09-10	.465 (.406-.533)	.460 (.430-.530)	.830 (.710-.920)	1.21 (1.05-1.51)	1.56 (1.19-2.11)	451
Age 20+ years	99-00	.343 (.305-.386)	.370 (.330-.420)	.570 (.520-.640)	.880 (.810-.980)	1.28 (1.07-1.39)	1406
Age 20+ years	01-02	.352 (.333-.373)	.380 (.350-.410)	.560 (.520-.590)	.860 (.800-.930)	1.15 (1.04-1.42)	1560
Age 20+ years	03-04	.285 (.259-.313)	.300 (.270-.330)	.460 (.410-.510)	.690 (.660-.730)	1.06 (.890-1.14)	1543
Age 20+ years	05-06	.351 (.332-.371)	.370 (.350-.390)	.550 (.520-.600)	.810 (.760-.880)	1.30 (1.05-1.47)	1520
Age 20+ years	07-08	.343 (.326-.362)	.350 (.340-.370)	.530 (.500-.560)	.830 (.750-.920)	1.20 (1.00-1.38)	1857
Age 20+ years	09-10	.351 (.322-.382)	.350 (.330-.380)	.570 (.520-.630)	.890 (.800-1.02)	1.35 (1.12-1.58)	2019
Males	99-00	.371 (.331-.416)	.410 (.370-.450)	.580 (.540-.640)	.820 (.740-.900)	1.01 (.900-1.12)	1227
Males	01-02	.367 (.338-.399)	.390 (.360-.420)	.550 (.520-.600)	.790 (.740-.850)	1.05 (.960-1.14)	1335
Males	03-04	.294 (.270-.319)	.320 (.290-.340)	.480 (.440-.500)	.670 (.620-.710)	.870 (.790-.920)	1281
Males	05-06	.369 (.354-.383)	.380 (.370-.400)	.540 (.510-.570)	.760 (.690-.850)	1.06 (.910-1.27)	1271
Males	07-08	.350 (.330-.371)	.370 (.350-.390)	.530 (.500-.560)	.750 (.690-.820)	1.00 (.860-1.14)	1327
Males	09-10	.336 (.307-.368)	.360 (.330-.380)	.530 (.480-.570)	.750 (.690-.850)	.960 (.850-1.12)	1398
Females	99-00	.379 (.333-.431)	.410 (.340-.460)	.680 (.590-.790)	1.17 (.930-1.36)	1.50 (1.28-2.05)	1238
Females	01-02	.390 (.364-.417)	.430 (.400-.450)	.670 (.620-.700)	1.06 (.980-1.16)	1.46 (1.22-1.81)	1355
Females	03-04	.339 (.308-.372)	.340 (.310-.370)	.580 (.540-.610)	1.04 (.900-1.13)	1.47 (1.33-1.73)	1277
Females	05-06	.379 (.351-.409)	.410 (.370-.440)	.660 (.620-.700)	1.04 (.900-1.21)	1.54 (1.30-1.93)	1305
Females	07-08	.389 (.367-.411)	.390 (.360-.410)	.650 (.590-.690)	1.08 (.980-1.26)	1.43 (1.34-1.62)	1300
Females	09-10	.403 (.364-.447)	.400 (.360-.440)	.700 (.640-.770)	1.19 (1.05-1.36)	1.68 (1.51-2.11)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.07, 0.07, 0.08, 0.041, 0.041, and 0.041 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cobalt_BiomonitoringSummary.html

Urinary Cobalt (1999 – 2010)

CAS Number 7440-48-4

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.418 (.348-.502)	.470 (.370-.530)	.670 (.630-.770)	1.05 (.950-1.19)	1.47 (1.25-1.67)	884
Mexican Americans	01-02	.398 (.373-.424)	.430 (.410-.450)	.650 (.600-.710)	.950 (.850-1.03)	1.20 (1.06-1.48)	683
Mexican Americans	03-04	.374 (.350-.398)	.350 (.340-.390)	.580 (.530-.620)	1.09 (.920-1.16)	1.33 (1.16-1.73)	618
Mexican Americans	05-06	.437 (.404-.473)	.450 (.420-.500)	.680 (.620-.720)	1.11 (.940-1.30)	1.58 (1.33-1.79)	652
Mexican Americans	07-08	.396 (.349-.450)	.400 (.330-.480)	.610 (.560-.710)	.980 (.870-1.08)	1.26 (1.05-1.69)	515
Mexican Americans	09-10	.378 (.351-.407)	.380 (.360-.410)	.590 (.560-.640)	.920 (.860-1.04)	1.24 (1.04-1.58)	613
Non-Hispanic blacks	99-00	.434 (.405-.465)	.430 (.390-.470)	.680 (.620-.760)	1.17 (1.04-1.26)	1.45 (1.23-2.04)	568
Non-Hispanic blacks	01-02	.435 (.388-.487)	.420 (.380-.460)	.650 (.540-.810)	1.16 (.850-1.64)	1.75 (1.32-2.22)	667
Non-Hispanic blacks	03-04	.380 (.348-.414)	.380 (.360-.410)	.600 (.540-.680)	1.01 (.890-1.09)	1.28 (1.01-2.03)	723
Non-Hispanic blacks	05-06	.412 (.374-.453)	.410 (.360-.440)	.600 (.560-.670)	.930 (.830-1.11)	1.47 (1.12-2.00)	692
Non-Hispanic blacks	07-08	.403 (.367-.443)	.390 (.360-.420)	.620 (.560-.740)	1.06 (.880-1.31)	1.57 (1.22-1.86)	589
Non-Hispanic blacks	09-10	.368 (.335-.403)	.380 (.340-.400)	.590 (.520-.650)	.990 (.870-1.15)	1.47 (1.20-1.58)	544
Non-Hispanic whites	99-00	.369 (.316-.431)	.410 (.350-.460)	.630 (.550-.700)	.930 (.830-1.08)	1.29 (1.02-1.65)	822
Non-Hispanic whites	01-02	.359 (.327-.394)	.390 (.360-.430)	.590 (.520-.660)	.870 (.800-.950)	1.16 (1.04-1.32)	1132
Non-Hispanic whites	03-04	.301 (.270-.334)	.310 (.280-.340)	.500 (.460-.540)	.760 (.690-.850)	1.09 (.950-1.26)	1074
Non-Hispanic whites	05-06	.361 (.340-.384)	.380 (.360-.410)	.580 (.530-.630)	.860 (.800-.940)	1.30 (1.06-1.50)	1041
Non-Hispanic whites	07-08	.358 (.338-.379)	.370 (.350-.390)	.560 (.520-.600)	.900 (.780-1.00)	1.32 (1.02-1.46)	1095
Non-Hispanic whites	09-10	.369 (.335-.408)	.370 (.350-.400)	.600 (.540-.660)	.970 (.850-1.10)	1.40 (1.17-1.64)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.07, 0.07, 0.08, 0.041, 0.041, and 0.041 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cobalt_BiomonitoringSummary.html

Urinary Cobalt (creatinine corrected) (1999 – 2010)

CAS Number 7440-48-4

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.353 (.319-.391)	.328 (.302-.365)	.515 (.457-.581)	.821 (.679-.963)	1.16 (.938-1.50)	2465
Total population	01-02	.358 (.333-.384)	.335 (.313-.360)	.523 (.487-.562)	.844 (.750-.955)	1.16 (1.00-1.28)	2689
Total population	03-04	.314 (.303-.325)	.290 (.278-.306)	.455 (.434-.481)	.737 (.703-.781)	1.02 (.911-1.10)	2558
Total population	05-06	.368 (.353-.384)	.340 (.320-.360)	.520 (.490-.550)	.810 (.750-.920)	1.17 (.990-1.27)	2576
Total population	07-08	.385 (.366-.406)	.360 (.350-.380)	.560 (.520-.590)	.870 (.760-.990)	1.22 (1.01-1.46)	2627
Total population	09-10	.393 (.372-.415)	.370 (.350-.390)	.560 (.530-.600)	.890 (.830-.940)	1.29 (1.08-1.49)	2848
Age 6-11 years	99-00	.547 (.467-.640)	.554 (.449-.647)	.774 (.626-.938)	1.00 (.833-1.49)	1.25 (.895-1.50)	340
Age 6-11 years	01-02	.552 (.508-.599)	.548 (.503-.609)	.756 (.660-.829)	1.00 (.900-1.27)	1.30 (1.03-1.73)	368
Age 6-11 years	03-04	.529 (.471-.593)	.500 (.463-.543)	.689 (.634-.750)	1.04 (.760-1.29)	1.29 (1.04-1.36)	290
Age 6-11 years	05-06	.523 (.494-.554)	.520 (.480-.570)	.720 (.660-.760)	.900 (.840-1.04)	1.27 (.980-1.45)	355
Age 6-11 years	07-08	.564 (.501-.635)	.580 (.500-.630)	.760 (.660-.910)	1.12 (.830-1.46)	1.39 (1.06-1.81)	394
Age 6-11 years	09-10	.578 (.538-.620)	.570 (.530-.620)	.760 (.690-.840)	1.06 (.920-1.21)	1.26 (1.06-1.58)	378
Age 12-19 years	99-00	.391 (.353-.433)	.378 (.329-.407)	.537 (.469-.595)	.824 (.638-1.17)	1.44 (.821-3.54)	719
Age 12-19 years	01-02	.368 (.343-.396)	.352 (.327-.372)	.534 (.471-.611)	.851 (.673-.949)	1.06 (.932-1.24)	762
Age 12-19 years	03-04	.329 (.304-.355)	.316 (.277-.348)	.495 (.442-.561)	.738 (.630-.847)	.952 (.792-1.09)	725
Age 12-19 years	05-06	.392 (.360-.427)	.360 (.330-.400)	.530 (.480-.620)	.810 (.720-.920)	1.02 (.870-1.48)	701
Age 12-19 years	07-08	.414 (.382-.448)	.390 (.340-.450)	.610 (.520-.700)	.880 (.750-1.13)	1.17 (.890-1.35)	376
Age 12-19 years	09-10	.435 (.398-.476)	.410 (.370-.470)	.610 (.550-.700)	.960 (.790-1.07)	1.30 (1.00-1.53)	451
Age 20+ years	99-00	.328 (.297-.362)	.306 (.280-.328)	.471 (.428-.522)	.727 (.632-.905)	1.12 (.861-1.36)	1406
Age 20+ years	01-02	.337 (.313-.363)	.313 (.294-.337)	.475 (.435-.513)	.792 (.704-.955)	1.15 (.963-1.33)	1559
Age 20+ years	03-04	.293 (.282-.304)	.271 (.257-.286)	.400 (.380-.429)	.691 (.616-.744)	.976 (.829-1.10)	1543
Age 20+ years	05-06	.350 (.334-.367)	.320 (.300-.340)	.490 (.450-.520)	.780 (.690-.940)	1.17 (.970-1.31)	1520
Age 20+ years	07-08	.366 (.348-.384)	.340 (.330-.360)	.510 (.480-.540)	.830 (.720-.960)	1.19 (.980-1.47)	1857
Age 20+ years	09-10	.371 (.350-.394)	.340 (.320-.360)	.520 (.490-.550)	.840 (.750-.930)	1.29 (1.02-1.52)	2019
Males	99-00	.290 (.259-.324)	.279 (.248-.301)	.402 (.365-.449)	.608 (.534-.728)	.838 (.667-1.10)	1227
Males	01-02	.290 (.272-.310)	.278 (.256-.297)	.392 (.361-.425)	.644 (.574-.707)	.848 (.786-.929)	1334
Males	03-04	.247 (.237-.259)	.234 (.215-.250)	.333 (.313-.352)	.513 (.476-.585)	.700 (.630-.753)	1281
Males	05-06	.302 (.289-.317)	.290 (.270-.300)	.410 (.370-.440)	.610 (.580-.640)	.770 (.710-.850)	1271
Males	07-08	.313 (.298-.329)	.300 (.280-.310)	.420 (.400-.440)	.630 (.580-.680)	.830 (.680-1.02)	1327
Males	09-10	.306 (.290-.323)	.290 (.280-.300)	.420 (.390-.450)	.630 (.570-.690)	.810 (.720-.920)	1398
Females	99-00	.426 (.378-.479)	.407 (.362-.457)	.606 (.550-.694)	.960 (.781-1.29)	1.50 (1.11-1.83)	1238
Females	01-02	.435 (.404-.468)	.408 (.382-.438)	.635 (.560-.708)	1.00 (.879-1.19)	1.29 (1.12-1.60)	1355
Females	03-04	.393 (.378-.409)	.361 (.342-.381)	.554 (.513-.615)	.937 (.850-1.00)	1.29 (1.10-1.33)	1277
Females	05-06	.445 (.423-.468)	.420 (.400-.440)	.630 (.590-.700)	.990 (.900-1.17)	1.34 (1.18-1.60)	1305
Females	07-08	.470 (.442-.499)	.450 (.430-.480)	.690 (.630-.750)	1.09 (.930-1.27)	1.46 (1.26-1.69)	1300
Females	09-10	.498 (.465-.534)	.460 (.450-.480)	.690 (.650-.720)	1.09 (.990-1.33)	1.64 (1.34-2.15)	1450

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cobalt_BiomonitoringSummary.html

Urinary Cobalt (creatinine corrected) (1999 – 2010)

CAS Number 7440-48-4

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.386 (.339-.439)	.376 (.333-.419)	.598 (.500-.669)	.898 (.826-1.00)	1.23 (1.11-1.35)	884
Mexican Americans	01-02	.388 (.361-.417)	.361 (.333-.394)	.591 (.500-.662)	.872 (.777-.990)	1.10 (.990-1.27)	682
Mexican Americans	03-04	.346 (.326-.368)	.327 (.296-.349)	.542 (.487-.594)	.850 (.753-.963)	1.14 (.963-1.35)	618
Mexican Americans	05-06	.411 (.388-.436)	.380 (.360-.400)	.580 (.520-.650)	.900 (.820-1.02)	1.19 (1.05-1.35)	652
Mexican Americans	07-08	.396 (.348-.450)	.370 (.330-.410)	.560 (.470-.690)	.900 (.770-1.12)	1.17 (.990-1.54)	515
Mexican Americans	09-10	.396 (.367-.427)	.380 (.340-.420)	.590 (.530-.650)	.930 (.820-1.03)	1.22 (1.04-1.30)	613
Non-Hispanic blacks	99-00	.282 (.275-.289)	.257 (.243-.279)	.417 (.378-.462)	.723 (.600-.785)	.975 (.757-1.60)	568
Non-Hispanic blacks	01-02	.298 (.275-.323)	.268 (.251-.296)	.444 (.393-.505)	.728 (.582-.917)	1.03 (.740-1.55)	667
Non-Hispanic blacks	03-04	.273 (.248-.300)	.259 (.239-.281)	.388 (.344-.461)	.700 (.563-.842)	.964 (.733-1.15)	723
Non-Hispanic blacks	05-06	.299 (.281-.318)	.280 (.240-.300)	.420 (.380-.460)	.700 (.570-.780)	.950 (.790-1.17)	692
Non-Hispanic blacks	07-08	.295 (.277-.314)	.270 (.260-.290)	.420 (.390-.450)	.710 (.570-.860)	1.07 (.850-1.28)	589
Non-Hispanic blacks	09-10	.291 (.271-.314)	.280 (.240-.310)	.420 (.380-.480)	.700 (.610-.750)	.840 (.750-1.06)	544
Non-Hispanic whites	99-00	.369 (.324-.421)	.352 (.313-.387)	.533 (.452-.611)	.861 (.667-1.16)	1.25 (.895-1.57)	822
Non-Hispanic whites	01-02	.362 (.331-.396)	.343 (.313-.368)	.523 (.479-.562)	.830 (.736-.983)	1.16 (.983-1.33)	1132
Non-Hispanic whites	03-04	.317 (.301-.334)	.291 (.274-.309)	.457 (.425-.488)	.738 (.683-.804)	1.00 (.857-1.13)	1074
Non-Hispanic whites	05-06	.376 (.357-.395)	.350 (.330-.370)	.520 (.490-.580)	.810 (.710-.950)	1.18 (.950-1.43)	1041
Non-Hispanic whites	07-08	.401 (.380-.423)	.380 (.360-.400)	.590 (.530-.630)	.890 (.760-1.06)	1.27 (.980-1.55)	1095
Non-Hispanic whites	09-10	.413 (.388-.440)	.390 (.360-.410)	.580 (.530-.620)	.910 (.830-.980)	1.33 (1.08-1.58)	1225

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Cobalt_BiomonitoringSummary.html

Blood Lead (1999 – 2010)

CAS Number 7439-92-1

Geometric mean and selected percentiles of blood concentrations (in µg/dL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	1.66 (1.60-1.72)	1.60 (1.60-1.70)	2.50 (2.40-2.60)	3.80 (3.60-4.00)	5.00 (4.70-5.50)	7970
Total population	01-02	1.45 (1.39-1.51)	1.40 (1.40-1.50)	2.20 (2.10-2.30)	3.40 (3.20-3.60)	4.50 (4.20-4.70)	8945
Total population	03-04	1.43 (1.36-1.50)	1.40 (1.30-1.50)	2.10 (2.10-2.20)	3.20 (3.10-3.30)	4.20 (3.90-4.40)	8373
Total population	05-06	1.29 (1.23-1.36)	1.27 (1.20-1.34)	2.01 (1.91-2.11)	3.05 (2.86-3.22)	3.91 (3.64-4.18)	8407
Total population	07-08	1.27 (1.21-1.34)	1.22 (1.18-1.30)	1.90 (1.80-2.00)	2.80 (2.67-2.96)	3.70 (3.50-3.90)	8266
Total population	09-10	1.12 (1.08-1.16)	1.07 (1.03-1.12)	1.70 (1.62-1.77)	2.58 (2.45-2.71)	3.34 (3.14-3.57)	8793
Age 1-5 years	99-00	2.23 (1.96-2.53)	2.20 (1.90-2.50)	3.40 (2.80-3.90)	4.90 (4.00-6.60)	7.00 (6.10-8.30)	723
Age 1-5 years	01-02	1.70 (1.55-1.87)	1.60 (1.50-1.80)	2.50 (2.20-2.90)	4.20 (3.50-5.20)	5.80 (4.70-6.90)	898
Age 1-5 years	03-04	1.77 (1.60-1.95)	1.70 (1.50-1.90)	2.50 (2.30-2.80)	3.90 (3.30-4.60)	5.10 (4.10-6.60)	911
Age 1-5 years	05-06	1.46 (1.36-1.57)	1.43 (1.34-1.55)	2.10 (1.97-2.20)	2.98 (2.72-3.32)	3.80 (3.49-4.54)	968
Age 1-5 years	07-08	1.51 (1.37-1.66)	1.43 (1.30-1.60)	2.20 (1.98-2.31)	3.20 (2.65-3.85)	4.10 (3.40-5.19)	817
Age 1-5 years	09-10	1.17 (1.08-1.26)	1.15 (1.03-1.27)	1.70 (1.50-1.87)	2.39 (2.08-2.65)	3.37 (2.63-4.11)	836
Age 6-11 years	99-00	1.51 (1.36-1.66)	1.40 (1.30-1.60)	2.10 (1.80-2.50)	3.30 (2.80-3.80)	4.50 (3.40-6.20)	905
Age 6-11 years	01-02	1.25 (1.14-1.36)	1.20 (1.00-1.30)	1.70 (1.60-2.00)	2.80 (2.50-3.10)	3.70 (3.00-4.70)	1044
Age 6-11 years	03-04	1.25 (1.12-1.39)	1.20 (1.10-1.40)	1.80 (1.50-2.10)	2.60 (2.10-3.10)	3.30 (2.50-4.60)	856
Age 6-11 years	05-06	1.02 (.948-1.10)	.970 (.890-1.01)	1.40 (1.28-1.55)	2.06 (1.80-2.72)	3.00 (2.26-3.81)	934
Age 6-11 years	07-08	.988 (.914-1.07)	.960 (.880-1.07)	1.31 (1.22-1.49)	1.90 (1.70-2.11)	2.50 (2.10-2.88)	1011
Age 6-11 years	09-10	.838 (.792-.887)	.810 (.740-.840)	1.13 (1.06-1.21)	1.64 (1.45-1.84)	2.01 (1.88-2.25)	1009
Age 12-19 years	99-00	1.10 (1.04-1.17)	1.10 (1.00-1.20)	1.50 (1.40-1.70)	2.30 (2.10-2.40)	2.90 (2.70-3.00)	2135
Age 12-19 years	01-02	.942 (.899-.986)	.900 (.900-1.00)	1.30 (1.20-1.40)	2.00 (1.90-2.10)	2.70 (2.40-2.90)	2231
Age 12-19 years	03-04	.946 (.878-1.02)	.900 (.800-1.00)	1.30 (1.20-1.40)	1.90 (1.70-2.10)	2.60 (2.20-3.00)	2081
Age 12-19 years	05-06	.797 (.746-.852)	.740 (.690-.790)	1.08 (.990-1.20)	1.69 (1.50-1.85)	2.23 (1.98-2.46)	1996
Age 12-19 years	07-08	.800 (.744-.859)	.760 (.720-.820)	1.04 (.980-1.16)	1.50 (1.35-1.70)	1.90 (1.70-2.32)	1074
Age 12-19 years	09-10	.680 (.636-.727)	.660 (.590-.700)	.910 (.840-.990)	1.29 (1.19-1.43)	1.72 (1.52-1.86)	1183
Age 20+ years	99-00	1.75 (1.68-1.81)	1.70 (1.60-1.80)	2.60 (2.50-2.70)	3.90 (3.70-4.10)	5.20 (4.80-5.60)	4207
Age 20+ years	01-02	1.56 (1.49-1.62)	1.60 (1.50-1.60)	2.30 (2.30-2.40)	3.60 (3.40-3.70)	4.60 (4.30-5.00)	4772
Age 20+ years	03-04	1.52 (1.45-1.60)	1.50 (1.40-1.60)	2.30 (2.20-2.40)	3.30 (3.20-3.50)	4.30 (4.00-4.60)	4525
Age 20+ years	05-06	1.41 (1.34-1.48)	1.41 (1.33-1.48)	2.17 (2.04-2.31)	3.22 (3.05-3.43)	4.12 (3.82-4.38)	4509
Age 20+ years	07-08	1.38 (1.31-1.46)	1.34 (1.26-1.42)	2.06 (1.94-2.18)	3.00 (2.80-3.14)	3.90 (3.68-4.23)	5364
Age 20+ years	09-10	1.23 (1.19-1.28)	1.20 (1.14-1.25)	1.85 (1.78-1.93)	2.77 (2.60-2.93)	3.57 (3.29-3.84)	5765

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.3, 0.3, 0.28, 0.25, 0.25, and 0.25 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Lead_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Lead_FactSheet.html

Blood Lead (1999 – 2010)

CAS Number 7439-92-1

Geometric mean and selected percentiles of blood concentrations (in µg/dL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Males	99-00	2.01 (1.93-2.09)	1.90 (1.90-2.00)	2.90 (2.80-3.00)	4.50 (4.10-4.80)	6.00 (5.50-6.50)	3913
Males	01-02	1.78 (1.71-1.86)	1.80 (1.70-1.80)	2.70 (2.50-2.80)	3.90 (3.80-4.10)	5.40 (5.00-5.50)	4339
Males	03-04	1.69 (1.62-1.75)	1.60 (1.50-1.70)	2.50 (2.40-2.60)	3.70 (3.40-3.90)	4.80 (4.50-5.20)	4132
Males	05-06	1.52 (1.42-1.62)	1.49 (1.41-1.58)	2.30 (2.12-2.51)	3.48 (3.20-3.75)	4.36 (4.04-4.76)	4092
Males	07-08	1.47 (1.39-1.56)	1.40 (1.32-1.50)	2.17 (2.00-2.30)	3.21 (3.01-3.53)	4.41 (4.10-4.88)	4147
Males	09-10	1.31 (1.25-1.36)	1.26 (1.20-1.32)	1.96 (1.89-2.03)	2.93 (2.72-3.15)	3.84 (3.54-4.39)	4366
Females	99-00	1.37 (1.32-1.43)	1.30 (1.30-1.40)	2.00 (1.90-2.10)	3.10 (2.90-3.30)	4.00 (3.80-4.20)	4057
Females	01-02	1.19 (1.14-1.25)	1.20 (1.10-1.20)	1.80 (1.70-1.90)	2.60 (2.50-2.80)	3.60 (3.10-4.00)	4606
Females	03-04	1.22 (1.14-1.31)	1.20 (1.10-1.30)	1.80 (1.70-2.00)	2.70 (2.50-3.00)	3.50 (3.10-3.80)	4241
Females	05-06	1.11 (1.05-1.17)	1.06 (.980-1.15)	1.73 (1.61-1.84)	2.59 (2.44-2.74)	3.25 (3.12-3.44)	4315
Females	07-08	1.11 (1.06-1.16)	1.09 (1.00-1.14)	1.64 (1.54-1.74)	2.41 (2.35-2.50)	3.00 (2.81-3.20)	4119
Females	09-10	.966 (.929-1.01)	.940 (.890-.970)	1.43 (1.36-1.53)	2.18 (2.08-2.30)	2.81 (2.63-2.93)	4427
Mexican Americans	99-00	1.83 (1.75-1.91)	1.80 (1.70-1.90)	2.80 (2.60-2.90)	4.20 (3.90-4.60)	5.80 (5.10-6.60)	2742
Mexican Americans	01-02	1.46 (1.34-1.60)	1.50 (1.30-1.60)	2.30 (2.10-2.60)	3.60 (3.40-4.20)	5.40 (4.40-6.70)	2268
Mexican Americans	03-04	1.55 (1.43-1.69)	1.50 (1.40-1.60)	2.30 (2.10-2.50)	3.50 (2.90-4.20)	4.90 (3.90-6.40)	2085
Mexican Americans	05-06	1.29 (1.21-1.38)	1.26 (1.15-1.36)	2.00 (1.87-2.20)	3.16 (2.79-3.58)	4.22 (3.47-5.36)	2236
Mexican Americans	07-08	1.25 (1.15-1.36)	1.20 (1.10-1.31)	1.88 (1.70-2.06)	2.81 (2.60-3.20)	3.92 (3.20-5.00)	1712
Mexican Americans	09-10	1.14 (1.03-1.28)	1.04 (.940-1.18)	1.76 (1.52-1.99)	2.93 (2.63-3.30)	3.92 (3.60-4.69)	1966
Non-Hispanic blacks	99-00	1.87 (1.75-2.00)	1.80 (1.70-2.00)	2.80 (2.60-3.00)	4.30 (4.00-4.60)	5.70 (5.20-6.10)	1842
Non-Hispanic blacks	01-02	1.65 (1.52-1.80)	1.60 (1.40-1.70)	2.60 (2.30-2.90)	4.20 (3.80-4.70)	5.80 (5.30-6.50)	2219
Non-Hispanic blacks	03-04	1.69 (1.52-1.89)	1.60 (1.40-1.80)	2.60 (2.20-3.00)	4.10 (3.50-4.70)	5.30 (4.60-6.60)	2293
Non-Hispanic blacks	05-06	1.39 (1.26-1.53)	1.31 (1.19-1.45)	2.16 (1.95-2.42)	3.48 (3.19-3.80)	4.65 (4.21-5.14)	2193
Non-Hispanic blacks	07-08	1.39 (1.30-1.48)	1.30 (1.20-1.42)	2.10 (2.00-2.20)	3.22 (3.08-3.50)	4.50 (4.00-4.80)	1746
Non-Hispanic blacks	09-10	1.24 (1.18-1.30)	1.19 (1.12-1.25)	1.87 (1.76-1.99)	2.90 (2.68-3.18)	3.86 (3.57-4.29)	1593
Non-Hispanic whites	99-00	1.62 (1.55-1.69)	1.60 (1.50-1.70)	2.40 (2.30-2.50)	3.60 (3.40-3.90)	5.00 (4.40-5.70)	2716
Non-Hispanic whites	01-02	1.43 (1.37-1.48)	1.40 (1.30-1.50)	2.20 (2.10-2.20)	3.20 (3.10-3.40)	4.20 (3.90-4.50)	3806
Non-Hispanic whites	03-04	1.37 (1.32-1.43)	1.30 (1.30-1.40)	2.10 (2.00-2.10)	3.00 (2.80-3.20)	3.90 (3.60-4.30)	3478
Non-Hispanic whites	05-06	1.28 (1.19-1.37)	1.27 (1.17-1.38)	1.97 (1.86-2.14)	2.99 (2.73-3.25)	3.82 (3.41-4.20)	3310
Non-Hispanic whites	07-08	1.24 (1.16-1.33)	1.20 (1.10-1.30)	1.86 (1.72-2.00)	2.70 (2.54-2.90)	3.50 (3.20-3.89)	3461
Non-Hispanic whites	09-10	1.10 (1.04-1.16)	1.07 (1.00-1.15)	1.67 (1.59-1.76)	2.49 (2.35-2.63)	3.14 (2.99-3.36)	3760

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.3, 0.3, 0.28, 0.25, 0.25, and 0.25 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Lead_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Lead_FactSheet.html

Urinary Lead (1999 – 2010)

CAS Number 7439-92-1

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.766 (.708-.828)	.800 (.800-.900)	1.40 (1.30-1.50)	2.20 (2.00-2.30)	2.90 (2.60-3.30)	2465
Total population	01-02	.677 (.637-.718)	.700 (.700-.800)	1.20 (1.20-1.30)	2.00 (1.90-2.20)	2.70 (2.50-2.80)	2690
Total population	03-04	.636 (.595-.680)	.640 (.580-.690)	1.04 (.960-1.12)	1.73 (1.52-1.86)	2.29 (2.03-2.62)	2558
Total population	05-06	.554 (.523-.587)	.570 (.540-.600)	.990 (.910-1.05)	1.58 (1.44-1.73)	2.14 (1.94-2.45)	2576
Total population	07-08	.493 (.467-.520)	.500 (.470-.530)	.850 (.790-.910)	1.38 (1.23-1.58)	1.97 (1.75-2.17)	2627
Total population	09-10	.458 (.441-.476)	.470 (.450-.480)	.790 (.750-.830)	1.24 (1.11-1.38)	1.65 (1.46-1.84)	2848
Age 6-11 years	99-00	1.07 (.955-1.20)	1.10 (.900-1.30)	1.50 (1.40-1.70)	2.40 (1.80-3.10)	3.40 (2.40-5.00)	340
Age 6-11 years	01-02	.753 (.661-.857)	.800 (.600-.900)	1.20 (1.10-1.40)	2.10 (1.60-2.40)	2.60 (2.10-3.70)	368
Age 6-11 years	03-04	.795 (.671-.941)	.790 (.640-.900)	1.35 (.970-1.86)	2.27 (1.62-4.09)	3.33 (2.23-4.41)	290
Age 6-11 years	05-06	.508 (.447-.579)	.510 (.440-.560)	.740 (.620-.980)	1.33 (1.00-1.86)	1.90 (1.33-2.60)	355
Age 6-11 years	07-08	.494 (.411-.593)	.520 (.410-.590)	.790 (.660-.900)	1.23 (.980-1.73)	1.90 (1.51-2.18)	394
Age 6-11 years	09-10	.443 (.399-.493)	.460 (.430-.490)	.710 (.630-.820)	1.09 (.880-1.33)	1.40 (1.06-1.82)	378
Age 12-19 years	99-00	.659 (.579-.749)	.700 (.600-.800)	1.10 (.900-1.30)	1.80 (1.40-2.20)	2.20 (1.90-2.80)	719
Age 12-19 years	01-02	.564 (.526-.605)	.600 (.500-.600)	1.00 (.800-1.10)	1.60 (1.40-1.70)	2.00 (1.80-2.40)	762
Age 12-19 years	03-04	.604 (.553-.660)	.630 (.570-.680)	.920 (.810-1.02)	1.32 (1.14-1.80)	1.86 (1.44-2.29)	725
Age 12-19 years	05-06	.472 (.421-.530)	.490 (.450-.540)	.780 (.710-.830)	1.19 (1.10-1.45)	1.65 (1.34-1.80)	701
Age 12-19 years	07-08	.386 (.346-.431)	.380 (.350-.410)	.640 (.560-.720)	1.03 (.870-1.24)	1.38 (1.09-1.91)	376
Age 12-19 years	09-10	.320 (.283-.361)	.320 (.270-.370)	.530 (.460-.630)	.830 (.710-1.10)	1.16 (.860-1.37)	451
Age 20+ years	99-00	.752 (.691-.818)	.800 (.700-.900)	1.40 (1.30-1.50)	2.20 (2.00-2.40)	2.90 (2.60-3.30)	1406
Age 20+ years	01-02	.688 (.641-.738)	.700 (.700-.800)	1.20 (1.20-1.30)	2.00 (1.90-2.30)	2.80 (2.50-2.90)	1560
Age 20+ years	03-04	.625 (.579-.674)	.620 (.560-.700)	1.04 (.960-1.11)	1.70 (1.52-1.80)	2.21 (2.04-2.49)	1543
Age 20+ years	05-06	.574 (.539-.612)	.600 (.560-.640)	1.02 (.970-1.13)	1.65 (1.53-1.81)	2.21 (1.99-2.57)	1520
Age 20+ years	07-08	.512 (.485-.540)	.530 (.490-.560)	.900 (.820-.950)	1.49 (1.29-1.64)	2.01 (1.78-2.33)	1857
Age 20+ years	09-10	.486 (.465-.507)	.490 (.470-.520)	.830 (.780-.880)	1.32 (1.16-1.46)	1.71 (1.52-2.03)	2019
Males	99-00	.923 (.822-1.04)	.900 (.900-1.00)	1.60 (1.40-1.80)	2.50 (2.20-2.90)	3.40 (2.90-3.80)	1227
Males	01-02	.808 (.757-.862)	.800 (.800-.900)	1.40 (1.30-1.50)	2.50 (2.20-2.70)	3.20 (2.90-3.50)	1335
Males	03-04	.731 (.680-.785)	.730 (.680-.800)	1.17 (1.07-1.27)	2.03 (1.78-2.22)	2.66 (2.33-2.91)	1281
Males	05-06	.672 (.638-.707)	.690 (.620-.760)	1.16 (1.04-1.28)	1.78 (1.60-2.00)	2.45 (2.00-2.97)	1271
Males	07-08	.560 (.518-.606)	.570 (.530-.620)	.930 (.840-1.02)	1.63 (1.36-1.97)	2.30 (1.97-3.07)	1327
Males	09-10	.527 (.491-.566)	.540 (.480-.580)	.880 (.820-.960)	1.41 (1.25-1.58)	1.83 (1.62-2.21)	1398
Females	99-00	.642 (.589-.701)	.700 (.600-.800)	1.20 (1.10-1.30)	1.90 (1.60-2.20)	2.40 (2.10-3.00)	1238
Females	01-02	.573 (.535-.613)	.600 (.600-.600)	1.10 (1.00-1.10)	1.60 (1.50-1.80)	2.20 (1.90-2.40)	1355
Females	03-04	.558 (.506-.616)	.540 (.480-.620)	.920 (.820-1.04)	1.49 (1.24-1.75)	1.82 (1.59-2.30)	1277
Females	05-06	.461 (.425-.499)	.460 (.430-.510)	.810 (.730-.880)	1.27 (1.17-1.46)	1.86 (1.54-2.17)	1305
Females	07-08	.436 (.412-.461)	.430 (.400-.480)	.760 (.690-.830)	1.22 (1.05-1.34)	1.67 (1.44-1.81)	1300
Females	09-10	.400 (.378-.424)	.420 (.390-.440)	.690 (.660-.740)	1.05 (.990-1.13)	1.42 (1.26-1.59)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.1, 0.1, 0.33, 0.1, 0.1, and 0.1 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Lead_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Lead_FactSheet.html

Urinary Lead (1999 – 2010)

CAS Number 7439-92-1

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	1.02 (.915-1.13)	1.10 (.900-1.20)	1.80 (1.60-1.90)	2.90 (2.50-3.40)	4.30 (3.10-5.40)	884
Mexican Americans	01-02	.833 (.745-.931)	.900 (.700-1.00)	1.50 (1.20-1.70)	2.50 (2.00-2.90)	3.30 (2.70-3.80)	683
Mexican Americans	03-04	.815 (.710-.935)	.840 (.700-.990)	1.31 (1.18-1.59)	2.19 (1.86-2.50)	2.66 (2.13-3.97)	618
Mexican Americans	05-06	.729 (.653-.815)	.770 (.680-.860)	1.32 (1.15-1.59)	2.22 (1.81-2.64)	3.08 (2.50-4.03)	652
Mexican Americans	07-08	.607 (.528-.698)	.610 (.530-.690)	.990 (.890-1.21)	1.76 (1.37-2.17)	2.29 (1.82-2.80)	515
Mexican Americans	09-10	.546 (.483-.618)	.520 (.460-.580)	.930 (.800-1.09)	1.66 (1.34-1.89)	2.16 (1.80-2.87)	613
Non-Hispanic blacks	99-00	1.11 (1.00-1.23)	1.10 (1.00-1.20)	1.90 (1.50-2.10)	3.00 (2.40-3.50)	4.20 (3.30-5.70)	568
Non-Hispanic blacks	01-02	.940 (.833-1.06)	.900 (.800-1.00)	1.60 (1.30-1.80)	2.70 (2.10-3.40)	3.70 (2.90-4.80)	667
Non-Hispanic blacks	03-04	.848 (.729-.986)	.850 (.710-1.00)	1.40 (1.10-1.72)	2.14 (1.78-2.64)	2.82 (2.31-3.89)	723
Non-Hispanic blacks	05-06	.666 (.604-.734)	.660 (.590-.760)	1.09 (.980-1.18)	1.62 (1.42-1.85)	2.24 (1.65-2.90)	692
Non-Hispanic blacks	07-08	.618 (.558-.685)	.620 (.560-.690)	1.01 (.920-1.13)	1.56 (1.38-1.90)	2.06 (1.88-2.60)	589
Non-Hispanic blacks	09-10	.560 (.522-.601)	.550 (.490-.600)	.910 (.830-1.01)	1.53 (1.26-1.71)	1.96 (1.68-2.80)	544
Non-Hispanic whites	99-00	.695 (.625-.773)	.700 (.700-.900)	1.30 (1.10-1.40)	2.00 (1.80-2.40)	2.70 (2.30-3.10)	822
Non-Hispanic whites	01-02	.610 (.572-.651)	.700 (.600-.700)	1.10 (1.10-1.20)	1.90 (1.70-2.00)	2.40 (2.30-2.60)	1132
Non-Hispanic whites	03-04	.591 (.556-.628)	.590 (.540-.650)	.960 (.910-.990)	1.52 (1.40-1.75)	2.14 (1.78-2.51)	1074
Non-Hispanic whites	05-06	.520 (.477-.566)	.540 (.490-.580)	.950 (.820-1.05)	1.53 (1.30-1.76)	2.07 (1.78-2.45)	1041
Non-Hispanic whites	07-08	.452 (.422-.485)	.460 (.430-.490)	.780 (.700-.880)	1.23 (1.03-1.50)	1.79 (1.58-1.97)	1095
Non-Hispanic whites	09-10	.431 (.406-.458)	.450 (.410-.480)	.750 (.690-.820)	1.11 (1.05-1.24)	1.51 (1.39-1.67)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.1, 0.1, 0.33, 0.1, 0.1, and 0.1 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Lead_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Lead_FactSheet.html

Urinary Lead (creatinine corrected) (1999 – 2010)

CAS Number 7439-92-1

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.721 (.700-.742)	.701 (.677-.725)	1.11 (1.05-1.15)	1.70 (1.62-1.85)	2.38 (2.22-2.79)	2465
Total population	01-02	.639 (.603-.677)	.635 (.588-.676)	1.03 (.963-1.08)	1.52 (1.43-1.61)	2.03 (1.89-2.22)	2689
Total population	03-04	.632 (.603-.662)	.622 (.594-.655)	.979 (.920-1.03)	1.49 (1.33-1.64)	1.97 (1.73-2.26)	2558
Total population	05-06	.546 (.520-.573)	.530 (.510-.560)	.860 (.810-.900)	1.27 (1.15-1.37)	1.71 (1.50-1.89)	2576
Total population	07-08	.514 (.482-.548)	.500 (.460-.530)	.800 (.720-.880)	1.30 (1.23-1.42)	1.85 (1.73-1.96)	2627
Total population	09-10	.488 (.466-.512)	.470 (.440-.500)	.760 (.710-.810)	1.16 (1.08-1.28)	1.53 (1.41-1.62)	2848
Age 6-11 years	99-00	1.17 (.975-1.41)	1.06 (.918-1.22)	1.55 (1.22-1.97)	2.71 (1.67-4.66)	4.66 (1.97-18.0)	340
Age 6-11 years	01-02	.918 (.841-1.00)	.870 (.800-.933)	1.27 (1.12-1.43)	2.33 (1.59-3.64)	3.64 (1.89-5.56)	368
Age 6-11 years	03-04	.926 (.812-1.06)	.914 (.781-1.03)	1.45 (1.17-1.72)	2.14 (1.62-3.47)	3.47 (2.19-5.31)	290
Age 6-11 years	05-06	.628 (.563-.701)	.590 (.530-.680)	.870 (.770-.940)	1.29 (1.03-1.82)	1.96 (1.32-2.42)	355
Age 6-11 years	07-08	.643 (.543-.763)	.630 (.530-.730)	1.02 (.770-1.24)	1.50 (1.24-2.02)	2.04 (1.70-2.58)	394
Age 6-11 years	09-10	.604 (.551-.662)	.580 (.520-.650)	.870 (.780-1.00)	1.32 (1.09-1.51)	1.60 (1.38-1.75)	378
Age 12-19 years	99-00	.496 (.460-.535)	.469 (.408-.508)	.709 (.655-.828)	1.11 (.981-1.28)	1.65 (1.15-2.79)	719
Age 12-19 years	01-02	.404 (.380-.428)	.375 (.342-.400)	.603 (.541-.702)	.990 (.882-1.18)	1.41 (1.07-1.63)	762
Age 12-19 years	03-04	.432 (.404-.461)	.404 (.383-.436)	.623 (.551-.730)	.938 (.828-1.06)	1.23 (1.09-1.35)	725
Age 12-19 years	05-06	.363 (.333-.395)	.340 (.310-.360)	.510 (.460-.600)	.800 (.690-.930)	1.07 (.940-1.23)	701
Age 12-19 years	07-08	.302 (.270-.337)	.290 (.250-.340)	.430 (.400-.490)	.670 (.550-.790)	.900 (.700-1.09)	376
Age 12-19 years	09-10	.299 (.273-.328)	.290 (.260-.320)	.420 (.370-.490)	.620 (.550-.760)	.880 (.740-1.01)	451
Age 20+ years	99-00	.720 (.683-.758)	.712 (.667-.739)	1.10 (1.02-1.18)	1.69 (1.53-1.87)	2.31 (2.15-2.62)	1406
Age 20+ years	01-02	.658 (.617-.703)	.652 (.608-.702)	1.05 (.992-1.11)	1.51 (1.40-1.61)	2.00 (1.85-2.19)	1559
Age 20+ years	03-04	.641 (.606-.679)	.633 (.605-.670)	.988 (.917-1.04)	1.47 (1.28-1.63)	1.94 (1.72-2.12)	1543
Age 20+ years	05-06	.573 (.548-.600)	.570 (.530-.600)	.890 (.850-.960)	1.32 (1.22-1.41)	1.77 (1.53-1.94)	1520
Age 20+ years	07-08	.545 (.513-.579)	.530 (.490-.570)	.840 (.760-.910)	1.36 (1.27-1.49)	1.92 (1.78-2.08)	1857
Age 20+ years	09-10	.514 (.489-.539)	.500 (.460-.530)	.790 (.730-.840)	1.22 (1.10-1.35)	1.57 (1.46-1.71)	2019
Males	99-00	.720 (.679-.763)	.693 (.645-.734)	1.10 (.992-1.22)	1.68 (1.50-2.09)	2.43 (2.15-3.03)	1227
Males	01-02	.639 (.607-.673)	.638 (.586-.686)	1.01 (.957-1.08)	1.55 (1.41-1.61)	2.06 (1.88-2.43)	1334
Males	03-04	.615 (.588-.644)	.593 (.561-.639)	.914 (.862-.977)	1.44 (1.25-1.53)	2.00 (1.71-2.28)	1281
Males	05-06	.551 (.522-.582)	.530 (.510-.580)	.830 (.770-.910)	1.25 (1.13-1.39)	1.77 (1.42-2.20)	1271
Males	07-08	.501 (.471-.534)	.490 (.450-.530)	.750 (.700-.810)	1.29 (1.15-1.49)	1.88 (1.71-1.98)	1327
Males	09-10	.481 (.458-.505)	.450 (.430-.490)	.740 (.690-.800)	1.15 (1.04-1.29)	1.56 (1.37-1.70)	1398
Females	99-00	.722 (.681-.765)	.707 (.667-.746)	1.11 (1.05-1.18)	1.74 (1.50-2.02)	2.38 (2.03-2.88)	1238
Females	01-02	.639 (.594-.688)	.625 (.571-.682)	1.03 (.946-1.11)	1.50 (1.39-1.61)	1.98 (1.85-2.15)	1355
Females	03-04	.648 (.601-.698)	.649 (.604-.718)	1.03 (.938-1.10)	1.56 (1.34-1.73)	1.96 (1.72-2.20)	1277
Females	05-06	.541 (.507-.577)	.530 (.500-.580)	.880 (.820-.940)	1.28 (1.12-1.41)	1.64 (1.38-1.91)	1305
Females	07-08	.527 (.489-.568)	.500 (.470-.550)	.840 (.740-.960)	1.34 (1.23-1.47)	1.79 (1.56-2.08)	1300
Females	09-10	.495 (.466-.526)	.480 (.450-.520)	.780 (.710-.830)	1.20 (1.08-1.32)	1.52 (1.39-1.62)	1450

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Lead_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Lead_FactSheet.html

Urinary Lead (creatinine corrected) (1999 – 2010)

CAS Number 7439-92-1

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.940 (.876-1.01)	.887 (.796-1.03)	1.43 (1.37-1.58)	2.38 (2.08-2.77)	3.46 (2.78-4.18)	884
Mexican Americans	01-02	.810 (.731-.898)	.774 (.702-.893)	1.29 (1.09-1.44)	2.05 (1.75-2.50)	2.78 (2.56-3.33)	682
Mexican Americans	03-04	.755 (.681-.838)	.708 (.612-.851)	1.18 (1.09-1.31)	1.86 (1.50-2.26)	2.31 (1.98-2.92)	618
Mexican Americans	05-06	.686 (.638-.737)	.680 (.620-.740)	1.00 (.930-1.13)	1.63 (1.39-1.88)	2.20 (1.77-3.20)	652
Mexican Americans	07-08	.607 (.514-.717)	.590 (.500-.690)	.970 (.770-1.19)	1.56 (1.25-2.07)	2.20 (1.78-2.46)	515
Mexican Americans	09-10	.573 (.526-.623)	.540 (.470-.610)	.950 (.780-1.06)	1.59 (1.41-1.82)	2.02 (1.82-2.40)	613
Non-Hispanic blacks	99-00	.722 (.659-.790)	.671 (.583-.753)	1.11 (.988-1.20)	2.00 (1.56-2.51)	2.83 (2.20-3.88)	568
Non-Hispanic blacks	01-02	.644 (.559-.742)	.608 (.510-.710)	.962 (.853-1.20)	1.79 (1.36-2.33)	2.75 (2.04-3.98)	667
Non-Hispanic blacks	03-04	.609 (.529-.701)	.569 (.492-.698)	.900 (.793-1.03)	1.48 (1.11-1.97)	2.24 (1.65-2.88)	723
Non-Hispanic blacks	05-06	.483 (.459-.508)	.470 (.440-.490)	.740 (.670-.820)	1.18 (1.06-1.29)	1.60 (1.37-1.85)	692
Non-Hispanic blacks	07-08	.452 (.414-.492)	.440 (.400-.490)	.710 (.610-.780)	1.13 (.930-1.33)	1.57 (1.21-1.88)	589
Non-Hispanic blacks	09-10	.444 (.417-.473)	.420 (.390-.470)	.680 (.600-.740)	1.07 (.940-1.18)	1.51 (1.18-1.65)	544
Non-Hispanic whites	99-00	.696 (.668-.725)	.677 (.645-.718)	1.07 (.997-1.14)	1.66 (1.50-1.83)	2.31 (1.94-2.82)	822
Non-Hispanic whites	01-02	.615 (.579-.654)	.621 (.571-.667)	1.00 (.933-1.07)	1.46 (1.37-1.52)	1.88 (1.62-2.03)	1132
Non-Hispanic whites	03-04	.623 (.592-.655)	.618 (.587-.657)	.971 (.914-1.03)	1.44 (1.25-1.61)	1.85 (1.64-2.10)	1074
Non-Hispanic whites	05-06	.541 (.500-.585)	.530 (.490-.580)	.850 (.790-.920)	1.24 (1.12-1.37)	1.62 (1.37-1.94)	1041
Non-Hispanic whites	07-08	.506 (.466-.550)	.490 (.460-.540)	.790 (.700-.880)	1.27 (1.15-1.42)	1.81 (1.59-1.96)	1095
Non-Hispanic whites	09-10	.482 (.448-.518)	.460 (.430-.500)	.740 (.690-.820)	1.15 (1.01-1.30)	1.46 (1.32-1.59)	1225

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Lead_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Lead_FactSheet.html

Blood Total Mercury (2003 – 2010)

CAS Number 92786-62-4

Geometric mean and selected percentiles of blood concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	.797 (.703-.903)	.800 (.700-.900)	1.70 (1.50-1.90)	3.30 (2.90-3.90)	4.90 (4.30-5.50)	8373
Total population	05-06	.863 (.787-.946)	.830 (.760-.920)	1.66 (1.48-1.93)	3.20 (2.87-3.54)	4.64 (4.17-5.25)	8407
Total population	07-08	.769 (.689-.859)	.740 (.660-.830)	1.48 (1.29-1.69)	2.95 (2.46-3.59)	4.64 (3.74-5.79)	8266
Total population	09-10	.863 (.792-.941)	.790 (.730-.880)	1.68 (1.49-1.91)	3.43 (3.07-3.84)	5.13 (4.57-5.67)	8793
Age 1-5 years	03-04	.326 (.285-.372)	.300 (.300-.300)	.500 (.500-.700)	1.00 (.800-1.60)	1.80 (1.30-2.50)	911
Age 1-5 years	05-06	*	<LOD	.500 (.470-.550)	.940 (.820-1.24)	1.43 (1.25-1.59)	968
Age 1-5 years	07-08	*	<LOD	.440 (.380-.540)	.830 (.620-1.12)	1.32 (.960-2.40)	817
Age 1-5 years	09-10	*	<LOD	.490 (.430-.590)	.890 (.740-1.08)	1.30 (1.08-1.52)	836
Age 6-11 years	03-04	.419 (.363-.484)	.400 (.400-.500)	.700 (.700-.900)	1.30 (1.00-1.60)	1.90 (1.40-3.50)	856
Age 6-11 years	05-06	*	.410 (.330-.460)	.740 (.630-1.00)	1.43 (1.21-1.87)	2.34 (1.53-3.42)	934
Age 6-11 years	07-08	*	.380 (.340-.440)	.700 (.600-.790)	1.21 (.970-1.36)	1.56 (1.34-1.80)	1011
Age 6-11 years	09-10	*	.360 (<LOD-.400)	.670 (.590-.770)	1.22 (1.05-1.45)	1.88 (1.43-2.61)	1009
Age 12-19 years	03-04	.490 (.418-.574)	.500 (.400-.600)	1.00 (.800-1.20)	1.80 (1.40-2.30)	2.60 (2.10-3.30)	2081
Age 12-19 years	05-06	.513 (.461-.570)	.460 (.390-.530)	.850 (.740-1.04)	1.66 (1.31-1.98)	2.41 (2.12-2.90)	1996
Age 12-19 years	07-08	.469 (.426-.516)	.440 (.390-.490)	.800 (.670-.970)	1.55 (1.30-1.72)	2.05 (1.77-2.34)	1074
Age 12-19 years	09-10	.534 (.473-.602)	.450 (.370-.540)	.910 (.770-1.11)	2.04 (1.53-2.55)	3.01 (2.53-3.63)	1183
Age 20+ years	03-04	.979 (.860-1.12)	1.00 (.800-1.10)	2.00 (1.70-2.30)	3.80 (3.20-4.40)	5.40 (4.60-6.70)	4525
Age 20+ years	05-06	1.06 (.967-1.15)	1.03 (.930-1.15)	1.98 (1.73-2.22)	3.64 (3.33-4.01)	5.31 (4.82-5.67)	4509
Age 20+ years	07-08	.944 (.833-1.07)	.890 (.780-1.03)	1.73 (1.47-2.09)	3.41 (2.82-4.17)	5.32 (4.32-6.72)	5364
Age 20+ years	09-10	1.04 (.956-1.14)	.970 (.870-1.08)	2.00 (1.80-2.20)	3.96 (3.55-4.27)	5.75 (5.14-6.50)	5765
Males	03-04	.814 (.714-.927)	.800 (.700-.900)	1.80 (1.50-2.00)	3.70 (3.20-4.30)	5.40 (4.60-6.50)	4132
Males	05-06	.864 (.783-.954)	.810 (.720-.940)	1.69 (1.48-2.01)	3.30 (2.86-3.73)	4.83 (4.08-5.45)	4092
Males	07-08	.809 (.709-.923)	.760 (.670-.850)	1.56 (1.31-1.81)	3.21 (2.72-4.06)	5.16 (4.12-6.97)	4147
Males	09-10	.883 (.810-.962)	.790 (.730-.870)	1.75 (1.54-2.02)	3.84 (3.35-4.26)	5.65 (5.13-6.34)	4366
Females	03-04	.781 (.689-.886)	.800 (.700-.900)	1.60 (1.40-1.80)	3.00 (2.50-3.50)	4.40 (3.60-5.30)	4241
Females	05-06	.864 (.791-.943)	.850 (.770-.920)	1.63 (1.44-1.89)	3.09 (2.75-3.46)	4.51 (4.01-5.28)	4315
Females	07-08	.748 (.677-.827)	.720 (.660-.810)	1.42 (1.24-1.60)	2.70 (2.27-3.27)	3.93 (3.17-5.16)	4119
Females	09-10	.845 (.772-.924)	.800 (.720-.880)	1.61 (1.43-1.81)	3.13 (2.76-3.48)	4.43 (4.04-5.11)	4427
Mexican Americans	03-04	.563 (.472-.672)	.600 (.500-.700)	1.00 (.800-1.30)	1.90 (1.60-2.40)	3.00 (2.20-3.80)	2085
Mexican Americans	05-06	.597 (.524-.679)	.580 (.490-.670)	1.04 (.870-1.24)	1.70 (1.40-2.12)	2.58 (1.96-3.31)	2236
Mexican Americans	07-08	.594 (.536-.658)	.580 (.520-.670)	1.03 (.900-1.17)	1.73 (1.49-2.04)	2.48 (2.10-2.91)	1712
Mexican Americans	09-10	.613 (.571-.659)	.580 (.540-.630)	1.01 (.890-1.15)	1.63 (1.47-1.90)	2.45 (2.03-2.93)	1966
Non-Hispanic blacks	03-04	.877 (.753-1.02)	.900 (.800-1.00)	1.60 (1.40-1.80)	3.00 (2.30-4.00)	4.40 (3.30-6.00)	2293
Non-Hispanic blacks	05-06	.823 (.697-.972)	.800 (.670-.940)	1.50 (1.21-1.92)	2.72 (2.14-3.59)	4.09 (3.22-5.16)	2193
Non-Hispanic blacks	07-08	.766 (.711-.825)	.780 (.710-.830)	1.32 (1.23-1.42)	2.25 (1.99-2.58)	3.42 (2.74-3.90)	1746
Non-Hispanic blacks	09-10	.928 (.805-1.07)	.900 (.800-1.02)	1.67 (1.38-1.96)	2.93 (2.20-4.21)	4.56 (3.34-6.69)	1593
Non-Hispanic whites	03-04	.776 (.655-.919)	.800 (.700-.900)	1.70 (1.40-2.00)	3.20 (2.60-3.90)	4.70 (4.00-5.60)	3478
Non-Hispanic whites	05-06	.891 (.801-.992)	.870 (.770-1.00)	1.74 (1.50-2.10)	3.37 (2.88-3.76)	4.76 (4.18-5.37)	3310
Non-Hispanic whites	07-08	.743 (.651-.847)	.720 (.620-.820)	1.43 (1.18-1.70)	2.79 (2.33-3.41)	4.18 (3.57-4.83)	3461
Non-Hispanic whites	09-10	.856 (.766-.957)	.790 (.690-.920)	1.70 (1.46-1.98)	3.43 (2.94-3.94)	4.92 (4.30-5.65)	3760

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.2, 0.33, 0.33, and 0.33 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mercury_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Mercury_FactSheet.html

Blood Inorganic Mercury (2003 – 2010)

CAS Number 92786-62-4

Geometric mean and selected percentiles of blood concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	.600 (.500-.600)	.700 (.700-.700)	8147
Total population	05-06	*	<LOD	<LOD	.540 (.500-.580)	.660 (.620-.710)	8371
Total population	07-08	*	<LOD	.350 (<LOD-.370)	.520 (.500-.540)	.650 (.620-.690)	8162
Total population	09-10	*	<LOD	<LOD	.390 (.360-.430)	.510 (.480-.570)	8733
Age 1-5 years	03-04	*	<LOD	<LOD	<LOD	.500 (<LOD-.600)	792
Age 1-5 years	05-06	*	<LOD	<LOD	.430 (<LOD-.470)	.510 (.430-.670)	948
Age 1-5 years	07-08	*	<LOD	<LOD	.350 (<LOD-.450)	.500 (.410-.550)	726
Age 1-5 years	09-10	*	<LOD	<LOD	<LOD	.360 (<LOD-.460)	789
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	.600 (.500-.600)	842
Age 6-11 years	05-06	*	<LOD	<LOD	.450 (<LOD-.520)	.560 (.470-.640)	932
Age 6-11 years	07-08	*	<LOD	<LOD	.380 (.350-.410)	.470 (.420-.520)	1010
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	.380 (.350-.440)	1006
Age 12-19 years	03-04	*	<LOD	<LOD	.500 (<LOD-.500)	.600 (.500-.600)	2060
Age 12-19 years	05-06	*	<LOD	<LOD	.430 (.410-.460)	.540 (.480-.590)	1984
Age 12-19 years	07-08	*	<LOD	<LOD	.370 (<LOD-.400)	.480 (.410-.530)	1069
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	.420 (.350-.500)	1184
Age 20+ years	03-04	*	<LOD	<LOD	.600 (.500-.600)	.700 (.700-.800)	4453
Age 20+ years	05-06	*	<LOD	<LOD	.570 (.530-.610)	.690 (.650-.750)	4507
Age 20+ years	07-08	*	<LOD	.380 (.360-.390)	.550 (.530-.570)	.700 (.660-.730)	5357
Age 20+ years	09-10	*	<LOD	<LOD	.420 (.390-.450)	.540 (.490-.600)	5754
Males	03-04	*	<LOD	<LOD	.500 (.500-.600)	.600 (.600-.700)	4015
Males	05-06	*	<LOD	<LOD	.480 (.450-.520)	.600 (.550-.640)	4076
Males	07-08	*	<LOD	<LOD	.500 (.470-.520)	.600 (.570-.650)	4093
Males	09-10	*	<LOD	<LOD	.370 (<LOD-.420)	.500 (.440-.560)	4336
Females	03-04	*	<LOD	<LOD	.600 (.500-.600)	.700 (.700-.800)	4132
Females	05-06	*	<LOD	<LOD	.580 (.550-.640)	.700 (.670-.780)	4295
Females	07-08	*	<LOD	.380 (.360-.390)	.550 (.520-.570)	.700 (.670-.740)	4069
Females	09-10	*	<LOD	<LOD	.410 (.380-.440)	.530 (.490-.600)	4397

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.42, 0.4, 0.35, and 0.35 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mercury_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Mercury_FactSheet.html

Blood Inorganic Mercury (2003 – 2010)

CAS Number 92786-62-4

Geometric mean and selected percentiles of blood concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	03-04	*	<LOD	<LOD	.500 (.500-.600)	.700 (.600-.800)	2007
Mexican Americans	05-06	*	<LOD	<LOD	.530 (.470-.580)	.670 (.560-.830)	2224
Mexican Americans	07-08	*	<LOD	<LOD	.430 (.400-.480)	.560 (.520-.610)	1685
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	.470 (.390-.530)	1947
Non-Hispanic blacks	03-04	*	<LOD	<LOD	.600 (.500-.600)	.700 (.600-.800)	2240
Non-Hispanic blacks	05-06	*	<LOD	<LOD	.530 (.470-.600)	.670 (.600-.760)	2183
Non-Hispanic blacks	07-08	*	<LOD	<LOD	.490 (.450-.530)	.610 (.560-.650)	1729
Non-Hispanic blacks	09-10	*	<LOD	<LOD	.370 (.350-.390)	.480 (.410-.530)	1580
Non-Hispanic whites	03-04	*	<LOD	<LOD	.600 (.500-.600)	.700 (.600-.700)	3406
Non-Hispanic whites	05-06	*	<LOD	<LOD	.540 (.500-.580)	.650 (.610-.710)	3298
Non-Hispanic whites	07-08	*	<LOD	.360 (<LOD-.390)	.530 (.500-.550)	.660 (.620-.700)	3421
Non-Hispanic whites	09-10	*	<LOD	<LOD	.410 (.370-.450)	.520 (.480-.590)	3739

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.42, 0.4, 0.35, and 0.35 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mercury_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Mercury_FactSheet.html

Urinary Mercury (2003 – 2010)

CAS Number 92786-62-4

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	.447 (.406-.492)	.420 (.360-.480)	1.00 (.870-1.14)	2.08 (1.78-2.42)	3.19 (2.76-3.55)	2538
Total population	05-06	.468 (.426-.514)	.460 (.410-.510)	1.03 (.900-1.12)	2.11 (1.88-2.36)	2.94 (2.58-3.26)	2578
Total population	07-08	.443 (.408-.482)	.440 (.400-.470)	.880 (.760-1.00)	1.74 (1.62-1.96)	2.66 (2.29-3.08)	2634
Total population	09-10	*	.400 (.360-.450)	.850 (.770-.910)	1.53 (1.30-1.81)	2.42 (2.07-2.72)	2865
Age 6-11 years	03-04	.254 (.213-.304)	.200 (.160-.250)	.440 (.330-.580)	1.16 (.610-1.61)	1.96 (1.13-2.97)	287
Age 6-11 years	05-06	.333 (.267-.416)	.320 (.250-.390)	.650 (.470-.840)	1.32 (.930-1.88)	2.18 (1.28-3.40)	355
Age 6-11 years	07-08	.301 (.260-.347)	.290 (.230-.340)	.520 (.430-.620)	1.03 (.770-1.23)	1.87 (1.03-3.48)	398
Age 6-11 years	09-10	*	.260 (.220-.320)	.510 (.430-.620)	1.03 (.730-1.31)	1.58 (1.18-1.88)	379
Age 12-19 years	03-04	.358 (.313-.408)	.330 (.290-.370)	.700 (.530-.840)	1.60 (1.14-2.52)	2.93 (1.88-3.66)	722
Age 12-19 years	05-06	.372 (.286-.486)	.350 (.270-.470)	.740 (.580-.920)	1.61 (.970-2.81)	2.59 (1.40-4.45)	703
Age 12-19 years	07-08	.364 (.326-.406)	.380 (.320-.450)	.590 (.550-.650)	1.24 (.830-1.71)	1.82 (1.41-2.29)	375
Age 12-19 years	09-10	*	.290 (.230-.360)	.530 (.470-.630)	1.09 (.890-1.31)	1.73 (1.28-2.31)	455
Age 20+ years	03-04	.495 (.442-.555)	.480 (.410-.570)	1.12 (.930-1.29)	2.20 (1.85-2.65)	3.33 (2.76-3.88)	1529
Age 20+ years	05-06	.505 (.468-.545)	.510 (.460-.560)	1.11 (1.04-1.16)	2.23 (1.97-2.50)	3.11 (2.64-3.37)	1520
Age 20+ years	07-08	.477 (.435-.523)	.470 (.430-.520)	.970 (.850-1.10)	1.89 (1.69-2.20)	2.82 (2.33-3.56)	1861
Age 20+ years	09-10	*	.450 (.390-.510)	.890 (.810-1.00)	1.66 (1.40-2.01)	2.53 (2.21-2.84)	2031
Males	03-04	.433 (.405-.463)	.400 (.350-.460)	.940 (.840-1.05)	1.88 (1.63-2.18)	2.68 (2.34-3.05)	1266
Males	05-06	.464 (.411-.523)	.450 (.400-.520)	.980 (.860-1.11)	2.03 (1.57-2.48)	3.00 (2.48-3.37)	1270
Males	07-08	.457 (.417-.501)	.460 (.400-.520)	.880 (.780-1.01)	1.68 (1.53-1.77)	2.40 (2.11-2.76)	1326
Males	09-10	*	.410 (.340-.480)	.860 (.750-.950)	1.46 (1.29-1.66)	2.21 (1.93-2.53)	1404
Females	03-04	.460 (.396-.534)	.430 (.330-.530)	1.07 (.870-1.28)	2.26 (1.77-2.90)	3.54 (2.76-4.31)	1272
Females	05-06	.472 (.424-.525)	.470 (.390-.550)	1.07 (.900-1.19)	2.14 (1.84-2.50)	2.89 (2.60-3.38)	1308
Females	07-08	.431 (.388-.478)	.430 (.380-.460)	.870 (.710-1.05)	1.88 (1.55-2.38)	2.92 (2.27-4.17)	1308
Females	09-10	*	.390 (.360-.450)	.840 (.730-.940)	1.61 (1.29-2.03)	2.61 (2.16-3.12)	1461
Mexican Americans	03-04	.416 (.340-.509)	.360 (.280-.430)	.960 (.700-1.23)	2.19 (1.39-3.24)	3.16 (1.99-6.30)	619
Mexican Americans	05-06	.451 (.369-.551)	.420 (.310-.560)	1.01 (.780-1.25)	2.22 (1.48-2.64)	3.00 (2.27-4.01)	651
Mexican Americans	07-08	.409 (.349-.480)	.370 (.330-.450)	.780 (.700-.950)	1.82 (1.26-1.97)	2.55 (1.87-3.08)	514
Mexican Americans	09-10	*	.350 (.280-.430)	.670 (.520-.890)	1.53 (1.06-1.84)	2.29 (1.81-2.76)	615
Non-Hispanic blacks	03-04	.476 (.413-.549)	.430 (.360-.530)	.890 (.770-1.00)	1.96 (1.60-2.31)	3.09 (2.03-4.89)	713
Non-Hispanic blacks	05-06	.453 (.384-.533)	.450 (.380-.550)	.890 (.710-1.13)	1.78 (1.34-2.29)	2.57 (2.21-3.15)	691
Non-Hispanic blacks	07-08	.478 (.411-.556)	.460 (.380-.540)	.910 (.770-1.06)	1.85 (1.42-2.41)	2.76 (1.97-4.19)	589
Non-Hispanic blacks	09-10	*	.410 (.340-.490)	.840 (.650-1.08)	1.66 (1.34-1.95)	2.64 (1.88-3.30)	546
Non-Hispanic whites	03-04	.441 (.382-.509)	.420 (.330-.520)	1.01 (.840-1.23)	2.08 (1.67-2.46)	3.24 (2.67-3.60)	1066
Non-Hispanic whites	05-06	.459 (.409-.513)	.440 (.400-.510)	1.00 (.860-1.12)	2.07 (1.77-2.40)	2.81 (2.47-3.37)	1044
Non-Hispanic whites	07-08	.431 (.378-.493)	.430 (.380-.480)	.880 (.700-1.07)	1.71 (1.50-2.18)	2.70 (2.18-3.59)	1100
Non-Hispanic whites	09-10	*	.390 (.330-.470)	.850 (.750-.950)	1.52 (1.26-2.01)	2.42 (1.93-2.85)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.14, 0.11, 0.08, and 0.08 respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mercury_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Mercury_FactSheet.html

Urinary Mercury (creatinine corrected) (2003 – 2010)

CAS Number 92786-62-4

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	.443 (.404-.486)	.447 (.392-.498)	.909 (.785-1.00)	1.65 (1.40-1.86)	2.35 (1.88-2.85)	2537
Total population	05-06	.460 (.414-.511)	.450 (.410-.510)	.870 (.790-1.00)	1.63 (1.44-1.75)	2.26 (2.12-2.50)	2578
Total population	07-08	.462 (.425-.502)	.450 (.400-.490)	.820 (.750-.960)	1.57 (1.38-1.73)	2.32 (2.00-2.89)	2634
Total population	09-10	*	.409 (.367-.459)	.793 (.691-.893)	1.43 (1.24-1.67)	2.09 (1.79-2.39)	2865
Age 6-11 years	03-04	.297 (.246-.358)	.276 (.208-.347)	.485 (.391-.630)	1.25 (.667-1.79)	1.79 (1.11-2.61)	286
Age 6-11 years	05-06	.411 (.323-.524)	.390 (.290-.500)	.710 (.510-.960)	1.30 (.990-2.12)	2.55 (1.38-3.50)	355
Age 6-11 years	07-08	.393 (.351-.440)	.350 (.300-.440)	.630 (.540-.770)	1.15 (.860-1.50)	1.68 (1.18-2.99)	398
Age 6-11 years	09-10	*	.357 (.306-.406)	.632 (.500-.750)	1.04 (.863-1.26)	1.62 (1.19-1.98)	379
Age 12-19 years	03-04	.255 (.225-.289)	.217 (.196-.275)	.464 (.376-.535)	1.06 (.714-1.39)	1.67 (1.13-2.03)	722
Age 12-19 years	05-06	.286 (.230-.356)	.260 (.200-.320)	.500 (.380-.660)	1.09 (.660-1.70)	1.76 (1.11-2.67)	703
Age 12-19 years	07-08	.284 (.251-.320)	.280 (.230-.300)	.500 (.400-.550)	.890 (.620-1.08)	1.18 (.980-1.36)	375
Age 12-19 years	09-10	*	.226 (.202-.287)	.481 (.429-.553)	.917 (.736-1.18)	1.41 (1.12-1.62)	455
Age 20+ years	03-04	.508 (.455-.566)	.525 (.447-.616)	1.00 (.875-1.09)	1.76 (1.46-2.11)	2.54 (2.04-3.00)	1529
Age 20+ years	05-06	.503 (.461-.549)	.510 (.470-.550)	.940 (.850-1.07)	1.69 (1.50-1.86)	2.31 (2.12-2.54)	1520
Age 20+ years	07-08	.507 (.463-.555)	.500 (.450-.550)	.940 (.810-1.02)	1.69 (1.51-2.01)	2.56 (2.09-3.17)	1861
Age 20+ years	09-10	*	.454 (.395-.517)	.861 (.731-.988)	1.51 (1.29-1.85)	2.15 (1.88-2.57)	2031
Males	03-04	.365 (.333-.400)	.362 (.309-.417)	.696 (.620-.784)	1.31 (1.18-1.44)	1.87 (1.51-2.30)	1266
Males	05-06	.380 (.336-.431)	.390 (.330-.440)	.740 (.600-.890)	1.27 (1.09-1.47)	1.73 (1.62-1.85)	1270
Males	07-08	.408 (.374-.445)	.390 (.350-.450)	.730 (.650-.810)	1.22 (1.11-1.36)	1.69 (1.54-2.11)	1326
Males	09-10	*	.337 (.298-.391)	.675 (.585-.802)	1.19 (1.06-1.29)	1.50 (1.33-1.78)	1404
Females	03-04	.532 (.472-.599)	.545 (.455-.652)	1.06 (.969-1.21)	1.88 (1.64-2.30)	2.77 (2.12-3.56)	1271
Females	05-06	.552 (.494-.617)	.540 (.490-.620)	1.09 (.850-1.27)	1.96 (1.72-2.14)	2.78 (2.35-3.17)	1308
Females	07-08	.520 (.469-.576)	.490 (.460-.540)	.960 (.820-1.11)	1.92 (1.58-2.24)	2.83 (2.24-3.50)	1308
Females	09-10	*	.475 (.423-.552)	.890 (.771-1.07)	1.81 (1.43-2.09)	2.57 (2.09-2.94)	1461
Mexican Americans	03-04	.384 (.307-.480)	.365 (.280-.455)	.768 (.619-.990)	1.62 (1.23-2.16)	2.32 (1.78-4.01)	618
Mexican Americans	05-06	.425 (.337-.536)	.400 (.310-.490)	.840 (.560-1.29)	1.82 (1.30-2.47)	2.63 (2.22-3.20)	651
Mexican Americans	07-08	.409 (.350-.479)	.380 (.310-.480)	.790 (.690-.850)	1.55 (1.08-1.98)	2.03 (1.55-2.70)	514
Mexican Americans	09-10	*	.333 (.272-.400)	.660 (.494-.861)	1.29 (1.02-1.54)	1.95 (1.52-2.89)	615
Non-Hispanic blacks	03-04	.343 (.301-.391)	.306 (.265-.368)	.587 (.522-.687)	1.28 (.964-1.63)	2.13 (1.41-2.87)	713
Non-Hispanic blacks	05-06	.328 (.285-.378)	.320 (.270-.370)	.610 (.470-.780)	1.15 (.930-1.40)	1.64 (1.29-1.96)	691
Non-Hispanic blacks	07-08	.350 (.303-.404)	.330 (.280-.380)	.590 (.490-.690)	1.10 (.840-1.46)	1.85 (1.13-2.77)	589
Non-Hispanic blacks	09-10	*	.317 (.259-.393)	.582 (.500-.659)	1.05 (.900-1.30)	1.55 (1.18-1.96)	546
Non-Hispanic whites	03-04	.463 (.400-.537)	.476 (.385-.588)	.970 (.800-1.07)	1.67 (1.32-2.11)	2.40 (1.88-2.90)	1066
Non-Hispanic whites	05-06	.475 (.426-.531)	.490 (.440-.540)	.890 (.820-1.02)	1.61 (1.42-1.75)	2.23 (1.98-2.50)	1044
Non-Hispanic whites	07-08	.481 (.423-.546)	.480 (.390-.540)	.890 (.750-1.03)	1.58 (1.34-2.02)	2.49 (1.89-3.18)	1100
Non-Hispanic whites	09-10	*	.434 (.370-.500)	.833 (.689-1.04)	1.50 (1.26-1.87)	2.12 (1.80-2.64)	1225

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Mercury_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Mercury_FactSheet.html

Urinary Molybdenum (1999 – 2010)

CAS Number 7439-98-7

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	45.9 (40.1-52.6)	50.7 (44.6-58.4)	84.9 (78.7-92.3)	135 (125-146)	180 (154-216)	2257
Total population	01-02	45.0 (42.1-48.0)	52.4 (48.9-55.5)	83.4 (79.1-88.7)	124 (117-130)	165 (145-176)	2690
Total population	03-04	39.7 (37.7-41.7)	44.5 (41.6-46.7)	78.5 (74.9-82.3)	111 (105-118)	138 (133-146)	2558
Total population	05-06	45.0 (42.4-47.8)	51.0 (47.2-54.7)	81.5 (77.4-85.8)	127 (117-132)	158 (144-174)	2576
Total population	07-08	45.2 (43.1-47.3)	49.7 (47.4-52.0)	86.2 (82.3-89.3)	136 (128-142)	163 (154-171)	2627
Total population	09-10	42.7 (40.8-44.7)	45.2 (43.6-47.3)	79.9 (75.9-83.0)	121 (112-130)	160 (147-180)	2848
Age 6-11 years	99-00	78.2 (61.0-100)	84.8 (67.7-105)	126 (106-147)	178 (147-259)	267 (159-840)	310
Age 6-11 years	01-02	63.3 (53.4-75.0)	69.2 (63.0-77.6)	109 (94.5-124)	169 (138-197)	197 (161-291)	368
Age 6-11 years	03-04	62.2 (56.7-68.3)	71.3 (55.7-84.1)	108 (92.7-122)	138 (127-152)	181 (138-235)	290
Age 6-11 years	05-06	65.6 (56.6-76.0)	73.5 (62.8-85.5)	108 (98.6-115)	154 (130-176)	181 (154-205)	355
Age 6-11 years	07-08	69.3 (60.8-79.0)	72.8 (62.1-83.9)	123 (99.9-148)	169 (154-217)	235 (169-282)	394
Age 6-11 years	09-10	65.0 (57.8-73.2)	69.7 (61.1-84.2)	123 (103-138)	180 (146-205)	218 (180-263)	378
Age 12-19 years	99-00	54.3 (47.6-62.0)	60.6 (52.2-70.3)	93.3 (79.9-109)	146 (112-171)	188 (146-216)	648
Age 12-19 years	01-02	60.6 (55.5-66.2)	65.7 (58.7-73.1)	97.1 (91.8-108)	145 (129-159)	179 (155-227)	762
Age 12-19 years	03-04	52.5 (49.0-56.3)	59.6 (55.5-65.1)	87.3 (84.5-91.4)	118 (105-125)	143 (130-156)	725
Age 12-19 years	05-06	59.1 (53.7-65.1)	63.8 (57.9-69.4)	96.6 (86.3-103)	136 (127-147)	173 (148-202)	701
Age 12-19 years	07-08	64.1 (58.6-70.2)	68.6 (63.7-80.2)	107 (97.2-118)	149 (125-167)	174 (151-196)	376
Age 12-19 years	09-10	52.4 (47.5-57.7)	58.5 (51.4-65.6)	96.2 (85.0-104)	148 (120-170)	178 (151-201)	451
Age 20+ years	99-00	41.7 (36.7-47.4)	46.6 (40.5-52.5)	76.7 (73.4-82.2)	126 (114-134)	168 (143-206)	1299
Age 20+ years	01-02	41.1 (38.3-44.1)	47.6 (43.7-51.2)	79.1 (71.9-83.6)	114 (103-124)	150 (130-166)	1560
Age 20+ years	03-04	35.9 (34.0-38.0)	40.3 (37.6-42.1)	71.5 (67.3-75.2)	105 (98.6-111)	133 (119-144)	1543
Age 20+ years	05-06	41.3 (38.7-44.0)	46.0 (41.7-49.6)	75.7 (72.1-80.3)	116 (107-127)	153 (135-171)	1520
Age 20+ years	07-08	40.8 (38.7-43.0)	44.5 (42.2-47.8)	77.7 (74.1-81.2)	123 (114-135)	152 (145-164)	1857
Age 20+ years	09-10	39.6 (37.5-41.8)	42.0 (39.8-43.9)	73.5 (69.0-76.8)	107 (100-113)	144 (130-163)	2019
Males	99-00	52.7 (45.7-60.7)	57.5 (48.5-68.4)	93.2 (83.8-106)	150 (128-187)	215 (161-278)	1121
Males	01-02	51.0 (46.6-55.7)	56.9 (52.0-62.6)	88.5 (81.6-96.5)	130 (120-141)	169 (145-194)	1335
Males	03-04	45.5 (43.3-47.8)	51.0 (48.1-55.4)	85.8 (82.8-90.7)	119 (112-130)	148 (136-163)	1281
Males	05-06	50.9 (48.2-53.9)	56.0 (51.0-60.3)	85.7 (80.3-92.8)	130 (122-136)	161 (145-177)	1271
Males	07-08	50.6 (48.1-53.2)	56.7 (52.4-60.6)	93.6 (88.7-98.7)	148 (137-150)	171 (159-178)	1327
Males	09-10	46.2 (43.5-49.1)	50.2 (46.4-52.7)	81.8 (77.0-85.9)	127 (113-144)	169 (147-197)	1398
Females	99-00	40.4 (34.8-46.8)	45.6 (40.4-52.0)	77.3 (71.0-85.7)	119 (105-138)	154 (132-180)	1136
Females	01-02	39.9 (37.2-42.9)	45.8 (42.8-49.3)	78.4 (72.6-82.9)	115 (104-128)	158 (130-177)	1355
Females	03-04	34.9 (32.2-37.7)	37.9 (33.5-41.6)	67.3 (64.6-72.2)	101 (97.3-108)	127 (114-139)	1277
Females	05-06	40.0 (36.4-43.8)	45.6 (40.0-51.0)	75.6 (71.2-82.0)	118 (107-128)	154 (136-179)	1305
Females	07-08	40.5 (38.1-43.0)	43.5 (39.0-48.0)	77.0 (72.0-84.5)	123 (114-134)	152 (142-165)	1300
Females	09-10	39.6 (36.9-42.4)	41.4 (39.0-43.8)	76.8 (70.7-82.0)	114 (106-127)	151 (135-170)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.8, 0.8, 1.5, 0.92, 0.92, and 0.92 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Molybdenum_BiomonitoringSummary.html

Urinary Molybdenum (1999 – 2010)

CAS Number 7439-98-7

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	47.0 (42.1-52.4)	53.2 (49.2-59.0)	80.6 (73.7-91.7)	121 (103-139)	152 (120-217)	780
Mexican Americans	01-02	49.3 (46.5-52.3)	55.7 (50.4-61.0)	86.4 (80.8-94.1)	133 (113-155)	177 (142-207)	683
Mexican Americans	03-04	47.0 (43.1-51.1)	54.4 (48.2-59.9)	82.9 (73.2-91.0)	121 (106-143)	152 (141-169)	618
Mexican Americans	05-06	55.1 (51.7-58.7)	58.4 (54.1-63.6)	98.3 (91.5-105)	140 (134-150)	177 (153-200)	652
Mexican Americans	07-08	53.3 (47.6-59.6)	57.3 (49.6-64.3)	90.4 (82.5-97.2)	140 (125-156)	176 (154-191)	515
Mexican Americans	09-10	49.4 (45.9-53.2)	51.1 (46.4-55.4)	81.4 (76.2-85.9)	134 (115-149)	180 (148-231)	613
Non-Hispanic blacks	99-00	57.7 (51.0-65.2)	62.2 (55.0-71.5)	97.8 (85.0-110)	153 (126-188)	206 (150-274)	546
Non-Hispanic blacks	01-02	53.2 (49.9-56.7)	60.3 (55.1-63.8)	90.0 (81.0-101)	132 (121-147)	166 (147-170)	667
Non-Hispanic blacks	03-04	46.0 (41.7-50.8)	46.2 (40.9-55.2)	82.3 (73.3-91.3)	117 (109-129)	156 (135-175)	723
Non-Hispanic blacks	05-06	48.1 (44.7-51.8)	52.0 (48.3-55.7)	80.0 (71.6-89.4)	125 (112-133)	160 (139-189)	692
Non-Hispanic blacks	07-08	51.9 (45.6-59.1)	56.9 (47.5-65.8)	90.3 (83.0-102)	137 (118-158)	168 (147-180)	589
Non-Hispanic blacks	09-10	45.8 (41.4-50.8)	52.1 (47.9-55.6)	85.6 (77.7-94.0)	132 (107-166)	184 (152-216)	544
Non-Hispanic whites	99-00	44.5 (37.0-53.4)	48.5 (41.1-59.8)	85.0 (76.7-96.5)	135 (119-154)	187 (146-223)	760
Non-Hispanic whites	01-02	42.2 (38.5-46.2)	48.9 (44.2-53.2)	80.7 (71.9-85.8)	117 (108-129)	152 (134-180)	1132
Non-Hispanic whites	03-04	37.1 (34.7-39.6)	41.3 (38.1-44.5)	75.2 (69.2-79.6)	107 (99.3-115)	130 (119-142)	1074
Non-Hispanic whites	05-06	42.8 (39.7-46.1)	48.6 (42.3-53.4)	79.0 (73.5-84.0)	123 (108-132)	156 (136-178)	1041
Non-Hispanic whites	07-08	41.7 (39.2-44.5)	46.5 (42.9-49.8)	81.2 (76.6-86.6)	131 (119-142)	153 (149-164)	1095
Non-Hispanic whites	09-10	40.6 (38.1-43.1)	42.6 (39.6-45.3)	75.9 (70.6-81.0)	114 (104-123)	148 (134-166)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.8, 0.8, 1.5, 0.92, 0.92, and 0.92 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Molybdenum_BiomonitoringSummary.html

Urinary Molybdenum (creatinine corrected) (1999 – 2010)

CAS Number 7439-98-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	43.2 (40.0-46.6)	41.6 (38.5-45.2)	63.5 (59.3-68.8)	108 (97.3-115)	144 (125-171)	2257
Total population	01-02	42.5 (39.9-45.2)	42.2 (40.1-45.2)	62.0 (58.4-66.4)	98.8 (90.1-109)	130 (120-149)	2689
Total population	03-04	39.4 (37.6-41.3)	39.2 (37.9-40.7)	58.3 (55.6-61.5)	89.0 (80.5-99.0)	120 (107-135)	2558
Total population	05-06	44.3 (42.4-46.3)	43.9 (41.8-45.7)	65.9 (61.8-68.6)	97.3 (92.5-103)	132 (125-143)	2576
Total population	07-08	47.1 (45.8-48.4)	46.3 (44.8-47.7)	72.4 (68.7-74.3)	104 (96.7-111)	137 (127-152)	2627
Total population	09-10	45.5 (43.2-47.8)	44.4 (41.9-47.4)	67.2 (64.7-69.4)	105 (95.4-121)	143 (129-157)	2848
Age 6-11 years	99-00	85.9 (73.7-100)	79.3 (71.6-88.4)	122 (107-133)	173 (130-243)	214 (154-1040)	310
Age 6-11 years	01-02	77.2 (73.1-81.5)	77.6 (71.8-84.5)	109 (99.4-120)	159 (129-170)	185 (165-219)	368
Age 6-11 years	03-04	72.5 (65.2-80.7)	73.5 (65.1-79.9)	101 (84.9-117)	132 (107-158)	160 (129-257)	290
Age 6-11 years	05-06	81.0 (71.9-91.3)	78.6 (72.1-89.0)	112 (93.7-134)	161 (133-199)	201 (160-261)	355
Age 6-11 years	07-08	90.4 (81.8-99.8)	88.2 (79.2-101)	133 (113-147)	206 (159-259)	274 (224-354)	394
Age 6-11 years	09-10	88.6 (81.9-95.9)	89.0 (79.2-95.4)	131 (123-148)	174 (154-191)	195 (178-216)	378
Age 12-19 years	99-00	41.9 (39.3-44.6)	40.5 (37.7-44.4)	57.3 (51.5-62.5)	85.4 (67.4-107)	112 (78.4-185)	648
Age 12-19 years	01-02	43.4 (40.8-46.1)	44.1 (40.8-47.2)	60.8 (57.6-63.7)	85.5 (79.7-93.8)	106 (94.8-118)	762
Age 12-19 years	03-04	37.5 (35.4-39.8)	38.9 (36.9-41.8)	53.2 (50.3-56.1)	71.9 (64.6-76.9)	81.0 (74.3-102)	725
Age 12-19 years	05-06	45.5 (42.5-48.7)	45.7 (41.3-49.2)	64.6 (58.5-71.2)	91.4 (75.3-102)	109 (95.0-131)	701
Age 12-19 years	07-08	50.1 (47.2-53.2)	50.1 (44.2-53.4)	71.6 (64.0-79.6)	95.8 (85.1-107)	129 (99.5-138)	376
Age 12-19 years	09-10	49.0 (45.3-53.0)	50.7 (44.6-56.2)	67.6 (63.0-73.1)	93.6 (85.8-101)	126 (96.4-134)	451
Age 20+ years	99-00	39.6 (36.9-42.6)	38.5 (36.1-41.0)	56.4 (53.5-60.7)	92.5 (83.1-100)	122 (116-147)	1299
Age 20+ years	01-02	39.3 (36.8-42.0)	39.6 (36.4-42.1)	57.2 (52.9-61.0)	86.7 (75.2-96.8)	123 (109-139)	1559
Age 20+ years	03-04	36.9 (35.0-38.9)	37.0 (35.7-38.4)	53.5 (50.0-56.9)	79.8 (75.9-87.5)	118 (101-134)	1543
Age 20+ years	05-06	41.2 (39.3-43.1)	40.5 (38.8-42.7)	59.1 (55.6-62.8)	87.9 (79.7-96.9)	119 (103-132)	1520
Age 20+ years	07-08	43.5 (42.1-44.9)	42.9 (41.3-44.7)	64.9 (61.7-69.9)	94.7 (90.8-97.1)	122 (110-132)	1857
Age 20+ years	09-10	41.9 (40.0-43.9)	41.2 (39.4-43.0)	61.9 (59.0-64.0)	90.4 (84.3-98.5)	127 (115-141)	2019
Males	99-00	40.8 (37.5-44.3)	38.5 (37.2-40.4)	62.4 (55.9-68.4)	101 (83.9-118)	131 (112-179)	1121
Males	01-02	40.3 (37.1-43.8)	40.2 (36.3-43.3)	60.5 (54.8-66.3)	91.3 (83.4-106)	123 (107-155)	1334
Males	03-04	38.3 (36.1-40.7)	37.8 (36.1-39.3)	56.3 (53.3-59.3)	85.7 (77.2-96.7)	118 (100-139)	1281
Males	05-06	41.8 (39.5-44.2)	41.7 (39.2-44.1)	62.1 (58.1-67.4)	94.6 (84.2-101)	126 (112-132)	1271
Males	07-08	45.3 (43.8-46.8)	44.6 (42.9-46.7)	72.3 (65.4-74.8)	105 (96.0-118)	135 (126-152)	1327
Males	09-10	42.1 (39.6-44.9)	41.3 (38.7-44.2)	63.4 (59.4-67.4)	101 (88.3-121)	139 (123-151)	1398
Females	99-00	45.5 (41.5-50.0)	44.1 (39.5-48.8)	64.4 (59.5-70.5)	112 (95.2-121)	152 (122-181)	1136
Females	01-02	44.6 (42.2-47.1)	45.1 (42.2-46.9)	63.6 (59.5-69.4)	107 (92.5-119)	136 (117-169)	1355
Females	03-04	40.5 (38.1-43.0)	41.1 (38.7-43.7)	61.4 (56.8-65.1)	90.1 (82.2-103)	122 (115-142)	1277
Females	05-06	46.9 (44.7-49.2)	46.5 (43.9-48.8)	67.2 (63.3-71.7)	103 (93.6-110)	157 (126-173)	1305
Females	07-08	48.9 (47.2-50.7)	48.3 (45.7-51.0)	72.6 (69.2-74.4)	103 (93.6-116)	139 (113-177)	1300
Females	09-10	48.9 (46.4-51.5)	48.8 (45.8-51.5)	70.1 (67.2-73.9)	109 (97.1-125)	148 (137-162)	1450

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Molybdenum_BiomonitoringSummary.html

Urinary Molybdenum (creatinine corrected) (1999 – 2010)

CAS Number 7439-98-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	42.9 (40.6-45.4)	43.2 (40.9-45.6)	61.6 (57.2-65.5)	89.5 (80.0-103)	115 (93.7-137)	780
Mexican Americans	01-02	48.1 (44.3-52.2)	48.4 (44.8-52.3)	71.7 (66.4-76.0)	103 (90.0-120)	129 (109-155)	682
Mexican Americans	03-04	43.5 (40.5-46.8)	43.5 (41.0-46.2)	62.8 (56.8-67.2)	85.9 (79.5-97.0)	112 (97.0-133)	618
Mexican Americans	05-06	51.8 (49.9-53.8)	52.1 (49.7-54.7)	73.5 (69.5-77.4)	106 (99.5-111)	133 (112-151)	652
Mexican Americans	07-08	53.3 (50.2-56.5)	51.9 (47.1-55.3)	77.9 (70.6-82.1)	113 (103-129)	151 (132-185)	515
Mexican Americans	09-10	51.8 (48.9-54.9)	51.4 (48.3-54.8)	74.0 (68.7-78.8)	109 (92.7-125)	148 (125-173)	613
Non-Hispanic blacks	99-00	37.2 (33.4-41.6)	37.1 (33.0-41.2)	55.9 (49.6-63.3)	88.2 (69.1-112)	119 (88.3-141)	546
Non-Hispanic blacks	01-02	36.5 (34.1-39.0)	37.5 (35.1-38.9)	57.1 (49.7-62.4)	78.3 (71.5-92.0)	109 (81.1-127)	667
Non-Hispanic blacks	03-04	33.1 (30.5-35.9)	31.7 (30.1-34.7)	47.2 (43.7-52.1)	72.9 (64.6-78.4)	90.5 (78.4-118)	723
Non-Hispanic blacks	05-06	34.9 (33.1-36.8)	35.4 (32.7-38.1)	53.5 (49.7-55.8)	81.1 (75.4-89.4)	102 (89.4-119)	692
Non-Hispanic blacks	07-08	38.0 (34.8-41.4)	38.7 (34.2-43.0)	57.0 (52.7-60.2)	82.0 (73.2-92.4)	105 (92.0-118)	589
Non-Hispanic blacks	09-10	36.3 (32.9-40.1)	37.2 (35.1-39.5)	54.7 (50.3-60.4)	85.2 (68.6-110)	121 (97.1-155)	544
Non-Hispanic whites	99-00	44.5 (40.2-49.2)	42.1 (38.8-47.3)	65.3 (58.9-71.3)	116 (101-126)	172 (131-195)	760
Non-Hispanic whites	01-02	42.5 (39.3-46.0)	41.9 (39.3-45.6)	61.2 (57.1-67.2)	104 (88.7-120)	138 (120-163)	1132
Non-Hispanic whites	03-04	39.1 (37.2-41.1)	39.3 (37.7-40.8)	58.1 (54.6-61.4)	87.4 (78.9-96.7)	118 (106-134)	1074
Non-Hispanic whites	05-06	44.5 (42.4-46.6)	43.9 (41.7-45.7)	65.0 (59.9-68.5)	97.3 (90.7-105)	132 (119-152)	1041
Non-Hispanic whites	07-08	46.7 (45.0-48.6)	46.1 (43.6-48.4)	72.4 (65.8-75.1)	103 (95.7-113)	135 (120-152)	1095
Non-Hispanic whites	09-10	45.3 (42.4-48.5)	44.2 (41.5-48.4)	66.6 (63.1-69.3)	101 (88.4-124)	141 (121-159)	1225

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Molybdenum_BiomonitoringSummary.html

Urinary Platinum (1999 – 2010)‡

CAS Number 7740-06-4

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	2465
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2690
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2558
Total population	05-06	*	<LOD	<LOD	.009 (<LOD-.012)	.014 (.009-.025)	2576
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2627
Total population	09-10	*	<LOD	<LOD	.009 (<LOD-.015)	.016 (.009-.049)	2847
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	<LOD	340
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	368
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	290
Age 6-11 years	05-06	*	<LOD	<LOD	.010 (<LOD-.011)	.014 (.010-.020)	355
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	.009 (<LOD-.011)	394
Age 6-11 years	09-10	*	<LOD	<LOD	.010 (<LOD-.014)	.015 (.009-.036)	378
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	719
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	762
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	725
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	.012 (.009-.019)	701
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	.009 (<LOD-.017)	376
Age 12-19 years	09-10	*	<LOD	<LOD	.010 (<LOD-.019)	.018 (<LOD-.078)	451
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1406
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1560
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1543
Age 20+ years	05-06	*	<LOD	<LOD	.009 (<LOD-.014)	.014 (.009-.032)	1520
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1857
Age 20+ years	09-10	*	<LOD	<LOD	.009 (<LOD-.016)	.017 (.009-.049)	2018
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	1227
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1335
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1281
Males	05-06	*	<LOD	<LOD	.009 (<LOD-.012)	.012 (.009-.020)	1271
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1327
Males	09-10	*	<LOD	<LOD	.009 (<LOD-.015)	.016 (<LOD-.047)	1397
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1238
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1355
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1277
Females	05-06	*	<LOD	<LOD	.010 (<LOD-.014)	.015 (.010-.033)	1305
Females	07-08	*	<LOD	<LOD	<LOD	.009 (<LOD-.009)	1300
Females	09-10	*	<LOD	<LOD	.010 (<LOD-.015)	.017 (.009-.051)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.04, 0.04, 0.07, 0.009, 0.009, and 0.009 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Platinum_BiomonitoringSummary.html

Urinary Platinum (1999 – 2010)‡

CAS Number 7740-06-4

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	884
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	683
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	618
Mexican Americans	05-06	*	<LOD	<LOD	.010 (<LOD-.014)	.014 (.009-.023)	652
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	.009 (<LOD-.010)	515
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	.010 (.009-.012)	613
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	568
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	667
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	723
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	.011 (.009-.016)	692
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	.009 (<LOD-.013)	589
Non-Hispanic blacks	09-10	*	<LOD	<LOD	.012 (<LOD-.032)	.024 (.009-.103)	544
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	822
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1132
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1074
Non-Hispanic whites	05-06	*	<LOD	<LOD	.009 (<LOD-.012)	.013 (.009-.026)	1041
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	.009 (<LOD-.009)	1095
Non-Hispanic whites	09-10	*	<LOD	<LOD	.009 (<LOD-.019)	.018 (<LOD-.073)	1224

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.04, 0.04, 0.07, 0.009, 0.009, and 0.009 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Platinum_BiomonitoringSummary.html

Urinary Platinum (creatinine corrected) (1999 – 2010)‡

CAS Number 7740-06-4

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	2465
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2689
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2558
Total population	05-06	*	<LOD	<LOD	.021 (<LOD-.023)	.029 (.026-.035)	2576
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2627
Total population	09-10	*	<LOD	<LOD	.023 (<LOD-.027)	.033 (.026-.046)	2847
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	<LOD	340
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	368
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	290
Age 6-11 years	05-06	*	<LOD	<LOD	.020 (<LOD-.027)	.030 (.021-.050)	355
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	.026 (<LOD-.032)	394
Age 6-11 years	09-10	*	<LOD	<LOD	.026 (<LOD-.030)	.043 (.027-.050)	378
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	719
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	762
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	725
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	.017 (.012-.026)	701
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	.017 (<LOD-.025)	376
Age 12-19 years	09-10	*	<LOD	<LOD	.021 (<LOD-.029)	.032 (<LOD-.050)	451
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1406
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1559
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1543
Age 20+ years	05-06	*	<LOD	<LOD	.022 (<LOD-.025)	.030 (.026-.035)	1520
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1857
Age 20+ years	09-10	*	<LOD	<LOD	.023 (<LOD-.030)	.035 (.024-.050)	2018
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	1227
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1334
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1281
Males	05-06	*	<LOD	<LOD	.014 (<LOD-.016)	.021 (.016-.025)	1271
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1327
Males	09-10	*	<LOD	<LOD	.019 (<LOD-.025)	.027 (<LOD-.036)	1397
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	1238
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1355
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1277
Females	05-06	*	<LOD	<LOD	.026 (<LOD-.030)	.033 (.029-.050)	1305
Females	07-08	*	<LOD	<LOD	<LOD	.033 (<LOD-.043)	1300
Females	09-10	*	<LOD	<LOD	.027 (<LOD-.032)	.038 (.030-.054)	1450

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Platinum_BiomonitoringSummary.html

Urinary Platinum (creatinine corrected) (1999 – 2010)‡

CAS Number 7740-06-4

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	884
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	682
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	618
Mexican Americans	05-06	*	<LOD	<LOD	.016 (<LOD-.019)	.023 (.017-.032)	652
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	.025 (<LOD-.033)	515
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	.025 (.021-.029)	613
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	568
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	667
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	723
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	.018 (.014-.022)	692
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	.017 (<LOD-.021)	589
Non-Hispanic blacks	09-10	*	<LOD	<LOD	.017 (<LOD-.024)	.027 (.019-.050)	544
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	822
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1132
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1074
Non-Hispanic whites	05-06	*	<LOD	<LOD	.023 (<LOD-.025)	.030 (.027-.035)	1041
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	.030 (<LOD-.038)	1095
Non-Hispanic whites	09-10	*	<LOD	<LOD	.025 (<LOD-.032)	.036 (<LOD-.058)	1224

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Platinum_BiomonitoringSummary.html

Urinary Thallium (1999 – 2010)

CAS Number 7440-28-0

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.176 (.162-.192)	.200 (.180-.220)	.290 (.270-.330)	.400 (.370-.420)	.450 (.430-.480)	2413
Total population	01-02	.165 (.154-.177)	.190 (.180-.200)	.280 (.260-.290)	.370 (.350-.390)	.440 (.410-.470)	2653
Total population	03-04	.155 (.145-.165)	.170 (.160-.180)	.270 (.250-.290)	.370 (.340-.400)	.440 (.410-.490)	2558
Total population	05-06	.158 (.151-.165)	.180 (.170-.190)	.270 (.260-.280)	.360 (.350-.390)	.430 (.410-.460)	2576
Total population	07-08	.146 (.139-.153)	.160 (.150-.170)	.250 (.230-.260)	.330 (.320-.360)	.400 (.390-.420)	2627
Total population	09-10	.144 (.137-.152)	.160 (.150-.170)	.240 (.230-.250)	.340 (.310-.360)	.410 (.380-.440)	2848
Age 6-11 years	99-00	.201 (.167-.243)	.210 (.150-.280)	.310 (.250-.350)	.410 (.330-.450)	.450 (.350-.590)	336
Age 6-11 years	01-02	.172 (.147-.202)	.200 (.160-.220)	.290 (.230-.330)	.350 (.340-.370)	.390 (.360-.430)	362
Age 6-11 years	03-04	.191 (.170-.215)	.190 (.170-.230)	.300 (.250-.370)	.430 (.360-.500)	.510 (.430-.690)	290
Age 6-11 years	05-06	.174 (.158-.192)	.190 (.170-.210)	.280 (.250-.300)	.380 (.320-.430)	.430 (.400-.480)	355
Age 6-11 years	07-08	.166 (.150-.185)	.170 (.150-.200)	.250 (.230-.270)	.350 (.310-.410)	.420 (.360-.470)	394
Age 6-11 years	09-10	.161 (.147-.176)	.170 (.150-.200)	.280 (.230-.310)	.360 (.330-.410)	.440 (.400-.460)	378
Age 12-19 years	99-00	.202 (.181-.225)	.220 (.200-.240)	.300 (.270-.340)	.410 (.390-.430)	.470 (.430-.510)	697
Age 12-19 years	01-02	.200 (.182-.220)	.220 (.190-.250)	.310 (.290-.320)	.370 (.350-.420)	.470 (.400-.500)	746
Age 12-19 years	03-04	.201 (.185-.218)	.220 (.210-.240)	.310 (.290-.320)	.410 (.360-.470)	.500 (.420-.560)	725
Age 12-19 years	05-06	.182 (.165-.200)	.210 (.190-.230)	.290 (.270-.310)	.370 (.350-.400)	.430 (.390-.480)	701
Age 12-19 years	07-08	.172 (.155-.190)	.180 (.160-.210)	.270 (.230-.300)	.330 (.310-.350)	.390 (.340-.420)	376
Age 12-19 years	09-10	.150 (.137-.163)	.160 (.150-.180)	.250 (.240-.270)	.340 (.290-.380)	.400 (.350-.430)	451
Age 20+ years	99-00	.170 (.157-.183)	.190 (.180-.210)	.290 (.260-.320)	.400 (.370-.420)	.450 (.420-.480)	1380
Age 20+ years	01-02	.159 (.147-.173)	.190 (.170-.200)	.270 (.250-.290)	.380 (.350-.400)	.440 (.410-.490)	1545
Age 20+ years	03-04	.145 (.134-.156)	.160 (.150-.170)	.250 (.240-.270)	.360 (.330-.390)	.420 (.390-.460)	1543
Age 20+ years	05-06	.152 (.144-.161)	.170 (.160-.180)	.260 (.240-.270)	.360 (.340-.390)	.440 (.400-.470)	1520
Age 20+ years	07-08	.140 (.133-.148)	.150 (.140-.160)	.240 (.230-.250)	.330 (.310-.360)	.400 (.380-.440)	1857
Age 20+ years	09-10	.142 (.133-.150)	.160 (.150-.170)	.240 (.220-.250)	.330 (.310-.360)	.410 (.370-.440)	2019
Males	99-00	.197 (.179-.217)	.220 (.200-.240)	.320 (.280-.350)	.400 (.370-.440)	.450 (.420-.520)	1200
Males	01-02	.184 (.173-.196)	.210 (.200-.230)	.290 (.280-.300)	.380 (.360-.400)	.430 (.400-.470)	1313
Males	03-04	.167 (.156-.178)	.190 (.180-.200)	.280 (.260-.300)	.370 (.340-.400)	.430 (.400-.480)	1281
Males	05-06	.171 (.163-.179)	.190 (.180-.200)	.270 (.260-.280)	.370 (.360-.390)	.430 (.410-.470)	1271
Males	07-08	.154 (.148-.161)	.170 (.160-.180)	.250 (.240-.270)	.340 (.320-.360)	.390 (.380-.440)	1327
Males	09-10	.152 (.140-.164)	.170 (.150-.180)	.250 (.240-.270)	.330 (.310-.360)	.410 (.360-.440)	1398
Females	99-00	.159 (.145-.175)	.180 (.150-.200)	.270 (.250-.300)	.390 (.350-.420)	.460 (.410-.490)	1213
Females	01-02	.149 (.137-.163)	.160 (.150-.180)	.260 (.230-.290)	.370 (.330-.400)	.440 (.400-.500)	1340
Females	03-04	.144 (.133-.156)	.160 (.140-.170)	.250 (.230-.280)	.370 (.330-.410)	.450 (.410-.510)	1277
Females	05-06	.146 (.138-.155)	.160 (.150-.180)	.260 (.240-.270)	.360 (.350-.380)	.440 (.400-.460)	1305
Females	07-08	.139 (.129-.148)	.150 (.130-.160)	.240 (.220-.260)	.330 (.300-.390)	.410 (.380-.430)	1300
Females	09-10	.137 (.129-.146)	.150 (.140-.160)	.230 (.210-.250)	.340 (.310-.360)	.410 (.380-.450)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.02, 0.02, 0.02, 0.015, 0.015, and 0.015 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Thallium_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Thallium_FactSheet.html

Urinary Thallium (1999 – 2010)

CAS Number 7440-28-0

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.172 (.150-.196)	.200 (.160-.230)	.270 (.250-.300)	.370 (.320-.420)	.450 (.370-.520)	861
Mexican Americans	01-02	.160 (.148-.173)	.180 (.160-.200)	.260 (.240-.270)	.340 (.310-.360)	.400 (.350-.440)	675
Mexican Americans	03-04	.171 (.160-.183)	.200 (.170-.220)	.280 (.260-.310)	.360 (.340-.420)	.450 (.390-.480)	618
Mexican Americans	05-06	.158 (.149-.167)	.180 (.170-.190)	.250 (.240-.270)	.330 (.300-.360)	.400 (.360-.440)	652
Mexican Americans	07-08	.151 (.140-.164)	.170 (.150-.180)	.250 (.220-.270)	.330 (.310-.360)	.380 (.350-.390)	515
Mexican Americans	09-10	.147 (.139-.155)	.160 (.150-.180)	.240 (.210-.260)	.310 (.290-.320)	.390 (.320-.430)	613
Non-Hispanic blacks	99-00	.217 (.197-.239)	.230 (.220-.260)	.350 (.300-.390)	.450 (.400-.520)	.550 (.460-.630)	561
Non-Hispanic blacks	01-02	.202 (.187-.218)	.220 (.200-.230)	.300 (.270-.340)	.410 (.380-.440)	.520 (.440-.590)	657
Non-Hispanic blacks	03-04	.185 (.167-.206)	.190 (.170-.220)	.290 (.250-.330)	.410 (.330-.490)	.490 (.410-.640)	723
Non-Hispanic blacks	05-06	.188 (.169-.210)	.210 (.180-.230)	.300 (.270-.320)	.390 (.360-.440)	.500 (.430-.530)	692
Non-Hispanic blacks	07-08	.171 (.160-.182)	.180 (.170-.190)	.270 (.250-.290)	.350 (.330-.390)	.430 (.390-.460)	589
Non-Hispanic blacks	09-10	.162 (.148-.177)	.180 (.160-.200)	.270 (.250-.280)	.350 (.330-.400)	.450 (.390-.510)	544
Non-Hispanic whites	99-00	.170 (.153-.188)	.200 (.170-.220)	.290 (.260-.330)	.400 (.360-.420)	.450 (.420-.480)	801
Non-Hispanic whites	01-02	.159 (.147-.172)	.180 (.170-.200)	.270 (.250-.290)	.360 (.330-.390)	.430 (.390-.460)	1114
Non-Hispanic whites	03-04	.146 (.135-.158)	.160 (.150-.170)	.260 (.240-.280)	.360 (.330-.380)	.410 (.380-.460)	1074
Non-Hispanic whites	05-06	.150 (.140-.160)	.170 (.160-.180)	.260 (.240-.270)	.350 (.320-.380)	.420 (.390-.450)	1041
Non-Hispanic whites	07-08	.138 (.130-.147)	.150 (.130-.160)	.240 (.220-.260)	.320 (.300-.360)	.390 (.350-.440)	1095
Non-Hispanic whites	09-10	.139 (.130-.149)	.150 (.140-.170)	.240 (.210-.250)	.330 (.300-.360)	.400 (.360-.430)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.02, 0.02, 0.02, 0.015, 0.015, and 0.015 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Thallium_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Thallium_FactSheet.html

Urinary Thallium (creatinine corrected) (1999 – 2010)

CAS Number 7440-28-0

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.166 (.159-.173)	.168 (.162-.176)	.224 (.217-.233)	.297 (.273-.319)	.366 (.338-.387)	2413
Total population	01-02	.156 (.151-.162)	.156 (.148-.164)	.215 (.208-.222)	.287 (.278-.300)	.349 (.337-.365)	2652
Total population	03-04	.154 (.149-.158)	.153 (.146-.160)	.214 (.203-.222)	.286 (.274-.304)	.350 (.328-.369)	2558
Total population	05-06	.155 (.149-.162)	.150 (.140-.160)	.210 (.200-.220)	.300 (.290-.320)	.370 (.350-.390)	2576
Total population	07-08	.152 (.147-.158)	.150 (.140-.160)	.210 (.200-.220)	.290 (.280-.310)	.370 (.350-.380)	2627
Total population	09-10	.153 (.145-.162)	.150 (.140-.160)	.220 (.200-.230)	.300 (.280-.320)	.370 (.350-.400)	2848
Age 6-11 years	99-00	.221 (.197-.248)	.222 (.196-.236)	.297 (.229-.356)	.375 (.318-.469)	.424 (.356-.600)	336
Age 6-11 years	01-02	.211 (.198-.226)	.207 (.198-.221)	.286 (.260-.321)	.370 (.333-.402)	.412 (.389-.456)	362
Age 6-11 years	03-04	.223 (.208-.238)	.216 (.198-.229)	.306 (.280-.346)	.412 (.346-.458)	.458 (.400-.532)	290
Age 6-11 years	05-06	.215 (.200-.231)	.210 (.190-.250)	.310 (.270-.320)	.360 (.320-.410)	.430 (.360-.510)	355
Age 6-11 years	07-08	.217 (.201-.234)	.220 (.210-.240)	.310 (.270-.340)	.410 (.370-.440)	.470 (.410-.540)	394
Age 6-11 years	09-10	.219 (.199-.241)	.220 (.200-.260)	.300 (.280-.340)	.400 (.350-.440)	.500 (.390-.600)	378
Age 12-19 years	99-00	.153 (.146-.160)	.154 (.146-.162)	.205 (.191-.219)	.258 (.231-.278)	.321 (.265-.364)	697
Age 12-19 years	01-02	.143 (.137-.150)	.145 (.135-.152)	.196 (.184-.207)	.272 (.250-.289)	.312 (.299-.333)	746
Age 12-19 years	03-04	.143 (.135-.152)	.146 (.131-.155)	.194 (.179-.208)	.254 (.234-.280)	.304 (.271-.327)	725
Age 12-19 years	05-06	.140 (.133-.147)	.140 (.130-.150)	.190 (.170-.200)	.240 (.220-.270)	.290 (.250-.310)	701
Age 12-19 years	07-08	.134 (.124-.145)	.140 (.120-.150)	.190 (.180-.220)	.260 (.220-.300)	.300 (.250-.370)	376
Age 12-19 years	09-10	.140 (.127-.155)	.140 (.120-.160)	.190 (.170-.220)	.260 (.220-.310)	.310 (.260-.370)	451
Age 20+ years	99-00	.162 (.153-.171)	.167 (.155-.176)	.218 (.207-.230)	.286 (.271-.300)	.364 (.325-.389)	1380
Age 20+ years	01-02	.153 (.147-.159)	.153 (.144-.161)	.210 (.200-.217)	.278 (.263-.293)	.343 (.313-.362)	1544
Age 20+ years	03-04	.148 (.144-.153)	.149 (.141-.156)	.206 (.192-.215)	.273 (.258-.289)	.333 (.306-.353)	1543
Age 20+ years	05-06	.152 (.145-.159)	.150 (.140-.160)	.210 (.200-.210)	.290 (.270-.310)	.370 (.350-.400)	1520
Age 20+ years	07-08	.149 (.143-.156)	.150 (.140-.160)	.210 (.200-.220)	.280 (.270-.300)	.350 (.330-.380)	1857
Age 20+ years	09-10	.150 (.142-.157)	.150 (.140-.160)	.210 (.200-.220)	.290 (.270-.320)	.370 (.330-.400)	2019
Males	99-00	.154 (.147-.161)	.156 (.149-.164)	.202 (.192-.214)	.269 (.254-.297)	.338 (.300-.364)	1200
Males	01-02	.146 (.140-.153)	.148 (.142-.157)	.192 (.184-.204)	.260 (.246-.278)	.307 (.291-.342)	1312
Males	03-04	.140 (.135-.146)	.142 (.134-.149)	.188 (.180-.198)	.264 (.235-.286)	.317 (.287-.350)	1281
Males	05-06	.140 (.134-.147)	.140 (.130-.140)	.190 (.180-.200)	.270 (.240-.300)	.320 (.300-.340)	1271
Males	07-08	.138 (.131-.145)	.130 (.130-.140)	.190 (.180-.210)	.270 (.250-.290)	.330 (.300-.360)	1327
Males	09-10	.138 (.129-.148)	.130 (.130-.150)	.190 (.170-.210)	.270 (.240-.300)	.330 (.290-.360)	1398
Females	99-00	.178 (.167-.189)	.182 (.169-.197)	.244 (.226-.259)	.317 (.281-.366)	.380 (.333-.462)	1213
Females	01-02	.167 (.158-.176)	.167 (.153-.180)	.233 (.217-.250)	.313 (.282-.348)	.378 (.348-.402)	1340
Females	03-04	.167 (.162-.173)	.166 (.157-.177)	.235 (.222-.243)	.313 (.286-.333)	.368 (.340-.412)	1277
Females	05-06	.171 (.162-.181)	.170 (.160-.180)	.230 (.220-.250)	.330 (.300-.360)	.430 (.370-.490)	1305
Females	07-08	.167 (.163-.173)	.170 (.160-.180)	.230 (.230-.240)	.320 (.300-.340)	.390 (.360-.430)	1300
Females	09-10	.170 (.161-.178)	.170 (.160-.180)	.230 (.220-.250)	.340 (.310-.370)	.420 (.370-.470)	1450

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Thallium_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Thallium_FactSheet.html

Urinary Thallium (creatinine corrected) (1999 – 2010)

CAS Number 7440-28-0

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.158 (.147-.170)	.160 (.148-.176)	.213 (.200-.237)	.282 (.266-.304)	.343 (.306-.389)	861
Mexican Americans	01-02	.156 (.145-.169)	.155 (.145-.167)	.204 (.191-.221)	.286 (.250-.317)	.361 (.301-.424)	674
Mexican Americans	03-04	.159 (.148-.170)	.157 (.143-.172)	.211 (.187-.241)	.293 (.273-.324)	.369 (.326-.422)	618
Mexican Americans	05-06	.149 (.139-.158)	.150 (.140-.160)	.200 (.180-.210)	.270 (.240-.290)	.320 (.280-.370)	652
Mexican Americans	07-08	.151 (.143-.160)	.160 (.130-.170)	.200 (.190-.220)	.270 (.250-.280)	.320 (.290-.370)	515
Mexican Americans	09-10	.154 (.141-.167)	.150 (.140-.170)	.210 (.180-.230)	.280 (.250-.330)	.360 (.310-.430)	613
Non-Hispanic blacks	99-00	.142 (.133-.152)	.140 (.129-.151)	.200 (.184-.214)	.278 (.244-.307)	.383 (.286-.462)	561
Non-Hispanic blacks	01-02	.138 (.128-.150)	.136 (.125-.146)	.194 (.170-.212)	.256 (.238-.278)	.328 (.271-.387)	657
Non-Hispanic blacks	03-04	.133 (.122-.145)	.128 (.119-.143)	.185 (.171-.200)	.255 (.237-.269)	.323 (.267-.377)	723
Non-Hispanic blacks	05-06	.137 (.128-.145)	.130 (.130-.140)	.190 (.180-.200)	.240 (.220-.290)	.320 (.270-.370)	692
Non-Hispanic blacks	07-08	.125 (.118-.132)	.130 (.120-.130)	.170 (.160-.180)	.230 (.210-.260)	.280 (.250-.330)	589
Non-Hispanic blacks	09-10	.128 (.120-.137)	.120 (.110-.130)	.180 (.160-.210)	.250 (.230-.280)	.310 (.270-.350)	544
Non-Hispanic whites	99-00	.169 (.160-.179)	.173 (.167-.181)	.227 (.215-.240)	.300 (.272-.329)	.364 (.333-.377)	801
Non-Hispanic whites	01-02	.161 (.155-.167)	.161 (.153-.171)	.222 (.214-.231)	.292 (.278-.304)	.348 (.330-.383)	1114
Non-Hispanic whites	03-04	.154 (.148-.160)	.153 (.143-.162)	.214 (.200-.223)	.283 (.271-.304)	.333 (.313-.363)	1074
Non-Hispanic whites	05-06	.156 (.148-.164)	.150 (.140-.160)	.210 (.200-.230)	.300 (.280-.320)	.360 (.330-.400)	1041
Non-Hispanic whites	07-08	.154 (.146-.164)	.160 (.140-.170)	.220 (.210-.230)	.300 (.280-.320)	.370 (.340-.390)	1095
Non-Hispanic whites	09-10	.155 (.145-.166)	.150 (.140-.170)	.220 (.200-.240)	.310 (.280-.330)	.380 (.340-.410)	1225

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Thallium_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Thallium_FactSheet.html

Urinary Tungsten (1999 – 2010)

CAS Number 7440-33-7

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.093 (.087-.100)	.090 (.080-.090)	.180 (.160-.190)	.320 (.280-.370)	.500 (.430-.550)	2338
Total population	01-02	.082 (.073-.092)	.070 (.060-.090)	.160 (.140-.180)	.300 (.260-.350)	.460 (.370-.560)	2652
Total population	03-04	.071 (.064-.078)	.070 (.060-.080)	.130 (.120-.140)	.270 (.230-.300)	.400 (.330-.480)	2558
Total population	05-06	.085 (.079-.092)	.090 (.080-.090)	.170 (.150-.180)	.310 (.280-.340)	.470 (.400-.520)	2576
Total population	07-08	.099 (.093-.105)	.100 (.090-.110)	.190 (.180-.200)	.360 (.320-.380)	.500 (.440-.570)	2627
Total population	09-10	.081 (.075-.087)	.080 (.070-.090)	.160 (.150-.170)	.310 (.270-.330)	.460 (.370-.540)	2847
Age 6-11 years	99-00	.158 (.123-.204)	.160 (.120-.220)	.270 (.220-.350)	.510 (.380-.560)	.620 (.510-.950)	320
Age 6-11 years	01-02	.137 (.110-.170)	.140 (.110-.170)	.260 (.200-.350)	.460 (.360-.690)	.770 (.510-1.53)	363
Age 6-11 years	03-04	.130 (.111-.151)	.140 (.120-.150)	.240 (.190-.290)	.410 (.290-.500)	.500 (.370-.630)	290
Age 6-11 years	05-06	.142 (.121-.166)	.140 (.120-.170)	.230 (.210-.290)	.430 (.330-.610)	.640 (.440-.850)	355
Age 6-11 years	07-08	.160 (.138-.186)	.150 (.130-.170)	.310 (.240-.390)	.510 (.450-.580)	.810 (.560-1.15)	394
Age 6-11 years	09-10	.151 (.126-.180)	.150 (.110-.200)	.310 (.230-.400)	.560 (.400-.770)	.770 (.560-1.04)	378
Age 12-19 years	99-00	.113 (.097-.132)	.110 (.090-.130)	.210 (.180-.250)	.360 (.310-.440)	.530 (.380-.800)	679
Age 12-19 years	01-02	.113 (.095-.135)	.110 (.090-.130)	.210 (.180-.260)	.400 (.310-.520)	.570 (.430-.790)	744
Age 12-19 years	03-04	.105 (.090-.122)	.100 (.090-.120)	.190 (.160-.230)	.350 (.290-.460)	.530 (.350-1.00)	725
Age 12-19 years	05-06	.131 (.108-.158)	.130 (.100-.160)	.250 (.200-.310)	.430 (.360-.530)	.620 (.410-1.04)	701
Age 12-19 years	07-08	.150 (.136-.167)	.160 (.140-.180)	.250 (.220-.290)	.470 (.350-.660)	.660 (.430-1.05)	376
Age 12-19 years	09-10	.101 (.089-.115)	.100 (.080-.120)	.210 (.190-.240)	.360 (.300-.460)	.540 (.440-.650)	451
Age 20+ years	99-00	.084 (.078-.091)	.080 (.070-.090)	.160 (.130-.180)	.280 (.260-.320)	.450 (.360-.520)	1339
Age 20+ years	01-02	.073 (.065-.082)	.060 (.050-.070)	.140 (.110-.160)	.260 (.210-.310)	.380 (.310-.490)	1545
Age 20+ years	03-04	.062 (.056-.068)	.060 (.050-.070)	.110 (.100-.120)	.210 (.180-.250)	.360 (.270-.430)	1543
Age 20+ years	05-06	.075 (.070-.081)	.080 (.070-.080)	.140 (.130-.160)	.250 (.220-.310)	.410 (.340-.470)	1520
Age 20+ years	07-08	.088 (.081-.095)	.090 (.080-.100)	.170 (.150-.190)	.310 (.280-.340)	.450 (.390-.500)	1857
Age 20+ years	09-10	.073 (.068-.079)	.080 (.070-.080)	.150 (.130-.160)	.260 (.230-.300)	.370 (.330-.460)	2018
Males	99-00	.107 (.096-.120)	.100 (.090-.120)	.210 (.190-.230)	.390 (.310-.470)	.530 (.470-.650)	1160
Males	01-02	.088 (.074-.105)	.080 (.060-.100)	.170 (.140-.220)	.330 (.260-.390)	.490 (.380-.580)	1307
Males	03-04	.081 (.071-.093)	.080 (.070-.090)	.140 (.130-.170)	.300 (.250-.340)	.430 (.340-.560)	1281
Males	05-06	.095 (.090-.101)	.090 (.080-.100)	.180 (.160-.190)	.340 (.310-.380)	.480 (.420-.610)	1271
Males	07-08	.109 (.102-.116)	.110 (.100-.130)	.210 (.190-.240)	.380 (.350-.450)	.550 (.450-.660)	1327
Males	09-10	.090 (.082-.098)	.090 (.080-.100)	.170 (.150-.190)	.320 (.290-.350)	.500 (.410-.550)	1398
Females	99-00	.082 (.077-.087)	.070 (.060-.080)	.150 (.130-.160)	.270 (.240-.300)	.400 (.320-.470)	1178
Females	01-02	.076 (.069-.084)	.060 (.060-.080)	.150 (.120-.170)	.280 (.230-.330)	.430 (.340-.560)	1345
Females	03-04	.062 (.056-.069)	.060 (.050-.070)	.110 (.100-.120)	.220 (.190-.250)	.370 (.270-.460)	1277
Females	05-06	.077 (.069-.085)	.080 (.070-.090)	.160 (.150-.170)	.280 (.250-.320)	.440 (.350-.510)	1305
Females	07-08	.090 (.083-.098)	.090 (.080-.100)	.170 (.160-.180)	.300 (.270-.350)	.460 (.420-.550)	1300
Females	09-10	.074 (.067-.081)	.070 (.070-.080)	.150 (.130-.170)	.280 (.240-.330)	.400 (.320-.600)	1449

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.04, 0.04, 0.04, 0.021, 0.021, and 0.021 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Tungsten_BiomonitoringSummary.html

Urinary Tungsten (1999 – 2010)

CAS Number 7440-33-7

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.113 (.095-.133)	.110 (.090-.130)	.200 (.160-.250)	.400 (.300-.520)	.550 (.420-.830)	790
Mexican Americans	01-02	.101 (.093-.109)	.100 (.090-.110)	.190 (.170-.210)	.370 (.310-.430)	.570 (.450-.670)	680
Mexican Americans	03-04	.086 (.073-.100)	.080 (.070-.100)	.170 (.120-.220)	.360 (.230-.620)	.640 (.410-.800)	618
Mexican Americans	05-06	.102 (.088-.118)	.100 (.080-.110)	.200 (.170-.220)	.450 (.310-.650)	.730 (.510-1.04)	652
Mexican Americans	07-08	.106 (.084-.135)	.110 (.080-.150)	.210 (.170-.270)	.400 (.250-.670)	.580 (.400-1.12)	515
Mexican Americans	09-10	.099 (.089-.109)	.090 (.090-.100)	.200 (.170-.220)	.380 (.340-.470)	.540 (.480-.580)	613
Non-Hispanic blacks	99-00	.113 (.101-.126)	.100 (.090-.130)	.210 (.180-.250)	.370 (.290-.460)	.560 (.420-.810)	562
Non-Hispanic blacks	01-02	.096 (.080-.116)	.090 (.070-.120)	.160 (.130-.250)	.310 (.270-.400)	.460 (.400-.590)	649
Non-Hispanic blacks	03-04	.092 (.082-.104)	.090 (.080-.110)	.160 (.150-.180)	.300 (.250-.330)	.470 (.340-.550)	723
Non-Hispanic blacks	05-06	.101 (.088-.116)	.110 (.090-.120)	.190 (.160-.220)	.320 (.280-.370)	.450 (.340-.650)	692
Non-Hispanic blacks	07-08	.120 (.099-.146)	.120 (.090-.160)	.240 (.200-.290)	.390 (.340-.440)	.540 (.460-.690)	589
Non-Hispanic blacks	09-10	.093 (.086-.100)	.100 (.090-.110)	.180 (.160-.200)	.290 (.270-.340)	.400 (.320-.590)	543
Non-Hispanic whites	99-00	.092 (.084-.100)	.080 (.070-.100)	.180 (.160-.200)	.320 (.270-.380)	.470 (.380-.550)	802
Non-Hispanic whites	01-02	.076 (.066-.088)	.060 (.050-.080)	.150 (.120-.180)	.290 (.230-.360)	.430 (.330-.620)	1117
Non-Hispanic whites	03-04	.065 (.058-.073)	.060 (.060-.070)	.120 (.100-.130)	.230 (.190-.290)	.380 (.320-.410)	1074
Non-Hispanic whites	05-06	.082 (.075-.089)	.080 (.080-.090)	.160 (.140-.180)	.300 (.250-.340)	.430 (.380-.480)	1041
Non-Hispanic whites	07-08	.093 (.087-.101)	.100 (.090-.110)	.180 (.160-.190)	.330 (.290-.370)	.470 (.410-.570)	1095
Non-Hispanic whites	09-10	.077 (.070-.083)	.080 (.070-.090)	.150 (.140-.170)	.280 (.250-.310)	.400 (.330-.540)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.04, 0.04, 0.04, 0.021, 0.021, and 0.021 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Tungsten_BiomonitoringSummary.html

Urinary Tungsten (creatinine corrected) (1999 – 2010)

CAS Number 7440-33-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.087 (.080-.095)	.080 (.075-.086)	.146 (.136-.158)	.270 (.206-.333)	.383 (.302-.459)	2338
Total population	01-02	.078 (.069-.087)	.074 (.064-.084)	.138 (.122-.154)	.255 (.216-.300)	.359 (.315-.436)	2651
Total population	03-04	.070 (.063-.078)	.065 (.059-.074)	.117 (.107-.133)	.215 (.179-.253)	.333 (.255-.439)	2558
Total population	05-06	.084 (.080-.089)	.080 (.080-.080)	.140 (.130-.150)	.250 (.210-.290)	.350 (.290-.440)	2576
Total population	07-08	.103 (.096-.111)	.100 (.090-.110)	.170 (.160-.190)	.320 (.290-.360)	.470 (.410-.540)	2627
Total population	09-10	.086 (.080-.093)	.080 (.070-.090)	.150 (.130-.160)	.270 (.230-.310)	.400 (.340-.470)	2847
Age 6-11 years	99-00	.174 (.150-.201)	.169 (.136-.198)	.293 (.216-.333)	.439 (.331-.667)	.667 (.452-.880)	320
Age 6-11 years	01-02	.168 (.144-.197)	.158 (.139-.190)	.275 (.231-.326)	.412 (.333-.554)	.634 (.436-1.28)	363
Age 6-11 years	03-04	.151 (.131-.174)	.144 (.119-.167)	.250 (.205-.283)	.333 (.278-.484)	.484 (.333-.739)	290
Age 6-11 years	05-06	.175 (.152-.202)	.160 (.140-.180)	.270 (.220-.320)	.560 (.330-.790)	.790 (.470-1.18)	355
Age 6-11 years	07-08	.209 (.185-.235)	.200 (.180-.240)	.340 (.290-.370)	.540 (.450-.660)	.780 (.620-.910)	394
Age 6-11 years	09-10	.205 (.177-.239)	.200 (.160-.230)	.330 (.290-.440)	.620 (.450-.850)	.930 (.690-1.08)	378
Age 12-19 years	99-00	.084 (.078-.091)	.079 (.074-.084)	.138 (.124-.158)	.231 (.180-.287)	.339 (.237-.465)	679
Age 12-19 years	01-02	.081 (.071-.092)	.081 (.072-.091)	.148 (.122-.167)	.250 (.208-.301)	.359 (.272-.431)	744
Age 12-19 years	03-04	.075 (.065-.086)	.071 (.061-.082)	.122 (.098-.148)	.197 (.167-.308)	.379 (.197-.582)	725
Age 12-19 years	05-06	.101 (.086-.117)	.100 (.080-.110)	.170 (.140-.200)	.300 (.200-.370)	.370 (.300-.770)	701
Age 12-19 years	07-08	.118 (.104-.132)	.120 (.110-.130)	.180 (.160-.210)	.340 (.230-.550)	.530 (.310-.810)	376
Age 12-19 years	09-10	.094 (.085-.106)	.090 (.080-.110)	.150 (.120-.180)	.270 (.210-.290)	.370 (.280-.500)	451
Age 20+ years	99-00	.080 (.072-.089)	.075 (.067-.082)	.130 (.116-.146)	.218 (.179-.301)	.347 (.245-.426)	1339
Age 20+ years	01-02	.070 (.063-.079)	.067 (.058-.075)	.119 (.099-.139)	.216 (.176-.267)	.333 (.253-.431)	1544
Age 20+ years	03-04	.063 (.057-.071)	.059 (.053-.065)	.105 (.094-.117)	.181 (.155-.215)	.279 (.217-.370)	1543
Age 20+ years	05-06	.075 (.071-.079)	.070 (.070-.080)	.120 (.110-.130)	.210 (.200-.220)	.290 (.240-.360)	1520
Age 20+ years	07-08	.093 (.087-.101)	.090 (.080-.100)	.160 (.140-.170)	.280 (.250-.310)	.420 (.350-.490)	1857
Age 20+ years	09-10	.078 (.072-.084)	.070 (.070-.080)	.130 (.120-.140)	.220 (.190-.260)	.340 (.270-.400)	2018
Males	99-00	.083 (.074-.094)	.073 (.063-.086)	.146 (.126-.165)	.279 (.198-.386)	.439 (.329-.605)	1160
Males	01-02	.071 (.060-.083)	.065 (.056-.077)	.125 (.098-.153)	.255 (.203-.306)	.364 (.300-.431)	1306
Males	03-04	.068 (.059-.079)	.062 (.054-.071)	.111 (.098-.133)	.216 (.170-.284)	.341 (.240-.500)	1281
Males	05-06	.078 (.073-.083)	.070 (.070-.080)	.130 (.120-.150)	.240 (.200-.300)	.360 (.300-.440)	1271
Males	07-08	.097 (.090-.106)	.090 (.090-.110)	.170 (.150-.180)	.310 (.280-.360)	.440 (.410-.480)	1327
Males	09-10	.082 (.074-.089)	.070 (.070-.080)	.140 (.120-.150)	.250 (.220-.310)	.440 (.320-.500)	1398
Females	99-00	.091 (.085-.098)	.084 (.080-.091)	.145 (.136-.158)	.265 (.200-.301)	.339 (.300-.381)	1178
Females	01-02	.085 (.077-.094)	.083 (.075-.091)	.143 (.130-.161)	.258 (.216-.317)	.353 (.317-.538)	1345
Females	03-04	.072 (.065-.079)	.069 (.063-.078)	.121 (.108-.138)	.211 (.176-.237)	.333 (.261-.439)	1277
Females	05-06	.090 (.085-.096)	.080 (.080-.090)	.150 (.140-.160)	.250 (.210-.290)	.350 (.260-.530)	1305
Females	07-08	.109 (.100-.118)	.100 (.090-.120)	.180 (.160-.210)	.330 (.290-.360)	.520 (.400-.590)	1300
Females	09-10	.091 (.083-.100)	.090 (.080-.090)	.150 (.130-.170)	.270 (.210-.340)	.380 (.330-.450)	1449

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Tungsten_BiomonitoringSummary.html

Urinary Tungsten (creatinine corrected) (1999 – 2010)

CAS Number 7440-33-7

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.106 (.093-.120)	.100 (.086-.116)	.184 (.152-.214)	.329 (.267-.392)	.497 (.354-.727)	790
Mexican Americans	01-02	.098 (.090-.108)	.089 (.081-.100)	.164 (.143-.187)	.294 (.258-.375)	.555 (.410-.797)	679
Mexican Americans	03-04	.079 (.065-.096)	.073 (.054-.093)	.136 (.103-.197)	.300 (.233-.426)	.482 (.344-.823)	618
Mexican Americans	05-06	.096 (.083-.111)	.090 (.080-.090)	.160 (.150-.180)	.330 (.250-.420)	.670 (.360-.890)	652
Mexican Americans	07-08	.106 (.083-.137)	.110 (.080-.140)	.200 (.160-.270)	.400 (.260-.710)	.610 (.310-1.12)	515
Mexican Americans	09-10	.103 (.096-.111)	.100 (.090-.110)	.180 (.160-.200)	.330 (.290-.390)	.480 (.390-.540)	613
Non-Hispanic blacks	99-00	.073 (.064-.083)	.071 (.061-.081)	.124 (.109-.154)	.201 (.188-.222)	.360 (.217-.465)	562
Non-Hispanic blacks	01-02	.066 (.056-.077)	.060 (.049-.079)	.109 (.090-.125)	.199 (.153-.285)	.340 (.250-.414)	649
Non-Hispanic blacks	03-04	.066 (.059-.074)	.067 (.055-.075)	.105 (.095-.120)	.186 (.150-.224)	.317 (.214-.358)	723
Non-Hispanic blacks	05-06	.073 (.065-.082)	.070 (.060-.080)	.120 (.110-.140)	.210 (.190-.260)	.320 (.260-.390)	692
Non-Hispanic blacks	07-08	.088 (.076-.102)	.090 (.070-.100)	.150 (.140-.160)	.240 (.220-.300)	.380 (.270-.630)	589
Non-Hispanic blacks	09-10	.074 (.067-.080)	.070 (.060-.080)	.120 (.110-.140)	.210 (.180-.250)	.310 (.220-.410)	543
Non-Hispanic whites	99-00	.091 (.083-.100)	.082 (.077-.088)	.150 (.136-.169)	.279 (.200-.354)	.385 (.302-.462)	802
Non-Hispanic whites	01-02	.078 (.068-.088)	.073 (.061-.085)	.139 (.121-.157)	.253 (.209-.308)	.353 (.286-.453)	1117
Non-Hispanic whites	03-04	.069 (.060-.078)	.063 (.057-.071)	.116 (.104-.133)	.199 (.167-.237)	.299 (.222-.439)	1074
Non-Hispanic whites	05-06	.085 (.080-.090)	.080 (.080-.090)	.140 (.130-.160)	.240 (.210-.280)	.340 (.280-.420)	1041
Non-Hispanic whites	07-08	.104 (.096-.114)	.100 (.090-.110)	.180 (.160-.200)	.310 (.280-.360)	.460 (.390-.530)	1095
Non-Hispanic whites	09-10	.086 (.078-.094)	.080 (.070-.090)	.140 (.130-.160)	.250 (.200-.310)	.370 (.330-.400)	1225

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Tungsten_BiomonitoringSummary.html

Urinary Uranium (1999 – 2010)

CAS Number 7440-61-1

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.008 (.007-.009)	.007 (.006-.008)	.013 (.010-.017)	.027 (.021-.038)	.046 (.037-.056)	2464
Total population	01-02	.009 (.007-.010)	.008 (.007-.009)	.014 (.012-.018)	.030 (.023-.039)	.046 (.034-.062)	2690
Total population	03-04	.008 (.007-.008)	.007 (.006-.007)	.011 (.010-.013)	.021 (.017-.026)	.031 (.026-.037)	2557
Total population	05-06	.006 (.005-.006)	.005 (.005-.006)	.010 (.009-.012)	.019 (.016-.022)	.033 (.023-.041)	2576
Total population	07-08	.007 (.006-.008)	.007 (.005-.008)	.013 (.011-.015)	.024 (.018-.033)	.039 (.026-.057)	2627
Total population	09-10	.007 (.006-.008)	.007 (.006-.008)	.013 (.011-.015)	.022 (.019-.030)	.036 (.029-.044)	2848
Age 6-11 years	99-00	.009 (.007-.011)	.007 (.006-.009)	.013 (.009-.022)	.032 (.019-.048)	.048 (.033-.066)	340
Age 6-11 years	01-02	.008 (.007-.010)	.008 (.006-.010)	.014 (.010-.020)	.026 (.020-.036)	.040 (.025-.049)	368
Age 6-11 years	03-04	.008 (.007-.009)	.007 (.006-.009)	.012 (.009-.016)	.020 (.016-.026)	.028 (.020-.039)	289
Age 6-11 years	05-06	.006 (.005-.007)	.005 (.004-.007)	.010 (.008-.011)	.015 (.012-.031)	.031 (.013-.051)	355
Age 6-11 years	07-08	.007 (.006-.008)	.006 (.005-.008)	.012 (.009-.016)	.021 (.016-.027)	.030 (.022-.039)	394
Age 6-11 years	09-10	.006 (.005-.008)	.006 (.005-.008)	.012 (.009-.014)	.018 (.013-.034)	.033 (.016-.052)	378
Age 12-19 years	99-00	.009 (.008-.011)	.009 (.008-.010)	.015 (.012-.018)	.026 (.020-.043)	.044 (.028-.072)	719
Age 12-19 years	01-02	.010 (.008-.012)	.010 (.008-.012)	.017 (.013-.023)	.030 (.022-.042)	.042 (.027-.088)	762
Age 12-19 years	03-04	.010 (.009-.011)	.009 (.008-.010)	.015 (.012-.018)	.028 (.023-.036)	.038 (.036-.053)	725
Age 12-19 years	05-06	.007 (.006-.008)	.007 (.006-.008)	.013 (.011-.015)	.023 (.018-.032)	.034 (.027-.045)	701
Age 12-19 years	07-08	.009 (.007-.011)	.008 (.007-.011)	.016 (.014-.020)	.029 (.022-.056)	.056 (.027-.156)	376
Age 12-19 years	09-10	.008 (.007-.010)	.008 (.006-.010)	.014 (.011-.018)	.023 (.020-.038)	.040 (.024-.059)	451
Age 20+ years	99-00	.008 (.006-.009)	.007 (.005-.008)	.013 (.010-.017)	.027 (.021-.040)	.046 (.036-.056)	1405
Age 20+ years	01-02	.009 (.007-.010)	.008 (.007-.009)	.014 (.012-.017)	.031 (.022-.040)	.046 (.034-.065)	1560
Age 20+ years	03-04	*	.006 (.005-.007)	.011 (.009-.012)	.019 (.016-.026)	.029 (.024-.038)	1543
Age 20+ years	05-06	.006 (.005-.006)	.005 (.005-.006)	.010 (.008-.012)	.019 (.015-.022)	.032 (.022-.041)	1520
Age 20+ years	07-08	.007 (.005-.008)	.006 (.005-.008)	.013 (.010-.015)	.024 (.017-.035)	.039 (.026-.052)	1857
Age 20+ years	09-10	.007 (.006-.008)	.007 (.006-.008)	.013 (.011-.015)	.023 (.019-.030)	.036 (.029-.044)	2019
Males	99-00	.009 (.008-.011)	.008 (.007-.010)	.015 (.012-.021)	.036 (.024-.046)	.053 (.040-.067)	1227
Males	01-02	.009 (.008-.011)	.009 (.007-.010)	.015 (.013-.021)	.033 (.024-.045)	.047 (.035-.065)	1335
Males	03-04	.008 (.007-.009)	.007 (.006-.008)	.013 (.011-.016)	.023 (.019-.027)	.031 (.027-.035)	1280
Males	05-06	.006 (.006-.007)	.006 (.005-.006)	.011 (.009-.012)	.019 (.015-.022)	.030 (.021-.043)	1271
Males	07-08	.007 (.006-.009)	.007 (.006-.009)	.014 (.013-.016)	.026 (.021-.037)	.046 (.030-.056)	1327
Males	09-10	.007 (.006-.009)	.007 (.006-.009)	.014 (.012-.017)	.024 (.020-.034)	.040 (.032-.046)	1398
Females	99-00	.007 (.006-.008)	.006 (.005-.007)	.012 (.009-.015)	.023 (.016-.033)	.036 (.026-.050)	1237
Females	01-02	.008 (.007-.010)	.008 (.006-.009)	.014 (.011-.017)	.027 (.019-.037)	.041 (.029-.063)	1355
Females	03-04	*	.006 (.005-.007)	.010 (.009-.011)	.018 (.013-.027)	.031 (.022-.039)	1277
Females	05-06	.005 (.005-.006)	.005 (.004-.006)	.010 (.008-.011)	.019 (.016-.023)	.034 (.025-.040)	1305
Females	07-08	.006 (.005-.008)	.006 (.005-.007)	.011 (.009-.015)	.024 (.016-.033)	.035 (.022-.067)	1300
Females	09-10	.007 (.006-.008)	.007 (.006-.008)	.012 (.011-.014)	.022 (.017-.029)	.033 (.023-.045)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.004, 0.004, 0.005, 0.002, 0.002, and 0.002 respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Uranium_BiomonitoringSummary.html

Urinary Uranium (1999 – 2010)

CAS Number 7440-61-1

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.017 (.012-.023)	.016 (.011-.021)	.033 (.020-.054)	.060 (.040-.127)	.114 (.054-.279)	883
Mexican Americans	01-02	.013 (.010-.016)	.012 (.009-.016)	.022 (.017-.030)	.040 (.031-.054)	.055 (.046-.069)	683
Mexican Americans	03-04	.014 (.011-.017)	.013 (.009-.018)	.024 (.017-.034)	.041 (.028-.073)	.064 (.039-.158)	618
Mexican Americans	05-06	.008 (.007-.009)	.009 (.007-.010)	.014 (.013-.017)	.025 (.021-.033)	.042 (.028-.051)	652
Mexican Americans	07-08	.009 (.008-.011)	.009 (.008-.010)	.017 (.014-.022)	.032 (.026-.039)	.047 (.032-.073)	515
Mexican Americans	09-10	.009 (.008-.011)	.009 (.008-.011)	.018 (.015-.021)	.034 (.027-.040)	.046 (.039-.055)	613
Non-Hispanic blacks	99-00	.009 (.007-.011)	.008 (.006-.010)	.014 (.010-.020)	.028 (.018-.049)	.052 (.030-.067)	568
Non-Hispanic blacks	01-02	.008 (.007-.009)	.008 (.007-.009)	.012 (.011-.015)	.021 (.017-.027)	.030 (.023-.037)	667
Non-Hispanic blacks	03-04	.008 (.008-.009)	.007 (.007-.008)	.012 (.011-.013)	.021 (.017-.027)	.031 (.023-.045)	722
Non-Hispanic blacks	05-06	.006 (.005-.007)	.006 (.005-.007)	.010 (.009-.011)	.016 (.014-.020)	.023 (.018-.031)	692
Non-Hispanic blacks	07-08	.007 (.006-.009)	.007 (.006-.008)	.013 (.010-.016)	.024 (.016-.038)	.038 (.025-.055)	589
Non-Hispanic blacks	09-10	.008 (.007-.010)	.008 (.007-.010)	.014 (.012-.016)	.027 (.017-.044)	.044 (.027-.074)	544
Non-Hispanic whites	99-00	.007 (.006-.009)	.007 (.006-.007)	.012 (.009-.016)	.023 (.017-.037)	.043 (.027-.051)	822
Non-Hispanic whites	01-02	.008 (.007-.009)	.007 (.006-.009)	.013 (.011-.016)	.026 (.019-.035)	.037 (.029-.050)	1132
Non-Hispanic whites	03-04	*	.006 (.005-.007)	.010 (.009-.012)	.018 (.015-.023)	.027 (.020-.036)	1074
Non-Hispanic whites	05-06	.005 (.005-.006)	.005 (.004-.006)	.010 (.008-.012)	.018 (.014-.022)	.033 (.021-.043)	1041
Non-Hispanic whites	07-08	.006 (.005-.008)	.006 (.005-.008)	.013 (.009-.016)	.023 (.015-.039)	.038 (.022-.086)	1095
Non-Hispanic whites	09-10	.006 (.005-.007)	.006 (.005-.007)	.012 (.011-.014)	.021 (.017-.027)	.032 (.023-.041)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.004, 0.004, 0.005, 0.002, 0.002, and 0.002 respectively.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Uranium_BiomonitoringSummary.html

Urinary Uranium (creatinine corrected) (1999 – 2010)

CAS Number 7440-61-1

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.007 (.006-.009)	.007 (.006-.009)	.013 (.010-.016)	.024 (.019-.030)	.034 (.027-.053)	2464
Total population	01-02	.008 (.007-.010)	.007 (.006-.009)	.014 (.011-.018)	.026 (.020-.034)	.040 (.028-.058)	2689
Total population	03-04	.008 (.007-.008)	.007 (.006-.008)	.012 (.010-.014)	.021 (.017-.025)	.029 (.023-.039)	2557
Total population	05-06	.006 (.005-.006)	.005 (.005-.006)	.009 (.008-.010)	.017 (.014-.020)	.026 (.020-.039)	2576
Total population	07-08	.007 (.006-.009)	.006 (.005-.008)	.012 (.009-.016)	.024 (.016-.038)	.038 (.025-.065)	2627
Total population	09-10	.007 (.006-.008)	.007 (.006-.008)	.012 (.010-.013)	.020 (.017-.024)	.029 (.024-.035)	2848
Age 6-11 years	99-00	.009 (.007-.012)	.008 (.006-.011)	.015 (.010-.024)	.030 (.016-.044)	.037 (.030-.077)	340
Age 6-11 years	01-02	.010 (.008-.011)	.010 (.008-.012)	.015 (.013-.019)	.027 (.018-.032)	.033 (.027-.048)	368
Age 6-11 years	03-04	.009 (.008-.010)	.008 (.007-.010)	.013 (.011-.017)	.024 (.016-.039)	.033 (.022-.050)	289
Age 6-11 years	05-06	.007 (.006-.008)	.006 (.005-.008)	.010 (.008-.014)	.018 (.013-.035)	.034 (.018-.048)	355
Age 6-11 years	07-08	.009 (.007-.011)	.008 (.007-.010)	.014 (.010-.022)	.026 (.016-.053)	.042 (.023-.065)	394
Age 6-11 years	09-10	.009 (.007-.010)	.008 (.007-.010)	.014 (.011-.016)	.020 (.015-.030)	.029 (.022-.033)	378
Age 12-19 years	99-00	.007 (.006-.008)	.006 (.005-.008)	.010 (.009-.014)	.020 (.014-.030)	.030 (.019-.074)	719
Age 12-19 years	01-02	.007 (.006-.008)	.007 (.006-.008)	.012 (.009-.016)	.020 (.015-.026)	.026 (.020-.042)	762
Age 12-19 years	03-04	.007 (.006-.008)	.006 (.005-.007)	.010 (.008-.013)	.019 (.015-.027)	.034 (.022-.041)	725
Age 12-19 years	05-06	.006 (.005-.007)	.005 (.005-.006)	.009 (.007-.012)	.017 (.013-.022)	.023 (.019-.026)	701
Age 12-19 years	07-08	.007 (.006-.009)	.006 (.005-.008)	.012 (.009-.016)	.025 (.013-.050)	.033 (.022-.077)	376
Age 12-19 years	09-10	.007 (.006-.009)	.007 (.006-.008)	.011 (.010-.013)	.017 (.014-.021)	.025 (.017-.038)	451
Age 20+ years	99-00	.007 (.006-.009)	.007 (.006-.009)	.013 (.010-.016)	.024 (.019-.029)	.034 (.025-.051)	1405
Age 20+ years	01-02	.008 (.007-.010)	.007 (.006-.009)	.014 (.011-.019)	.027 (.020-.039)	.043 (.030-.063)	1559
Age 20+ years	03-04	*	.007 (.006-.008)	.012 (.010-.014)	.020 (.017-.024)	.028 (.022-.038)	1543
Age 20+ years	05-06	.006 (.005-.006)	.005 (.005-.006)	.009 (.008-.010)	.016 (.014-.019)	.026 (.020-.039)	1520
Age 20+ years	07-08	.007 (.006-.008)	.006 (.005-.008)	.012 (.009-.016)	.024 (.016-.036)	.037 (.025-.065)	1857
Age 20+ years	09-10	.007 (.006-.008)	.007 (.006-.008)	.012 (.010-.013)	.020 (.017-.025)	.029 (.024-.036)	2019
Males	99-00	.007 (.006-.009)	.006 (.005-.008)	.011 (.009-.015)	.021 (.017-.028)	.035 (.024-.056)	1227
Males	01-02	.007 (.006-.008)	.007 (.006-.008)	.012 (.010-.015)	.022 (.018-.028)	.033 (.025-.047)	1334
Males	03-04	.007 (.006-.008)	.006 (.006-.007)	.010 (.009-.012)	.019 (.015-.024)	.026 (.019-.039)	1280
Males	05-06	.005 (.005-.005)	.005 (.004-.005)	.008 (.007-.009)	.014 (.013-.016)	.021 (.016-.031)	1271
Males	07-08	.007 (.005-.008)	.006 (.005-.007)	.012 (.009-.015)	.022 (.016-.031)	.032 (.024-.056)	1327
Males	09-10	.007 (.006-.008)	.006 (.006-.007)	.011 (.010-.012)	.019 (.015-.023)	.028 (.022-.033)	1398
Females	99-00	.008 (.007-.010)	.007 (.006-.010)	.013 (.010-.017)	.025 (.019-.033)	.034 (.027-.054)	1237
Females	01-02	.009 (.008-.011)	.009 (.007-.011)	.016 (.012-.021)	.029 (.021-.042)	.045 (.031-.067)	1355
Females	03-04	*	.008 (.007-.009)	.013 (.011-.016)	.022 (.018-.028)	.031 (.025-.041)	1277
Females	05-06	.006 (.006-.007)	.006 (.005-.006)	.010 (.009-.011)	.019 (.015-.024)	.035 (.022-.041)	1305
Females	07-08	.008 (.006-.009)	.007 (.006-.008)	.013 (.010-.018)	.026 (.016-.043)	.042 (.024-.083)	1300
Females	09-10	.008 (.007-.009)	.008 (.006-.009)	.013 (.011-.015)	.021 (.017-.027)	.031 (.024-.041)	1450

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Uranium_BiomonitoringSummary.html

Urinary Uranium (creatinine corrected) (1999 – 2010)

CAS Number 7440-61-1

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.015 (.011-.022)	.015 (.011-.020)	.029 (.016-.058)	.059 (.027-.146)	.100 (.042-.270)	883
Mexican Americans	01-02	.012 (.010-.016)	.012 (.009-.016)	.021 (.015-.028)	.033 (.024-.053)	.050 (.034-.080)	682
Mexican Americans	03-04	.013 (.010-.016)	.013 (.009-.017)	.022 (.016-.029)	.035 (.026-.051)	.051 (.034-.061)	618
Mexican Americans	05-06	.008 (.007-.009)	.007 (.006-.008)	.013 (.010-.015)	.022 (.016-.031)	.035 (.025-.060)	652
Mexican Americans	07-08	.009 (.008-.012)	.009 (.007-.011)	.017 (.014-.021)	.031 (.021-.048)	.042 (.027-.097)	515
Mexican Americans	09-10	.010 (.009-.011)	.010 (.008-.011)	.016 (.013-.018)	.026 (.022-.030)	.036 (.030-.044)	613
Non-Hispanic blacks	99-00	.006 (.004-.007)	.005 (.004-.006)	.008 (.006-.013)	.017 (.011-.029)	.028 (.018-.048)	568
Non-Hispanic blacks	01-02	.005 (.005-.006)	.005 (.005-.006)	.008 (.007-.010)	.013 (.011-.014)	.017 (.014-.029)	667
Non-Hispanic blacks	03-04	.006 (.005-.006)	.005 (.005-.006)	.009 (.008-.009)	.013 (.012-.015)	.018 (.014-.024)	722
Non-Hispanic blacks	05-06	.004 (.004-.005)	.004 (.003-.005)	.006 (.006-.007)	.011 (.009-.015)	.017 (.012-.021)	692
Non-Hispanic blacks	07-08	.005 (.005-.006)	.005 (.004-.006)	.009 (.007-.011)	.014 (.011-.017)	.018 (.014-.041)	589
Non-Hispanic blacks	09-10	.006 (.005-.008)	.006 (.005-.007)	.010 (.008-.012)	.018 (.013-.021)	.023 (.018-.044)	544
Non-Hispanic whites	99-00	.007 (.006-.009)	.007 (.006-.009)	.012 (.010-.015)	.021 (.017-.027)	.030 (.024-.050)	822
Non-Hispanic whites	01-02	.008 (.007-.009)	.007 (.006-.009)	.013 (.011-.016)	.025 (.018-.032)	.034 (.025-.051)	1132
Non-Hispanic whites	03-04	*	.007 (.006-.008)	.011 (.010-.013)	.019 (.015-.024)	.027 (.020-.040)	1074
Non-Hispanic whites	05-06	.006 (.005-.006)	.005 (.005-.006)	.009 (.008-.010)	.016 (.013-.020)	.024 (.019-.039)	1041
Non-Hispanic whites	07-08	.007 (.006-.009)	.006 (.005-.008)	.012 (.009-.019)	.025 (.015-.043)	.039 (.024-.081)	1095
Non-Hispanic whites	09-10	.007 (.006-.008)	.007 (.006-.008)	.012 (.010-.013)	.018 (.015-.024)	.028 (.021-.035)	1225

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Uranium_BiomonitoringSummary.html

Perchlorate and Other Anions

Urinary Nitrate (2001 – 2010)

CAS Number 84145-82-4

Geometric mean and selected percentiles of urine concentrations (in mg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	48.2 (46.2-50.3)	49.0 (46.0-52.0)	78.0 (73.0-83.0)	100 (100-130)	140 (130-150)	1617
Total population	05-06	42.7 (39.6-46.1)	47.8 (44.4-51.2)	74.6 (69.8-79.4)	108 (101-114)	133 (125-144)	7697
Total population	07-08	46.3 (44.6-48.1)	50.3 (48.4-52.0)	76.0 (72.7-79.1)	110 (104-116)	138 (132-146)	7629
Total population	09-10	40.7 (38.9-42.7)	43.3 (41.1-45.8)	68.7 (65.5-72.5)	98.5 (93.4-102)	126 (114-137)	2844
Age 6-11 years	01-02	62.2 (53.8-71.8)	68.0 (58.0-79.0)	94.0 (84.0-100)	130 (100-160)	150 (120-380)	374
Age 6-11 years	05-06	51.2 (47.4-55.4)	54.7 (51.9-58.2)	79.2 (72.8-87.2)	113 (101-128)	141 (120-158)	1054
Age 6-11 years	07-08	55.2 (51.7-58.9)	60.2 (56.1-64.3)	84.5 (80.1-92.5)	117 (107-135)	149 (132-189)	1143
Age 6-11 years	09-10	46.8 (43.2-50.6)	50.3 (45.5-58.2)	73.2 (70.2-79.1)	98.7 (86.7-112)	119 (98.0-186)	377
Age 12-19 years	01-02	57.4 (53.5-61.6)	66.0 (60.0-69.0)	91.0 (86.0-95.0)	120 (100-130)	150 (130-160)	827
Age 12-19 years	05-06	52.5 (48.5-56.8)	57.5 (52.3-62.6)	84.2 (79.9-88.4)	119 (111-124)	144 (129-153)	2106
Age 12-19 years	07-08	55.5 (51.5-59.7)	56.8 (51.9-61.5)	84.1 (76.2-94.5)	119 (107-133)	144 (133-162)	1135
Age 12-19 years	09-10	44.6 (41.0-48.4)	48.0 (43.3-54.9)	75.2 (70.0-79.4)	106 (91.6-119)	133 (106-163)	452
Age 20+ years	01-02	45.4 (43.3-47.5)	49.0 (46.0-52.0)	78.0 (73.0-83.0)	100 (100-130)	140 (130-150)	1617
Age 20+ years	05-06	40.5 (37.4-43.9)	45.0 (41.3-48.3)	71.7 (67.1-77.4)	105 (98.0-113)	129 (122-142)	4537
Age 20+ years	07-08	44.2 (42.5-45.9)	48.1 (46.0-49.7)	73.2 (70.1-76.5)	107 (101-113)	135 (128-146)	5351
Age 20+ years	09-10	39.6 (37.4-41.9)	42.3 (39.4-44.8)	66.4 (62.3-71.9)	97.2 (91.9-102)	124 (113-144)	2015
Males	01-02	57.5 (54.6-60.6)	63.0 (59.0-67.0)	89.0 (83.0-94.0)	130 (100-140)	150 (140-170)	1335
Males	05-06	48.4 (44.6-52.6)	52.7 (48.3-57.8)	79.4 (72.8-86.5)	110 (103-121)	136 (123-152)	3765
Males	07-08	51.9 (49.9-54.1)	56.1 (53.8-58.0)	79.5 (75.7-83.5)	112 (105-119)	137 (131-149)	3839
Males	09-10	44.9 (41.8-48.2)	46.0 (43.1-49.7)	73.3 (67.9-77.1)	105 (95.6-112)	133 (117-159)	1401
Females	01-02	40.7 (38.4-43.2)	43.0 (41.0-48.0)	72.0 (68.0-76.0)	100 (98.0-120)	130 (120-150)	1483
Females	05-06	37.9 (35.1-40.8)	42.0 (38.2-46.0)	69.2 (65.5-73.4)	104 (96.6-110)	130 (124-140)	3932
Females	07-08	41.4 (39.3-43.7)	43.9 (41.5-46.3)	71.3 (67.5-74.8)	108 (99.8-115)	138 (132-149)	3790
Females	09-10	37.1 (34.9-39.5)	40.3 (36.4-43.9)	65.9 (62.0-69.8)	92.2 (88.4-98.5)	117 (101-130)	1443
Mexican Americans	01-02	53.2 (48.7-58.2)	59.0 (52.0-66.0)	84.0 (79.0-91.0)	120 (100-150)	160 (130-180)	707
Mexican Americans	05-06	47.8 (44.7-51.2)	52.4 (49.9-56.2)	77.9 (75.1-83.1)	113 (104-120)	148 (133-156)	1972
Mexican Americans	07-08	48.7 (45.0-52.6)	51.9 (47.4-56.7)	75.6 (69.7-81.3)	111 (100-122)	148 (127-164)	1505
Mexican Americans	09-10	41.3 (39.3-43.5)	43.5 (41.2-46.4)	66.4 (61.0-73.9)	92.6 (86.5-99.7)	111 (94.4-132)	611
Non-Hispanic blacks	01-02	53.8 (47.8-60.5)	58.0 (51.0-64.0)	84.0 (77.0-93.0)	120 (100-130)	140 (130-170)	680
Non-Hispanic blacks	05-06	45.9 (42.1-50.0)	50.4 (46.6-54.9)	75.0 (68.8-80.8)	101 (95.3-110)	127 (114-148)	2078
Non-Hispanic blacks	07-08	47.5 (45.0-50.3)	50.3 (48.6-52.5)	74.7 (71.9-77.3)	105 (97.1-116)	134 (125-150)	1707
Non-Hispanic blacks	09-10	39.0 (36.5-41.7)	44.1 (41.6-46.3)	65.4 (61.5-69.6)	94.2 (86.6-101)	121 (101-141)	544
Non-Hispanic whites	01-02	46.3 (44.1-48.6)	51.0 (47.0-53.0)	81.0 (78.0-85.0)	120 (100-130)	140 (130-150)	1228
Non-Hispanic whites	05-06	41.2 (37.6-45.2)	46.2 (41.3-50.6)	73.3 (67.3-80.1)	107 (98.2-115)	129 (122-142)	3056
Non-Hispanic whites	07-08	45.0 (42.7-47.5)	49.2 (46.1-52.6)	75.5 (70.5-80.0)	108 (101-116)	134 (128-140)	3190
Non-Hispanic whites	09-10	39.8 (37.2-42.6)	42.1 (39.1-45.2)	68.4 (63.0-73.5)	95.6 (89.8-100)	119 (106-131)	1215

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 05-06, 07-08, and 09-10 are 0.7, 0.7, 0.7, and 0.7 respectively.

Urinary Nitrate (creatinine corrected) (2001 – 2010)

CAS Number 84145-82-4

Geometric mean and selected percentiles of urine concentrations (in mg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	49.8 (47.7-51.9)	46.9 (44.2-49.6)	63.8 (61.2-67.7)	90.9 (84.3-98.8)	120 (111-128)	1616
Total population	05-06	42.6 (40.2-45.1)	42.4 (40.1-44.7)	59.7 (55.8-64.1)	85.5 (81.3-91.3)	113 (106-118)	7697
Total population	07-08	47.7 (45.9-49.7)	46.0 (44.0-48.3)	66.5 (62.4-70.5)	98.0 (92.3-102)	127 (119-135)	7628
Total population	09-10	43.7 (42.1-45.3)	42.3 (41.0-43.7)	60.2 (57.6-63.0)	88.5 (83.3-96.1)	115 (104-127)	2843
Age 6-11 years	01-02	72.0 (66.1-78.4)	66.0 (62.6-70.4)	87.0 (80.2-97.7)	129 (96.5-144)	144 (130-235)	374
Age 6-11 years	05-06	60.8 (57.4-64.5)	57.3 (53.6-60.6)	76.5 (70.9-82.1)	109 (95.0-123)	134 (121-164)	1054
Age 6-11 years	07-08	70.2 (65.7-74.9)	65.9 (62.4-69.5)	89.0 (83.2-96.5)	128 (112-152)	173 (140-216)	1143
Age 6-11 years	09-10	64.2 (58.8-70.0)	60.2 (56.3-63.3)	80.7 (68.9-96.1)	107 (96.1-124)	127 (105-202)	376
Age 12-19 years	01-02	44.8 (43.4-46.2)	43.8 (42.6-45.0)	56.2 (52.2-59.7)	73.2 (65.2-85.1)	93.4 (79.0-104)	826
Age 12-19 years	05-06	39.8 (37.8-41.9)	38.1 (36.3-40.3)	51.8 (47.7-56.0)	70.6 (63.1-78.8)	88.9 (79.4-103)	2106
Age 12-19 years	07-08	43.4 (41.3-45.5)	40.5 (38.6-43.5)	56.0 (52.7-59.2)	76.6 (69.0-86.2)	98.0 (85.4-121)	1134
Age 12-19 years	09-10	41.7 (39.3-44.4)	39.7 (38.3-41.7)	54.0 (48.4-57.4)	73.4 (61.0-86.1)	88.5 (71.0-117)	452
Age 20+ years	01-02	48.3 (45.9-50.9)	46.9 (44.2-49.6)	63.8 (61.2-67.7)	90.9 (84.3-98.8)	120 (111-128)	1616
Age 20+ years	05-06	41.4 (38.9-43.9)	41.0 (38.8-43.7)	58.6 (54.8-63.1)	85.3 (80.2-91.0)	111 (105-116)	4537
Age 20+ years	07-08	46.5 (44.6-48.4)	44.7 (42.5-47.0)	65.0 (60.7-69.2)	96.1 (90.0-102)	125 (117-132)	5351
Age 20+ years	09-10	42.2 (40.3-44.2)	41.0 (39.6-42.5)	58.6 (55.4-62.2)	87.7 (81.0-98.5)	116 (103-133)	2015
Males	01-02	47.6 (44.7-50.7)	46.1 (43.4-48.7)	61.3 (58.0-64.5)	86.7 (77.1-97.3)	114 (97.3-125)	1335
Males	05-06	40.1 (37.5-42.9)	39.5 (36.7-42.8)	55.3 (51.6-59.5)	77.2 (70.7-83.0)	95.9 (89.6-102)	3765
Males	07-08	44.6 (42.8-46.6)	42.8 (40.7-45.1)	60.6 (58.1-64.4)	85.6 (81.1-91.3)	111 (101-121)	3839
Males	09-10	41.0 (38.9-43.1)	39.1 (37.6-40.6)	54.6 (52.2-58.1)	83.3 (74.6-90.0)	103 (96.1-122)	1400
Females	01-02	51.9 (49.9-54.1)	51.2 (48.4-53.0)	69.1 (66.7-71.2)	100 (91.7-111)	129 (118-140)	1481
Females	05-06	45.1 (42.8-47.6)	45.0 (42.4-47.4)	64.4 (60.0-69.6)	96.8 (87.8-105)	128 (117-134)	3932
Females	07-08	51.0 (48.9-53.2)	50.0 (47.5-52.7)	72.3 (67.8-76.8)	107 (101-116)	146 (129-163)	3789
Females	09-10	46.5 (44.4-48.7)	46.5 (44.8-48.4)	64.2 (60.5-69.4)	96.6 (83.3-106)	121 (106-152)	1443
Mexican Americans	01-02	50.9 (45.7-56.8)	48.1 (44.9-51.4)	67.4 (60.3-77.6)	97.3 (85.7-117)	135 (100-161)	707
Mexican Americans	05-06	44.6 (42.6-46.7)	44.0 (42.2-45.3)	60.4 (58.1-62.9)	89.9 (82.0-95.4)	120 (111-128)	1972
Mexican Americans	07-08	48.7 (45.1-52.7)	47.0 (43.5-50.5)	64.8 (59.7-69.9)	93.5 (88.9-101)	128 (108-156)	1505
Mexican Americans	09-10	43.4 (40.5-46.5)	42.2 (39.7-45.9)	58.2 (54.7-61.3)	86.2 (77.1-92.5)	104 (90.8-122)	611
Non-Hispanic blacks	01-02	38.7 (36.3-41.3)	38.0 (34.6-41.3)	53.5 (50.3-57.4)	70.3 (64.9-79.3)	91.7 (78.9-100)	679
Non-Hispanic blacks	05-06	32.9 (30.9-35.0)	31.9 (29.8-34.1)	45.4 (41.5-49.6)	64.0 (60.1-68.0)	81.2 (75.3-89.6)	2078
Non-Hispanic blacks	07-08	35.9 (34.2-37.7)	34.8 (33.3-36.6)	49.0 (44.8-53.6)	69.1 (63.5-77.4)	87.8 (78.1-97.4)	1706
Non-Hispanic blacks	09-10	31.4 (28.9-34.0)	32.2 (29.7-34.5)	43.3 (40.8-47.3)	59.9 (54.8-69.7)	77.1 (62.2-98.3)	543
Non-Hispanic whites	01-02	51.4 (49.4-53.4)	49.1 (46.9-51.5)	66.9 (64.2-69.4)	95.2 (87.7-100)	124 (115-132)	1227
Non-Hispanic whites	05-06	43.7 (40.8-46.8)	43.9 (40.8-46.8)	61.4 (56.5-66.2)	85.5 (80.6-91.9)	110 (102-116)	3056
Non-Hispanic whites	07-08	49.0 (46.7-51.4)	47.4 (44.9-50.5)	68.2 (63.3-73.1)	98.3 (91.2-105)	126 (118-135)	3190
Non-Hispanic whites	09-10	44.7 (42.7-46.9)	43.8 (41.5-46.1)	62.0 (58.6-64.7)	87.7 (83.3-96.1)	106 (103-117)	1215

Urinary Perchlorate (2001 – 2010)

CAS Number 14797-73-0

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	3.72 (3.46-4.01)	3.70 (3.40-3.90)	6.20 (5.60-6.90)	10.0 (8.90-12.0)	14.0 (12.0-18.0)	1618
Total population	03-04	3.39 (3.08-3.73)	3.50 (3.00-4.00)	5.80 (5.20-6.70)	10.0 (8.80-12.0)	14.0 (13.0-16.0)	2522
Total population	05-06	3.47 (3.20-3.76)	3.62 (3.35-3.98)	6.10 (5.67-6.52)	9.76 (9.19-10.5)	13.4 (12.4-14.6)	7697
Total population	07-08	3.88 (3.60-4.18)	3.96 (3.59-4.30)	7.10 (6.50-7.74)	12.0 (11.2-13.0)	17.3 (16.1-18.8)	7629
Total population	09-10	3.38 (3.19-3.58)	3.44 (3.17-3.61)	5.95 (5.66-6.35)	10.1 (9.20-10.6)	13.8 (12.2-15.4)	2844
Age 6-11 years	01-02	5.19 (4.44-6.05)	5.50 (4.60-6.70)	8.50 (7.20-10.0)	13.0 (9.80-20.0)	20.0 (13.0-24.0)	374
Age 6-11 years	03-04	4.54 (3.85-5.36)	4.80 (4.20-5.50)	8.30 (6.00-10.0)	14.0 (9.20-17.0)	17.0 (12.0-30.0)	314
Age 6-11 years	05-06	4.64 (4.15-5.18)	4.81 (4.26-5.38)	7.67 (6.71-8.60)	11.6 (10.0-12.7)	14.1 (12.4-16.3)	1054
Age 6-11 years	07-08	4.88 (4.31-5.53)	4.86 (4.22-5.93)	9.11 (7.84-10.3)	14.4 (12.1-16.9)	18.9 (16.1-23.2)	1143
Age 6-11 years	09-10	4.47 (3.88-5.15)	5.03 (3.84-5.98)	7.98 (6.86-9.68)	12.2 (10.1-15.7)	16.2 (11.2-24.5)	377
Age 12-19 years	01-02	4.00 (3.62-4.42)	4.60 (4.00-5.00)	7.10 (6.60-7.70)	10.0 (9.70-12.0)	14.0 (12.0-18.0)	828
Age 12-19 years	03-04	3.81 (3.35-4.33)	4.00 (3.40-4.60)	6.70 (5.80-7.40)	10.0 (8.20-13.0)	14.0 (10.0-19.0)	721
Age 12-19 years	05-06	4.14 (3.77-4.53)	4.25 (3.94-4.65)	7.00 (6.41-7.69)	10.9 (9.71-12.4)	15.6 (12.4-17.9)	2106
Age 12-19 years	07-08	4.50 (4.06-4.97)	4.73 (4.39-5.05)	7.93 (6.89-8.89)	13.0 (11.1-15.4)	17.7 (15.8-20.2)	1135
Age 12-19 years	09-10	3.36 (2.89-3.91)	3.33 (2.86-3.98)	6.21 (5.22-7.82)	10.7 (8.58-13.2)	15.1 (12.0-19.4)	452
Age 20+ years	01-02	3.53 (3.24-3.84)	3.70 (3.40-3.90)	6.20 (5.60-6.90)	10.0 (8.90-12.0)	14.0 (12.0-18.0)	1618
Age 20+ years	03-04	3.21 (2.89-3.56)	3.40 (2.80-3.80)	5.50 (4.90-6.40)	9.50 (8.30-10.0)	13.0 (12.0-15.0)	1487
Age 20+ years	05-06	3.27 (3.01-3.55)	3.42 (3.14-3.72)	5.75 (5.33-6.21)	9.38 (8.73-9.86)	13.1 (12.2-14.5)	4537
Age 20+ years	07-08	3.70 (3.43-3.99)	3.69 (3.42-4.09)	6.75 (6.09-7.38)	11.6 (10.8-12.7)	16.8 (15.4-18.7)	5351
Age 20+ years	09-10	3.29 (3.08-3.51)	3.28 (3.00-3.59)	5.68 (5.47-6.05)	9.55 (8.72-10.3)	13.3 (11.2-15.2)	2015
Males	01-02	4.41 (4.13-4.70)	4.60 (4.40-4.80)	7.40 (6.70-8.30)	12.0 (10.0-13.0)	15.0 (12.0-20.0)	1335
Males	03-04	3.95 (3.56-4.37)	4.10 (3.60-4.60)	6.70 (5.90-7.90)	12.0 (9.70-13.0)	15.0 (14.0-18.0)	1229
Males	05-06	3.93 (3.64-4.25)	4.07 (3.77-4.38)	6.50 (6.11-6.92)	10.4 (9.65-11.6)	14.7 (13.2-16.3)	3765
Males	07-08	4.40 (4.13-4.70)	4.42 (4.12-4.78)	7.90 (7.16-8.46)	13.3 (12.0-14.4)	18.6 (17.0-19.7)	3839
Males	09-10	3.66 (3.40-3.95)	3.74 (3.36-4.00)	6.21 (5.70-6.65)	10.2 (9.10-11.2)	14.6 (11.9-18.2)	1401
Females	01-02	3.17 (2.89-3.48)	3.30 (2.80-3.60)	5.70 (5.20-6.30)	9.70 (8.60-12.0)	14.0 (12.0-18.0)	1485
Females	03-04	2.93 (2.62-3.28)	3.00 (2.60-3.40)	5.10 (4.60-5.80)	8.60 (7.20-10.0)	12.0 (9.20-16.0)	1293
Females	05-06	3.08 (2.80-3.38)	3.24 (2.96-3.51)	5.55 (5.14-6.07)	9.20 (8.22-10.3)	12.4 (11.3-14.2)	3932
Females	07-08	3.42 (3.11-3.76)	3.44 (3.10-3.79)	6.41 (5.95-7.01)	10.8 (10.0-12.0)	16.0 (14.1-17.9)	3790
Females	09-10	3.13 (2.93-3.34)	3.11 (2.83-3.37)	5.83 (5.36-6.28)	9.73 (8.44-10.6)	13.2 (11.0-15.4)	1443

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, &fyr4., 07-08, and 09-10 are 0.05, 0.05, &lod4., 0.05, and 0.05 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Perchlorate_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Perchlorate_FactSheet.html

Urinary Perchlorate (2001 – 2010)

CAS Number 14797-73-0

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	4.23 (3.65-4.90)	4.60 (3.90-5.20)	7.40 (6.10-8.80)	13.0 (9.90-14.0)	15.0 (13.0-19.0)	708
Mexican Americans	03-04	3.96 (3.63-4.32)	4.20 (3.70-4.60)	6.50 (5.60-7.90)	12.0 (9.50-13.0)	16.0 (13.0-18.0)	617
Mexican Americans	05-06	4.02 (3.77-4.28)	4.16 (3.84-4.46)	6.93 (6.62-7.26)	11.3 (10.4-12.0)	15.7 (14.6-16.8)	1972
Mexican Americans	07-08	4.20 (3.95-4.46)	4.38 (4.08-4.65)	7.32 (6.73-7.95)	12.1 (10.9-14.0)	16.7 (15.0-17.7)	1505
Mexican Americans	09-10	3.98 (3.51-4.51)	3.99 (3.45-4.54)	7.27 (6.06-8.20)	11.3 (9.97-13.4)	17.2 (12.0-24.5)	611
Non-Hispanic blacks	01-02	3.69 (3.22-4.23)	3.90 (3.30-4.30)	6.20 (5.30-7.30)	9.70 (8.20-13.0)	16.0 (12.0-21.0)	681
Non-Hispanic blacks	03-04	3.38 (3.05-3.74)	3.40 (3.00-3.70)	5.70 (4.80-6.60)	9.00 (7.90-12.0)	14.0 (9.80-18.0)	652
Non-Hispanic blacks	05-06	3.48 (3.19-3.80)	3.54 (3.24-3.94)	5.95 (5.33-6.65)	9.99 (9.02-11.0)	14.4 (12.8-15.7)	2078
Non-Hispanic blacks	07-08	3.82 (3.37-4.33)	3.82 (3.37-4.48)	6.96 (6.18-7.97)	12.0 (10.6-13.8)	17.2 (14.3-20.6)	1707
Non-Hispanic blacks	09-10	2.98 (2.74-3.26)	2.94 (2.64-3.27)	5.31 (4.88-5.99)	9.06 (7.90-10.2)	12.7 (9.23-17.3)	544
Non-Hispanic whites	01-02	3.70 (3.35-4.08)	3.90 (3.60-4.30)	6.60 (6.00-7.40)	10.0 (9.20-12.0)	15.0 (12.0-19.0)	1228
Non-Hispanic whites	03-04	3.43 (3.04-3.86)	3.50 (2.90-4.20)	5.90 (5.10-7.10)	9.90 (8.50-12.0)	14.0 (12.0-16.0)	1092
Non-Hispanic whites	05-06	3.42 (3.08-3.80)	3.59 (3.23-4.04)	6.05 (5.52-6.55)	9.62 (8.90-10.5)	13.2 (11.9-14.8)	3056
Non-Hispanic whites	07-08	3.84 (3.52-4.18)	3.93 (3.48-4.36)	7.07 (6.37-7.77)	11.7 (10.8-12.7)	16.8 (15.3-18.4)	3190
Non-Hispanic whites	09-10	3.40 (3.21-3.61)	3.48 (3.17-3.68)	5.94 (5.60-6.40)	9.69 (8.78-10.3)	13.6 (11.2-15.5)	1215

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, &fyr4., 07-08, and 09-10 are 0.05, 0.05, &lod4., 0.05, and 0.05 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Perchlorate_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Perchlorate_FactSheet.html

Urinary Perchlorate (creatinine corrected) (2001 – 2010)

CAS Number 14797-73-0

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	3.74 (3.51-3.99)	3.44 (3.18-3.79)	5.70 (5.27-6.18)	9.47 (7.88-10.8)	12.9 (10.7-14.9)	1617
Total population	03-04	3.31 (3.04-3.59)	3.18 (2.90-3.45)	5.19 (4.80-5.55)	8.86 (7.69-10.0)	12.4 (11.2-14.5)	2519
Total population	05-06	3.46 (3.27-3.66)	3.37 (3.17-3.59)	5.42 (5.08-5.86)	8.56 (8.19-9.17)	11.6 (10.4-13.4)	7697
Total population	07-08	4.00 (3.69-4.33)	3.89 (3.59-4.26)	6.59 (6.10-7.13)	10.9 (10.1-11.8)	15.7 (14.6-16.8)	7628
Total population	09-10	3.62 (3.48-3.77)	3.51 (3.37-3.72)	5.84 (5.57-6.10)	9.42 (8.73-10.3)	13.1 (11.4-14.1)	2843
Age 6-11 years	01-02	6.01 (5.49-6.57)	6.10 (5.37-6.67)	8.68 (7.72-10.6)	13.6 (11.6-17.3)	18.6 (13.7-23.7)	374
Age 6-11 years	03-04	5.52 (4.86-6.28)	5.34 (4.92-5.78)	7.64 (6.67-10.5)	13.5 (9.66-21.3)	21.3 (12.0-46.9)	314
Age 6-11 years	05-06	5.51 (5.06-6.00)	5.66 (5.08-6.22)	8.39 (7.61-9.25)	12.3 (10.3-13.6)	15.4 (14.3-17.0)	1054
Age 6-11 years	07-08	6.21 (5.52-6.99)	6.34 (5.56-7.10)	9.78 (8.63-11.3)	14.7 (13.3-16.0)	20.6 (16.4-25.0)	1143
Age 6-11 years	09-10	6.14 (5.51-6.84)	6.10 (5.40-6.94)	10.3 (7.79-13.3)	16.2 (14.1-17.6)	20.2 (15.8-25.5)	376
Age 12-19 years	01-02	3.10 (2.77-3.46)	3.04 (2.67-3.53)	4.75 (4.20-5.48)	7.50 (6.82-8.26)	10.4 (7.90-14.1)	827
Age 12-19 years	03-04	2.85 (2.59-3.14)	2.83 (2.62-3.17)	4.39 (3.88-4.67)	6.63 (5.56-7.82)	8.62 (7.24-11.4)	719
Age 12-19 years	05-06	3.14 (2.89-3.41)	3.17 (2.87-3.40)	4.86 (4.32-5.41)	7.30 (6.40-8.43)	9.54 (8.46-11.0)	2106
Age 12-19 years	07-08	3.52 (3.27-3.78)	3.43 (3.07-3.80)	5.62 (5.13-6.11)	8.84 (7.70-9.73)	12.6 (10.4-15.8)	1134
Age 12-19 years	09-10	3.15 (2.87-3.45)	3.05 (2.75-3.50)	4.79 (4.14-5.74)	8.20 (6.29-8.96)	9.70 (8.73-11.0)	452
Age 20+ years	01-02	3.64 (3.37-3.93)	3.44 (3.18-3.79)	5.70 (5.27-6.18)	9.47 (7.88-10.8)	12.9 (10.7-14.9)	1617
Age 20+ years	03-04	3.18 (2.90-3.49)	3.02 (2.74-3.33)	4.94 (4.53-5.35)	8.64 (7.18-10.0)	11.7 (10.3-15.2)	1486
Age 20+ years	05-06	3.34 (3.15-3.53)	3.24 (3.08-3.45)	5.12 (4.82-5.45)	8.24 (7.67-8.64)	11.4 (10.0-13.0)	4537
Age 20+ years	07-08	3.88 (3.57-4.22)	3.77 (3.49-4.14)	6.35 (5.85-6.91)	10.5 (9.64-11.5)	15.4 (13.6-16.9)	5351
Age 20+ years	09-10	3.50 (3.33-3.68)	3.44 (3.23-3.61)	5.59 (5.20-5.94)	8.91 (7.93-9.70)	12.2 (10.5-13.7)	2015
Males	01-02	3.57 (3.36-3.79)	3.42 (3.17-3.67)	5.62 (5.22-6.12)	9.24 (7.87-10.3)	12.2 (10.9-13.3)	1335
Males	03-04	3.23 (2.96-3.52)	3.09 (2.83-3.33)	5.00 (4.60-5.55)	8.00 (6.86-10.2)	12.5 (10.2-15.3)	1228
Males	05-06	3.25 (3.08-3.44)	3.16 (2.99-3.36)	4.98 (4.71-5.37)	8.07 (7.60-8.58)	11.0 (10.0-12.9)	3765
Males	07-08	3.78 (3.47-4.12)	3.64 (3.28-4.03)	6.29 (5.72-6.85)	10.3 (9.28-11.3)	14.4 (13.1-15.5)	3839
Males	09-10	3.34 (3.19-3.51)	3.25 (2.98-3.48)	5.21 (4.95-5.77)	9.08 (7.91-9.90)	13.1 (10.4-15.0)	1400
Females	01-02	3.92 (3.57-4.30)	3.79 (3.36-4.31)	6.33 (5.65-7.00)	10.6 (8.64-12.6)	14.0 (11.8-17.0)	1483
Females	03-04	3.38 (3.02-3.78)	3.28 (2.90-3.61)	5.24 (4.73-6.00)	9.40 (7.24-11.4)	12.4 (10.7-15.2)	1291
Females	05-06	3.67 (3.43-3.93)	3.58 (3.31-3.91)	5.86 (5.39-6.19)	9.21 (8.35-9.77)	12.1 (10.5-14.5)	3932
Females	07-08	4.22 (3.90-4.56)	4.16 (3.81-4.55)	6.89 (6.40-7.54)	11.5 (10.4-12.6)	16.6 (14.5-18.6)	3789
Females	09-10	3.92 (3.71-4.13)	3.89 (3.68-4.07)	6.16 (5.83-6.74)	9.58 (8.68-10.7)	13.2 (10.8-16.1)	1443

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Perchlorate_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Perchlorate_FactSheet.html

Urinary Perchlorate (creatinine corrected) (2001 – 2010)

CAS Number 14797-73-0

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	3.96 (3.39-4.63)	3.71 (3.15-4.69)	6.18 (5.06-8.13)	10.9 (8.78-14.0)	15.3 (12.2-18.6)	708
Mexican Americans	03-04	3.59 (3.32-3.88)	3.45 (3.10-3.68)	5.69 (4.82-6.45)	9.77 (8.00-11.2)	13.5 (11.2-20.0)	616
Mexican Americans	05-06	3.75 (3.56-3.95)	3.60 (3.42-3.81)	5.97 (5.53-6.48)	9.83 (9.19-10.4)	12.7 (11.3-14.5)	1972
Mexican Americans	07-08	4.20 (3.96-4.46)	4.17 (3.81-4.58)	6.95 (6.33-7.73)	11.8 (10.4-12.3)	15.7 (14.4-17.6)	1505
Mexican Americans	09-10	4.18 (3.73-4.69)	4.09 (3.68-4.53)	6.94 (5.71-7.74)	10.3 (8.91-13.3)	16.2 (11.9-19.8)	611
Non-Hispanic blacks	01-02	2.66 (2.35-3.01)	2.66 (2.22-2.97)	4.24 (3.69-5.20)	7.18 (6.17-8.80)	11.0 (8.73-12.7)	680
Non-Hispanic blacks	03-04	2.33 (2.11-2.57)	2.24 (2.02-2.47)	3.60 (3.22-4.13)	6.54 (4.91-8.47)	9.02 (6.84-11.8)	651
Non-Hispanic blacks	05-06	2.50 (2.32-2.69)	2.40 (2.24-2.61)	3.97 (3.69-4.26)	6.71 (6.30-7.13)	9.41 (8.53-10.4)	2078
Non-Hispanic blacks	07-08	2.89 (2.60-3.21)	2.76 (2.47-3.17)	4.92 (4.36-5.54)	8.63 (7.43-9.78)	11.8 (10.6-13.6)	1706
Non-Hispanic blacks	09-10	2.40 (2.19-2.63)	2.35 (2.11-2.55)	3.81 (3.60-4.18)	6.31 (5.58-6.94)	8.31 (6.69-10.6)	543
Non-Hispanic whites	01-02	3.95 (3.64-4.29)	3.73 (3.39-4.22)	6.19 (5.73-6.64)	10.0 (8.67-11.2)	13.3 (11.8-16.0)	1227
Non-Hispanic whites	03-04	3.53 (3.16-3.94)	3.35 (3.01-3.68)	5.29 (4.81-5.96)	9.23 (7.61-11.0)	12.8 (11.0-16.5)	1091
Non-Hispanic whites	05-06	3.63 (3.36-3.91)	3.51 (3.20-3.85)	5.60 (5.10-6.10)	8.58 (7.98-9.42)	11.8 (10.0-14.3)	3056
Non-Hispanic whites	07-08	4.17 (3.83-4.54)	4.06 (3.71-4.52)	6.63 (6.18-7.23)	10.8 (9.86-11.8)	15.5 (14.0-16.8)	3190
Non-Hispanic whites	09-10	3.82 (3.66-3.99)	3.67 (3.50-3.83)	5.98 (5.69-6.26)	9.40 (8.73-10.2)	12.9 (10.8-14.1)	1215

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Perchlorate_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Perchlorate_FactSheet.html

Urinary Thiocyanate (2001 – 2010)

CAS Number 302-04-5

Geometric mean and selected percentiles of urine concentrations (in mg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	1.52 (1.44-1.61)	1.50 (1.40-1.60)	3.60 (3.00-4.10)	7.90 (6.90-9.00)	12.0 (10.0-13.0)	1617
Total population	05-06	1.23 (1.12-1.35)	1.18 (1.08-1.31)	2.55 (2.31-2.83)	6.11 (5.10-6.85)	9.04 (8.14-9.93)	7697
Total population	07-08	1.35 (1.26-1.45)	1.32 (1.23-1.42)	2.77 (2.47-3.13)	6.36 (5.39-7.33)	9.54 (8.58-11.1)	7629
Total population	09-10	1.15 (1.08-1.24)	1.12 (1.04-1.18)	2.27 (2.11-2.45)	5.39 (4.61-6.37)	8.92 (7.59-9.83)	2844
Age 6-11 years	01-02	1.35 (1.20-1.51)	1.50 (1.30-1.70)	2.50 (1.90-3.00)	3.70 (3.30-4.10)	4.90 (3.90-5.60)	374
Age 6-11 years	05-06	.980 (.892-1.08)	1.03 (.916-1.15)	1.72 (1.55-1.92)	2.65 (2.31-3.09)	3.45 (2.96-4.21)	1054
Age 6-11 years	07-08	1.10 (.989-1.22)	1.12 (1.02-1.24)	1.88 (1.68-2.07)	2.92 (2.48-3.52)	4.08 (3.35-5.30)	1143
Age 6-11 years	09-10	.847 (.760-.945)	.855 (.762-1.02)	1.51 (1.31-1.82)	2.27 (2.00-2.45)	2.64 (2.30-3.09)	377
Age 12-19 years	01-02	1.59 (1.43-1.77)	1.50 (1.40-1.70)	2.90 (2.50-3.30)	5.30 (4.30-7.40)	7.70 (5.90-10.0)	826
Age 12-19 years	05-06	1.24 (1.11-1.39)	1.29 (1.15-1.47)	2.27 (1.99-2.62)	3.84 (3.18-4.65)	6.07 (4.76-6.95)	2106
Age 12-19 years	07-08	1.29 (1.15-1.46)	1.35 (1.14-1.53)	2.39 (2.06-2.69)	3.93 (3.36-4.57)	6.14 (4.55-7.27)	1135
Age 12-19 years	09-10	.978 (.869-1.10)	1.01 (.927-1.18)	1.76 (1.68-1.99)	2.96 (2.51-3.78)	4.48 (3.05-6.62)	452
Age 20+ years	01-02	1.54 (1.43-1.65)	1.50 (1.40-1.60)	3.60 (3.00-4.10)	7.90 (6.90-9.00)	12.0 (10.0-13.0)	1617
Age 20+ years	05-06	1.26 (1.14-1.40)	1.19 (1.08-1.34)	2.82 (2.50-3.15)	6.87 (6.06-7.58)	9.79 (8.78-10.7)	4537
Age 20+ years	07-08	1.39 (1.29-1.50)	1.34 (1.25-1.46)	3.11 (2.68-3.57)	7.21 (6.05-8.31)	10.8 (8.99-12.0)	5351
Age 20+ years	09-10	1.22 (1.13-1.32)	1.15 (1.07-1.23)	2.53 (2.31-2.93)	6.32 (5.11-7.59)	9.72 (8.62-11.4)	2015
Males	01-02	1.86 (1.67-2.07)	1.80 (1.60-2.10)	4.00 (3.40-4.90)	8.40 (7.00-10.0)	12.0 (10.0-13.0)	1335
Males	05-06	1.49 (1.36-1.64)	1.44 (1.27-1.62)	3.10 (2.82-3.56)	6.90 (6.13-7.64)	9.93 (8.99-10.7)	3765
Males	07-08	1.61 (1.50-1.72)	1.60 (1.50-1.71)	3.32 (2.96-3.77)	7.27 (6.01-8.22)	10.9 (9.04-12.3)	3839
Males	09-10	1.33 (1.22-1.46)	1.23 (1.15-1.36)	2.71 (2.29-3.10)	5.81 (5.01-7.19)	9.25 (7.85-10.0)	1401
Females	01-02	1.26 (1.16-1.36)	1.30 (1.00-1.40)	2.50 (2.40-2.80)	6.00 (5.20-6.70)	8.70 (7.20-10.0)	1482
Females	05-06	1.02 (.920-1.13)	.995 (.886-1.13)	2.07 (1.86-2.25)	4.61 (3.81-5.98)	8.04 (7.26-8.78)	3932
Females	07-08	1.14 (1.04-1.24)	1.09 (.991-1.19)	2.31 (2.06-2.62)	5.51 (4.58-6.52)	8.59 (7.36-9.85)	3790
Females	09-10	1.00 (.894-1.13)	.982 (.842-1.10)	1.95 (1.59-2.29)	4.63 (3.59-6.33)	8.79 (6.44-10.0)	1443
Mexican Americans	01-02	1.14 (.977-1.33)	1.20 (.940-1.40)	2.20 (1.80-2.60)	3.90 (3.00-4.90)	5.70 (4.20-6.60)	707
Mexican Americans	05-06	.823 (.744-.912)	.844 (.763-.937)	1.51 (1.36-1.71)	2.70 (2.26-3.22)	4.48 (3.49-5.40)	1972
Mexican Americans	07-08	.993 (.926-1.06)	1.04 (.987-1.11)	1.88 (1.75-2.02)	3.30 (2.98-3.52)	4.56 (3.92-5.43)	1505
Mexican Americans	09-10	.877 (.787-.977)	.917 (.800-1.02)	1.62 (1.34-1.92)	2.97 (2.57-3.83)	5.06 (4.06-5.56)	611
Non-Hispanic blacks	01-02	1.91 (1.72-2.11)	2.00 (1.80-2.20)	3.90 (3.30-4.90)	7.60 (6.20-10.0)	10.0 (7.00-15.0)	679
Non-Hispanic blacks	05-06	1.50 (1.32-1.72)	1.51 (1.36-1.68)	3.13 (2.56-3.81)	6.94 (5.66-8.09)	10.3 (8.01-12.4)	2078
Non-Hispanic blacks	07-08	1.73 (1.61-1.86)	1.73 (1.61-1.86)	3.78 (3.53-4.23)	8.29 (7.25-9.07)	12.8 (11.2-14.5)	1707
Non-Hispanic blacks	09-10	1.34 (1.21-1.48)	1.29 (1.15-1.49)	2.67 (2.36-3.32)	6.82 (6.01-8.08)	12.1 (7.67-14.1)	544
Non-Hispanic whites	01-02	1.56 (1.45-1.68)	1.50 (1.40-1.70)	3.40 (2.80-3.80)	7.20 (6.30-8.50)	12.0 (8.90-13.0)	1228
Non-Hispanic whites	05-06	1.30 (1.18-1.44)	1.25 (1.12-1.40)	2.74 (2.46-3.01)	6.53 (5.57-7.31)	9.43 (8.58-10.4)	3056
Non-Hispanic whites	07-08	1.42 (1.29-1.56)	1.41 (1.28-1.53)	2.98 (2.52-3.44)	6.67 (5.24-8.14)	9.71 (8.32-11.9)	3190
Non-Hispanic whites	09-10	1.27 (1.18-1.36)	1.18 (1.13-1.26)	2.44 (2.27-2.72)	5.95 (4.62-7.69)	9.59 (8.53-11.3)	1215

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 05-06, 07-08, and 09-10 are 0.02, 0.02, 0.02, and 0.02 respectively.

Urinary Thiocyanate (creatinine corrected) (2001 – 2010)

CAS Number 302-04-5

Geometric mean and selected percentiles of urine concentrations (in mg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	1.53 (1.43-1.64)	1.47 (1.37-1.61)	3.35 (2.95-3.74)	7.34 (6.67-7.81)	10.3 (8.81-11.3)	1616
Total population	05-06	1.23 (1.13-1.33)	1.15 (1.05-1.27)	2.44 (2.18-2.68)	5.67 (5.16-6.28)	8.23 (7.71-8.98)	7697
Total population	07-08	1.39 (1.28-1.51)	1.33 (1.22-1.43)	2.72 (2.42-3.04)	6.11 (5.25-7.30)	9.59 (8.03-11.5)	7628
Total population	09-10	1.24 (1.15-1.34)	1.13 (1.04-1.21)	2.31 (2.11-2.58)	5.78 (4.64-6.63)	9.13 (7.28-11.2)	2843
Age 6-11 years	01-02	1.56 (1.35-1.80)	1.55 (1.35-1.82)	2.67 (2.33-3.13)	4.46 (3.79-5.20)	5.33 (4.58-6.16)	374
Age 6-11 years	05-06	1.16 (1.06-1.28)	1.18 (1.06-1.34)	2.03 (1.81-2.32)	3.15 (2.83-3.43)	4.25 (3.49-4.58)	1054
Age 6-11 years	07-08	1.40 (1.27-1.54)	1.42 (1.24-1.59)	2.28 (2.02-2.53)	3.74 (3.29-4.26)	5.23 (4.39-6.65)	1143
Age 6-11 years	09-10	1.16 (1.04-1.30)	1.12 (1.02-1.23)	1.90 (1.58-2.26)	2.96 (2.47-3.57)	3.92 (3.04-4.67)	376
Age 12-19 years	01-02	1.23 (1.12-1.35)	1.14 (1.08-1.24)	2.12 (1.78-2.45)	3.88 (3.28-4.91)	5.75 (3.93-8.13)	825
Age 12-19 years	05-06	.941 (.867-1.02)	.937 (.855-1.03)	1.69 (1.51-1.86)	2.95 (2.43-3.64)	4.15 (3.64-5.00)	2106
Age 12-19 years	07-08	1.01 (.910-1.12)	1.04 (.906-1.17)	1.75 (1.60-1.92)	2.94 (2.49-3.54)	4.69 (3.64-5.44)	1134
Age 12-19 years	09-10	.917 (.858-.980)	.875 (.784-.972)	1.53 (1.36-1.79)	2.90 (2.26-3.84)	4.86 (3.49-5.10)	452
Age 20+ years	01-02	1.59 (1.47-1.71)	1.47 (1.37-1.61)	3.35 (2.95-3.74)	7.34 (6.67-7.81)	10.3 (8.81-11.3)	1616
Age 20+ years	05-06	1.29 (1.17-1.42)	1.20 (1.08-1.33)	2.68 (2.37-3.10)	6.43 (5.88-7.07)	8.99 (8.23-10.2)	4537
Age 20+ years	07-08	1.46 (1.34-1.59)	1.37 (1.27-1.47)	3.00 (2.69-3.45)	7.02 (5.82-8.26)	10.5 (8.63-12.9)	5351
Age 20+ years	09-10	1.30 (1.19-1.43)	1.17 (1.08-1.26)	2.63 (2.31-3.05)	6.41 (5.42-7.83)	9.88 (8.30-12.1)	2015
Males	01-02	1.51 (1.37-1.67)	1.42 (1.31-1.59)	3.33 (3.00-3.67)	6.38 (5.81-6.92)	8.51 (7.41-9.72)	1335
Males	05-06	1.24 (1.12-1.37)	1.18 (1.05-1.32)	2.61 (2.26-3.01)	5.67 (5.00-6.43)	8.17 (7.15-9.13)	3765
Males	07-08	1.38 (1.28-1.50)	1.32 (1.23-1.42)	2.77 (2.42-3.08)	6.13 (5.47-6.97)	9.27 (7.82-11.1)	3839
Males	09-10	1.22 (1.09-1.36)	1.12 (1.02-1.24)	2.47 (2.14-2.96)	5.78 (4.51-6.67)	8.72 (6.88-11.3)	1400
Females	01-02	1.55 (1.43-1.69)	1.45 (1.33-1.58)	2.79 (2.42-3.25)	7.07 (5.86-7.69)	10.0 (8.18-11.1)	1480
Females	05-06	1.22 (1.12-1.33)	1.13 (1.04-1.24)	2.27 (2.00-2.54)	5.62 (4.91-6.37)	8.40 (7.20-10.5)	3932
Females	07-08	1.40 (1.27-1.55)	1.34 (1.19-1.45)	2.69 (2.40-3.03)	6.07 (4.89-7.80)	9.88 (7.93-12.1)	3789
Females	09-10	1.26 (1.12-1.42)	1.14 (1.01-1.26)	2.15 (1.88-2.74)	5.80 (4.17-7.29)	9.24 (6.88-12.0)	1443
Mexican Americans	01-02	1.07 (.898-1.27)	1.06 (.819-1.29)	1.97 (1.51-2.50)	3.62 (2.86-4.52)	5.10 (3.52-7.33)	707
Mexican Americans	05-06	.768 (.685-.861)	.773 (.684-.881)	1.37 (1.20-1.59)	2.44 (2.19-2.85)	3.66 (3.28-4.27)	1972
Mexican Americans	07-08	.995 (.923-1.07)	1.03 (.918-1.14)	1.88 (1.71-2.05)	3.27 (2.77-3.76)	4.59 (3.86-5.59)	1505
Mexican Americans	09-10	.921 (.845-1.01)	.912 (.849-.985)	1.57 (1.38-1.90)	3.09 (2.79-3.63)	4.24 (3.72-5.62)	611
Non-Hispanic blacks	01-02	1.37 (1.18-1.59)	1.37 (1.18-1.61)	2.80 (2.21-3.43)	5.67 (4.17-6.74)	7.64 (5.91-11.3)	678
Non-Hispanic blacks	05-06	1.08 (.972-1.20)	1.05 (.972-1.16)	2.15 (1.84-2.57)	4.77 (3.93-5.61)	6.91 (5.84-7.80)	2078
Non-Hispanic blacks	07-08	1.31 (1.21-1.41)	1.25 (1.18-1.36)	2.81 (2.55-3.24)	6.19 (5.29-6.77)	8.74 (7.44-9.59)	1706
Non-Hispanic blacks	09-10	1.07 (.963-1.19)	.993 (.888-1.08)	2.14 (1.87-2.49)	5.39 (3.94-6.76)	7.74 (6.56-11.3)	543
Non-Hispanic whites	01-02	1.67 (1.55-1.80)	1.55 (1.42-1.73)	3.29 (3.00-3.73)	7.09 (6.38-7.95)	10.3 (8.78-11.1)	1227
Non-Hispanic whites	05-06	1.38 (1.25-1.52)	1.30 (1.14-1.44)	2.78 (2.48-3.12)	6.31 (5.67-7.08)	9.00 (8.13-10.5)	3056
Non-Hispanic whites	07-08	1.55 (1.40-1.70)	1.45 (1.32-1.58)	2.96 (2.56-3.53)	7.03 (5.71-8.56)	10.9 (8.70-13.1)	3190
Non-Hispanic whites	09-10	1.42 (1.32-1.54)	1.25 (1.17-1.38)	2.71 (2.38-3.17)	6.59 (5.61-7.85)	10.2 (8.62-11.8)	1215

Perfluoroalkyl and Polyfluoroalkyl Substances: Surfactants

Serum Perfluorobutane sulfonic acid (PFBS) (2003 – 2010)

CAS Number 375-73-5

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2094
Total population	05-06	*	<LOD	<LOD	<LOD	.100 (<LOD-.200)	2120
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2100
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2233
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	640
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	.100 (<LOD-.100)	640
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	357
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	364
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1454
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	.100 (<LOD-.200)	1480
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1743
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	1869
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1053
Males	05-06	*	<LOD	<LOD	<LOD	.100 (<LOD-.200)	1048
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1059
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1075
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1041
Females	05-06	*	<LOD	<LOD	<LOD	.100 (<LOD-.200)	1072
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1041
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1158

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.4, 0.1, 0.1, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluorobutane sulfonic acid (PFBS) (2003 – 2010)

CAS Number 375-73-5

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	485
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	.100 (<LOD-.200)	499
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	391
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	461
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	538
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	.100 (<LOD-.100)	544
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	419
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	391
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	962
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	.100 (<LOD-.400)	935
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	931
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.4, 0.1, 0.1, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluorodecanoic acid (PFDA) (1999 – 2010)

CAS Number 335-76-2

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	.200 (<LOD-.300)	.400 (.300-.700)	.600 (.400-1.10)	1562
Total population	03-04	*	<LOD	.300 (<LOD-.500)	.600 (.400-1.10)	.900 (.500-1.80)	2094
Total population	05-06	.355 (.297-.423)	.300 (.300-.400)	.500 (.400-.700)	.900 (.600-1.60)	1.50 (.900-2.60)	2120
Total population	07-08	.286 (.264-.309)	.300 (.300-.300)	.400 (.400-.500)	.700 (.600-.700)	.900 (.800-1.00)	2100
Total population	09-10	.279 (.258-.303)	.300 (.300-.300)	.400 (.400-.500)	.700 (.600-.800)	.900 (.800-1.10)	2233
Age 12-19 years	99-00	*	<LOD	<LOD	.300 (.200-.400)	.400 (.300-.600)	543
Age 12-19 years	03-04	*	<LOD	<LOD	.500 (<LOD-1.00)	.800 (.300-1.20)	640
Age 12-19 years	05-06	.295 (.258-.338)	.300 (.200-.300)	.500 (.400-.500)	.600 (.500-.800)	.800 (.600-1.60)	640
Age 12-19 years	07-08	.231 (.214-.248)	.200 (.200-.300)	.300 (.300-.400)	.500 (.400-.500)	.600 (.500-.700)	357
Age 12-19 years	09-10	.220 (.198-.245)	.200 (.200-.200)	.300 (.300-.300)	.400 (.400-.600)	.600 (.400-.800)	364
Age 20+ years	99-00	*	<LOD	.300 (.200-.300)	.400 (.300-.800)	.600 (.400-1.50)	1019
Age 20+ years	03-04	*	<LOD	.400 (<LOD-.500)	.700 (.400-1.00)	.900 (.500-1.80)	1454
Age 20+ years	05-06	.364 (.303-.438)	.300 (.300-.400)	.500 (.400-.700)	1.00 (.600-1.70)	1.50 (.900-2.60)	1480
Age 20+ years	07-08	.295 (.271-.321)	.300 (.300-.300)	.400 (.400-.500)	.700 (.600-.800)	.900 (.800-1.10)	1743
Age 20+ years	09-10	.289 (.265-.314)	.300 (.300-.300)	.400 (.400-.500)	.700 (.600-.800)	.900 (.800-1.20)	1869
Males	99-00	*	<LOD	.300 (.200-.300)	.400 (.300-.700)	.500 (.300-1.90)	743
Males	03-04	*	<LOD	.400 (<LOD-.500)	.800 (.400-1.40)	1.10 (.600-2.10)	1053
Males	05-06	.381 (.318-.456)	.400 (.300-.400)	.600 (.400-.800)	1.00 (.600-2.20)	1.70 (1.00-2.60)	1048
Males	07-08	.306 (.283-.331)	.300 (.300-.300)	.400 (.400-.500)	.700 (.600-.800)	.900 (.800-1.20)	1059
Males	09-10	.289 (.264-.318)	.300 (.300-.300)	.400 (.400-.500)	.600 (.500-.800)	.800 (.600-1.20)	1075
Females	99-00	*	<LOD	.200 (<LOD-.300)	.400 (.300-.800)	.600 (.400-1.40)	819
Females	03-04	*	<LOD	.300 (<LOD-.400)	.500 (.400-.800)	.800 (.500-1.20)	1041
Females	05-06	.331 (.277-.396)	.300 (.300-.400)	.500 (.400-.600)	.900 (.600-1.40)	1.30 (.800-2.30)	1072
Females	07-08	.267 (.245-.292)	.300 (.200-.300)	.400 (.400-.500)	.600 (.500-.800)	.800 (.700-1.10)	1041
Females	09-10	.270 (.248-.295)	.300 (.200-.300)	.400 (.400-.500)	.700 (.600-.800)	1.00 (.800-1.10)	1158

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 0.3, 0.2, 0.2, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluorodecanoic acid (PFDA) (1999 – 2010)

CAS Number 335-76-2

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	.300 (<LOD-.300)	.300 (.200-1.50)	584
Mexican Americans	03-04	*	<LOD	<LOD	.500 (.400-.500)	.600 (.500-.800)	485
Mexican Americans	05-06	.283 (.245-.327)	.300 (.200-.300)	.400 (.300-.500)	.600 (.500-1.00)	1.00 (.500-2.40)	499
Mexican Americans	07-08	.253 (.222-.289)	.200 (.200-.300)	.400 (.300-.500)	.600 (.400-.700)	.600 (.500-1.40)	391
Mexican Americans	09-10	.242 (.215-.272)	.200 (.200-.300)	.400 (.300-.400)	.500 (.500-.600)	.700 (.600-.800)	461
Non-Hispanic blacks	99-00	*	.200 (<LOD-.300)	.400 (.200-.700)	.800 (.500-1.20)	1.10 (.600-2.30)	303
Non-Hispanic blacks	03-04	*	<LOD	.400 (<LOD-.700)	.800 (.400-1.50)	1.00 (.500-3.10)	538
Non-Hispanic blacks	05-06	.405 (.309-.531)	.400 (.300-.500)	.600 (.400-.900)	1.20 (.600-2.90)	2.30 (1.10-3.70)	544
Non-Hispanic blacks	07-08	.331 (.298-.368)	.300 (.300-.400)	.500 (.400-.600)	.800 (.600-.900)	1.00 (.800-1.50)	419
Non-Hispanic blacks	09-10	.336 (.298-.379)	.300 (.300-.300)	.500 (.400-.600)	.800 (.600-1.00)	1.10 (.800-2.60)	391
Non-Hispanic whites	99-00	*	<LOD	.300 (<LOD-.300)	.400 (.300-.600)	.500 (.400-.800)	519
Non-Hispanic whites	03-04	*	<LOD	.300 (<LOD-.500)	.600 (.400-1.00)	.900 (.500-1.80)	962
Non-Hispanic whites	05-06	.350 (.294-.417)	.300 (.300-.400)	.500 (.400-.700)	.900 (.600-1.50)	1.40 (.800-2.30)	935
Non-Hispanic whites	07-08	.276 (.254-.301)	.300 (.200-.300)	.400 (.400-.500)	.600 (.500-.700)	.900 (.700-.900)	931
Non-Hispanic whites	09-10	.270 (.240-.304)	.300 (.200-.300)	.400 (.300-.500)	.600 (.500-.800)	.800 (.600-1.10)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 0.3, 0.2, 0.2, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluorododecanoic acid (PFDoA) (1999 – 2010)

CAS Number 307-55-1

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	<LOD	1562
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2094
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2120
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2100
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2233
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	<LOD	543
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	640
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	640
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	357
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	364
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1019
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1454
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1480
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1743
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	.100 (<LOD-.100)	1869
Males	99-00	*	<LOD	<LOD	<LOD	<LOD	743
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1053
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1048
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1059
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1075
Females	99-00	*	<LOD	<LOD	<LOD	<LOD	819
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1041
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1072
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1041
Females	09-10	*	<LOD	<LOD	<LOD	.100 (<LOD-.100)	1158

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 1.0, 0.2, 0.2, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluorododecanoic acid (PFDoA) (1999 – 2010)

CAS Number 307-55-1

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	584
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	485
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	499
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	391
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	461
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	<LOD	303
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	538
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	544
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	419
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	.100 (<LOD-.400)	391
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	<LOD	519
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	962
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	935
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	931
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 1.0, 0.2, 0.2, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluoroheptanoic acid (PFHpA) (1999 – 2010)

CAS Number 375-85-9

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	.500 (<LOD-.600)	.700 (.500-1.00)	1562
Total population	03-04	*	<LOD	<LOD	<LOD	.400 (<LOD-.500)	2094
Total population	05-06	*	<LOD	<LOD	<LOD	.700 (<LOD-1.70)	2120
Total population	07-08	*	<LOD	<LOD	<LOD	.500 (.400-.600)	2100
Total population	09-10	*	<LOD	<LOD	.200 (.100-.200)	.200 (.200-.300)	2233
Age 12-19 years	99-00	*	<LOD	<LOD	.800 (.600-1.10)	1.20 (.800-1.80)	543
Age 12-19 years	03-04	*	<LOD	<LOD	.400 (<LOD-.600)	.600 (.500-.900)	640
Age 12-19 years	05-06	*	<LOD	<LOD	.700 (<LOD-1.10)	1.10 (.600-2.70)	640
Age 12-19 years	07-08	*	<LOD	<LOD	.500 (<LOD-.600)	.600 (.500-.700)	357
Age 12-19 years	09-10	*	<LOD	.100 (.100-.200)	.200 (.200-.400)	.400 (.200-.500)	364
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	.600 (<LOD-.900)	1019
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1454
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	.600 (<LOD-2.10)	1480
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	.500 (<LOD-.500)	1743
Age 20+ years	09-10	*	<LOD	<LOD	.100 (.100-.200)	.200 (.200-.200)	1869
Males	99-00	*	<LOD	<LOD	.500 (<LOD-.600)	.700 (.500-1.00)	743
Males	03-04	*	<LOD	<LOD	<LOD	.300 (<LOD-.400)	1053
Males	05-06	*	<LOD	<LOD	.400 (<LOD-1.00)	.800 (<LOD-2.10)	1048
Males	07-08	*	<LOD	<LOD	<LOD	.600 (.400-.700)	1059
Males	09-10	*	<LOD	<LOD	.200 (.100-.200)	.200 (.200-.300)	1075
Females	99-00	*	<LOD	<LOD	.500 (<LOD-.700)	.700 (<LOD-1.20)	819
Females	03-04	*	<LOD	<LOD	<LOD	.400 (.300-.600)	1041
Females	05-06	*	<LOD	<LOD	<LOD	.600 (<LOD-1.30)	1072
Females	07-08	*	<LOD	<LOD	<LOD	.500 (.400-.500)	1041
Females	09-10	*	<LOD	<LOD	.200 (.100-.200)	.200 (.200-.300)	1158

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.4, 0.3, 0.4, 0.4, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluoroheptanoic acid (PFHpA) (1999 – 2010)

CAS Number 375-85-9

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	.500 (<LOD-.900)	.900 (.500-1.30)	584
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	.500 (<LOD-.900)	485
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	.500 (<LOD-1.50)	499
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	.500 (<LOD-.500)	391
Mexican Americans	09-10	*	<LOD	<LOD	.200 (.100-.200)	.200 (.200-.300)	461
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	.600 (<LOD-1.20)	303
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	538
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	.500 (<LOD-1.80)	544
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	.600 (.400-.700)	419
Non-Hispanic blacks	09-10	*	<LOD	<LOD	.100 (.100-.200)	.200 (.200-.200)	391
Non-Hispanic whites	99-00	*	<LOD	<LOD	.400 (<LOD-.600)	.600 (.500-.900)	519
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	.300 (<LOD-.500)	962
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	.800 (<LOD-2.10)	935
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	.500 (.400-.700)	931
Non-Hispanic whites	09-10	*	<LOD	<LOD	.200 (.100-.200)	.200 (.200-.300)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.4, 0.3, 0.4, 0.4, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluorohexane sulfonic acid (PFHxS) (1999 – 2010)

CAS Number 355-46-4

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	2.13 (1.91-2.38)	2.10 (1.80-2.30)	3.40 (3.10-4.00)	5.80 (5.20-6.90)	8.70 (7.00-10.0)	1562
Total population	03-04	1.93 (1.73-2.16)	1.90 (1.70-2.10)	3.30 (2.80-3.90)	5.90 (4.80-7.20)	8.30 (7.10-9.70)	2094
Total population	05-06	1.67 (1.42-1.98)	1.80 (1.50-2.10)	3.20 (2.60-4.00)	5.40 (4.40-7.10)	8.30 (5.80-11.9)	2120
Total population	07-08	1.95 (1.76-2.17)	2.00 (1.80-2.10)	3.50 (3.10-4.00)	5.90 (4.90-8.30)	9.80 (6.10-15.2)	2100
Total population	09-10	1.66 (1.51-1.82)	1.70 (1.50-1.90)	3.00 (2.60-3.30)	4.80 (4.40-5.30)	6.90 (5.90-7.60)	2233
Age 12-19 years	99-00	2.69 (2.14-3.39)	2.50 (2.00-3.70)	5.00 (3.60-6.50)	8.00 (5.80-12.9)	12.9 (6.90-16.4)	543
Age 12-19 years	03-04	2.44 (2.05-2.90)	2.40 (1.80-3.20)	4.90 (4.00-6.30)	9.50 (6.80-12.5)	13.3 (9.90-19.6)	640
Age 12-19 years	05-06	2.09 (1.74-2.52)	2.40 (2.00-2.90)	4.30 (3.70-5.40)	9.50 (6.40-13.1)	14.1 (9.80-17.8)	640
Age 12-19 years	07-08	2.40 (2.09-2.75)	2.30 (1.80-2.70)	4.30 (3.70-5.70)	9.90 (6.50-12.5)	15.9 (11.1-21.5)	357
Age 12-19 years	09-10	2.03 (1.77-2.33)	1.90 (1.60-2.10)	3.80 (3.20-4.20)	8.10 (6.30-9.70)	12.3 (8.60-19.0)	364
Age 20+ years	99-00	2.05 (1.85-2.27)	2.00 (1.80-2.30)	3.30 (3.00-3.70)	5.40 (4.90-5.90)	8.20 (6.70-9.50)	1019
Age 20+ years	03-04	1.86 (1.67-2.08)	1.80 (1.60-2.10)	3.00 (2.60-3.60)	5.50 (4.50-6.70)	7.60 (6.30-9.40)	1454
Age 20+ years	05-06	1.62 (1.37-1.92)	1.70 (1.50-2.10)	3.10 (2.50-3.80)	5.20 (4.20-6.50)	7.20 (5.10-11.6)	1480
Age 20+ years	07-08	1.90 (1.69-2.13)	1.90 (1.70-2.10)	3.30 (2.90-3.90)	5.80 (4.50-8.00)	9.00 (5.60-15.0)	1743
Age 20+ years	09-10	1.61 (1.45-1.79)	1.70 (1.50-1.90)	2.90 (2.50-3.30)	4.50 (4.00-5.20)	6.00 (5.40-7.10)	1869
Males	99-00	2.61 (2.27-3.00)	2.60 (2.20-3.00)	4.10 (3.50-4.70)	6.60 (5.30-9.40)	10.5 (6.90-15.0)	743
Males	03-04	2.17 (1.87-2.51)	2.10 (1.80-2.40)	3.40 (2.80-4.50)	6.10 (4.60-8.10)	8.50 (6.50-10.5)	1053
Males	05-06	2.08 (1.76-2.45)	2.20 (1.80-2.70)	3.70 (3.20-4.60)	6.40 (4.80-9.30)	9.50 (6.70-13.7)	1048
Males	07-08	2.63 (2.36-2.94)	2.60 (2.40-2.80)	4.20 (3.80-4.90)	7.30 (5.50-11.0)	11.4 (7.10-18.1)	1059
Males	09-10	2.21 (1.99-2.46)	2.20 (1.90-2.50)	3.40 (3.00-4.00)	5.50 (5.00-6.40)	7.80 (6.50-9.90)	1075
Females	99-00	1.79 (1.56-2.06)	1.70 (1.50-2.10)	2.80 (2.30-3.50)	5.10 (4.10-6.70)	8.00 (5.70-9.00)	819
Females	03-04	1.72 (1.56-1.91)	1.60 (1.40-1.80)	2.90 (2.50-3.50)	5.80 (4.60-7.10)	8.20 (6.70-10.0)	1041
Females	05-06	1.37 (1.15-1.63)	1.50 (1.20-1.70)	2.80 (2.20-3.30)	4.60 (3.90-5.80)	6.60 (5.60-9.30)	1072
Females	07-08	1.46 (1.30-1.64)	1.40 (1.30-1.50)	2.60 (2.20-3.10)	4.70 (3.80-6.10)	7.50 (5.00-12.5)	1041
Females	09-10	1.26 (1.14-1.40)	1.30 (1.20-1.40)	2.20 (2.00-2.60)	4.00 (3.50-4.50)	5.40 (4.70-6.50)	1158

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.1, 0.3, 0.1, 0.1, and 0.1 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluorohexane sulfonic acid (PFHxS) (1999 – 2010)

CAS Number 355-46-4

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	1.47 (1.13-1.92)	1.50 (1.00-2.00)	2.80 (1.80-3.80)	4.50 (3.30-6.90)	6.70 (4.60-9.50)	584
Mexican Americans	03-04	1.42 (1.17-1.72)	1.50 (1.20-1.70)	2.30 (1.90-2.90)	4.30 (3.10-5.10)	5.50 (4.00-8.90)	485
Mexican Americans	05-06	1.25 (.884-1.76)	1.60 (1.20-2.10)	2.80 (2.50-3.40)	4.30 (3.60-5.20)	6.00 (4.60-7.20)	499
Mexican Americans	07-08	1.65 (1.46-1.86)	1.70 (1.40-1.90)	3.00 (2.70-3.40)	5.00 (3.70-6.10)	6.70 (5.20-10.7)	391
Mexican Americans	09-10	1.01 (.835-1.22)	1.10 (.800-1.30)	1.80 (1.50-2.20)	3.10 (2.50-3.70)	4.00 (3.20-5.30)	461
Non-Hispanic blacks	99-00	2.14 (1.58-2.89)	2.10 (1.40-3.00)	3.40 (2.70-5.00)	6.70 (3.90-10.7)	10.7 (6.80-14.3)	303
Non-Hispanic blacks	03-04	1.92 (1.62-2.26)	1.90 (1.60-2.20)	3.50 (2.80-4.60)	6.00 (5.00-7.10)	8.30 (6.30-12.0)	538
Non-Hispanic blacks	05-06	1.53 (1.13-2.07)	1.70 (1.40-2.20)	3.30 (2.50-4.10)	5.40 (3.90-7.50)	7.50 (5.30-11.0)	544
Non-Hispanic blacks	07-08	1.98 (1.55-2.52)	2.10 (1.80-2.50)	3.90 (2.80-5.40)	7.90 (4.20-12.5)	11.1 (5.90-17.2)	419
Non-Hispanic blacks	09-10	1.44 (1.26-1.64)	1.40 (1.20-1.70)	2.60 (2.10-3.00)	4.40 (3.80-5.20)	6.50 (4.60-8.20)	391
Non-Hispanic whites	99-00	2.30 (2.06-2.56)	2.30 (1.90-2.60)	3.60 (3.20-4.20)	5.90 (5.30-7.00)	8.40 (7.00-9.70)	519
Non-Hispanic whites	03-04	2.01 (1.77-2.27)	1.90 (1.70-2.20)	3.30 (2.80-4.10)	6.10 (4.70-7.80)	8.20 (6.90-10.1)	962
Non-Hispanic whites	05-06	1.79 (1.48-2.17)	1.80 (1.50-2.20)	3.30 (2.70-4.30)	5.60 (4.60-8.20)	9.40 (6.10-13.1)	935
Non-Hispanic whites	07-08	2.13 (1.89-2.41)	2.10 (1.80-2.40)	3.70 (3.20-4.20)	6.40 (5.30-9.00)	10.5 (6.50-15.6)	931
Non-Hispanic whites	09-10	1.93 (1.77-2.10)	2.00 (1.80-2.20)	3.30 (2.90-3.70)	5.30 (4.80-5.60)	7.30 (6.20-8.80)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.1, 0.3, 0.1, 0.1, and 0.1 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluorononanoic acid (PFNA) (1999 – 2010)

CAS Number 375-95-1

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.551 (.456-.666)	.600 (.500-.700)	.900 (.700-1.00)	1.30 (1.00-1.90)	1.80 (1.30-2.40)	1562
Total population	03-04	.966 (.816-1.14)	1.00 (.900-1.10)	1.50 (1.20-1.80)	2.30 (1.60-4.30)	3.20 (1.80-7.70)	2094
Total population	05-06	1.09 (.909-1.29)	1.10 (.900-1.20)	1.70 (1.30-2.10)	2.60 (1.80-4.20)	3.60 (2.50-5.70)	2120
Total population	07-08	1.22 (1.12-1.32)	1.23 (1.15-1.31)	1.72 (1.56-1.89)	2.62 (2.30-2.87)	3.28 (2.95-3.77)	2100
Total population	09-10	1.26 (1.11-1.44)	1.23 (1.07-1.31)	1.80 (1.48-2.13)	2.71 (1.97-4.26)	3.77 (2.30-7.22)	2233
Age 12-19 years	99-00	.473 (.406-.551)	.500 (.400-.600)	.700 (.600-.800)	.900 (.800-1.10)	1.20 (.900-1.40)	543
Age 12-19 years	03-04	.852 (.697-1.04)	.800 (.700-1.00)	1.20 (1.00-1.60)	1.90 (1.20-3.70)	2.80 (1.30-6.30)	640
Age 12-19 years	05-06	.929 (.782-1.10)	.900 (.800-1.10)	1.40 (1.10-1.80)	2.00 (1.60-2.70)	2.70 (2.10-3.40)	640
Age 12-19 years	07-08	1.16 (1.04-1.30)	1.15 (.980-1.31)	1.56 (1.31-1.97)	2.05 (1.64-2.71)	2.54 (2.13-3.28)	357
Age 12-19 years	09-10	1.10 (.950-1.27)	1.07 (.900-1.23)	1.48 (1.31-1.80)	2.21 (1.48-2.95)	2.62 (1.89-4.84)	364
Age 20+ years	99-00	.566 (.464-.690)	.600 (.500-.700)	.900 (.700-1.20)	1.40 (1.00-1.90)	1.90 (1.40-2.40)	1019
Age 20+ years	03-04	.984 (.835-1.16)	1.00 (.900-1.10)	1.50 (1.20-1.80)	2.40 (1.60-4.40)	3.40 (1.80-8.40)	1454
Age 20+ years	05-06	1.11 (.929-1.33)	1.10 (1.00-1.20)	1.70 (1.30-2.20)	2.60 (1.80-4.40)	3.90 (2.50-5.80)	1480
Age 20+ years	07-08	1.23 (1.13-1.33)	1.23 (1.15-1.31)	1.72 (1.64-1.89)	2.62 (2.38-2.95)	3.36 (3.03-3.77)	1743
Age 20+ years	09-10	1.29 (1.13-1.47)	1.23 (1.15-1.39)	1.80 (1.56-2.21)	2.71 (1.97-4.67)	3.94 (2.38-8.36)	1869
Males	99-00	.604 (.510-.716)	.600 (.500-.700)	.900 (.800-1.10)	1.30 (1.10-1.80)	1.70 (1.30-2.40)	743
Males	03-04	1.09 (.912-1.30)	1.10 (.900-1.20)	1.60 (1.40-1.90)	2.40 (1.70-5.00)	4.00 (1.80-8.70)	1053
Males	05-06	1.19 (.993-1.43)	1.20 (1.00-1.30)	1.80 (1.40-2.50)	2.90 (1.80-4.60)	3.90 (2.50-6.70)	1048
Males	07-08	1.36 (1.27-1.47)	1.31 (1.23-1.39)	1.89 (1.72-2.05)	2.87 (2.54-3.12)	3.53 (3.12-4.18)	1059
Males	09-10	1.37 (1.17-1.59)	1.31 (1.15-1.48)	1.80 (1.56-2.30)	2.79 (1.89-4.84)	4.10 (2.21-12.1)	1075
Females	99-00	.508 (.409-.632)	.500 (.400-.600)	.800 (.600-1.00)	1.30 (.900-2.00)	1.80 (1.30-2.60)	819
Females	03-04	.861 (.721-1.03)	.900 (.800-1.00)	1.30 (1.00-1.70)	2.20 (1.40-3.40)	3.00 (1.70-6.10)	1041
Females	05-06	.992 (.833-1.18)	.900 (.800-1.10)	1.50 (1.20-1.90)	2.40 (1.70-3.50)	3.10 (2.10-5.70)	1072
Females	07-08	1.09 (.985-1.21)	1.07 (.980-1.23)	1.56 (1.48-1.72)	2.21 (1.97-2.54)	2.79 (2.54-3.53)	1041
Females	09-10	1.17 (1.05-1.31)	1.15 (.980-1.23)	1.72 (1.39-2.05)	2.62 (1.97-3.77)	3.53 (2.30-6.15)	1158

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.1, 0.1, 0.1, 0.082, and 0.082 respectively.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.82 for Survey periods 2007-2008 and 2009-2010 compared with results previously released.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluorononanoic acid (PFNA) (1999 – 2010)

CAS Number 375-95-1

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.341 (.292-.398)	.400 (.300-.400)	.500 (.400-.700)	.700 (.600-.900)	.900 (.700-1.30)	584
Mexican Americans	03-04	.689 (.586-.809)	.700 (.600-.900)	1.10 (.900-1.40)	1.60 (1.30-2.00)	2.00 (1.60-2.80)	485
Mexican Americans	05-06	.821 (.710-.951)	.800 (.700-.900)	1.20 (1.10-1.40)	1.60 (1.30-2.30)	2.30 (1.50-3.20)	499
Mexican Americans	07-08	1.10 (.967-1.25)	1.15 (.980-1.31)	1.56 (1.39-1.80)	2.13 (1.80-2.71)	2.71 (2.13-3.28)	391
Mexican Americans	09-10	.993 (.906-1.09)	.980 (.900-1.07)	1.39 (1.31-1.56)	2.05 (1.80-2.38)	2.46 (2.21-3.03)	461
Non-Hispanic blacks	99-00	.764 (.606-.964)	.700 (.600-1.00)	1.30 (.800-1.80)	1.90 (1.50-2.50)	2.50 (1.90-2.90)	303
Non-Hispanic blacks	03-04	1.14 (.834-1.54)	1.10 (.900-1.40)	1.70 (1.20-2.90)	3.20 (1.50-6.50)	4.70 (2.10-9.30)	538
Non-Hispanic blacks	05-06	1.17 (.916-1.50)	1.20 (.900-1.40)	1.60 (1.30-2.50)	2.60 (1.70-5.60)	4.40 (2.40-8.20)	544
Non-Hispanic blacks	07-08	1.35 (1.23-1.48)	1.39 (1.23-1.48)	1.89 (1.72-2.13)	2.79 (2.30-3.36)	3.36 (2.79-4.67)	419
Non-Hispanic blacks	09-10	1.42 (1.29-1.56)	1.39 (1.23-1.56)	1.97 (1.80-2.30)	2.79 (2.38-3.36)	3.36 (2.62-4.84)	391
Non-Hispanic whites	99-00	.566 (.467-.687)	.600 (.500-.700)	.900 (.700-1.10)	1.30 (1.00-1.90)	1.70 (1.30-2.30)	519
Non-Hispanic whites	03-04	.963 (.826-1.12)	.900 (.900-1.10)	1.50 (1.20-1.70)	2.30 (1.60-3.60)	3.00 (1.80-6.20)	962
Non-Hispanic whites	05-06	1.10 (.914-1.31)	1.10 (.900-1.20)	1.70 (1.30-2.10)	2.60 (1.80-4.20)	3.50 (2.40-5.70)	935
Non-Hispanic whites	07-08	1.22 (1.10-1.34)	1.23 (1.15-1.31)	1.72 (1.48-1.89)	2.54 (2.13-3.03)	3.20 (2.79-3.85)	931
Non-Hispanic whites	09-10	1.28 (1.08-1.51)	1.23 (1.07-1.39)	1.80 (1.48-2.21)	2.62 (1.80-5.08)	3.85 (2.05-10.8)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.1, 0.1, 0.1, 0.082, and 0.082 respectively.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.82 for Survey periods 2007-2008 and 2009-2010 compared with results previously released.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluorooctanoic acid (PFOA) (1999 – 2010)

CAS Number 335-67-1

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	5.21 (4.72-5.74)	5.20 (4.80-5.90)	6.90 (6.30-7.80)	9.40 (8.20-11.1)	11.9 (10.9-13.5)	1562
Total population	03-04	3.95 (3.65-4.27)	4.10 (3.80-4.40)	5.80 (5.30-6.40)	7.80 (6.70-9.60)	9.80 (7.40-14.1)	2094
Total population	05-06	3.92 (3.48-4.42)	4.20 (3.80-4.50)	6.20 (5.40-7.20)	9.00 (7.40-11.2)	11.3 (8.80-14.5)	2120
Total population	07-08	4.12 (4.01-4.24)	4.30 (4.20-4.50)	5.90 (5.70-6.20)	7.90 (7.50-8.30)	9.60 (8.90-10.1)	2100
Total population	09-10	3.07 (2.81-3.36)	3.20 (2.90-3.50)	4.60 (4.10-5.10)	6.00 (5.30-7.20)	7.50 (6.20-9.70)	2233
Age 12-19 years	99-00	5.46 (4.98-5.99)	5.60 (4.90-6.10)	6.90 (6.20-7.70)	9.40 (7.70-11.0)	11.6 (10.2-12.5)	543
Age 12-19 years	03-04	3.89 (3.47-4.35)	4.00 (3.50-4.50)	5.40 (4.60-6.10)	7.00 (5.60-9.20)	8.60 (5.90-12.6)	640
Age 12-19 years	05-06	3.59 (3.26-3.96)	3.80 (3.30-4.20)	5.40 (4.60-5.90)	6.90 (6.30-7.90)	8.40 (7.30-10.1)	640
Age 12-19 years	07-08	3.91 (3.71-4.12)	4.00 (3.70-4.40)	5.00 (4.70-5.50)	6.10 (5.70-6.70)	7.30 (6.20-8.00)	357
Age 12-19 years	09-10	2.74 (2.46-3.05)	2.90 (2.60-3.10)	3.80 (3.30-4.20)	4.80 (4.10-5.30)	5.00 (4.40-7.20)	364
Age 20+ years	99-00	5.16 (4.66-5.72)	5.20 (4.70-5.70)	7.00 (6.30-7.80)	9.40 (8.20-11.1)	12.0 (10.8-14.0)	1019
Age 20+ years	03-04	3.96 (3.67-4.27)	4.10 (3.90-4.40)	5.90 (5.40-6.50)	7.80 (6.80-9.60)	9.90 (7.60-14.2)	1454
Age 20+ years	05-06	3.97 (3.51-4.49)	4.20 (3.80-4.60)	6.40 (5.40-7.50)	9.30 (7.40-11.9)	11.6 (9.00-14.8)	1480
Age 20+ years	07-08	4.15 (4.02-4.30)	4.30 (4.20-4.60)	6.10 (5.80-6.50)	8.10 (7.70-8.70)	9.80 (9.00-10.4)	1743
Age 20+ years	09-10	3.12 (2.84-3.43)	3.30 (3.00-3.60)	4.70 (4.20-5.30)	6.40 (5.40-7.50)	7.70 (6.30-10.2)	1869
Males	99-00	5.71 (5.17-6.31)	6.00 (5.40-6.50)	7.70 (6.80-8.70)	10.6 (9.00-11.8)	12.1 (11.2-13.1)	743
Males	03-04	4.47 (4.07-4.91)	4.60 (4.30-5.00)	6.30 (5.70-7.20)	8.40 (6.80-12.5)	10.7 (7.40-17.5)	1053
Males	05-06	4.69 (4.23-5.20)	4.90 (4.40-5.40)	7.20 (6.10-8.00)	9.90 (8.00-12.2)	12.2 (9.60-15.2)	1048
Males	07-08	4.80 (4.55-5.06)	4.90 (4.60-5.20)	6.70 (6.30-7.10)	8.70 (8.10-9.30)	10.1 (9.50-11.1)	1059
Males	09-10	3.53 (3.22-3.87)	3.70 (3.40-4.00)	4.90 (4.50-5.40)	6.80 (5.40-8.00)	7.90 (6.40-10.2)	1075
Females	99-00	4.80 (4.32-5.34)	4.70 (4.40-5.20)	6.30 (5.60-7.10)	8.30 (7.50-9.90)	11.3 (9.20-14.4)	819
Females	03-04	3.50 (3.21-3.82)	3.60 (3.30-3.90)	5.20 (4.70-5.80)	7.10 (6.30-8.20)	8.60 (7.40-10.6)	1041
Females	05-06	3.31 (2.89-3.79)	3.50 (3.10-4.00)	5.20 (4.40-6.00)	7.90 (6.10-9.70)	10.1 (7.50-14.2)	1072
Females	07-08	3.55 (3.38-3.73)	3.70 (3.50-3.90)	5.20 (4.80-5.60)	7.00 (6.50-7.50)	8.30 (7.20-9.90)	1041
Females	09-10	2.69 (2.45-2.96)	2.70 (2.50-3.00)	4.10 (3.60-4.70)	5.60 (5.10-6.50)	6.90 (5.80-8.40)	1158

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.1, 0.2, 0.1, 0.1, and 0.1 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluorooctanoic acid (PFOA) (1999 – 2010)

CAS Number 335-67-1

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	3.89 (3.58-4.21)	4.20 (3.80-4.60)	5.80 (5.20-6.30)	7.70 (6.40-8.00)	8.20 (7.70-8.90)	584
Mexican Americans	03-04	3.11 (2.84-3.40)	3.30 (3.10-3.70)	4.50 (4.20-5.20)	6.70 (5.70-7.30)	7.60 (6.70-10.5)	485
Mexican Americans	05-06	2.62 (2.33-2.95)	2.80 (2.50-3.30)	4.30 (3.80-4.70)	5.80 (5.30-6.70)	7.40 (5.90-8.10)	499
Mexican Americans	07-08	3.54 (3.35-3.75)	3.80 (3.50-4.00)	5.20 (4.90-5.60)	6.60 (6.20-7.10)	7.60 (6.80-9.00)	391
Mexican Americans	09-10	2.26 (2.00-2.54)	2.40 (2.10-2.60)	3.60 (3.10-3.80)	4.60 (4.00-5.30)	5.40 (4.50-6.60)	461
Non-Hispanic blacks	99-00	4.78 (4.10-5.57)	4.80 (3.80-5.90)	6.40 (5.90-7.50)	9.00 (7.40-11.5)	11.5 (9.20-14.0)	303
Non-Hispanic blacks	03-04	3.37 (2.99-3.79)	3.70 (3.20-4.20)	5.20 (4.40-6.30)	7.70 (5.30-11.6)	9.60 (6.50-13.9)	538
Non-Hispanic blacks	05-06	3.27 (2.61-4.08)	3.70 (3.00-4.20)	5.50 (4.40-6.80)	8.10 (6.00-11.3)	10.4 (7.80-12.3)	544
Non-Hispanic blacks	07-08	3.86 (3.57-4.16)	4.00 (3.50-4.30)	5.90 (5.20-6.50)	7.80 (7.10-8.70)	9.20 (8.50-10.1)	419
Non-Hispanic blacks	09-10	2.74 (2.47-3.04)	2.80 (2.60-3.00)	4.00 (3.70-4.40)	5.50 (5.00-6.20)	6.70 (5.60-9.40)	391
Non-Hispanic whites	99-00	5.61 (5.06-6.23)	5.60 (4.90-6.20)	7.30 (6.50-8.20)	10.3 (8.40-12.1)	13.0 (11.0-14.9)	519
Non-Hispanic whites	03-04	4.18 (3.85-4.53)	4.30 (3.90-4.70)	6.00 (5.50-6.70)	7.90 (7.20-9.20)	9.90 (7.60-13.3)	962
Non-Hispanic whites	05-06	4.27 (3.80-4.81)	4.40 (4.00-5.00)	6.60 (5.60-7.80)	9.60 (7.40-12.2)	11.6 (8.80-14.8)	935
Non-Hispanic whites	07-08	4.38 (4.20-4.56)	4.60 (4.30-4.70)	6.10 (5.80-6.60)	8.20 (7.80-8.80)	9.90 (9.30-10.6)	931
Non-Hispanic whites	09-10	3.36 (3.06-3.69)	3.50 (3.20-3.90)	4.80 (4.40-5.40)	6.60 (5.40-7.80)	7.80 (6.20-10.5)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.1, 0.2, 0.1, 0.1, and 0.1 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluorooctane sulfonic acid (PFOS) (1999 – 2010)

CAS Number 1763-23-1

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	30.4 (27.1-33.9)	30.2 (27.8-33.9)	43.7 (37.5-47.3)	57.0 (50.2-71.7)	75.7 (58.1-97.5)	1562
Total population	03-04	20.7 (19.2-22.3)	21.2 (19.8-22.4)	30.0 (27.5-33.0)	41.3 (35.6-50.0)	54.6 (44.0-66.5)	2094
Total population	05-06	17.1 (16.0-18.2)	17.5 (16.8-18.6)	27.2 (24.9-29.6)	39.4 (34.9-43.1)	47.5 (42.7-56.8)	2120
Total population	07-08	13.2 (12.2-14.2)	13.6 (12.8-14.7)	21.0 (18.9-23.3)	32.6 (29.4-36.3)	40.5 (35.4-47.4)	2100
Total population	09-10	9.32 (8.13-10.7)	9.70 (8.50-10.8)	14.8 (12.9-17.3)	23.7 (18.3-30.2)	32.0 (22.6-48.5)	2233
Age 12-19 years	99-00	29.1 (26.2-32.4)	29.5 (26.9-34.2)	39.0 (35.9-45.0)	52.7 (46.0-56.2)	57.4 (52.7-66.5)	543
Age 12-19 years	03-04	19.3 (17.5-21.4)	19.9 (17.8-22.0)	27.1 (23.7-30.2)	36.5 (28.6-45.6)	42.6 (35.1-52.1)	640
Age 12-19 years	05-06	15.0 (14.3-15.7)	14.9 (13.6-16.6)	22.7 (19.7-24.9)	30.6 (27.8-34.1)	38.5 (33.0-44.6)	640
Age 12-19 years	07-08	11.3 (10.3-12.3)	11.3 (10.3-13.0)	15.9 (15.1-17.7)	21.7 (17.7-28.2)	28.0 (22.0-32.2)	357
Age 12-19 years	09-10	6.84 (5.81-8.06)	6.90 (6.00-8.40)	10.7 (8.90-12.5)	14.4 (12.4-18.1)	18.1 (13.5-26.0)	364
Age 20+ years	99-00	30.6 (27.1-34.4)	30.3 (27.9-33.9)	44.4 (37.9-48.0)	58.0 (50.1-75.7)	78.0 (59.9-107)	1019
Age 20+ years	03-04	20.9 (19.3-22.5)	21.4 (19.8-22.8)	30.4 (28.1-33.0)	42.7 (35.7-53.3)	57.8 (45.7-69.4)	1454
Age 20+ years	05-06	17.4 (16.2-18.7)	18.0 (17.1-19.4)	27.8 (25.3-30.8)	40.2 (35.6-44.5)	49.6 (42.8-60.7)	1480
Age 20+ years	07-08	13.5 (12.4-14.6)	14.0 (13.0-15.5)	21.7 (19.5-24.6)	33.9 (29.9-39.0)	42.8 (37.3-50.3)	1743
Age 20+ years	09-10	9.72 (8.45-11.2)	10.1 (8.90-11.2)	15.7 (13.4-18.4)	25.3 (19.3-32.9)	34.1 (23.4-52.7)	1869
Males	99-00	33.4 (29.6-37.6)	34.9 (31.1-37.9)	46.3 (41.2-51.6)	58.4 (50.2-78.3)	78.3 (58.0-108)	743
Males	03-04	23.2 (21.1-25.6)	23.9 (22.4-25.5)	32.2 (28.8-35.9)	45.3 (35.5-62.7)	62.7 (43.8-81.8)	1053
Males	05-06	20.5 (19.4-21.8)	21.3 (20.0-22.5)	31.4 (27.9-33.7)	43.3 (38.7-49.7)	54.3 (43.5-80.7)	1048
Males	07-08	16.3 (15.0-17.7)	17.0 (15.7-17.8)	23.9 (21.6-26.9)	36.4 (33.5-41.1)	45.3 (40.4-53.1)	1059
Males	09-10	11.5 (9.93-13.3)	11.8 (10.6-12.9)	16.8 (14.3-20.4)	25.7 (19.4-39.7)	37.4 (22.5-72.3)	1075
Females	99-00	28.0 (24.6-31.8)	27.8 (24.5-30.2)	39.0 (32.7-46.0)	55.4 (46.3-70.2)	75.7 (56.1-98.4)	819
Females	03-04	18.4 (17.0-20.0)	18.2 (16.9-19.8)	27.4 (23.8-30.2)	39.8 (34.4-42.6)	46.6 (42.3-61.5)	1041
Females	05-06	14.4 (13.3-15.4)	14.6 (13.5-15.9)	23.3 (21.1-25.3)	34.2 (30.6-37.7)	42.8 (38.0-46.5)	1072
Females	07-08	10.7 (9.70-11.7)	10.7 (9.80-11.7)	17.2 (15.4-19.1)	28.7 (21.7-32.5)	33.6 (29.9-41.6)	1041
Females	09-10	7.65 (6.73-8.71)	7.80 (6.70-9.00)	12.0 (10.8-14.4)	21.1 (16.4-26.9)	28.8 (22.3-34.1)	1158

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 0.4, 0.2, 0.2, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluorooctane sulfonic acid (PFOS) (1999 – 2010)

CAS Number 1763-23-1

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	22.7 (19.8-25.9)	23.7 (20.8-27.2)	33.0 (27.9-39.7)	41.9 (36.7-54.5)	53.6 (41.3-72.0)	584
Mexican Americans	03-04	14.7 (13.0-16.6)	15.9 (13.4-17.9)	21.2 (18.7-23.5)	28.1 (24.1-35.0)	35.5 (28.9-38.5)	485
Mexican Americans	05-06	11.2 (10.3-12.2)	11.6 (9.90-13.3)	17.2 (15.4-19.3)	24.9 (22.0-30.3)	31.9 (26.4-40.6)	499
Mexican Americans	07-08	10.6 (9.47-11.9)	10.8 (9.70-12.2)	17.1 (14.9-19.2)	26.3 (20.7-30.4)	31.5 (25.7-36.1)	391
Mexican Americans	09-10	6.23 (5.28-7.36)	6.10 (5.10-8.10)	11.2 (8.50-14.1)	16.8 (14.9-18.8)	20.4 (17.5-22.7)	461
Non-Hispanic blacks	99-00	32.9 (26.0-41.6)	32.0 (23.9-45.8)	50.6 (37.4-62.2)	69.3 (60.9-75.9)	81.5 (68.0-129)	303
Non-Hispanic blacks	03-04	21.6 (19.1-24.4)	22.1 (19.6-24.9)	32.3 (28.1-36.2)	43.8 (37.2-57.3)	57.7 (43.8-78.4)	538
Non-Hispanic blacks	05-06	18.4 (15.6-21.8)	19.0 (16.7-22.3)	27.6 (24.3-35.5)	45.9 (34.4-58.1)	57.9 (45.0-84.4)	544
Non-Hispanic blacks	07-08	15.0 (12.6-17.8)	15.2 (12.9-17.7)	25.8 (21.0-33.3)	42.7 (31.5-57.3)	57.3 (43.4-79.2)	419
Non-Hispanic blacks	09-10	9.11 (7.93-10.5)	9.50 (8.20-11.2)	16.0 (13.4-17.4)	23.0 (20.5-26.1)	28.7 (25.7-39.7)	391
Non-Hispanic whites	99-00	32.3 (29.5-35.3)	32.8 (29.5-36.0)	45.1 (40.4-47.4)	56.3 (51.7-70.0)	78.0 (58.0-98.4)	519
Non-Hispanic whites	03-04	21.4 (19.9-23.1)	22.0 (20.5-23.0)	30.2 (27.7-33.3)	41.7 (35.7-49.6)	56.3 (44.0-70.0)	962
Non-Hispanic whites	05-06	18.1 (17.1-19.1)	18.6 (17.3-19.8)	28.3 (26.1-30.8)	39.7 (35.6-43.3)	46.6 (42.7-54.3)	935
Non-Hispanic whites	07-08	13.7 (12.7-14.8)	14.3 (13.2-15.5)	21.1 (18.7-23.7)	32.9 (29.7-36.0)	40.4 (36.1-44.9)	931
Non-Hispanic whites	09-10	10.2 (8.69-11.9)	10.4 (9.20-11.5)	15.6 (13.0-18.7)	24.7 (17.5-35.1)	33.1 (20.7-56.7)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 0.4, 0.2, 0.2, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluorooctane sulfonamide (PFOSA or FOSA) (1999 – 2010)

CAS Number 754-91-6

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.355 (.296-.426)	.400 (.300-.400)	.700 (.500-.800)	1.00 (.900-1.40)	1.40 (1.00-2.00)	1562
Total population	03-04	*	.100 (.100-.100)	.100 (.100-.100)	.300 (.200-.300)	.300 (.300-.400)	2094
Total population	05-06	*	<LOD	.100 (<LOD-.200)	.200 (.200-.300)	.300 (.200-.500)	2120
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2100
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2233
Age 12-19 years	99-00	.429 (.370-.498)	.400 (.400-.500)	.700 (.700-.900)	1.10 (.900-1.40)	1.60 (1.10-2.90)	543
Age 12-19 years	03-04	*	.100 (.100-.100)	.100 (.100-.200)	.300 (.200-.300)	.300 (.200-.500)	640
Age 12-19 years	05-06	*	<LOD	<LOD	.200 (.100-.300)	.300 (.200-.500)	640
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	357
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	364
Age 20+ years	99-00	.344 (.283-.418)	.300 (.300-.400)	.600 (.500-.800)	1.00 (.800-1.40)	1.40 (1.00-2.00)	1019
Age 20+ years	03-04	*	.100 (.100-.100)	.100 (.100-.100)	.300 (.200-.300)	.300 (.300-.400)	1454
Age 20+ years	05-06	*	<LOD	.100 (<LOD-.200)	.200 (.200-.300)	.300 (.200-.500)	1480
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1743
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	1869
Males	99-00	.351 (.289-.426)	.400 (.300-.400)	.600 (.500-.700)	.900 (.700-1.30)	1.30 (.900-1.90)	743
Males	03-04	*	.100 (.100-.100)	.100 (.100-.100)	.300 (.200-.300)	.300 (.200-.500)	1053
Males	05-06	*	<LOD	.100 (.100-.200)	.200 (.200-.300)	.300 (.200-.600)	1048
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1059
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1075
Females	99-00	.358 (.298-.431)	.300 (.300-.500)	.700 (.500-.900)	1.10 (.900-1.40)	1.50 (1.20-2.00)	819
Females	03-04	*	.100 (.100-.100)	.100 (.100-.200)	.300 (.200-.300)	.300 (.300-.500)	1041
Females	05-06	*	<LOD	.100 (<LOD-.100)	.200 (.200-.300)	.300 (.200-.400)	1072
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1041
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1158

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.05, 0.1, 0.1, 0.1, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluorooctane sulfonamide (PFOSA or FOSA) (1999 – 2010)

CAS Number 754-91-6

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.285 (.245-.332)	.300 (.200-.400)	.500 (.400-.600)	.800 (.700-1.00)	1.10 (.800-1.60)	584
Mexican Americans	03-04	*	.100 (.100-.100)	.100 (.100-.100)	.100 (.100-.100)	.200 (.100-.300)	485
Mexican Americans	05-06	*	<LOD	<LOD	.200 (<LOD-.300)	.200 (<LOD-5.00)	499
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	391
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	461
Non-Hispanic blacks	99-00	.347 (.289-.417)	.300 (.300-.400)	.600 (.500-.800)	1.00 (.700-1.70)	1.70 (.900-2.60)	303
Non-Hispanic blacks	03-04	*	.100 (.100-.100)	.100 (.100-.200)	.300 (.200-.300)	.300 (.200-.500)	538
Non-Hispanic blacks	05-06	*	<LOD	<LOD	.200 (.100-.200)	.200 (.200-.400)	544
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	419
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	391
Non-Hispanic whites	99-00	.382 (.305-.479)	.400 (.300-.500)	.700 (.600-.900)	1.10 (.900-1.40)	1.50 (1.10-2.00)	519
Non-Hispanic whites	03-04	*	.100 (.100-.100)	.100 (.100-.200)	.300 (.200-.300)	.300 (.300-.500)	962
Non-Hispanic whites	05-06	*	<LOD	.100 (.100-.200)	.200 (.200-.300)	.300 (.200-.500)	935
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	931
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.05, 0.1, 0.1, 0.1, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum 2-(N-Ethyl-perfluorooctane sulfonamido) acetic acid (EtFOSAA) (1999 – 2010)

CAS Number 2991-50-6

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.642 (.596-.691)	.600 (.500-.700)	1.10 (1.00-1.20)	1.60 (1.50-1.80)	2.30 (1.90-2.70)	1562
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2094
Total population	05-06	*	<LOD	<LOD	<LOD	.300 (<LOD-.300)	2120
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2100
Total population	09-10	*	<LOD	<LOD	<LOD	.100 (<LOD-.100)	2233
Age 12-19 years	99-00	.826 (.764-.893)	.800 (.700-.800)	1.20 (1.10-1.30)	1.70 (1.50-2.00)	2.40 (1.90-3.30)	543
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	640
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	.200 (<LOD-.400)	640
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	357
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	364
Age 20+ years	99-00	.614 (.569-.663)	.600 (.500-.700)	1.00 (.900-1.10)	1.60 (1.50-1.80)	2.30 (1.80-2.70)	1019
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1454
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	.300 (<LOD-.300)	1480
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1743
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	.100 (<LOD-.100)	1869
Males	99-00	.619 (.572-.671)	.600 (.500-.700)	1.00 (.900-1.10)	1.50 (1.30-1.80)	1.90 (1.60-2.90)	743
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1053
Males	05-06	*	<LOD	<LOD	<LOD	.300 (.200-.300)	1048
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1059
Males	09-10	*	<LOD	<LOD	<LOD	.100 (<LOD-.100)	1075
Females	99-00	.662 (.599-.732)	.700 (.500-.700)	1.10 (1.00-1.20)	1.70 (1.50-2.20)	2.50 (2.00-2.80)	819
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1041
Females	05-06	*	<LOD	<LOD	<LOD	.300 (<LOD-.300)	1072
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1041
Females	09-10	*	<LOD	<LOD	<LOD	.100 (<LOD-.100)	1158

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 0.4, 0.2, 0.2, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum 2-(N-Ethyl-perfluorooctane sulfonamido) acetic acid (EtFOSAA (1999 – 2010)

CAS Number 2991-50-6

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.577 (.477-.698)	.600 (.400-.700)	1.00 (.800-1.20)	1.70 (1.30-2.00)	2.50 (1.90-3.00)	584
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	485
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	499
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	391
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	461
Non-Hispanic blacks	99-00	.555 (.476-.646)	.500 (.500-.600)	.900 (.700-1.00)	1.50 (1.20-1.90)	2.20 (1.40-3.20)	303
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	.400 (<LOD-.500)	538
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	544
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	419
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	391
Non-Hispanic whites	99-00	.660 (.606-.717)	.700 (.600-.700)	1.10 (1.00-1.20)	1.70 (1.50-1.90)	2.40 (1.90-2.80)	519
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	962
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	.300 (.200-.400)	935
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	931
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	.100 (<LOD-.200)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 0.4, 0.2, 0.2, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum 2-(N-Methyl-perfluorooctane sulfonamido) acetic acid (Me-PFOSA-AcOH or MeFOSAA) (1999 – 2010)

CAS Number 2355-31-9

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	.846 (.738-.970)	.870 (.780-.960)	1.40 (1.13-1.66)	2.18 (1.83-2.62)	2.79 (2.44-3.23)	1562
Total population	03-04	*	<LOD	.610 (<LOD-.610)	.870 (.780-.960)	1.13 (.960-1.31)	2094
Total population	05-06	.410 (.372-.451)	.440 (.350-.440)	.700 (.610-.780)	1.22 (1.13-1.22)	1.57 (1.48-1.74)	2120
Total population	07-08	.303 (.277-.330)	.300 (.300-.300)	.500 (.400-.600)	1.00 (.800-1.00)	1.30 (1.20-1.40)	2100
Total population	09-10	.198 (.184-.213)	.200 (.200-.200)	.300 (.300-.300)	.700 (.600-.700)	1.00 (.900-1.00)	2233
Age 12-19 years	99-00	1.17 (1.03-1.34)	1.22 (1.05-1.31)	1.83 (1.31-2.18)	2.70 (2.18-3.05)	3.23 (2.79-4.10)	543
Age 12-19 years	03-04	*	<LOD	.610 (<LOD-.700)	.960 (.780-1.13)	1.31 (1.05-1.57)	640
Age 12-19 years	05-06	.432 (.380-.490)	.440 (.350-.520)	.780 (.610-.870)	1.13 (.960-1.31)	1.48 (1.13-1.66)	640
Age 12-19 years	07-08	.340 (.305-.379)	.300 (.300-.400)	.600 (.500-.600)	1.00 (.800-1.50)	1.60 (1.00-2.00)	357
Age 12-19 years	09-10	.235 (.203-.273)	.300 (.200-.300)	.400 (.300-.500)	.700 (.500-.900)	.900 (.600-1.70)	364
Age 20+ years	99-00	.800 (.693-.923)	.780 (.700-.960)	1.31 (1.13-1.57)	2.09 (1.74-2.44)	2.70 (2.27-3.14)	1019
Age 20+ years	03-04	*	<LOD	.610 (<LOD-.610)	.870 (.780-.960)	1.05 (.960-1.40)	1454
Age 20+ years	05-06	.406 (.369-.448)	.440 (.350-.440)	.700 (.610-.780)	1.22 (1.13-1.31)	1.66 (1.48-1.74)	1480
Age 20+ years	07-08	.297 (.270-.327)	.300 (.300-.300)	.500 (.400-.600)	1.00 (.800-1.00)	1.20 (1.10-1.40)	1743
Age 20+ years	09-10	.193 (.178-.210)	.200 (.200-.200)	.300 (.300-.300)	.700 (.600-.800)	1.00 (.900-1.00)	1869
Males	99-00	.885 (.756-1.04)	.870 (.780-1.05)	1.40 (1.13-1.74)	2.27 (2.01-2.79)	2.79 (2.44-3.66)	743
Males	03-04	*	<LOD	.610 (<LOD-.610)	.960 (.780-1.05)	1.13 (.960-1.48)	1053
Males	05-06	.435 (.400-.472)	.440 (.350-.440)	.780 (.700-.870)	1.22 (1.13-1.31)	1.66 (1.40-1.74)	1048
Males	07-08	.307 (.281-.334)	.300 (.300-.300)	.500 (.400-.600)	.900 (.800-1.00)	1.30 (1.10-1.40)	1059
Males	09-10	.200 (.187-.214)	.200 (.200-.200)	.300 (.300-.400)	.700 (.600-.800)	1.00 (.800-1.10)	1075
Females	99-00	.813 (.717-.923)	.780 (.700-.960)	1.31 (1.13-1.66)	2.01 (1.74-2.35)	2.62 (2.27-3.23)	819
Females	03-04	*	<LOD	<LOD	.870 (.780-.960)	.960 (.870-1.57)	1041
Females	05-06	.387 (.342-.438)	.350 (.350-.440)	.700 (.610-.780)	1.13 (1.05-1.31)	1.57 (1.40-1.83)	1072
Females	07-08	.299 (.267-.334)	.300 (.300-.300)	.500 (.400-.600)	1.00 (.800-1.10)	1.30 (1.10-1.70)	1041
Females	09-10	.196 (.178-.216)	.200 (.200-.200)	.300 (.300-.300)	.600 (.500-.800)	1.00 (.800-1.00)	1158

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.174, 0.523, 0.174, 0.174, and 0.087 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum 2-(N-Methyl-perfluorooctane sulfonamido) acetic acid (MeFOSAA) (1999 – 2010)

CAS Number 2355-31-9

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	.668 (.545-.817)	.700 (.520-.780)	1.13 (.870-1.31)	1.83 (1.40-2.35)	2.35 (1.74-3.92)	584
Mexican Americans	03-04	*	<LOD	<LOD	.610 (<LOD-.780)	.780 (<LOD-1.13)	485
Mexican Americans	05-06	.292 (.245-.348)	.260 (.260-.350)	.440 (.350-.700)	.780 (.610-1.05)	1.05 (.870-1.22)	499
Mexican Americans	07-08	*	.200 (<LOD-.200)	.300 (.300-.300)	.500 (.400-.800)	.800 (.500-1.10)	391
Mexican Americans	09-10	.139 (.118-.163)	.100 (.100-.200)	.300 (.200-.300)	.500 (.400-.600)	.700 (.500-1.00)	461
Non-Hispanic blacks	99-00	.989 (.853-1.15)	1.05 (.780-1.22)	1.57 (1.31-1.83)	2.35 (1.92-2.79)	3.14 (2.27-4.27)	303
Non-Hispanic blacks	03-04	*	<LOD	.700 (<LOD-.780)	.960 (.780-1.22)	1.31 (.960-1.57)	538
Non-Hispanic blacks	05-06	.418 (.361-.486)	.440 (.350-.520)	.700 (.610-.870)	1.22 (1.05-1.48)	1.66 (1.48-2.01)	544
Non-Hispanic blacks	07-08	.330 (.304-.357)	.300 (.300-.300)	.500 (.500-.700)	1.00 (.800-1.20)	1.40 (1.20-1.70)	419
Non-Hispanic blacks	09-10	.193 (.166-.225)	.200 (.200-.200)	.300 (.300-.400)	.600 (.400-.800)	.900 (.600-1.10)	391
Non-Hispanic whites	99-00	.883 (.758-1.03)	.870 (.780-1.05)	1.40 (1.22-1.74)	2.18 (1.92-2.70)	2.79 (2.44-3.66)	519
Non-Hispanic whites	03-04	*	<LOD	.610 (<LOD-.700)	.870 (.780-.960)	1.13 (.960-1.40)	962
Non-Hispanic whites	05-06	.428 (.380-.483)	.440 (.350-.520)	.780 (.700-.870)	1.22 (1.13-1.31)	1.66 (1.40-1.83)	935
Non-Hispanic whites	07-08	.332 (.296-.372)	.300 (.300-.300)	.600 (.500-.700)	1.00 (.800-1.10)	1.30 (1.10-1.60)	931
Non-Hispanic whites	09-10	.216 (.201-.232)	.200 (.200-.300)	.300 (.300-.400)	.700 (.600-.800)	1.00 (.900-1.10)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.174, 0.523, 0.174, 0.174, and 0.087 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluoroundecanoic acid (PFUA or PFUnDA) (1999 – 2010)

CAS Number 2058-94-8

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	.300 (<LOD-.400)	.400 (.300-.700)	1562
Total population	03-04	*	<LOD	<LOD	<LOD	.600 (<LOD-1.30)	2094
Total population	05-06	*	<LOD	.300 (.200-.400)	.500 (.400-.800)	.700 (.600-1.20)	2120
Total population	07-08	*	<LOD	.200 (<LOD-.300)	.400 (.300-.500)	.600 (.500-.800)	2100
Total population	09-10	.172 (.151-.196)	.200 (.100-.200)	.300 (.200-.400)	.600 (.400-.800)	.900 (.600-1.10)	2233
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	.200 (<LOD-.300)	543
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	.300 (<LOD-1.10)	640
Age 12-19 years	05-06	*	<LOD	<LOD	.300 (.200-.500)	.500 (.300-.900)	640
Age 12-19 years	07-08	*	<LOD	<LOD	.200 (<LOD-.200)	.300 (.200-.300)	357
Age 12-19 years	09-10	*	.100 (<LOD-.100)	.200 (.100-.200)	.300 (.200-.600)	.400 (.200-.900)	364
Age 20+ years	99-00	*	<LOD	<LOD	.300 (<LOD-.500)	.500 (.300-.700)	1019
Age 20+ years	03-04	*	<LOD	<LOD	.300 (<LOD-.600)	.600 (<LOD-1.40)	1454
Age 20+ years	05-06	*	<LOD	.300 (.200-.400)	.500 (.400-.800)	.800 (.600-1.10)	1480
Age 20+ years	07-08	*	<LOD	.200 (.200-.300)	.400 (.300-.600)	.600 (.500-.900)	1743
Age 20+ years	09-10	.182 (.160-.207)	.200 (.200-.200)	.300 (.300-.400)	.600 (.400-.800)	.900 (.700-1.20)	1869
Males	99-00	*	<LOD	<LOD	.300 (<LOD-.500)	.500 (.300-.600)	743
Males	03-04	*	<LOD	<LOD	.400 (<LOD-1.00)	.700 (<LOD-2.30)	1053
Males	05-06	*	<LOD	.300 (.200-.400)	.600 (.400-.700)	.800 (.600-1.10)	1048
Males	07-08	*	<LOD	.200 (<LOD-.300)	.400 (.300-.500)	.700 (.500-1.00)	1059
Males	09-10	.170 (.147-.196)	.200 (.100-.200)	.300 (.200-.400)	.500 (.400-.900)	.800 (.500-1.20)	1075
Females	99-00	*	<LOD	<LOD	.300 (<LOD-.400)	.400 (.200-.800)	819
Females	03-04	*	<LOD	<LOD	<LOD	.400 (<LOD-.700)	1041
Females	05-06	*	<LOD	.300 (<LOD-.400)	.500 (.400-.700)	.700 (.500-1.10)	1072
Females	07-08	*	<LOD	.200 (<LOD-.200)	.400 (.300-.500)	.600 (.400-.700)	1041
Females	09-10	.175 (.153-.199)	.200 (.100-.200)	.300 (.200-.400)	.600 (.400-.800)	.900 (.700-1.20)	1158

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 0.3, 0.2, 0.2, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Serum Perfluoroundecanoic acid (PFUnDA) (1999 – 2010)

CAS Number 2058-94-8

Geometric mean and selected percentiles of serum concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	584
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	485
Mexican Americans	05-06	*	<LOD	<LOD	.300 (<LOD-.700)	.500 (.300-1.00)	499
Mexican Americans	07-08	*	<LOD	<LOD	.300 (<LOD-.400)	.300 (<LOD-1.40)	391
Mexican Americans	09-10	*	.100 (.100-.100)	.200 (.200-.200)	.300 (.300-.400)	.400 (.300-.600)	461
Non-Hispanic blacks	99-00	*	<LOD	.300 (<LOD-.500)	.600 (.300-1.00)	.900 (.600-1.80)	303
Non-Hispanic blacks	03-04	*	<LOD	<LOD	.600 (<LOD-1.40)	.900 (.300-2.90)	538
Non-Hispanic blacks	05-06	*	<LOD	.300 (<LOD-.500)	.600 (.400-1.50)	1.20 (.600-2.70)	544
Non-Hispanic blacks	07-08	*	<LOD	.300 (.200-.400)	.500 (.400-.700)	.800 (.600-1.20)	419
Non-Hispanic blacks	09-10	.237 (.199-.283)	.200 (.200-.200)	.400 (.300-.500)	.800 (.500-1.10)	1.30 (.800-1.80)	391
Non-Hispanic whites	99-00	*	<LOD	<LOD	.200 (<LOD-.300)	.300 (<LOD-.800)	519
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	.500 (<LOD-.900)	962
Non-Hispanic whites	05-06	*	<LOD	.300 (.200-.400)	.500 (.400-.700)	.600 (.400-1.50)	935
Non-Hispanic whites	07-08	*	<LOD	.200 (<LOD-.200)	.300 (.300-.500)	.500 (.400-.600)	931
Non-Hispanic whites	09-10	.162 (.136-.193)	.200 (.100-.200)	.300 (.200-.400)	.500 (.300-.800)	.800 (.500-1.00)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 0.3, 0.2, 0.2, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

Phthalate and Phthalate Alternative Metabolites

Urinary Mono-benzyl phthalate (MBzP) (1999 – 2010)

CAS Number 2528-16-7

Metabolite of Benzylbutyl phthalate (BzBP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	11.0 (9.88-12.3)	12.2 (11.0-13.6)	25.5 (23.5-28.6)	48.3 (39.8-59.3)	74.4 (68.1-83.4)	2541
Total population	01-02	10.8 (10.0-11.7)	11.4 (10.7-12.5)	27.4 (24.8-29.7)	58.2 (51.3-63.5)	87.6 (73.7-102)	2782
Total population	03-04	9.89 (9.12-10.7)	10.3 (9.22-11.8)	23.3 (21.7-25.2)	47.9 (41.3-54.4)	72.6 (61.4-90.2)	2605
Total population	05-06	8.32 (7.28-9.51)	8.93 (7.78-10.4)	20.7 (18.2-23.7)	44.6 (37.6-52.8)	67.1 (57.4-77.7)	2548
Total population	07-08	7.24 (6.47-8.09)	8.42 (7.20-9.50)	18.3 (16.6-20.4)	37.3 (31.3-43.3)	58.8 (48.7-69.1)	2604
Total population	09-10	6.46 (5.76-7.24)	6.70 (5.97-7.49)	15.4 (13.4-17.1)	31.0 (26.8-36.1)	48.3 (43.1-55.4)	2749
Age 6-11 years	99-00	28.4 (23.7-34.0)	29.0 (24.3-35.0)	59.0 (40.2-70.6)	92.8 (70.6-154)	154 (77.8-287)	328
Age 6-11 years	01-02	24.1 (21.0-27.6)	26.6 (19.2-31.2)	49.3 (44.4-66.8)	120 (83.7-137)	169 (132-237)	393
Age 6-11 years	03-04	24.4 (20.3-29.2)	25.2 (21.7-28.7)	45.9 (36.3-66.5)	105 (79.1-154)	184 (105-263)	342
Age 6-11 years	05-06	21.3 (19.2-23.7)	23.5 (19.4-26.6)	46.1 (37.1-56.9)	78.6 (64.3-104)	116 (88.4-137)	356
Age 6-11 years	07-08	15.4 (12.3-19.3)	17.6 (13.8-20.8)	33.8 (27.0-47.5)	69.9 (51.3-104)	131 (69.9-221)	389
Age 6-11 years	09-10	11.6 (9.51-14.1)	12.6 (10.4-14.5)	28.4 (20.2-37.8)	63.9 (47.4-76.8)	87.8 (65.4-212)	415
Age 12-19 years	99-00	18.4 (15.7-21.6)	20.4 (16.1-25.1)	36.9 (31.5-42.1)	63.7 (48.4-82.6)	90.2 (67.5-122)	752
Age 12-19 years	01-02	16.7 (14.3-19.6)	17.9 (15.3-22.3)	40.0 (34.1-45.3)	81.1 (66.1-95.5)	122 (96.3-143)	742
Age 12-19 years	03-04	15.9 (14.0-18.1)	17.9 (16.1-19.6)	35.9 (28.7-46.5)	64.7 (51.2-86.3)	110 (71.9-136)	729
Age 12-19 years	05-06	14.2 (11.9-16.9)	14.8 (11.5-18.3)	31.8 (24.2-41.0)	62.6 (44.0-85.0)	94.2 (67.7-134)	702
Age 12-19 years	07-08	11.6 (9.56-14.2)	14.6 (11.5-16.6)	27.2 (22.0-31.5)	46.7 (35.4-58.3)	63.9 (54.7-102)	401
Age 12-19 years	09-10	10.6 (8.75-12.9)	11.9 (10.1-15.4)	24.8 (21.9-29.2)	43.1 (36.0-45.8)	56.1 (44.7-74.3)	420
Age 20+ years	99-00	8.96 (7.83-10.3)	9.94 (8.71-11.2)	21.0 (18.1-23.8)	37.4 (31.6-45.0)	62.1 (39.4-85.5)	1461
Age 20+ years	01-02	9.16 (8.40-9.98)	10.0 (9.22-10.7)	22.9 (20.5-24.1)	47.1 (38.7-54.9)	71.8 (59.6-87.1)	1647
Age 20+ years	03-04	8.22 (7.42-9.11)	8.71 (7.78-9.72)	19.4 (17.0-21.2)	39.0 (33.9-44.3)	57.2 (47.9-68.3)	1534
Age 20+ years	05-06	6.87 (6.00-7.86)	7.34 (6.41-8.71)	17.1 (14.5-19.7)	34.0 (28.3-43.4)	56.9 (45.9-66.7)	1490
Age 20+ years	07-08	6.18 (5.40-7.08)	7.13 (6.12-8.06)	15.5 (13.4-17.6)	30.5 (25.2-37.7)	49.5 (40.3-63.9)	1814
Age 20+ years	09-10	5.61 (4.97-6.34)	5.95 (5.17-6.61)	12.7 (10.9-14.8)	25.6 (21.5-29.4)	39.6 (34.2-47.7)	1914
Males	99-00	11.6 (10.1-13.4)	12.7 (10.9-14.4)	25.5 (22.7-29.0)	50.0 (43.1-62.8)	77.8 (69.3-93.4)	1215
Males	01-02	11.2 (9.78-12.9)	11.5 (10.5-13.3)	26.6 (23.8-31.0)	56.4 (45.7-70.1)	87.5 (63.5-132)	1371
Males	03-04	10.5 (9.50-11.6)	10.9 (9.50-12.6)	23.3 (21.2-25.6)	47.2 (38.6-57.3)	72.6 (56.6-94.8)	1250
Males	05-06	9.47 (8.20-10.9)	10.2 (8.78-12.2)	23.3 (19.3-25.9)	51.6 (39.8-61.6)	71.0 (61.6-83.2)	1270
Males	07-08	7.80 (6.96-8.74)	8.64 (7.49-10.0)	17.6 (15.8-20.4)	33.8 (28.4-41.3)	49.3 (41.5-62.1)	1294
Males	09-10	6.93 (6.07-7.92)	6.98 (6.21-7.80)	15.6 (13.3-17.6)	33.0 (27.4-37.8)	49.0 (40.4-62.8)	1399
Females	99-00	10.5 (9.17-12.0)	11.6 (10.2-13.8)	25.8 (22.2-29.8)	45.9 (38.7-59.3)	73.9 (60.6-83.4)	1326
Females	01-02	10.5 (9.40-11.7)	11.1 (9.94-12.9)	27.4 (23.3-31.5)	58.6 (49.2-66.0)	88.0 (73.2-103)	1411
Females	03-04	9.33 (8.53-10.2)	9.58 (8.71-11.2)	24.0 (21.2-26.1)	48.3 (42.3-52.1)	72.5 (60.8-86.3)	1355
Females	05-06	7.34 (6.30-8.55)	7.70 (6.55-9.36)	18.4 (15.6-22.2)	39.5 (33.0-46.3)	62.1 (48.0-73.7)	1278
Females	07-08	6.73 (5.77-7.85)	7.99 (6.41-9.36)	18.8 (15.4-22.5)	40.1 (32.2-50.9)	64.4 (51.1-78.8)	1310
Females	09-10	6.04 (5.38-6.77)	6.36 (5.18-7.47)	15.3 (12.9-16.9)	29.3 (24.5-36.9)	47.7 (38.0-60.4)	1350

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.576, 0.216, 0.072, 0.216, 0.216, and 0.216 respectively.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.72 for survey periods 1999-2008 compared with results previously released.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/BzBP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-benzyl phthalate (MBzP) (1999 – 2010)

CAS Number 2528-16-7

Metabolite of Benzylbutyl phthalate (BzBP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	10.0 (8.69-11.6)	11.3 (9.65-12.2)	23.8 (19.8-26.0)	48.6 (40.0-60.5)	71.1 (58.0-108)	814
Mexican Americans	01-02	9.49 (7.75-11.6)	10.7 (7.78-13.3)	21.2 (18.9-27.4)	50.7 (38.2-61.5)	68.2 (50.6-116)	677
Mexican Americans	03-04	10.7 (9.52-12.0)	11.2 (9.72-13.2)	23.3 (19.9-25.5)	51.4 (35.0-66.5)	71.9 (62.3-104)	652
Mexican Americans	05-06	8.95 (7.12-11.3)	10.2 (8.57-11.9)	20.1 (14.3-31.0)	43.1 (33.9-49.8)	59.8 (43.6-77.3)	637
Mexican Americans	07-08	7.87 (6.39-9.68)	9.43 (6.91-11.5)	18.7 (14.1-25.3)	38.0 (30.2-47.5)	60.4 (40.5-73.9)	531
Mexican Americans	09-10	7.58 (6.42-8.96)	7.39 (6.33-9.00)	17.1 (14.3-20.3)	33.8 (26.5-43.5)	54.5 (34.4-79.7)	566
Non-Hispanic blacks	99-00	16.6 (14.9-18.4)	16.6 (14.8-18.4)	35.5 (31.7-40.0)	68.2 (57.6-93.4)	99.1 (76.6-174)	603
Non-Hispanic blacks	01-02	17.1 (15.1-19.4)	17.4 (14.3-20.2)	36.4 (29.9-45.3)	72.6 (62.2-91.3)	103 (91.2-129)	703
Non-Hispanic blacks	03-04	13.6 (11.8-15.7)	14.4 (11.1-17.7)	31.5 (28.0-35.3)	58.2 (50.4-76.0)	86.2 (71.8-124)	699
Non-Hispanic blacks	05-06	11.9 (9.03-15.7)	12.7 (10.1-17.1)	26.1 (21.0-35.0)	60.6 (47.2-74.6)	83.2 (74.6-102)	678
Non-Hispanic blacks	07-08	9.37 (8.28-10.6)	9.72 (8.35-11.7)	21.4 (18.4-24.8)	46.9 (34.3-61.6)	71.3 (63.7-89.6)	597
Non-Hispanic blacks	09-10	8.98 (7.67-10.5)	9.14 (7.76-10.5)	21.0 (16.4-24.7)	38.9 (30.3-52.6)	67.4 (51.3-80.7)	516
Non-Hispanic whites	99-00	10.3 (9.12-11.6)	11.6 (10.3-13.4)	24.5 (22.0-27.6)	42.3 (36.9-53.4)	73.9 (53.4-83.4)	912
Non-Hispanic whites	01-02	10.1 (9.12-11.1)	10.5 (9.65-11.2)	25.6 (23.2-28.4)	55.2 (47.6-65.0)	87.5 (67.1-112)	1216
Non-Hispanic whites	03-04	9.25 (8.30-10.3)	9.50 (8.42-11.5)	22.0 (20.0-25.3)	45.9 (38.6-52.1)	65.9 (54.9-87.9)	1088
Non-Hispanic whites	05-06	7.67 (6.61-8.90)	8.06 (6.98-10.1)	19.8 (17.1-23.5)	43.4 (32.4-52.5)	65.8 (52.5-76.8)	1038
Non-Hispanic whites	07-08	7.10 (6.33-7.97)	8.14 (7.06-9.29)	17.9 (16.5-20.3)	37.7 (31.0-44.2)	57.0 (46.0-68.6)	1077
Non-Hispanic whites	09-10	6.07 (5.24-7.03)	6.31 (5.54-7.23)	14.7 (12.4-16.7)	29.5 (23.4-36.9)	44.6 (34.9-64.1)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.576, 0.216, 0.072, 0.216, 0.216, and 0.216 respectively.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.72 for survey periods 1999-2008 compared with results previously released.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/BzBP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-benzyl phthalate (MBzP) (creatinine corrected) (1999 – 2010)

CAS Number 2528-16-7

Metabolite of Benzylbutyl phthalate (BzBP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	10.0 (9.33-10.8)	9.60 (9.22-10.3)	18.1 (16.8-19.6)	36.1 (29.9-42.3)	55.7 (50.1-62.1)	2541
Total population	01-02	10.2 (9.50-10.9)	9.71 (9.12-10.4)	19.1 (17.8-20.9)	39.5 (35.3-42.1)	65.1 (53.6-73.2)	2782
Total population	03-04	9.29 (8.76-9.86)	9.04 (8.07-9.82)	17.7 (16.0-19.0)	33.1 (29.5-37.1)	50.4 (44.9-57.5)	2605
Total population	05-06	8.11 (7.28-9.04)	8.24 (7.37-8.98)	15.3 (13.9-17.4)	30.2 (26.4-35.1)	47.4 (42.7-53.3)	2548
Total population	07-08	7.29 (6.71-7.93)	7.20 (6.57-8.17)	14.3 (13.1-15.4)	28.3 (24.4-31.8)	42.6 (36.3-49.1)	2604
Total population	09-10	6.74 (6.06-7.50)	6.40 (5.63-7.30)	12.4 (11.3-13.8)	24.0 (20.4-26.6)	34.1 (30.5-41.4)	2749
Age 6-11 years	99-00	28.8 (24.2-34.3)	27.8 (21.7-36.9)	52.9 (40.8-71.4)	75.1 (64.4-102)	102 (71.8-124)	328
Age 6-11 years	01-02	27.4 (24.8-30.3)	26.9 (24.3-30.4)	48.9 (40.2-57.9)	96.7 (83.3-127)	140 (86.9-219)	393
Age 6-11 years	03-04	25.8 (21.9-30.3)	23.2 (20.1-29.1)	43.7 (36.1-57.2)	97.8 (61.6-154)	165 (71.8-286)	342
Age 6-11 years	05-06	23.5 (21.1-26.2)	25.5 (20.5-29.5)	47.1 (35.8-57.8)	77.6 (62.8-94.3)	104 (85.8-130)	356
Age 6-11 years	07-08	19.0 (16.0-22.5)	20.7 (15.6-27.0)	35.4 (32.3-40.0)	67.2 (51.9-91.5)	118 (74.3-159)	389
Age 6-11 years	09-10	15.1 (12.7-18.0)	14.6 (12.0-17.2)	29.3 (25.9-37.6)	66.5 (45.3-84.1)	92.2 (67.1-163)	415
Age 12-19 years	99-00	12.4 (11.1-14.0)	12.3 (10.5-14.6)	20.4 (17.5-25.1)	35.8 (27.9-49.9)	50.4 (35.7-59.0)	752
Age 12-19 years	01-02	12.9 (11.3-14.8)	13.0 (11.3-15.0)	24.4 (21.1-27.8)	48.7 (40.2-61.9)	72.0 (58.1-88.6)	742
Age 12-19 years	03-04	11.9 (11.1-12.8)	12.2 (11.1-13.1)	21.6 (18.0-25.6)	37.5 (29.3-44.5)	56.0 (39.5-82.6)	729
Age 12-19 years	05-06	10.6 (9.14-12.2)	10.5 (8.33-13.0)	18.5 (15.9-23.7)	35.8 (28.1-46.0)	48.8 (41.3-65.3)	702
Age 12-19 years	07-08	9.06 (7.76-10.6)	9.39 (8.12-11.1)	16.7 (13.8-21.0)	32.1 (22.0-45.9)	48.4 (32.3-55.6)	401
Age 12-19 years	09-10	8.54 (7.36-9.90)	8.73 (7.44-10.8)	14.9 (13.2-17.5)	24.9 (21.6-28.9)	32.5 (25.7-42.7)	420
Age 20+ years	99-00	8.47 (7.73-9.27)	8.68 (8.01-9.26)	14.5 (13.2-16.8)	24.9 (22.0-29.4)	41.1 (29.7-53.2)	1461
Age 20+ years	01-02	8.66 (8.08-9.28)	8.47 (8.00-9.00)	15.6 (14.3-17.1)	30.5 (25.8-34.7)	46.8 (39.0-56.4)	1647
Age 20+ years	03-04	7.90 (7.39-8.45)	7.58 (6.98-8.37)	14.2 (13.1-15.4)	26.3 (25.0-28.2)	40.2 (33.7-44.9)	1534
Age 20+ years	05-06	6.89 (6.20-7.66)	7.10 (6.60-7.71)	13.1 (12.1-14.2)	22.4 (19.9-25.5)	34.6 (28.9-43.1)	1490
Age 20+ years	07-08	6.35 (5.74-7.03)	6.41 (5.65-7.15)	12.3 (11.1-13.6)	21.8 (19.1-25.7)	32.6 (28.7-40.5)	1814
Age 20+ years	09-10	5.94 (5.31-6.66)	5.67 (5.03-6.53)	10.8 (9.18-12.5)	19.2 (16.6-23.5)	29.1 (24.2-33.4)	1914
Males	99-00	9.14 (8.51-9.82)	8.96 (8.32-9.39)	17.1 (15.5-18.8)	32.0 (25.5-41.0)	52.9 (34.9-71.8)	1215
Males	01-02	9.13 (8.18-10.2)	8.55 (7.85-9.53)	17.4 (15.1-19.0)	35.3 (31.5-40.4)	57.8 (43.8-74.7)	1371
Males	03-04	8.25 (7.60-8.95)	7.99 (7.01-9.03)	15.2 (14.0-17.0)	28.4 (24.6-35.8)	45.3 (37.4-59.8)	1250
Males	05-06	7.61 (6.65-8.70)	7.57 (6.65-8.91)	14.3 (13.0-16.6)	30.0 (25.5-34.5)	43.7 (36.2-48.2)	1270
Males	07-08	6.57 (5.91-7.31)	6.66 (5.68-7.46)	12.8 (11.3-14.8)	24.4 (21.2-29.5)	36.3 (30.6-45.5)	1294
Males	09-10	6.21 (5.56-6.94)	5.88 (5.13-6.74)	11.6 (10.1-12.9)	21.3 (18.8-24.1)	32.2 (27.6-35.6)	1399
Females	99-00	11.0 (9.96-12.1)	10.6 (9.60-11.5)	18.6 (17.3-21.1)	40.6 (33.7-43.6)	57.9 (43.3-84.2)	1326
Females	01-02	11.3 (10.2-12.4)	10.8 (9.97-11.9)	21.2 (18.6-24.5)	42.1 (35.9-50.0)	69.0 (50.0-83.4)	1411
Females	03-04	10.4 (9.65-11.2)	9.97 (9.20-10.9)	20.1 (17.8-22.6)	37.4 (31.2-43.4)	52.9 (45.8-65.0)	1355
Females	05-06	8.63 (7.84-9.51)	8.67 (8.12-9.26)	15.9 (14.8-18.3)	32.0 (26.3-41.4)	52.3 (45.2-62.8)	1278
Females	07-08	8.07 (7.29-8.93)	8.37 (7.20-9.16)	15.5 (13.9-18.0)	31.5 (27.5-34.2)	48.3 (40.2-54.9)	1310
Females	09-10	7.29 (6.47-8.21)	6.90 (5.90-8.04)	13.6 (11.9-15.3)	25.6 (21.9-30.4)	38.8 (30.7-47.3)	1350

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.72 for survey periods 1999-2008 compared with results previously released.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/BzBP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-benzyl phthalate (MBzP) (creatinine corrected) (1999 – 2010)

CAS Number 2528-16-7

Metabolite of Benzylbutyl phthalate (BzBP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	9.10 (8.20-10.1)	8.60 (7.87-9.53)	17.4 (15.5-19.1)	33.5 (30.2-38.7)	49.1 (40.6-67.5)	814
Mexican Americans	01-02	8.95 (7.69-10.4)	8.55 (7.16-10.7)	17.1 (14.1-20.9)	33.6 (26.3-44.4)	51.5 (36.8-86.5)	677
Mexican Americans	03-04	9.66 (8.41-11.1)	9.00 (8.25-9.66)	17.3 (15.1-20.0)	38.2 (27.6-46.7)	56.0 (41.1-89.8)	652
Mexican Americans	05-06	8.05 (6.69-9.69)	8.38 (7.48-8.91)	16.0 (12.6-20.2)	31.0 (22.4-40.6)	45.7 (31.3-54.2)	637
Mexican Americans	07-08	7.68 (6.13-9.62)	8.06 (6.42-10.3)	15.5 (12.5-19.2)	29.1 (21.9-36.9)	42.9 (33.5-51.8)	531
Mexican Americans	09-10	7.53 (6.52-8.69)	7.29 (6.30-8.18)	13.3 (11.6-16.3)	32.3 (23.3-43.6)	52.2 (33.0-66.1)	566
Non-Hispanic blacks	99-00	10.7 (9.75-11.7)	9.83 (8.76-10.9)	19.4 (16.2-22.9)	40.5 (28.4-54.7)	62.5 (46.4-71.9)	603
Non-Hispanic blacks	01-02	12.0 (10.5-13.7)	11.3 (9.84-13.9)	24.1 (19.1-27.4)	43.3 (38.7-50.0)	77.7 (54.4-83.4)	703
Non-Hispanic blacks	03-04	9.65 (8.46-11.0)	9.81 (8.32-11.2)	17.4 (15.8-20.7)	36.0 (29.6-41.6)	53.8 (42.5-65.2)	699
Non-Hispanic blacks	05-06	8.38 (6.44-10.9)	8.24 (6.72-10.6)	16.1 (12.8-21.5)	34.1 (25.8-43.9)	52.3 (39.9-62.9)	678
Non-Hispanic blacks	07-08	7.28 (6.51-8.14)	7.07 (5.97-8.28)	14.7 (12.2-16.0)	25.8 (22.6-31.5)	42.3 (32.6-50.3)	597
Non-Hispanic blacks	09-10	6.50 (5.49-7.70)	6.50 (5.38-7.45)	11.7 (9.80-14.9)	23.9 (17.0-31.8)	34.4 (25.8-48.9)	516
Non-Hispanic whites	99-00	10.0 (9.16-11.0)	9.66 (9.25-10.7)	18.2 (16.6-19.8)	38.3 (27.9-46.7)	56.1 (48.5-65.0)	912
Non-Hispanic whites	01-02	9.97 (9.24-10.8)	9.33 (8.69-10.3)	18.5 (17.1-20.1)	38.2 (33.5-42.1)	64.2 (49.7-78.5)	1216
Non-Hispanic whites	03-04	9.14 (8.48-9.84)	8.97 (7.77-9.93)	17.6 (15.6-19.2)	30.2 (28.1-35.2)	47.2 (41.4-57.3)	1088
Non-Hispanic whites	05-06	8.08 (7.17-9.10)	8.35 (7.31-9.49)	15.2 (13.7-17.4)	29.9 (25.1-36.5)	47.4 (40.0-57.1)	1038
Non-Hispanic whites	07-08	7.42 (6.90-7.97)	7.38 (6.65-8.23)	14.0 (12.9-15.4)	28.3 (24.2-32.3)	44.5 (36.3-52.4)	1077
Non-Hispanic whites	09-10	6.83 (6.08-7.67)	6.37 (5.58-7.34)	12.6 (11.1-14.5)	24.0 (19.5-27.6)	33.4 (27.9-44.6)	1206

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.72 for survey periods 1999-2008 compared with results previously released.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/BzBP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-n-butyl phthalate (MnBP) (1999 – 2010)

CAS Number 131-70-4

Metabolite of Dibutyl phthalate (DBP) and Benzylbutyl phthalate (BzBP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.*

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	24.6 (22.1-27.4)	26.0 (23.6-29.2)	51.6 (44.5-60.3)	98.6 (90.2-114)	150 (121-169)	2541
Total population	01-02	18.9 (17.4-20.6)	20.4 (19.2-21.8)	40.4 (36.5-44.2)	73.6 (65.3-85.6)	108 (94.1-122)	2782
Total population	03-04	21.1 (19.8-22.5)	23.2 (21.2-24.8)	42.7 (38.5-47.2)	80.7 (70.2-93.9)	122 (104-137)	2605
Total population	05-06	19.6 (18.2-21.3)	20.6 (18.6-23.0)	40.4 (36.4-44.9)	71.5 (66.5-79.5)	107 (96.3-124)	2548
Total population	07-08	18.9 (17.2-20.7)	20.0 (18.1-21.9)	39.1 (34.5-43.4)	72.4 (64.5-77.7)	110 (94.5-120)	2604
Total population	09-10	14.6 (13.2-16.2)	15.9 (14.3-17.3)	30.5 (27.2-33.3)	54.4 (49.7-59.1)	75.9 (67.5-86.8)	2749
Age 6-11 years	99-00	41.4 (35.6-48.0)	40.0 (36.2-49.2)	75.5 (59.1-92.8)	124 (98.4-159)	166 (127-279)	328
Age 6-11 years	01-02	31.1 (26.6-36.5)	32.4 (25.6-37.1)	62.1 (51.3-76.9)	107 (84.3-136)	159 (110-290)	393
Age 6-11 years	03-04	36.3 (30.7-42.9)	36.7 (28.5-47.5)	71.3 (56.9-87.2)	137 (107-162)	191 (150-243)	342
Age 6-11 years	05-06	30.5 (27.5-33.8)	32.3 (27.8-35.0)	57.4 (46.8-65.4)	93.4 (75.6-130)	136 (108-181)	356
Age 6-11 years	07-08	26.9 (22.5-32.1)	28.7 (21.3-38.0)	53.6 (45.6-63.6)	85.6 (71.4-102)	119 (91.6-150)	389
Age 6-11 years	09-10	21.7 (19.0-24.8)	23.3 (20.8-26.2)	44.9 (39.1-49.7)	83.8 (59.6-121)	124 (92.3-173)	415
Age 12-19 years	99-00	36.0 (30.8-42.1)	36.3 (30.6-44.9)	68.6 (55.9-79.7)	119 (90.2-159)	165 (121-227)	752
Age 12-19 years	01-02	25.1 (21.6-29.2)	26.7 (22.0-32.7)	52.6 (48.4-60.4)	92.4 (72.7-121)	148 (106-185)	742
Age 12-19 years	03-04	26.7 (24.1-29.5)	28.2 (25.2-33.1)	52.0 (45.3-60.9)	97.5 (74.7-116)	134 (110-158)	729
Age 12-19 years	05-06	27.5 (24.3-31.3)	29.0 (23.7-36.6)	57.2 (48.7-64.9)	88.6 (75.1-105)	125 (96.2-154)	702
Age 12-19 years	07-08	26.2 (22.5-30.6)	27.3 (22.1-32.8)	51.7 (46.2-63.8)	111 (77.7-132)	149 (103-188)	401
Age 12-19 years	09-10	18.9 (16.1-22.2)	22.3 (19.4-24.4)	37.2 (31.3-43.4)	61.7 (52.8-73.2)	81.4 (68.9-86.3)	420
Age 20+ years	99-00	21.6 (19.0-24.5)	23.1 (19.7-26.1)	46.3 (36.9-53.6)	95.0 (78.7-111)	143 (117-161)	1461
Age 20+ years	01-02	17.0 (15.4-18.8)	19.1 (17.1-20.4)	35.1 (31.6-40.2)	64.8 (57.3-79.7)	95.4 (84.6-113)	1647
Age 20+ years	03-04	19.0 (17.7-20.5)	20.7 (18.9-22.9)	38.4 (35.7-42.7)	74.7 (64.1-82.6)	108 (90.7-127)	1534
Age 20+ years	05-06	17.7 (16.0-19.6)	18.4 (16.6-20.6)	36.7 (32.5-41.4)	65.1 (55.4-74.3)	101 (84.3-121)	1490
Age 20+ years	07-08	17.2 (15.6-19.1)	18.6 (16.7-20.3)	34.5 (31.5-39.1)	63.8 (56.4-72.5)	98.3 (83.0-115)	1814
Age 20+ years	09-10	13.5 (12.0-15.1)	14.5 (13.0-16.0)	28.1 (24.1-32.0)	50.0 (44.1-56.1)	68.9 (60.6-77.3)	1914
Males	99-00	22.0 (20.1-24.1)	23.2 (20.4-26.3)	43.1 (36.6-49.5)	84.4 (71.3-96.2)	116 (97.8-132)	1215
Males	01-02	17.7 (16.0-19.6)	19.3 (17.3-21.0)	34.5 (30.3-40.6)	62.1 (54.1-75.5)	95.2 (75.5-117)	1371
Males	03-04	20.0 (18.1-22.0)	21.1 (19.0-24.0)	39.4 (35.5-43.4)	65.5 (59.0-73.0)	95.9 (79.8-111)	1250
Males	05-06	19.8 (18.4-21.4)	20.7 (19.0-23.0)	38.5 (34.6-42.0)	63.8 (56.8-72.0)	96.2 (79.0-113)	1270
Males	07-08	18.4 (16.8-20.3)	19.0 (17.3-21.3)	36.0 (32.5-40.4)	60.9 (52.8-68.8)	88.3 (72.6-110)	1294
Males	09-10	14.5 (13.0-16.3)	15.4 (13.7-16.9)	28.4 (25.9-31.2)	51.7 (44.3-54.8)	68.9 (58.9-78.0)	1399
Females	99-00	27.3 (23.6-31.5)	30.0 (25.9-33.3)	59.7 (51.6-69.6)	120 (98.3-145)	167 (143-223)	1326
Females	01-02	20.2 (18.2-22.4)	21.7 (19.7-24.3)	46.7 (43.1-51.1)	85.0 (72.7-92.5)	121 (106-136)	1411
Females	03-04	22.2 (21.2-23.3)	24.4 (23.4-25.8)	47.3 (42.7-53.0)	95.9 (79.9-114)	137 (122-156)	1355
Females	05-06	19.5 (17.2-22.0)	20.4 (17.1-24.7)	42.3 (36.7-52.0)	83.2 (71.0-90.2)	124 (101-137)	1278
Females	07-08	19.3 (17.2-21.7)	20.8 (18.1-23.2)	42.5 (35.6-50.6)	83.7 (68.6-109)	132 (109-151)	1310
Females	09-10	14.7 (13.1-16.5)	16.4 (13.9-19.3)	32.7 (29.9-37.1)	57.7 (52.7-63.9)	86.2 (68.9-113)	1350

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.9, 1.1, 0.4, 0.6, 0.6, and 0.4 respectively.

*In the 1999-2000 survey period, concentrations of mono-isobutyl and mono-n-butyl phthalates were measured together and expressed as the combined value, monobutyl phthalate (MBP)

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DBP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-n-butyl phthalate (MnBP) (1999 – 2010)

CAS Number 131-70-4

Metabolite of Dibutyl phthalate (DBP) and Benzylbutyl phthalate (BzBP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.*

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	23.4 (21.8-25.1)	26.3 (23.9-28.1)	48.1 (41.2-56.7)	92.2 (78.9-101)	117 (104-131)	814
Mexican Americans	01-02	20.1 (16.6-24.5)	23.1 (18.0-26.5)	42.1 (34.0-51.5)	77.1 (62.9-92.5)	112 (84.6-143)	677
Mexican Americans	03-04	24.1 (19.8-29.5)	26.9 (20.2-32.0)	47.4 (38.0-58.5)	85.6 (61.7-117)	127 (99.8-165)	652
Mexican Americans	05-06	22.4 (18.6-27.0)	23.5 (19.0-29.0)	45.4 (37.1-55.4)	90.2 (71.1-119)	132 (106-174)	637
Mexican Americans	07-08	22.2 (18.5-26.7)	22.4 (17.8-27.1)	43.8 (36.2-50.4)	76.4 (59.8-106)	145 (85.6-223)	531
Mexican Americans	09-10	17.2 (15.3-19.4)	17.3 (14.3-20.9)	34.3 (31.4-38.8)	56.1 (47.7-67.9)	80.0 (65.1-107)	566
Non-Hispanic blacks	99-00	37.0 (31.9-42.9)	38.7 (33.4-44.5)	78.2 (58.7-91.8)	118 (108-143)	167 (143-197)	603
Non-Hispanic blacks	01-02	29.6 (26.6-33.1)	31.5 (28.7-34.1)	58.3 (51.2-63.4)	93.2 (79.5-121)	138 (110-184)	703
Non-Hispanic blacks	03-04	30.1 (28.4-31.9)	31.5 (29.7-34.1)	64.1 (58.3-67.1)	106 (94.8-119)	144 (115-168)	699
Non-Hispanic blacks	05-06	27.1 (23.1-31.8)	28.5 (25.0-31.2)	53.1 (39.9-65.8)	105 (77.3-135)	143 (118-183)	678
Non-Hispanic blacks	07-08	25.0 (21.9-28.4)	25.8 (22.0-30.4)	52.4 (43.9-59.5)	91.2 (75.6-106)	114 (96.8-148)	597
Non-Hispanic blacks	09-10	21.9 (19.2-25.0)	23.2 (20.0-26.3)	42.4 (37.1-47.5)	69.1 (59.4-84.2)	103 (74.8-134)	516
Non-Hispanic whites	99-00	21.8 (19.3-24.6)	23.2 (19.5-27.5)	46.3 (37.5-53.3)	90.2 (74.7-106)	142 (111-161)	912
Non-Hispanic whites	01-02	17.6 (16.0-19.3)	19.2 (17.0-21.0)	36.6 (32.4-42.6)	69.2 (59.2-87.6)	107 (89.8-123)	1216
Non-Hispanic whites	03-04	18.9 (17.6-20.3)	20.7 (18.9-22.8)	38.4 (35.5-42.7)	71.3 (60.1-80.0)	101 (90.7-124)	1088
Non-Hispanic whites	05-06	17.8 (16.2-19.5)	18.6 (16.9-20.7)	37.8 (33.1-42.1)	65.4 (55.4-73.9)	95.9 (79.5-113)	1038
Non-Hispanic whites	07-08	17.8 (16.2-19.5)	18.9 (17.2-20.9)	36.7 (32.3-41.4)	68.0 (58.9-77.2)	110 (86.5-120)	1077
Non-Hispanic whites	09-10	13.0 (11.6-14.5)	14.1 (12.7-15.8)	26.6 (23.4-31.0)	48.8 (42.2-54.3)	67.5 (57.6-76.5)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.9, 1.1, 0.4, 0.6, 0.6, and 0.4 respectively.

*In the 1999-2000 survey period, concentrations of mono-isobutyl and mono-n-butyl phthalates were measured together and expressed as the combined value, monobutyl phthalate (MBP)

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DBP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-n-butyl phthalate (MnBP) (creatinine corrected) (1999 – 2010)

CAS Number 131-70-4

Metabolite of Dibutyl phthalate (DBP) and Benzylbutyl phthalate (BzBP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.*

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	22.4 (20.6-24.4)	21.9 (19.8-24.3)	38.9 (35.0-41.8)	68.3 (60.3-78.3)	97.7 (81.4-131)	2541
Total population	01-02	17.8 (16.7-19.0)	17.4 (16.3-18.4)	30.3 (28.1-32.3)	52.4 (47.4-61.0)	81.3 (71.0-92.5)	2782
Total population	03-04	19.8 (18.5-21.2)	19.3 (17.7-20.8)	33.9 (30.9-38.5)	59.0 (52.9-68.1)	91.6 (74.1-115)	2605
Total population	05-06	19.2 (18.0-20.4)	18.3 (16.8-19.8)	30.8 (29.0-33.0)	50.8 (47.8-56.6)	77.8 (67.2-94.8)	2548
Total population	07-08	19.0 (17.7-20.5)	18.8 (17.2-20.0)	31.4 (28.7-34.1)	52.0 (46.4-59.5)	77.1 (64.2-88.6)	2604
Total population	09-10	15.3 (14.0-16.6)	14.4 (13.4-15.8)	23.6 (21.7-25.2)	38.7 (34.1-45.8)	57.4 (49.8-69.9)	2749
Age 6-11 years	99-00	41.9 (37.4-47.1)	39.1 (34.3-49.0)	65.9 (56.7-80.0)	108 (71.2-179)	159 (102-263)	328
Age 6-11 years	01-02	35.4 (31.7-39.6)	35.1 (29.3-38.9)	55.4 (50.1-62.3)	84.0 (69.0-113)	147 (93.8-235)	393
Age 6-11 years	03-04	38.4 (33.8-43.6)	39.0 (34.7-42.6)	59.3 (52.9-68.1)	104 (83.6-119)	137 (108-198)	342
Age 6-11 years	05-06	33.6 (30.8-36.6)	33.9 (30.6-37.4)	50.6 (45.0-58.3)	78.5 (66.8-111)	128 (73.4-172)	356
Age 6-11 years	07-08	33.1 (27.6-39.7)	34.2 (27.5-41.3)	51.9 (42.6-63.8)	81.8 (61.3-101)	109 (83.1-159)	389
Age 6-11 years	09-10	28.3 (25.0-32.0)	26.7 (24.0-31.1)	47.8 (39.4-53.9)	78.6 (59.8-101)	130 (98.9-156)	415
Age 12-19 years	99-00	24.3 (21.2-27.8)	23.7 (20.6-27.4)	37.6 (31.6-43.8)	63.3 (52.4-76.4)	88.1 (61.5-142)	752
Age 12-19 years	01-02	19.4 (17.3-21.7)	20.3 (17.5-22.3)	34.9 (30.5-37.9)	53.4 (45.2-73.9)	89.7 (60.3-106)	742
Age 12-19 years	03-04	20.0 (18.7-21.3)	19.8 (18.2-21.7)	30.7 (27.9-34.8)	52.7 (43.4-65.4)	74.4 (56.0-90.9)	729
Age 12-19 years	05-06	20.5 (19.0-22.2)	21.2 (18.8-22.9)	31.9 (29.6-33.8)	49.3 (42.1-56.4)	70.2 (52.0-108)	702
Age 12-19 years	07-08	20.4 (18.4-22.6)	21.9 (18.7-25.7)	33.8 (30.0-38.5)	50.7 (42.4-64.0)	72.4 (50.7-84.5)	401
Age 12-19 years	09-10	15.2 (13.8-16.8)	15.3 (13.8-18.4)	22.5 (21.1-24.8)	31.8 (28.2-34.6)	42.3 (33.8-51.2)	420
Age 20+ years	99-00	20.4 (18.6-22.4)	19.5 (18.1-21.4)	34.9 (30.3-40.0)	62.4 (53.4-72.1)	91.0 (70.4-135)	1461
Age 20+ years	01-02	16.1 (15.0-17.3)	15.5 (14.2-16.5)	26.3 (24.2-28.6)	44.2 (38.7-51.1)	71.6 (61.2-85.6)	1647
Age 20+ years	03-04	18.3 (17.0-19.6)	17.7 (16.6-19.2)	31.0 (27.4-34.0)	53.3 (46.5-64.2)	83.8 (65.3-114)	1534
Age 20+ years	05-06	17.8 (16.4-19.2)	16.8 (15.6-18.4)	28.1 (25.3-30.9)	46.1 (41.5-53.0)	74.3 (55.4-94.8)	1490
Age 20+ years	07-08	17.7 (16.3-19.2)	17.2 (15.7-18.8)	28.2 (25.8-30.5)	46.7 (42.0-53.3)	71.8 (57.8-89.5)	1814
Age 20+ years	09-10	14.3 (13.0-15.7)	13.5 (12.5-14.8)	21.6 (20.0-23.8)	34.5 (30.1-40.2)	50.9 (42.2-67.7)	1914
Males	99-00	17.3 (16.1-18.6)	17.0 (15.5-18.8)	28.6 (25.8-32.1)	49.3 (42.6-53.5)	64.7 (57.3-71.5)	1215
Males	01-02	14.4 (13.5-15.4)	13.7 (12.9-14.9)	22.9 (20.8-24.6)	39.9 (35.6-44.0)	60.0 (50.5-76.2)	1371
Males	03-04	15.7 (14.5-16.9)	14.8 (13.6-16.0)	25.4 (23.6-28.1)	41.4 (37.0-47.5)	59.4 (50.3-81.5)	1250
Males	05-06	15.9 (15.1-16.8)	15.4 (14.2-16.4)	24.9 (23.1-27.0)	38.6 (35.7-42.3)	51.2 (46.1-63.5)	1270
Males	07-08	15.5 (14.4-16.8)	14.7 (13.4-16.3)	24.9 (22.6-27.6)	40.8 (35.2-44.9)	55.2 (46.1-65.2)	1294
Males	09-10	13.0 (12.0-14.2)	12.8 (11.7-13.6)	19.9 (18.1-21.2)	30.3 (28.4-33.2)	45.3 (39.7-53.8)	1399
Females	99-00	28.6 (25.3-32.3)	28.8 (25.5-30.5)	50.6 (41.9-56.3)	84.3 (69.2-106)	134 (93.6-155)	1326
Females	01-02	21.7 (19.6-23.9)	21.6 (19.7-23.6)	35.8 (33.0-38.7)	64.9 (58.9-70.2)	91.5 (81.4-103)	1411
Females	03-04	24.8 (22.9-26.8)	24.1 (21.6-26.8)	42.9 (39.2-48.9)	74.9 (64.2-86.6)	117 (83.6-139)	1355
Females	05-06	22.9 (20.9-25.1)	21.5 (19.4-24.6)	37.1 (33.3-41.9)	67.2 (56.8-74.4)	99.6 (77.8-128)	1278
Females	07-08	23.1 (21.0-25.5)	22.8 (20.9-25.2)	38.0 (32.7-43.1)	62.7 (52.1-78.5)	89.8 (76.2-126)	1310
Females	09-10	17.8 (16.0-19.7)	17.6 (15.1-19.4)	27.1 (24.4-30.3)	47.8 (37.9-53.8)	70.6 (53.8-91.5)	1350

*In the 1999-2000 survey period, concentrations of mono-isobutyl and mono-n-butyl phthalates were measured together and expressed as the combined value, monobutyl phthalate (MBP)

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DBP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-n-butyl phthalate (MnBP) (creatinine corrected) (1999 – 2010)

CAS Number 131-70-4

Metabolite of Dibutyl phthalate (DBP) and Benzylbutyl phthalate (BzBP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.*

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	21.2 (19.3-23.3)	20.0 (18.2-22.9)	40.1 (32.6-44.3)	63.6 (57.5-70.1)	82.9 (73.9-100)	814
Mexican Americans	01-02	19.0 (16.2-22.2)	19.2 (16.3-21.9)	33.7 (28.3-39.6)	61.0 (43.9-84.0)	86.7 (60.6-128)	677
Mexican Americans	03-04	21.8 (17.7-26.8)	20.4 (17.4-24.0)	37.6 (29.6-50.1)	75.3 (55.6-92.0)	96.3 (76.4-164)	652
Mexican Americans	05-06	20.1 (17.8-22.8)	19.1 (16.4-23.0)	34.3 (29.2-42.6)	64.8 (54.6-75.9)	98.1 (70.2-154)	637
Mexican Americans	07-08	21.7 (17.7-26.5)	20.9 (16.4-27.1)	36.9 (29.1-46.7)	59.5 (47.1-88.9)	102 (63.4-161)	531
Mexican Americans	09-10	17.1 (15.5-18.8)	15.0 (14.0-16.3)	27.4 (23.6-31.6)	51.0 (42.9-69.6)	88.1 (59.8-100)	566
Non-Hispanic blacks	99-00	23.9 (21.3-26.8)	25.0 (20.7-28.1)	42.2 (35.9-49.6)	70.0 (61.1-83.9)	96.2 (83.9-105)	603
Non-Hispanic blacks	01-02	20.8 (18.8-23.1)	20.2 (19.2-22.8)	34.5 (30.9-36.8)	62.8 (50.6-74.6)	85.6 (72.1-99.0)	703
Non-Hispanic blacks	03-04	21.4 (19.5-23.4)	22.0 (19.6-24.8)	35.4 (31.6-42.7)	65.7 (54.0-75.3)	94.0 (71.1-128)	699
Non-Hispanic blacks	05-06	19.1 (16.4-22.1)	18.5 (16.2-20.7)	30.1 (24.9-39.5)	54.6 (42.0-81.3)	84.7 (51.3-125)	678
Non-Hispanic blacks	07-08	19.4 (17.3-21.7)	19.2 (16.8-22.0)	30.5 (27.0-36.5)	50.7 (42.8-60.4)	78.3 (59.3-125)	597
Non-Hispanic blacks	09-10	15.9 (14.5-17.4)	15.3 (13.5-18.6)	24.9 (22.6-27.2)	37.6 (33.8-45.4)	51.2 (44.7-70.6)	516
Non-Hispanic whites	99-00	21.3 (19.1-23.8)	20.5 (18.6-23.2)	36.4 (31.5-41.0)	67.1 (56.7-78.4)	97.7 (73.5-142)	912
Non-Hispanic whites	01-02	17.4 (16.2-18.6)	16.5 (15.3-17.8)	29.0 (26.6-32.2)	51.1 (46.0-60.0)	81.4 (68.1-99.0)	1216
Non-Hispanic whites	03-04	18.6 (17.3-20.1)	17.9 (16.7-19.8)	31.6 (27.7-37.8)	53.3 (48.2-61.5)	81.5 (64.2-108)	1088
Non-Hispanic whites	05-06	18.7 (17.5-19.9)	17.9 (16.3-19.5)	29.7 (27.5-32.0)	48.7 (42.2-55.4)	74.3 (58.3-94.5)	1038
Non-Hispanic whites	07-08	18.5 (17.3-19.9)	18.1 (16.6-19.6)	30.4 (27.3-33.3)	50.9 (43.6-61.0)	75.8 (62.6-88.0)	1077
Non-Hispanic whites	09-10	14.6 (13.5-15.7)	13.9 (13.2-15.0)	22.1 (20.3-24.2)	35.3 (30.9-40.6)	52.5 (45.8-63.0)	1206

*In the 1999-2000 survey period, concentrations of mono-isobutyl and mono-n-butyl phthalates were measured together and expressed as the combined value, monobutyl phthalate (MBP)

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DBP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-isobutyl phthalate (MiBP) (2001 – 2010)

CAS Number 30833-53-5

Metabolite of Di-isobutyl phthalate (DiBP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	2.71 (2.49-2.94)	2.70 (2.40-3.00)	5.70 (5.30-6.10)	12.0 (11.4-12.7)	17.9 (16.3-19.8)	2782
Total population	03-04	3.80 (3.40-4.25)	4.20 (3.70-4.80)	8.40 (7.40-9.50)	15.0 (13.1-17.3)	21.3 (18.6-26.0)	2605
Total population	05-06	5.20 (4.64-5.83)	5.80 (5.40-6.60)	11.9 (10.6-13.3)	21.3 (18.7-23.7)	31.6 (27.1-37.2)	2548
Total population	07-08	7.15 (6.59-7.77)	8.00 (7.50-8.60)	15.3 (13.9-16.9)	27.2 (24.6-30.4)	39.1 (35.4-43.8)	2604
Total population	09-10	7.64 (6.88-8.49)	8.30 (7.24-9.27)	15.8 (14.5-17.4)	27.6 (24.7-31.7)	41.3 (35.6-47.5)	2749
Age 6-11 years	01-02	4.22 (3.28-5.43)	4.40 (3.20-6.20)	10.7 (7.30-13.4)	18.6 (14.2-22.0)	23.4 (20.4-27.8)	393
Age 6-11 years	03-04	6.56 (5.24-8.22)	7.00 (5.10-9.10)	12.8 (9.40-17.7)	24.3 (19.6-34.5)	40.6 (29.3-48.5)	342
Age 6-11 years	05-06	8.53 (7.67-9.48)	9.00 (8.20-10.3)	15.8 (13.7-19.2)	33.2 (27.5-38.4)	49.1 (33.2-54.4)	356
Age 6-11 years	07-08	10.7 (8.94-12.8)	11.4 (8.90-13.2)	21.1 (16.6-27.2)	35.9 (30.2-44.7)	55.4 (36.4-75.5)	389
Age 6-11 years	09-10	10.2 (9.10-11.4)	10.9 (9.45-12.2)	20.8 (18.8-23.6)	35.7 (28.8-46.9)	55.4 (41.2-75.4)	415
Age 12-19 years	01-02	3.48 (2.90-4.17)	3.80 (2.90-4.40)	7.40 (6.00-9.00)	14.5 (11.7-18.6)	22.3 (16.2-33.4)	742
Age 12-19 years	03-04	4.55 (3.73-5.55)	5.60 (4.50-6.30)	10.1 (8.00-11.4)	17.1 (13.3-20.9)	22.7 (18.5-29.1)	729
Age 12-19 years	05-06	7.46 (6.53-8.51)	7.90 (6.90-9.80)	16.2 (13.6-19.3)	29.2 (23.6-31.3)	34.1 (30.1-49.9)	702
Age 12-19 years	07-08	10.2 (8.53-12.3)	10.5 (8.40-12.9)	22.3 (17.0-26.9)	41.6 (32.9-48.1)	56.2 (44.6-82.7)	401
Age 12-19 years	09-10	10.7 (9.54-12.1)	12.3 (10.7-13.6)	20.2 (17.3-22.2)	36.1 (28.3-46.0)	49.8 (42.3-60.2)	420
Age 20+ years	01-02	2.46 (2.30-2.63)	2.40 (2.20-2.70)	5.10 (4.80-5.50)	10.6 (9.40-12.0)	16.3 (13.6-18.5)	1647
Age 20+ years	03-04	3.46 (3.11-3.84)	3.90 (3.40-4.30)	7.50 (6.70-8.50)	13.3 (11.5-16.5)	19.9 (16.0-25.0)	1534
Age 20+ years	05-06	4.65 (4.07-5.30)	5.40 (4.70-6.00)	10.6 (9.50-12.0)	18.7 (16.0-21.9)	29.0 (22.1-34.4)	1490
Age 20+ years	07-08	6.47 (5.91-7.09)	7.50 (6.70-8.00)	14.1 (12.5-16.1)	24.5 (21.3-27.7)	34.2 (27.9-39.5)	1814
Age 20+ years	09-10	7.03 (6.26-7.90)	7.55 (6.66-8.57)	14.6 (12.8-16.6)	25.7 (23.2-28.5)	38.6 (31.4-43.6)	1914
Males	01-02	2.73 (2.50-2.97)	2.80 (2.40-3.20)	5.60 (5.00-6.10)	11.6 (10.1-12.6)	16.6 (13.6-20.1)	1371
Males	03-04	4.07 (3.56-4.66)	4.30 (3.80-5.10)	9.20 (7.50-10.2)	16.0 (13.3-18.5)	22.7 (17.3-30.3)	1250
Males	05-06	5.65 (5.08-6.29)	6.20 (5.60-6.90)	11.9 (10.7-13.3)	22.1 (18.7-26.5)	32.3 (25.5-39.8)	1270
Males	07-08	7.52 (6.84-8.26)	8.30 (7.70-9.40)	15.2 (13.6-17.2)	25.0 (21.7-28.4)	38.3 (27.3-44.2)	1294
Males	09-10	7.80 (6.96-8.74)	8.48 (7.44-9.16)	15.3 (14.0-17.0)	26.2 (23.2-30.9)	39.1 (31.1-46.4)	1399
Females	01-02	2.68 (2.44-2.96)	2.60 (2.30-3.00)	5.80 (5.30-6.50)	12.6 (11.0-14.7)	18.7 (16.3-24.0)	1411
Females	03-04	3.56 (3.19-3.97)	4.10 (3.50-4.50)	8.00 (7.10-9.10)	14.2 (12.5-16.6)	20.5 (17.9-23.0)	1355
Females	05-06	4.80 (4.15-5.55)	5.50 (4.70-6.60)	11.9 (10.1-13.6)	19.6 (17.0-24.1)	29.8 (24.6-35.9)	1278
Females	07-08	6.82 (6.21-7.49)	7.40 (6.50-8.30)	15.5 (14.5-16.9)	29.1 (27.0-32.9)	39.8 (36.2-46.7)	1310
Females	09-10	7.50 (6.68-8.43)	8.07 (6.94-9.62)	16.4 (14.0-18.9)	29.1 (25.3-33.5)	45.0 (36.0-52.7)	1350

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 1.0, 0.3, 0.3,0.3, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DBP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-isobutyl phthalate (MiBP) (2001 – 2010)

CAS Number 30833-53-5

Metabolite of Di-isobutyl phthalate (DiBP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	3.26 (2.72-3.91)	3.40 (2.70-4.30)	7.20 (6.20-9.30)	12.2 (11.2-14.7)	18.4 (14.1-25.6)	677
Mexican Americans	03-04	4.81 (3.85-6.02)	5.10 (4.00-6.70)	10.2 (8.20-12.6)	18.3 (13.5-24.5)	26.0 (19.0-38.5)	652
Mexican Americans	05-06	6.88 (5.58-8.48)	7.30 (6.00-8.90)	14.5 (11.5-17.5)	26.3 (20.7-34.1)	40.4 (33.8-46.8)	637
Mexican Americans	07-08	9.30 (8.12-10.6)	10.2 (9.40-11.1)	17.4 (15.9-18.8)	31.9 (24.0-39.2)	47.6 (34.2-58.2)	531
Mexican Americans	09-10	9.34 (8.22-10.6)	9.97 (8.31-11.6)	18.8 (16.0-21.8)	31.7 (25.6-37.2)	46.4 (37.3-54.0)	566
Non-Hispanic blacks	01-02	4.90 (4.46-5.37)	5.30 (4.60-6.00)	10.7 (9.20-12.0)	18.3 (16.1-20.1)	25.5 (20.7-31.3)	703
Non-Hispanic blacks	03-04	6.67 (5.97-7.46)	6.90 (6.30-7.50)	12.6 (10.9-14.7)	25.7 (17.7-31.0)	33.5 (27.3-43.9)	699
Non-Hispanic blacks	05-06	8.37 (7.06-9.91)	8.70 (7.50-10.2)	16.1 (13.8-19.7)	30.1 (22.1-37.2)	41.4 (30.1-67.7)	678
Non-Hispanic blacks	07-08	10.7 (9.08-12.5)	12.5 (10.5-14.8)	23.1 (21.7-25.0)	38.9 (32.4-43.5)	47.6 (44.5-57.0)	597
Non-Hispanic blacks	09-10	14.0 (11.9-16.4)	15.4 (12.9-17.8)	27.5 (22.4-34.1)	47.6 (34.4-65.6)	66.0 (46.3-85.2)	516
Non-Hispanic whites	01-02	2.33 (2.10-2.59)	2.30 (1.90-2.60)	4.90 (4.40-5.30)	9.60 (8.30-11.6)	15.6 (13.0-18.6)	1216
Non-Hispanic whites	03-04	3.17 (2.82-3.56)	3.50 (3.00-4.00)	6.80 (5.90-7.90)	12.5 (10.6-14.5)	17.6 (14.7-20.8)	1088
Non-Hispanic whites	05-06	4.41 (3.86-5.04)	5.00 (4.20-5.70)	10.3 (9.10-11.5)	18.7 (16.3-21.1)	28.8 (22.1-32.2)	1038
Non-Hispanic whites	07-08	6.32 (5.78-6.93)	7.20 (6.40-7.90)	13.6 (12.4-14.9)	24.3 (20.1-27.3)	33.8 (27.0-39.5)	1077
Non-Hispanic whites	09-10	6.34 (5.65-7.10)	6.92 (6.08-7.90)	12.9 (11.7-14.5)	21.6 (19.1-24.2)	29.6 (26.0-34.3)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 1.0, 0.3, 0.3,0.3, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DBP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-isobutyl phthalate (MiBP) (creatinine corrected) (2001 – 2010)

CAS Number 30833-53-5

Metabolite of Di-isobutyl phthalate (DiBP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	2.54 (2.36-2.73)	2.46 (2.26-2.68)	4.54 (4.20-4.86)	8.02 (7.78-8.66)	12.0 (10.8-13.5)	2782
Total population	03-04	3.57 (3.18-4.00)	3.57 (3.15-4.08)	6.21 (5.36-7.17)	10.9 (9.47-12.7)	15.4 (12.8-18.6)	2605
Total population	05-06	5.07 (4.68-5.50)	5.07 (4.74-5.45)	8.81 (8.08-9.55)	15.2 (13.4-16.5)	21.3 (18.3-24.3)	2548
Total population	07-08	7.21 (6.76-7.70)	7.25 (6.77-7.81)	12.1 (11.2-13.3)	19.5 (17.2-21.5)	27.8 (24.9-31.3)	2604
Total population	09-10	7.98 (7.34-8.68)	7.86 (7.12-8.52)	12.4 (11.2-14.1)	20.1 (17.3-23.0)	26.8 (23.7-32.8)	2749
Age 6-11 years	01-02	4.81 (3.89-5.94)	5.18 (4.13-6.32)	9.20 (7.03-11.7)	15.2 (11.1-24.3)	24.3 (13.9-40.3)	393
Age 6-11 years	03-04	6.94 (5.79-8.31)	7.03 (5.29-8.95)	11.8 (9.56-15.1)	18.6 (15.1-25.1)	28.7 (21.8-36.9)	342
Age 6-11 years	05-06	9.39 (8.56-10.3)	9.46 (8.50-10.3)	15.3 (13.0-18.1)	25.2 (21.6-30.1)	37.9 (28.0-65.5)	356
Age 6-11 years	07-08	13.2 (11.1-15.5)	12.9 (10.5-15.7)	21.9 (17.8-26.0)	35.5 (28.3-43.5)	52.6 (41.4-58.3)	389
Age 6-11 years	09-10	13.2 (11.8-14.9)	12.6 (11.0-14.7)	20.9 (18.7-24.9)	35.3 (28.6-46.1)	53.0 (39.1-95.1)	415
Age 12-19 years	01-02	2.68 (2.29-3.15)	2.83 (2.39-3.33)	4.79 (4.04-5.51)	7.62 (6.18-10.2)	12.8 (8.76-15.6)	742
Age 12-19 years	03-04	3.41 (2.86-4.05)	3.69 (2.99-4.31)	5.75 (4.69-7.04)	9.32 (7.17-12.0)	13.5 (9.52-20.1)	729
Age 12-19 years	05-06	5.56 (5.05-6.11)	5.82 (5.20-6.53)	9.05 (8.06-10.4)	14.3 (13.4-16.5)	20.3 (17.7-26.8)	702
Age 12-19 years	07-08	7.95 (6.96-9.09)	8.30 (6.89-9.76)	13.7 (11.3-15.7)	21.3 (16.3-28.4)	28.7 (20.5-62.6)	401
Age 12-19 years	09-10	8.63 (7.97-9.34)	8.94 (7.87-9.78)	12.7 (11.7-14.9)	19.5 (16.5-25.3)	28.8 (20.6-53.4)	420
Age 20+ years	01-02	2.33 (2.20-2.46)	2.26 (2.08-2.43)	3.89 (3.65-4.25)	7.31 (7.00-7.78)	10.6 (9.46-11.3)	1647
Age 20+ years	03-04	3.32 (3.00-3.68)	3.33 (3.00-3.81)	5.59 (4.93-6.51)	9.84 (8.65-11.2)	13.5 (11.4-16.0)	1534
Age 20+ years	05-06	4.66 (4.23-5.13)	4.62 (4.36-5.03)	8.00 (7.23-8.78)	13.5 (11.6-15.7)	18.2 (16.1-23.0)	1490
Age 20+ years	07-08	6.65 (6.21-7.12)	6.73 (6.29-7.20)	11.1 (10.2-12.1)	17.1 (15.6-18.6)	23.8 (21.0-26.7)	1814
Age 20+ years	09-10	7.45 (6.81-8.15)	7.24 (6.69-7.89)	11.6 (10.4-12.6)	17.7 (15.1-21.9)	23.8 (20.7-28.8)	1914
Males	01-02	2.22 (2.09-2.35)	2.18 (1.97-2.37)	3.76 (3.58-4.11)	7.38 (6.64-7.95)	11.1 (10.1-12.5)	1371
Males	03-04	3.20 (2.80-3.66)	3.19 (2.74-3.56)	5.84 (4.79-6.56)	10.0 (8.27-12.2)	13.9 (11.5-19.1)	1250
Males	05-06	4.54 (4.19-4.92)	4.45 (4.21-4.81)	7.95 (6.95-8.73)	13.4 (11.6-15.8)	18.5 (16.7-19.8)	1270
Males	07-08	6.33 (5.91-6.79)	6.36 (5.93-6.77)	10.4 (9.43-11.3)	16.4 (15.0-19.7)	24.1 (21.1-27.7)	1294
Males	09-10	6.99 (6.44-7.59)	6.70 (6.26-7.21)	10.6 (9.80-11.5)	17.5 (15.4-19.8)	23.4 (20.9-27.3)	1399
Females	01-02	2.88 (2.61-3.18)	2.85 (2.52-3.18)	5.14 (4.67-5.89)	8.66 (8.02-10.1)	13.7 (11.1-15.0)	1411
Females	03-04	3.96 (3.56-4.42)	4.00 (3.57-4.45)	6.73 (5.64-7.80)	11.6 (10.2-13.0)	15.7 (13.0-18.7)	1355
Females	05-06	5.64 (5.04-6.32)	5.86 (5.39-6.39)	9.61 (8.85-10.6)	15.8 (14.3-18.1)	24.3 (18.7-32.5)	1278
Females	07-08	8.18 (7.46-8.96)	8.70 (7.78-9.47)	13.9 (12.2-15.2)	21.3 (18.3-25.3)	31.6 (26.4-34.7)	1310
Females	09-10	9.05 (8.22-9.97)	9.13 (8.19-9.90)	14.4 (12.2-16.2)	22.0 (18.1-26.3)	29.8 (25.8-36.4)	1350

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DBP_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-isobutyl phthalate (MiBP) (creatinine corrected) (2001 – 2010)

CAS Number 30833-53-5

Metabolite of Di-isobutyl phthalate (DiBP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	3.07 (2.58-3.66)	2.98 (2.53-3.82)	5.82 (4.91-6.99)	10.6 (8.28-13.3)	16.0 (12.6-19.4)	677
Mexican Americans	03-04	4.34 (3.47-5.43)	4.47 (3.53-5.24)	7.75 (6.33-9.69)	13.1 (11.9-16.8)	23.3 (17.9-26.1)	652
Mexican Americans	05-06	6.19 (5.24-7.31)	6.17 (5.59-7.02)	10.9 (9.61-12.3)	18.6 (17.1-21.5)	28.3 (23.7-36.2)	637
Mexican Americans	07-08	9.07 (7.87-10.5)	8.94 (8.07-10.3)	14.6 (12.4-18.0)	25.9 (21.1-32.4)	36.1 (28.0-42.3)	531
Mexican Americans	09-10	9.27 (8.37-10.3)	8.95 (8.00-10.0)	14.6 (12.8-17.3)	25.6 (23.1-28.2)	40.6 (28.7-47.4)	566
Non-Hispanic blacks	01-02	3.44 (3.20-3.69)	3.52 (2.95-3.81)	6.11 (5.03-7.04)	10.6 (8.94-12.4)	15.6 (12.6-19.7)	703
Non-Hispanic blacks	03-04	4.74 (4.07-5.51)	4.65 (4.10-5.30)	7.81 (6.38-10.0)	15.2 (10.8-18.4)	19.9 (15.7-28.7)	699
Non-Hispanic blacks	05-06	5.88 (5.12-6.76)	5.86 (5.03-7.03)	9.74 (8.21-11.3)	14.9 (12.0-19.9)	21.4 (14.9-29.7)	678
Non-Hispanic blacks	07-08	8.28 (7.20-9.52)	8.96 (8.33-9.71)	14.4 (12.9-15.7)	21.6 (20.3-24.3)	29.6 (24.3-37.7)	597
Non-Hispanic blacks	09-10	10.1 (8.76-11.7)	10.5 (9.41-11.6)	15.2 (12.9-19.2)	24.1 (19.3-32.2)	33.2 (26.3-42.0)	516
Non-Hispanic whites	01-02	2.31 (2.11-2.52)	2.20 (2.01-2.43)	3.80 (3.53-4.39)	7.30 (6.72-7.78)	10.7 (9.62-12.6)	1216
Non-Hispanic whites	03-04	3.13 (2.76-3.54)	3.17 (2.76-3.72)	5.28 (4.55-6.21)	8.92 (7.64-10.3)	11.8 (10.2-15.1)	1088
Non-Hispanic whites	05-06	4.64 (4.25-5.07)	4.58 (4.35-4.91)	8.28 (7.45-9.01)	13.7 (12.2-15.6)	18.8 (16.9-22.2)	1038
Non-Hispanic whites	07-08	6.60 (6.14-7.10)	6.70 (6.26-7.08)	10.9 (10.0-12.1)	17.0 (15.2-20.5)	24.9 (20.5-29.1)	1077
Non-Hispanic whites	09-10	7.12 (6.62-7.66)	6.95 (6.51-7.40)	10.7 (10.1-11.8)	17.0 (14.6-20.3)	22.0 (19.1-26.2)	1206

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DBP_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-cyclohexyl phthalate (MCHP) (1999 – 2010)‡

CAS Number 7517-36-4

Metabolite of Dicyclohexyl phthalate (DCHP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	2.21 (<LOD-3.42)	2541
Total population	01-02	*	<LOD	<LOD	.804 (.603-1.01)	1.01 (.804-1.21)	2782
Total population	03-04	*	<LOD	<LOD	<LOD	.603 (.402-.804)	2605
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2548
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2604
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2749
Age 6-11 years	99-00	*	<LOD	<LOD	2.01 (<LOD-2.21)	3.42 (2.01-7.64)	328
Age 6-11 years	01-02	*	<LOD	<LOD	.804 (.603-1.01)	1.21 (1.01-1.41)	393
Age 6-11 years	03-04	*	<LOD	<LOD	.603 (<LOD-.804)	1.01 (.603-1.01)	342
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	356
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	389
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	.960 (.640-1.57)	415
Age 12-19 years	99-00	*	<LOD	<LOD	2.01 (<LOD-3.02)	3.42 (2.01-5.03)	752
Age 12-19 years	01-02	*	<LOD	<LOD	.804 (.603-1.01)	1.01 (.804-1.21)	742
Age 12-19 years	03-04	*	<LOD	<LOD	.402 (<LOD-.603)	.804 (.603-1.21)	729
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	702
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	401
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	420
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1461
Age 20+ years	01-02	*	<LOD	<LOD	.804 (<LOD-1.01)	1.01 (.804-1.21)	1647
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	.603 (.402-.603)	1534
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1490
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1814
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	1914
Males	99-00	*	<LOD	<LOD	<LOD	2.21 (<LOD-4.02)	1215
Males	01-02	*	<LOD	<LOD	.804 (.603-1.01)	1.01 (.804-1.21)	1371
Males	03-04	*	<LOD	<LOD	<LOD	.603 (.603-.804)	1250
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1270
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1294
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1399
Females	99-00	*	<LOD	<LOD	<LOD	2.21 (<LOD-3.82)	1326
Females	01-02	*	<LOD	<LOD	.804 (<LOD-.804)	1.01 (.804-1.01)	1411
Females	03-04	*	<LOD	<LOD	<LOD	.603 (.402-1.01)	1355
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1278
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1310
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1350

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 1.81, 0.603, 0.402, 0.603, 0.603 and 0.402 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 2.01 for survey periods 1999-2008 compared with results previously released.

‡Not measured after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DCHP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-cyclohexyl phthalate (MCHP) (1999 – 2010)‡

CAS Number 7517-36-4

Metabolite of Dicyclohexyl phthalate (DCHP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	814
Mexican Americans	01-02	*	<LOD	<LOD	.804 (<LOD-1.01)	1.01 (.603-1.41)	677
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	.603 (.402-1.01)	652
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	637
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	531
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	.440 (<LOD-.640)	566
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	2.21 (1.81-2.41)	603
Non-Hispanic blacks	01-02	*	<LOD	<LOD	.804 (.603-1.01)	1.01 (.804-1.41)	703
Non-Hispanic blacks	03-04	*	<LOD	<LOD	.603 (.402-.603)	.804 (.603-1.01)	699
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	678
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	597
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	.480 (<LOD-.620)	516
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	2.01 (<LOD-3.42)	912
Non-Hispanic whites	01-02	*	<LOD	<LOD	.804 (<LOD-.804)	1.01 (.804-1.21)	1216
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	.603 (.402-.804)	1088
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1038
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1077
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 1.81, 0.603, 0.402, 0.603, 0.603 and 0.402 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 2.01 for survey periods 1999-2008 compared with results previously released.

‡Not measured after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DCHP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-cyclohexyl phthalate (MCHP) (creatinine corrected) (1999 – 2010)‡

CAS Number 7517-36-4

Metabolite of Dicyclohexyl phthalate (DCHP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	6.03 (<LOD-6.69)	2541
Total population	01-02	*	<LOD	<LOD	1.23 (1.07-1.39)	1.83 (1.55-2.01)	2782
Total population	03-04	*	<LOD	<LOD	<LOD	.905 (.804-1.01)	2605
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2548
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2604
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2749
Age 6-11 years	99-00	*	<LOD	<LOD	3.10 (<LOD-4.70)	5.67 (3.10-12.9)	328
Age 6-11 years	01-02	*	<LOD	<LOD	1.39 (1.03-1.49)	1.89 (1.39-2.35)	393
Age 6-11 years	03-04	*	<LOD	<LOD	.744 (<LOD-1.07)	1.07 (.704-1.67)	342
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	356
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	389
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	1.80 (1.34-2.55)	415
Age 12-19 years	99-00	*	<LOD	<LOD	2.45 (<LOD-3.10)	3.36 (2.73-3.66)	752
Age 12-19 years	01-02	*	<LOD	<LOD	.945 (.764-1.33)	1.55 (1.07-2.37)	742
Age 12-19 years	03-04	*	<LOD	<LOD	.442 (<LOD-.543)	.764 (.482-1.25)	729
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	702
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	401
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	420
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	<LOD	1461
Age 20+ years	01-02	*	<LOD	<LOD	1.27 (<LOD-1.39)	1.83 (1.55-2.11)	1647
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	.905 (.804-1.01)	1534
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1490
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1814
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	1914
Males	99-00	*	<LOD	<LOD	<LOD	4.30 (<LOD-6.35)	1215
Males	01-02	*	<LOD	<LOD	1.03 (.844-1.33)	1.77 (1.35-2.13)	1371
Males	03-04	*	<LOD	<LOD	<LOD	.663 (.583-1.01)	1250
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1270
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1294
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1399
Females	99-00	*	<LOD	<LOD	<LOD	6.69 (<LOD-7.10)	1326
Females	01-02	*	<LOD	<LOD	1.35 (<LOD-1.55)	1.83 (1.61-2.21)	1411
Females	03-04	*	<LOD	<LOD	<LOD	1.01 (.844-1.19)	1355
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1278
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1310
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1350

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 2.01 for survey periods 1999-2008 compared with results previously released.

‡Not measured after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DCHP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-cyclohexyl phthalate (MCHP) (creatinine corrected) (1999 – 2010)‡

CAS Number 7517-36-4

Metabolite of Dicyclohexyl phthalate (DCHP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	<LOD	814
Mexican Americans	01-02	*	<LOD	<LOD	1.19 (<LOD-1.39)	1.91 (1.59-2.23)	677
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	.784 (.623-1.13)	652
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	637
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	531
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	1.20 (<LOD-1.56)	566
Non-Hispanic blacks	99-00	*	<LOD	<LOD	<LOD	2.87 (2.25-3.50)	603
Non-Hispanic blacks	01-02	*	<LOD	<LOD	.824 (.724-.985)	1.19 (1.01-1.43)	703
Non-Hispanic blacks	03-04	*	<LOD	<LOD	.503 (.342-.623)	.663 (.523-.945)	699
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	678
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	597
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	.880 (<LOD-1.08)	516
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	6.35 (<LOD-7.10)	912
Non-Hispanic whites	01-02	*	<LOD	<LOD	1.27 (<LOD-1.49)	1.83 (1.55-2.13)	1216
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	.965 (.844-1.07)	1088
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1038
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1077
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1206

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 2.01 for survey periods 1999-2008 compared with results previously released.

‡Not measured after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DCHP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-ethyl phthalate (MEP) (1999 – 2010)

CAS Number 863029-89-4

Metabolite of Diethyl phthalate (DEP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	118 (103-135)	108 (90.0-132)	300 (244-355)	830 (664-977)	1870 (1420-2490)	2536
Total population	01-02	117 (105-131)	112 (93.0-128)	307 (274-348)	813 (688-947)	1650 (1230-2130)	2782
Total population	03-04	127 (112-145)	115 (99.9-137)	332 (302-366)	909 (769-1150)	1780 (1420-2180)	2605
Total population	05-06	108 (95.5-123)	102 (83.4-121)	284 (257-323)	750 (707-825)	1410 (1140-1830)	2548
Total population	07-08	90.4 (80.3-102)	81.1 (70.8-93.5)	239 (205-272)	605 (493-713)	1180 (821-1760)	2604
Total population	09-10	64.4 (58.3-71.2)	54.9 (50.5-62.7)	163 (145-187)	485 (374-604)	988 (805-1180)	2749
Age 6-11 years	99-00	60.3 (49.4-73.6)	49.8 (41.0-61.8)	130 (85.2-164)	249 (192-481)	499 (250-703)	328
Age 6-11 years	01-02	56.2 (47.0-67.2)	47.5 (40.9-61.1)	121 (93.7-143)	297 (208-420)	533 (377-717)	393
Age 6-11 years	03-04	62.9 (54.3-72.9)	53.9 (46.4-67.9)	130 (112-159)	344 (195-377)	546 (358-949)	342
Age 6-11 years	05-06	55.7 (45.7-67.9)	47.9 (38.3-61.6)	111 (73.9-147)	289 (173-368)	522 (326-719)	356
Age 6-11 years	07-08	49.0 (42.4-56.6)	45.2 (38.5-53.3)	108 (80.5-135)	193 (155-227)	296 (214-359)	389
Age 6-11 years	09-10	35.2 (31.2-39.8)	33.0 (29.8-37.8)	68.7 (54.3-80.9)	151 (114-207)	288 (205-530)	415
Age 12-19 years	99-00	139 (105-183)	127 (92.8-169)	372 (276-540)	994 (694-1420)	2150 (1020-2920)	752
Age 12-19 years	01-02	130 (105-161)	121 (97.9-150)	316 (256-429)	835 (649-974)	1360 (969-2020)	742
Age 12-19 years	03-04	148 (123-178)	146 (109-194)	367 (285-459)	828 (642-1030)	1520 (900-2180)	729
Age 12-19 years	05-06	126 (108-146)	114 (96.4-134)	315 (256-390)	765 (636-1060)	1360 (1030-1680)	702
Age 12-19 years	07-08	98.6 (79.1-123)	97.4 (68.3-130)	214 (173-330)	477 (356-705)	821 (511-1270)	401
Age 12-19 years	09-10	64.0 (50.1-81.8)	53.9 (39.0-75.4)	151 (101-228)	354 (260-497)	662 (371-1190)	420
Age 20+ years	99-00	125 (108-145)	119 (92.6-146)	318 (257-389)	882 (666-1100)	2300 (1470-3060)	1456
Age 20+ years	01-02	126 (113-141)	120 (101-140)	329 (291-374)	888 (702-1100)	1800 (1420-2420)	1647
Age 20+ years	03-04	135 (116-157)	124 (104-145)	351 (311-415)	1050 (807-1370)	1970 (1480-2510)	1534
Age 20+ years	05-06	114 (99.0-132)	111 (87.1-131)	299 (268-346)	782 (724-901)	1480 (1140-2080)	1490
Age 20+ years	07-08	95.3 (85.4-106)	84.7 (75.6-97.8)	264 (235-299)	673 (539-823)	1470 (913-1920)	1814
Age 20+ years	09-10	69.0 (61.8-76.9)	60.5 (54.0-68.7)	183 (159-207)	557 (445-712)	1110 (875-1350)	1914
Males	99-00	118 (98.5-142)	102 (78.3-130)	345 (246-429)	948 (672-1500)	2310 (1400-3010)	1214
Males	01-02	120 (103-139)	113 (91.8-131)	331 (276-398)	957 (703-1390)	2040 (1390-2900)	1371
Males	03-04	130 (114-148)	113 (97.8-133)	354 (296-432)	1000 (801-1370)	1920 (1460-2300)	1250
Males	05-06	107 (92.1-124)	95.9 (75.8-120)	279 (227-340)	757 (651-855)	1470 (923-1930)	1270
Males	07-08	92.8 (80.1-107)	81.0 (70.4-93.3)	245 (194-298)	659 (481-867)	1450 (851-1900)	1294
Males	09-10	61.0 (54.2-68.6)	52.8 (45.4-58.3)	157 (126-202)	436 (342-586)	965 (768-1170)	1399
Females	99-00	118 (102-136)	115 (91.3-139)	280 (231-335)	652 (581-813)	1470 (903-2560)	1322
Females	01-02	115 (101-131)	110 (91.5-128)	282 (255-329)	692 (580-867)	1230 (982-1650)	1411
Females	03-04	125 (106-148)	120 (90.9-145)	316 (258-372)	830 (639-1080)	1710 (1190-2260)	1355
Females	05-06	110 (92.8-130)	109 (86.8-130)	291 (252-346)	734 (671-871)	1310 (1140-1900)	1278
Females	07-08	88.2 (77.8-99.9)	82.4 (67.6-101)	233 (202-264)	553 (462-703)	1050 (713-1680)	1310
Females	09-10	67.8 (60.3-76.4)	59.6 (52.4-73.7)	164 (148-192)	548 (392-675)	988 (777-1340)	1350

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.792, 0.594, 0.264, 0.528, 0.462, and 0.396 respectively.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.66 for survey periods 1999-2008 compared with results previously released.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-ethyl phthalate (MEP) (1999 – 2010)

CAS Number 863029-89-4

Metabolite of Diethyl phthalate (DEP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	119 (103-138)	115 (96.5-138)	291 (257-357)	842 (561-996)	1130 (966-1410)	813
Mexican Americans	01-02	149 (129-173)	145 (125-174)	349 (293-435)	984 (690-1390)	1730 (1010-2940)	677
Mexican Americans	03-04	176 (158-196)	164 (140-202)	394 (345-454)	1080 (873-1440)	2010 (1470-2840)	652
Mexican Americans	05-06	163 (130-203)	161 (124-186)	384 (310-466)	1030 (682-1830)	1930 (1170-3330)	637
Mexican Americans	07-08	122 (105-141)	111 (82.0-144)	314 (270-372)	850 (604-971)	1180 (971-1520)	531
Mexican Americans	09-10	82.2 (70.0-96.5)	72.6 (59.6-84.0)	199 (142-254)	586 (415-869)	1300 (818-1760)	566
Non-Hispanic blacks	99-00	213 (182-249)	202 (169-231)	521 (419-626)	1250 (932-1500)	2380 (1410-3060)	603
Non-Hispanic blacks	01-02	233 (214-253)	235 (191-269)	563 (468-718)	1430 (1070-1630)	2340 (1860-3350)	703
Non-Hispanic blacks	03-04	236 (205-272)	202 (167-273)	626 (507-760)	1650 (1220-1970)	2880 (1840-3900)	699
Non-Hispanic blacks	05-06	219 (189-254)	199 (163-253)	522 (440-700)	1450 (1070-1900)	2610 (1900-3600)	678
Non-Hispanic blacks	07-08	168 (145-195)	165 (132-202)	415 (343-493)	994 (711-1260)	1920 (1090-3370)	597
Non-Hispanic blacks	09-10	156 (130-188)	137 (113-159)	405 (276-543)	1190 (841-1570)	1930 (1430-3380)	516
Non-Hispanic whites	99-00	101 (87.6-116)	88.4 (71.0-104)	242 (189-318)	651 (527-882)	1630 (1050-2560)	908
Non-Hispanic whites	01-02	104 (92.8-117)	96.8 (78.8-117)	273 (241-297)	672 (598-813)	1530 (1030-1800)	1216
Non-Hispanic whites	03-04	110 (95.4-128)	97.8 (82.4-115)	276 (242-315)	801 (630-975)	1480 (1050-2170)	1088
Non-Hispanic whites	05-06	91.3 (80.3-104)	84.2 (69.4-111)	232 (196-278)	600 (500-715)	1140 (757-1550)	1038
Non-Hispanic whites	07-08	78.9 (70.4-88.5)	68.9 (59.8-80.1)	199 (175-233)	506 (429-650)	880 (670-1500)	1077
Non-Hispanic whites	09-10	52.1 (48.1-56.5)	45.1 (40.0-51.6)	127 (106-140)	309 (259-394)	768 (468-988)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.792, 0.594, 0.264, 0.528, 0.462, and 0.396 respectively.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.66 for survey periods 1999-2008 compared with results previously released.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-ethyl phthalate (MEP) (creatinine corrected) (1999 – 2010)

CAS Number 863029-89-4

Metabolite of Diethyl phthalate (DEP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	107 (98.0-118)	93.0 (85.4-104)	237 (203-278)	598 (497-781)	1290 (1100-1530)	2536
Total population	01-02	110 (99.3-122)	97.4 (87.9-107)	256 (218-287)	640 (532-778)	1220 (959-1450)	2782
Total population	03-04	120 (107-133)	101 (90.1-117)	298 (254-332)	733 (587-853)	1350 (1080-1680)	2605
Total population	05-06	106 (95.3-117)	92.3 (80.9-104)	242 (211-286)	625 (528-711)	1140 (942-1310)	2548
Total population	07-08	91.1 (82.6-101)	75.3 (68.6-83.5)	204 (185-231)	547 (433-680)	987 (821-1190)	2604
Total population	09-10	67.2 (60.5-74.7)	56.1 (48.9-66.8)	150 (128-172)	433 (373-524)	850 (709-999)	2749
Age 6-11 years	99-00	61.1 (51.4-72.7)	52.5 (43.3-72.4)	109 (83.6-137)	225 (145-365)	412 (264-517)	328
Age 6-11 years	01-02	64.0 (54.4-75.2)	53.6 (43.7-69.4)	117 (88.8-148)	338 (191-529)	556 (338-874)	393
Age 6-11 years	03-04	66.6 (57.5-77.1)	57.4 (43.9-74.7)	119 (95.6-134)	310 (205-394)	474 (310-877)	342
Age 6-11 years	05-06	61.3 (49.6-75.8)	50.1 (42.7-61.0)	107 (76.2-145)	279 (167-441)	512 (366-1210)	356
Age 6-11 years	07-08	60.4 (53.9-67.7)	52.8 (42.4-64.2)	108 (96.3-134)	205 (166-237)	278 (228-386)	389
Age 6-11 years	09-10	45.9 (41.0-51.3)	39.0 (34.7-41.8)	73.0 (63.2-87.2)	168 (125-234)	296 (182-590)	415
Age 12-19 years	99-00	93.7 (78.6-112)	80.7 (61.4-103)	240 (181-326)	580 (446-834)	1160 (661-1320)	752
Age 12-19 years	01-02	100 (83.0-121)	92.4 (73.1-119)	218 (164-270)	533 (389-729)	878 (573-1220)	742
Age 12-19 years	03-04	111 (93.1-132)	99.1 (81.2-121)	240 (193-320)	522 (389-714)	969 (651-1470)	729
Age 12-19 years	05-06	93.6 (80.5-109)	85.3 (69.0-104)	201 (174-238)	500 (389-635)	813 (590-1110)	702
Age 12-19 years	07-08	76.7 (61.8-95.1)	72.8 (53.3-91.3)	161 (108-218)	334 (213-491)	547 (334-866)	401
Age 12-19 years	09-10	51.4 (40.8-64.9)	46.6 (31.2-68.8)	108 (84.2-137)	236 (150-393)	419 (268-524)	420
Age 20+ years	99-00	118 (107-131)	102 (89.5-117)	257 (222-298)	669 (530-965)	1430 (1180-2210)	1456
Age 20+ years	01-02	119 (108-132)	105 (96.3-120)	277 (240-321)	702 (583-871)	1400 (1010-1840)	1647
Age 20+ years	03-04	130 (115-147)	117 (96.8-133)	338 (279-417)	815 (652-1060)	1510 (1170-2110)	1534
Age 20+ years	05-06	115 (103-128)	100 (87.6-117)	278 (233-309)	700 (574-803)	1220 (972-1530)	1490
Age 20+ years	07-08	97.9 (89.6-107)	78.7 (73.2-87.7)	236 (208-266)	624 (518-759)	1100 (875-1380)	1814
Age 20+ years	09-10	73.0 (65.1-81.9)	62.5 (52.4-72.8)	173 (149-195)	523 (407-662)	989 (810-1120)	1914
Males	99-00	92.8 (82.0-105)	79.0 (70.8-88.2)	214 (165-274)	661 (457-978)	1290 (965-1920)	1214
Males	01-02	97.6 (85.8-111)	83.2 (72.6-96.8)	232 (186-280)	729 (554-974)	1400 (980-2000)	1371
Males	03-04	102 (91.9-113)	83.7 (71.0-99.0)	258 (225-307)	704 (562-896)	1320 (1060-1590)	1250
Males	05-06	85.7 (75.4-97.4)	73.0 (61.0-90.2)	204 (172-231)	504 (368-673)	898 (607-1240)	1270
Males	07-08	78.1 (68.5-89.1)	65.5 (57.0-73.8)	181 (162-216)	490 (390-625)	936 (662-1190)	1294
Males	09-10	54.7 (48.3-62.0)	43.3 (38.2-54.2)	125 (97.7-153)	314 (262-436)	792 (570-935)	1399
Females	99-00	123 (109-139)	104 (93.7-118)	249 (203-326)	543 (460-770)	1270 (770-2250)	1322
Females	01-02	123 (110-139)	113 (97.4-124)	269 (235-312)	568 (470-725)	944 (784-1330)	1411
Females	03-04	139 (119-163)	120 (97.8-143)	335 (250-418)	741 (587-923)	1490 (951-2200)	1355
Females	05-06	129 (116-144)	106 (97.4-121)	293 (247-333)	759 (629-920)	1370 (1150-1730)	1278
Females	07-08	106 (95.5-117)	88.5 (77.6-98.6)	227 (188-278)	610 (491-727)	1040 (759-1520)	1310
Females	09-10	81.9 (72.7-92.2)	69.9 (57.2-80.9)	178 (151-214)	523 (407-661)	987 (716-1220)	1350

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.66 for survey periods 1999-2008 compared with results previously released.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-ethyl phthalate (MEP) (creatinine corrected) (1999 – 2010)

CAS Number 863029-89-4

Metabolite of Diethyl phthalate (DEP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	108 (93.9-125)	102 (89.8-115)	252 (207-312)	538 (444-643)	875 (643-1270)	813
Mexican Americans	01-02	141 (120-165)	131 (108-160)	304 (261-378)	714 (568-1090)	1280 (928-1740)	677
Mexican Americans	03-04	159 (141-179)	154 (133-178)	352 (275-439)	815 (631-1060)	1500 (1190-2070)	652
Mexican Americans	05-06	146 (123-173)	125 (107-157)	324 (235-425)	767 (600-1020)	1410 (926-2510)	637
Mexican Americans	07-08	119 (100-140)	105 (81.9-142)	260 (224-306)	616 (502-750)	1230 (628-2160)	531
Mexican Americans	09-10	81.6 (70.9-93.8)	64.9 (56.3-72.7)	170 (131-254)	523 (324-792)	945 (685-1510)	566
Non-Hispanic blacks	99-00	137 (121-156)	130 (109-151)	292 (257-333)	682 (503-1120)	1270 (810-1710)	603
Non-Hispanic blacks	01-02	163 (149-179)	150 (122-178)	367 (316-408)	818 (634-979)	1380 (1020-1850)	703
Non-Hispanic blacks	03-04	167 (148-189)	140 (124-162)	409 (314-522)	1010 (793-1300)	1710 (1420-2310)	699
Non-Hispanic blacks	05-06	154 (131-181)	134 (113-160)	360 (311-412)	919 (590-1290)	1700 (1070-2030)	678
Non-Hispanic blacks	07-08	131 (115-148)	121 (105-132)	280 (224-334)	614 (489-843)	1100 (836-1780)	597
Non-Hispanic blacks	09-10	113 (89.0-143)	92.7 (77.5-121)	236 (180-338)	722 (443-1210)	1300 (890-2240)	516
Non-Hispanic whites	99-00	98.3 (88.9-109)	84.5 (72.9-93.7)	206 (158-255)	565 (432-916)	1290 (975-1810)	908
Non-Hispanic whites	01-02	103 (93.5-114)	89.6 (82.1-98.9)	223 (190-265)	607 (470-765)	1050 (874-1440)	1216
Non-Hispanic whites	03-04	109 (95.3-125)	88.9 (79.2-105)	254 (223-320)	652 (548-876)	1270 (922-1830)	1088
Non-Hispanic whites	05-06	96.1 (86.5-107)	84.5 (71.2-97.6)	211 (189-242)	532 (450-686)	993 (828-1240)	1038
Non-Hispanic whites	07-08	82.4 (74.7-90.9)	66.4 (58.5-73.8)	185 (158-219)	523 (397-640)	871 (708-1040)	1077
Non-Hispanic whites	09-10	58.6 (53.2-64.4)	49.1 (41.4-56.8)	125 (110-146)	366 (278-437)	706 (515-965)	1206

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.66 for survey periods 1999-2008 compared with results previously released.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-2-ethylhexyl phthalate (MEHP) (1999 – 2010)

CAS Number 4376-20-9

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	3.43 (3.19-3.69)	3.20 (3.00-3.60)	7.60 (6.80-8.40)	14.9 (13.5-17.4)	23.8 (19.2-28.6)	2541
Total population	01-02	4.27 (3.80-4.79)	4.20 (3.70-4.90)	9.80 (8.40-11.6)	23.0 (19.1-27.9)	39.2 (31.8-50.0)	2782
Total population	03-04	2.34 (2.10-2.62)	1.90 (1.70-2.40)	5.30 (4.50-6.60)	15.1 (11.4-20.6)	31.0 (21.4-42.0)	2605
Total population	05-06	3.04 (2.78-3.32)	2.50 (2.10-2.80)	6.30 (5.70-7.10)	17.7 (14.0-22.5)	39.7 (28.6-52.1)	2548
Total population	07-08	2.64 (2.29-3.05)	2.20 (1.80-2.50)	5.40 (4.30-6.90)	14.1 (11.2-20.2)	27.6 (19.8-39.8)	2604
Total population	09-10	1.59 (1.41-1.79)	1.51 (1.33-1.71)	3.52 (2.99-4.00)	7.54 (5.96-9.54)	14.1 (9.91-21.1)	2749
Age 6-11 years	99-00	5.12 (4.42-5.92)	4.90 (3.70-6.40)	11.1 (8.30-13.6)	19.0 (13.8-36.1)	35.3 (15.6-130)	328
Age 6-11 years	01-02	4.41 (3.90-5.00)	4.40 (4.10-5.30)	9.30 (7.90-11.7)	19.7 (14.6-25.9)	31.4 (21.8-47.9)	393
Age 6-11 years	03-04	2.84 (2.10-3.84)	2.70 (1.80-4.10)	6.40 (4.40-9.60)	13.9 (7.80-27.6)	27.6 (11.3-64.7)	342
Age 6-11 years	05-06	3.10 (2.78-3.47)	3.00 (2.60-3.30)	6.20 (5.10-7.10)	14.1 (9.40-19.3)	19.7 (14.7-36.6)	356
Age 6-11 years	07-08	2.39 (2.05-2.80)	2.20 (1.70-2.90)	4.50 (3.70-6.20)	8.70 (6.40-13.9)	15.1 (10.6-24.1)	389
Age 6-11 years	09-10	1.64 (1.45-1.85)	1.71 (1.26-2.02)	3.50 (3.09-3.94)	5.95 (4.56-7.56)	8.92 (6.94-12.9)	415
Age 12-19 years	99-00	3.75 (3.24-4.35)	3.70 (2.90-4.60)	8.10 (6.40-9.40)	15.3 (11.4-20.5)	22.8 (19.1-29.2)	752
Age 12-19 years	01-02	4.57 (3.96-5.27)	4.50 (3.70-5.10)	11.0 (9.50-14.4)	23.0 (17.7-32.7)	42.5 (25.9-57.5)	742
Age 12-19 years	03-04	2.77 (2.25-3.41)	2.50 (2.00-3.00)	6.40 (4.50-8.60)	18.6 (10.2-35.6)	40.6 (20.7-58.4)	729
Age 12-19 years	05-06	3.72 (3.04-4.56)	3.20 (2.40-4.10)	8.80 (6.20-13.3)	22.6 (13.8-43.4)	48.7 (23.1-62.9)	702
Age 12-19 years	07-08	2.99 (2.39-3.75)	2.30 (1.80-2.70)	6.00 (4.40-9.90)	21.1 (11.8-32.8)	37.6 (24.8-74.1)	401
Age 12-19 years	09-10	1.82 (1.52-2.16)	1.66 (1.42-1.94)	3.98 (3.35-4.73)	9.53 (6.27-14.0)	17.6 (9.54-27.4)	420
Age 20+ years	99-00	3.21 (2.94-3.51)	3.00 (2.70-3.40)	7.30 (6.40-8.00)	14.5 (12.1-17.0)	22.7 (17.5-27.0)	1461
Age 20+ years	01-02	4.20 (3.63-4.86)	4.10 (3.50-5.00)	9.50 (8.10-11.9)	23.5 (18.0-29.8)	39.5 (30.3-57.1)	1647
Age 20+ years	03-04	2.23 (2.03-2.44)	1.70 (1.50-2.00)	5.10 (4.50-6.00)	15.1 (10.9-19.7)	29.5 (20.4-40.0)	1534
Age 20+ years	05-06	2.94 (2.68-3.21)	2.30 (1.90-2.70)	6.20 (5.60-6.70)	17.7 (13.6-24.5)	41.5 (28.6-54.1)	1490
Age 20+ years	07-08	2.62 (2.27-3.02)	2.10 (1.80-2.50)	5.40 (4.20-7.10)	14.4 (11.2-20.2)	27.3 (19.2-40.6)	1814
Age 20+ years	09-10	1.55 (1.36-1.78)	1.44 (1.25-1.68)	3.40 (2.88-4.03)	7.39 (5.94-9.58)	14.6 (9.91-21.1)	1914
Males	99-00	3.68 (3.31-4.10)	3.40 (2.90-3.90)	8.00 (7.40-8.80)	16.0 (14.0-19.0)	25.3 (19.5-36.7)	1215
Males	01-02	4.31 (3.84-4.83)	4.30 (3.70-5.10)	9.70 (8.30-11.2)	23.0 (16.9-29.8)	37.9 (29.9-48.4)	1371
Males	03-04	2.56 (2.26-2.90)	2.20 (1.70-2.60)	6.00 (4.60-7.70)	17.2 (11.3-26.3)	33.3 (24.9-55.5)	1250
Males	05-06	3.40 (3.01-3.85)	2.80 (2.40-3.30)	7.00 (5.70-9.00)	22.6 (15.0-35.8)	49.8 (35.2-67.4)	1270
Males	07-08	2.77 (2.35-3.27)	2.30 (1.90-2.80)	5.50 (4.20-7.60)	14.4 (11.2-20.5)	28.9 (19.2-40.0)	1294
Males	09-10	1.83 (1.63-2.05)	1.77 (1.63-1.91)	3.97 (3.49-4.51)	8.63 (6.94-11.9)	18.0 (12.6-29.0)	1399
Females	99-00	3.21 (2.91-3.54)	3.10 (2.80-3.50)	7.10 (5.90-8.50)	13.6 (12.1-17.2)	21.9 (15.6-28.5)	1326
Females	01-02	4.23 (3.67-4.86)	4.10 (3.50-5.00)	9.80 (8.40-12.2)	23.0 (19.5-28.4)	43.5 (31.4-53.7)	1411
Females	03-04	2.15 (1.92-2.42)	1.80 (1.50-2.10)	4.90 (4.10-5.70)	13.2 (10.0-18.1)	27.8 (17.5-40.7)	1355
Females	05-06	2.72 (2.49-2.98)	2.10 (1.90-2.40)	6.00 (5.20-6.80)	13.9 (11.7-17.5)	30.8 (21.9-36.2)	1278
Females	07-08	2.52 (2.18-2.92)	2.00 (1.70-2.40)	5.10 (4.20-6.30)	14.1 (9.50-21.4)	26.4 (19.2-42.1)	1310
Females	09-10	1.39 (1.21-1.60)	1.30 (1.12-1.53)	3.00 (2.51-3.62)	6.48 (5.45-8.09)	10.3 (8.33-14.9)	1350

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 1.2, 1.0, 0.9, 1.2, 1.1, and 0.5 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEHP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-2-ethylhexyl phthalate (MEHP) (1999 – 2010)

CAS Number 4376-20-9

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	3.49 (3.16-3.85)	3.50 (3.10-3.90)	7.00 (5.70-8.60)	13.3 (10.7-18.7)	23.9 (17.4-27.3)	814
Mexican Americans	01-02	4.32 (3.75-4.98)	4.70 (3.80-5.70)	10.1 (8.50-11.4)	19.6 (16.6-23.0)	28.5 (24.2-39.9)	677
Mexican Americans	03-04	2.35 (1.87-2.96)	2.20 (1.50-3.00)	5.10 (4.30-6.60)	11.2 (7.50-16.5)	18.5 (11.6-38.2)	652
Mexican Americans	05-06	2.99 (2.50-3.57)	2.30 (1.70-3.30)	5.70 (4.70-7.60)	18.4 (12.1-30.6)	36.4 (26.2-63.8)	637
Mexican Americans	07-08	2.89 (2.38-3.50)	2.60 (2.00-3.10)	5.30 (4.40-8.20)	16.9 (10.3-27.3)	30.2 (22.9-34.3)	531
Mexican Americans	09-10	2.08 (1.84-2.36)	2.10 (1.86-2.40)	4.44 (3.73-5.63)	9.67 (6.89-16.0)	17.9 (13.1-24.3)	566
Non-Hispanic blacks	99-00	4.82 (3.92-5.93)	5.20 (4.10-5.80)	9.50 (7.60-11.4)	19.5 (12.9-26.5)	29.5 (18.6-60.3)	603
Non-Hispanic blacks	01-02	6.60 (5.57-7.82)	6.70 (5.40-8.10)	15.4 (13.0-18.7)	32.9 (26.5-41.4)	52.6 (41.0-84.0)	703
Non-Hispanic blacks	03-04	3.61 (3.07-4.23)	3.50 (3.00-4.00)	8.50 (7.10-11.4)	22.9 (16.5-28.6)	35.2 (29.3-49.1)	699
Non-Hispanic blacks	05-06	4.09 (3.51-4.75)	3.70 (3.10-4.10)	9.10 (6.90-11.9)	22.5 (17.4-40.7)	59.3 (34.5-86.7)	678
Non-Hispanic blacks	07-08	3.30 (2.98-3.64)	3.20 (2.70-3.60)	7.20 (6.30-8.90)	15.3 (13.3-20.2)	25.5 (19.2-38.1)	597
Non-Hispanic blacks	09-10	2.08 (1.79-2.41)	2.05 (1.70-2.42)	4.79 (3.80-5.95)	10.1 (7.50-14.4)	16.4 (9.60-38.4)	516
Non-Hispanic whites	99-00	3.16 (2.89-3.46)	2.80 (2.50-3.10)	7.40 (6.30-8.40)	14.5 (12.2-17.4)	22.4 (16.9-28.5)	912
Non-Hispanic whites	01-02	3.85 (3.37-4.40)	3.70 (3.10-4.40)	8.70 (7.80-9.90)	20.9 (17.3-25.9)	37.9 (29.9-49.5)	1216
Non-Hispanic whites	03-04	2.14 (1.92-2.39)	1.70 (1.40-1.90)	4.80 (4.00-5.80)	13.6 (9.50-20.0)	31.0 (18.1-48.9)	1088
Non-Hispanic whites	05-06	2.83 (2.59-3.10)	2.20 (1.80-2.60)	5.90 (5.30-6.90)	17.0 (13.3-21.6)	36.3 (26.6-51.0)	1038
Non-Hispanic whites	07-08	2.44 (2.07-2.88)	2.00 (1.70-2.30)	4.90 (3.70-6.20)	13.1 (8.70-20.1)	25.0 (15.8-42.1)	1077
Non-Hispanic whites	09-10	1.41 (1.22-1.62)	1.30 (1.12-1.57)	3.04 (2.53-3.60)	6.12 (5.23-7.65)	11.8 (7.63-21.1)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 1.2, 1.0, 0.9, 1.2, 1.1, and 0.5 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEHP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-2-ethylhexyl phthalate (MEHP) (creatinine corrected) (1999 – 2010)

CAS Number 4376-20-9

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	3.12 (2.95-3.31)	3.08 (2.82-3.27)	5.88 (5.38-6.25)	10.8 (9.62-12.5)	18.9 (15.0-21.8)	2541
Total population	01-02	4.00 (3.58-4.48)	3.90 (3.44-4.47)	7.94 (7.22-9.02)	18.0 (15.3-21.5)	32.8 (25.2-42.9)	2782
Total population	03-04	2.20 (2.01-2.41)	1.89 (1.68-2.19)	4.31 (3.84-4.74)	10.8 (8.72-13.8)	25.4 (16.7-34.7)	2605
Total population	05-06	2.96 (2.72-3.23)	2.61 (2.37-2.86)	5.69 (5.00-6.47)	13.7 (11.4-17.8)	30.1 (21.2-35.2)	2548
Total population	07-08	2.66 (2.37-2.99)	2.36 (2.11-2.67)	5.15 (4.35-6.00)	11.8 (8.89-15.6)	21.9 (14.6-33.4)	2604
Total population	09-10	1.66 (1.45-1.90)	1.52 (1.36-1.77)	3.09 (2.69-3.60)	6.28 (4.98-8.48)	11.2 (8.33-19.1)	2749
Age 6-11 years	99-00	5.19 (4.55-5.93)	5.37 (4.52-5.95)	9.11 (8.06-11.4)	21.6 (11.5-41.9)	41.9 (13.5-86.2)	328
Age 6-11 years	01-02	5.03 (4.47-5.65)	5.38 (4.51-6.21)	9.90 (7.87-11.5)	21.1 (13.8-28.8)	31.4 (24.3-40.7)	393
Age 6-11 years	03-04	3.00 (2.30-3.93)	2.80 (1.93-4.09)	5.86 (4.69-7.70)	14.3 (8.54-24.4)	28.7 (14.1-45.3)	342
Age 6-11 years	05-06	3.42 (3.08-3.79)	3.26 (2.63-3.92)	6.18 (5.40-6.85)	11.3 (8.96-17.4)	20.7 (11.3-31.8)	356
Age 6-11 years	07-08	2.95 (2.49-3.49)	2.80 (2.17-3.33)	5.42 (3.95-6.51)	10.6 (7.47-14.0)	15.6 (10.6-23.7)	389
Age 6-11 years	09-10	2.13 (1.90-2.40)	2.08 (1.88-2.33)	3.69 (3.13-4.20)	5.83 (4.80-7.95)	8.89 (5.88-20.1)	415
Age 12-19 years	99-00	2.53 (2.14-2.99)	2.35 (2.05-2.76)	5.83 (4.38-6.29)	9.66 (7.41-11.5)	12.1 (10.5-17.3)	752
Age 12-19 years	01-02	3.53 (3.09-4.03)	3.67 (2.89-4.48)	7.47 (6.51-8.67)	15.2 (11.7-21.9)	25.2 (17.7-32.8)	742
Age 12-19 years	03-04	2.07 (1.74-2.48)	1.88 (1.60-2.23)	4.25 (3.19-5.62)	11.6 (6.83-23.2)	24.8 (11.6-37.9)	729
Age 12-19 years	05-06	2.77 (2.27-3.38)	2.43 (2.03-2.87)	5.24 (4.06-7.75)	15.2 (9.86-23.2)	27.1 (16.0-43.7)	702
Age 12-19 years	07-08	2.33 (1.90-2.86)	2.00 (1.67-2.57)	4.33 (3.55-6.23)	12.6 (8.31-16.3)	21.9 (12.0-45.7)	401
Age 12-19 years	09-10	1.46 (1.20-1.77)	1.33 (1.09-1.61)	2.85 (2.24-3.63)	7.47 (4.31-11.6)	13.2 (8.11-20.9)	420
Age 20+ years	99-00	3.03 (2.83-3.25)	2.98 (2.73-3.23)	5.55 (4.90-6.06)	10.0 (8.60-12.9)	17.5 (13.8-22.1)	1461
Age 20+ years	01-02	3.97 (3.49-4.52)	3.82 (3.26-4.38)	7.79 (7.00-9.00)	18.3 (15.3-21.8)	34.5 (23.1-47.9)	1647
Age 20+ years	03-04	2.14 (1.98-2.31)	1.84 (1.63-2.08)	4.14 (3.78-4.40)	10.5 (8.38-12.9)	25.6 (15.9-36.3)	1534
Age 20+ years	05-06	2.94 (2.69-3.23)	2.60 (2.36-2.83)	5.67 (4.77-6.52)	13.8 (11.3-18.1)	33.1 (21.9-47.4)	1490
Age 20+ years	07-08	2.69 (2.39-3.02)	2.36 (2.14-2.66)	5.20 (4.38-6.04)	11.8 (8.94-16.6)	22.1 (13.5-37.1)	1814
Age 20+ years	09-10	1.65 (1.43-1.90)	1.51 (1.34-1.75)	3.04 (2.63-3.60)	6.24 (4.98-8.61)	11.1 (8.03-19.4)	1914
Males	99-00	2.89 (2.60-3.22)	2.76 (2.52-2.96)	5.58 (4.71-6.08)	10.3 (9.35-12.4)	21.6 (14.1-27.7)	1215
Males	01-02	3.50 (3.08-3.99)	3.33 (2.83-3.90)	7.00 (6.49-7.77)	16.2 (12.8-20.9)	31.6 (20.5-49.4)	1371
Males	03-04	2.01 (1.82-2.21)	1.71 (1.46-1.89)	4.14 (3.49-4.81)	10.4 (7.68-16.2)	23.3 (15.1-41.1)	1250
Males	05-06	2.73 (2.43-3.07)	2.30 (2.12-2.61)	5.08 (4.29-6.14)	14.3 (11.2-20.5)	31.0 (21.5-50.9)	1270
Males	07-08	2.33 (2.03-2.68)	2.00 (1.71-2.34)	4.36 (3.71-5.41)	11.6 (8.33-14.2)	20.2 (14.6-26.3)	1294
Males	09-10	1.64 (1.45-1.85)	1.52 (1.39-1.74)	3.06 (2.70-3.60)	6.53 (5.18-9.49)	13.0 (8.65-22.2)	1399
Females	99-00	3.36 (3.11-3.63)	3.33 (2.91-3.80)	6.15 (5.55-6.77)	11.1 (9.11-14.0)	17.3 (12.4-24.6)	1326
Females	01-02	4.54 (4.02-5.13)	4.47 (3.85-5.14)	9.28 (7.94-10.3)	20.3 (16.6-24.4)	34.7 (27.1-42.0)	1411
Females	03-04	2.40 (2.15-2.69)	2.16 (1.84-2.40)	4.40 (3.97-4.89)	10.9 (8.27-16.0)	27.0 (17.5-34.6)	1355
Females	05-06	3.20 (2.89-3.55)	2.89 (2.58-3.17)	6.07 (5.00-7.00)	13.3 (10.4-16.3)	28.2 (18.2-37.4)	1278
Females	07-08	3.02 (2.70-3.38)	2.76 (2.36-3.02)	5.57 (4.90-6.50)	12.1 (8.64-18.2)	24.7 (14.8-44.4)	1310
Females	09-10	1.68 (1.44-1.96)	1.53 (1.35-1.89)	3.10 (2.68-3.69)	5.75 (4.58-8.03)	10.5 (7.36-17.5)	1350

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEHP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-2-ethylhexyl phthalate (MEHP) (creatinine corrected) (1999 – 2010)

CAS Number 4376-20-9

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	3.16 (2.72-3.68)	3.15 (2.52-3.81)	5.88 (4.86-7.24)	11.6 (9.63-13.1)	15.7 (12.6-23.1)	814
Mexican Americans	01-02	4.07 (3.60-4.61)	4.18 (3.82-4.90)	7.80 (6.64-9.49)	16.4 (13.6-18.9)	24.9 (19.8-28.7)	677
Mexican Americans	03-04	2.12 (1.74-2.59)	1.94 (1.50-2.42)	4.06 (3.29-4.93)	9.38 (5.72-15.4)	16.8 (9.86-38.6)	652
Mexican Americans	05-06	2.69 (2.36-3.07)	2.41 (2.04-2.73)	4.82 (4.09-6.05)	14.3 (10.0-16.9)	27.2 (16.3-40.1)	637
Mexican Americans	07-08	2.82 (2.38-3.34)	2.45 (2.08-2.89)	5.00 (4.14-6.86)	12.3 (9.58-20.7)	29.0 (17.0-50.3)	531
Mexican Americans	09-10	2.07 (1.83-2.34)	1.89 (1.69-2.31)	4.06 (3.50-4.98)	8.38 (6.08-11.3)	13.9 (9.70-20.0)	566
Non-Hispanic blacks	99-00	3.11 (2.59-3.73)	3.13 (2.50-3.61)	5.84 (4.43-7.32)	10.2 (8.05-15.6)	18.4 (11.6-35.2)	603
Non-Hispanic blacks	01-02	4.63 (3.96-5.42)	4.59 (3.97-5.02)	9.93 (7.95-12.4)	21.2 (16.0-33.2)	39.9 (27.7-48.1)	703
Non-Hispanic blacks	03-04	2.56 (2.24-2.92)	2.28 (2.02-2.78)	5.17 (4.48-6.83)	13.2 (10.5-16.2)	27.5 (18.4-36.0)	699
Non-Hispanic blacks	05-06	2.87 (2.45-3.38)	2.41 (2.09-2.78)	5.72 (4.40-7.29)	15.0 (12.0-20.6)	54.4 (18.4-84.0)	678
Non-Hispanic blacks	07-08	2.56 (2.26-2.90)	2.40 (2.17-2.73)	4.77 (4.07-5.76)	11.4 (8.75-15.4)	18.0 (16.1-26.3)	597
Non-Hispanic blacks	09-10	1.51 (1.22-1.86)	1.48 (1.14-1.93)	2.87 (2.26-3.69)	5.73 (3.69-10.7)	10.7 (5.61-19.1)	516
Non-Hispanic whites	99-00	3.09 (2.84-3.36)	3.08 (2.73-3.47)	5.87 (5.11-6.67)	10.6 (8.95-13.5)	20.0 (14.0-24.6)	912
Non-Hispanic whites	01-02	3.81 (3.34-4.35)	3.67 (3.11-4.33)	7.78 (6.74-9.35)	17.0 (14.1-21.8)	32.8 (21.5-46.9)	1216
Non-Hispanic whites	03-04	2.12 (1.91-2.35)	1.82 (1.60-2.13)	4.11 (3.49-4.42)	10.7 (7.42-15.1)	27.0 (15.1-37.4)	1088
Non-Hispanic whites	05-06	2.98 (2.77-3.21)	2.66 (2.43-2.93)	5.73 (5.00-6.47)	13.4 (11.3-17.8)	27.7 (19.5-37.4)	1038
Non-Hispanic whites	07-08	2.55 (2.20-2.94)	2.26 (1.97-2.67)	4.90 (3.99-5.92)	11.0 (7.80-14.8)	20.5 (11.9-30.2)	1077
Non-Hispanic whites	09-10	1.58 (1.36-1.84)	1.49 (1.27-1.76)	2.94 (2.50-3.49)	5.64 (4.53-7.96)	10.3 (6.85-18.3)	1206

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEHP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP) (2001 – 2010)

CAS Number 40321-99-1

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	20.0 (17.8-22.5)	20.1 (17.8-22.4)	43.6 (38.0-49.7)	92.3 (77.0-108)	192 (131-256)	2782
Total population	03-04	21.7 (19.3-24.4)	21.2 (18.7-24.1)	49.1 (40.5-56.9)	121 (91.3-164)	266 (165-383)	2605
Total population	05-06	25.5 (23.0-28.2)	23.8 (21.5-26.8)	55.1 (50.2-61.0)	153 (132-180)	306 (240-421)	2548
Total population	07-08	22.1 (18.7-26.0)	20.7 (17.6-23.7)	48.2 (39.8-61.8)	123 (83.7-181)	238 (171-336)	2604
Total population	09-10	12.9 (11.3-14.7)	12.9 (11.4-14.8)	25.8 (22.1-30.3)	53.2 (41.7-75.2)	103 (74.2-149)	2749
Age 6-11 years	01-02	33.6 (29.7-37.9)	32.9 (26.9-39.1)	66.9 (49.7-74.0)	127 (103-148)	216 (137-280)	393
Age 6-11 years	03-04	36.9 (28.4-47.9)	36.5 (26.5-47.0)	77.4 (49.1-103)	164 (79.9-350)	318 (164-400)	342
Age 6-11 years	05-06	34.9 (30.8-39.6)	35.7 (31.3-40.7)	68.9 (56.5-76.0)	140 (101-169)	206 (133-401)	356
Age 6-11 years	07-08	28.6 (23.4-34.8)	27.0 (20.1-36.4)	56.1 (45.4-67.8)	113 (76.5-218)	242 (109-351)	389
Age 6-11 years	09-10	15.0 (13.2-17.1)	17.0 (14.1-19.8)	28.9 (24.4-37.4)	49.3 (41.2-70.2)	75.1 (55.2-117)	415
Age 12-19 years	01-02	24.9 (21.3-29.1)	25.3 (22.9-31.3)	50.6 (40.7-64.5)	107 (78.5-148)	216 (117-330)	742
Age 12-19 years	03-04	28.3 (23.0-34.8)	29.8 (25.9-33.9)	56.9 (45.4-73.7)	157 (84.1-299)	317 (176-553)	729
Age 12-19 years	05-06	34.8 (28.0-43.3)	32.5 (27.1-42.2)	79.5 (66.9-103)	213 (131-384)	424 (232-836)	702
Age 12-19 years	07-08	29.8 (22.5-39.3)	26.6 (20.0-35.4)	66.7 (43.7-96.6)	224 (101-417)	417 (209-615)	401
Age 12-19 years	09-10	15.3 (12.4-18.8)	14.9 (12.0-18.0)	28.8 (22.7-41.0)	70.2 (41.0-110)	117 (61.0-215)	420
Age 20+ years	01-02	18.1 (15.7-20.9)	17.8 (14.7-20.7)	39.8 (32.7-48.0)	86.2 (65.7-107)	175 (110-279)	1647
Age 20+ years	03-04	19.5 (17.7-21.5)	18.4 (16.6-21.0)	41.9 (36.9-51.2)	107 (88.2-136)	225 (148-384)	1534
Age 20+ years	05-06	23.4 (21.1-25.9)	21.4 (19.5-23.7)	48.6 (43.7-55.1)	148 (121-172)	306 (238-421)	1490
Age 20+ years	07-08	20.5 (17.4-24.1)	19.6 (17.1-22.2)	46.3 (37.2-59.9)	110 (75.0-169)	214 (157-303)	1814
Age 20+ years	09-10	12.4 (10.7-14.3)	12.5 (10.8-14.3)	24.5 (21.1-29.3)	52.5 (40.1-72.6)	104 (72.6-151)	1914
Males	01-02	22.0 (19.5-24.7)	21.2 (19.4-24.2)	48.0 (41.4-54.4)	94.2 (80.8-110)	212 (130-256)	1371
Males	03-04	24.1 (20.9-27.9)	22.9 (19.2-27.9)	51.0 (40.5-59.8)	133 (94.8-220)	317 (162-470)	1250
Males	05-06	29.6 (26.0-33.8)	27.2 (22.9-31.0)	63.1 (54.3-71.9)	180 (143-263)	494 (285-626)	1270
Males	07-08	23.2 (19.4-27.8)	20.8 (18.1-24.5)	46.0 (39.2-57.3)	132 (85.4-190)	277 (162-349)	1294
Males	09-10	15.2 (13.1-17.6)	14.6 (12.9-16.4)	29.5 (24.6-36.2)	71.0 (50.3-93.5)	128 (90.6-181)	1399
Females	01-02	18.3 (15.7-21.4)	18.2 (14.9-22.1)	39.8 (34.3-46.0)	86.0 (69.4-115)	170 (119-273)	1411
Females	03-04	19.7 (17.4-22.2)	19.4 (16.7-22.8)	46.4 (37.5-54.4)	103 (84.1-148)	214 (140-318)	1355
Females	05-06	22.0 (19.2-25.2)	21.4 (19.5-23.4)	47.1 (42.6-54.3)	135 (113-156)	232 (186-300)	1278
Females	07-08	21.0 (17.8-24.8)	19.9 (16.8-23.3)	51.0 (39.9-64.6)	121 (76.9-183)	223 (171-336)	1310
Females	09-10	11.0 (9.58-12.8)	11.6 (9.73-13.5)	22.5 (19.2-27.2)	42.8 (33.2-59.1)	82.2 (53.1-116)	1350

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 1.0, 0.3, 0.7,0.7, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEHP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP) (2001 – 2010)

CAS Number 40321-99-1

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	18.5 (16.2-21.1)	19.1 (16.3-21.6)	36.3 (31.6-44.0)	79.9 (66.4-93.9)	123 (100-161)	677
Mexican Americans	03-04	18.9 (15.4-23.4)	19.8 (17.6-22.3)	37.5 (30.0-45.6)	72.2 (52.4-115)	116 (71.6-327)	652
Mexican Americans	05-06	23.0 (18.0-29.3)	19.9 (15.7-23.9)	47.8 (34.8-65.3)	136 (84.6-223)	244 (157-520)	637
Mexican Americans	07-08	22.7 (18.5-27.7)	19.8 (17.5-23.8)	43.6 (33.5-66.6)	104 (82.8-157)	238 (158-282)	531
Mexican Americans	09-10	15.3 (12.9-18.2)	15.8 (13.3-18.3)	31.5 (26.6-39.2)	64.5 (46.4-94.9)	108 (70.7-153)	566
Non-Hispanic blacks	01-02	29.8 (26.1-34.1)	30.9 (27.2-34.3)	61.9 (52.6-69.4)	126 (108-157)	276 (157-339)	703
Non-Hispanic blacks	03-04	30.8 (26.8-35.5)	29.1 (25.3-32.3)	65.6 (53.7-76.3)	154 (113-178)	275 (174-401)	699
Non-Hispanic blacks	05-06	34.8 (30.3-39.9)	30.2 (27.6-33.2)	73.8 (61.0-96.7)	206 (156-275)	395 (274-547)	678
Non-Hispanic blacks	07-08	25.7 (23.1-28.6)	25.8 (22.4-28.9)	55.9 (47.1-64.7)	121 (99.1-150)	184 (137-255)	597
Non-Hispanic blacks	09-10	15.5 (12.8-18.8)	15.7 (13.4-17.7)	30.4 (24.4-35.7)	54.5 (37.7-84.1)	94.6 (51.5-229)	516
Non-Hispanic whites	01-02	19.1 (16.7-21.9)	19.2 (16.9-21.4)	41.7 (35.3-50.7)	91.1 (75.6-110)	212 (130-275)	1216
Non-Hispanic whites	03-04	20.8 (18.6-23.3)	19.7 (17.2-22.5)	47.5 (39.4-56.1)	120 (91.3-165)	270 (155-403)	1088
Non-Hispanic whites	05-06	24.3 (21.9-26.9)	23.0 (21.1-26.0)	54.6 (48.4-61.0)	148 (121-172)	302 (221-421)	1038
Non-Hispanic whites	07-08	21.3 (17.6-25.8)	20.2 (16.5-24.1)	46.7 (36.1-65.2)	123 (75.1-203)	277 (161-373)	1077
Non-Hispanic whites	09-10	12.2 (10.5-14.1)	12.3 (10.5-14.2)	24.4 (20.7-29.1)	51.7 (37.7-77.1)	104 (72.6-151)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 1.0, 0.3, 0.7,0.7, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEHP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP) (creatinine corrected) (2001 – 2010)

CAS Number 40321-99-1

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	18.8 (17.0-20.7)	16.6 (14.9-18.5)	32.2 (27.8-37.1)	71.1 (58.7-88.3)	143 (101-200)	2782
Total population	03-04	20.4 (18.7-22.3)	17.7 (16.3-19.6)	35.8 (30.5-43.3)	93.5 (74.0-128)	182 (134-262)	2605
Total population	05-06	24.8 (22.4-27.5)	21.4 (19.1-23.4)	46.1 (40.0-52.1)	117 (97.8-148)	235 (197-272)	2548
Total population	07-08	22.2 (19.4-25.5)	19.3 (17.4-22.1)	40.5 (34.1-50.3)	99.3 (69.7-134)	179 (135-252)	2604
Total population	09-10	13.5 (11.6-15.6)	11.9 (10.5-13.9)	22.3 (18.6-26.4)	44.0 (35.3-61.0)	86.3 (59.2-131)	2749
Age 6-11 years	01-02	38.2 (34.3-42.6)	34.3 (29.9-38.9)	60.6 (51.9-76.4)	107 (96.3-147)	211 (122-313)	393
Age 6-11 years	03-04	39.0 (31.1-48.9)	36.6 (25.3-49.3)	65.6 (49.8-91.3)	129 (77.1-253)	211 (123-708)	342
Age 6-11 years	05-06	38.5 (34.2-43.3)	37.0 (32.9-40.3)	65.5 (55.4-71.9)	115 (85.1-165)	213 (119-333)	356
Age 6-11 years	07-08	35.2 (29.1-42.5)	31.4 (25.6-37.8)	53.5 (44.8-72.3)	139 (79.9-230)	258 (141-303)	389
Age 6-11 years	09-10	19.6 (17.3-22.2)	18.6 (16.5-21.5)	34.2 (27.3-40.4)	55.4 (44.0-64.8)	72.1 (56.3-140)	415
Age 12-19 years	01-02	19.2 (17.0-21.8)	17.8 (15.6-20.0)	34.9 (29.2-42.7)	73.4 (58.4-80.7)	102 (86.6-160)	742
Age 12-19 years	03-04	21.2 (18.1-24.7)	18.6 (16.9-21.7)	38.7 (29.7-53.4)	103 (62.7-209)	212 (100-358)	729
Age 12-19 years	05-06	26.0 (21.2-31.7)	23.7 (18.8-28.4)	49.4 (37.4-74.0)	131 (79.0-228)	278 (132-375)	702
Age 12-19 years	07-08	23.2 (18.1-29.6)	20.0 (14.6-23.9)	46.1 (31.5-66.3)	148 (66.6-234)	234 (146-373)	401
Age 12-19 years	09-10	12.3 (9.73-15.5)	10.5 (8.95-13.3)	20.9 (14.2-31.0)	45.3 (28.9-91.9)	110 (44.6-200)	420
Age 20+ years	01-02	17.1 (15.2-19.3)	15.0 (13.3-16.7)	27.7 (23.2-34.0)	63.7 (48.3-86.9)	137 (84.4-203)	1647
Age 20+ years	03-04	18.8 (17.5-20.2)	16.3 (15.4-17.5)	31.6 (28.1-35.3)	83.8 (67.2-106)	171 (129-246)	1534
Age 20+ years	05-06	23.4 (21.1-26.0)	19.4 (17.6-21.8)	42.5 (37.6-49.2)	115 (93.1-153)	235 (184-298)	1490
Age 20+ years	07-08	21.0 (18.5-24.0)	18.5 (16.3-20.2)	38.1 (30.9-49.2)	94.3 (62.6-126)	164 (120-235)	1814
Age 20+ years	09-10	13.1 (11.3-15.2)	11.5 (10.1-13.4)	20.9 (17.7-25.1)	40.6 (32.4-64.9)	86.3 (59.2-131)	1914
Males	01-02	17.9 (16.2-19.7)	15.4 (13.8-17.9)	32.2 (27.8-36.8)	73.4 (55.3-91.8)	137 (97.7-224)	1371
Males	03-04	18.9 (17.1-20.9)	17.1 (15.2-18.6)	32.7 (26.6-41.6)	93.4 (68.8-123)	193 (108-291)	1250
Males	05-06	23.8 (21.0-26.9)	20.2 (17.5-23.3)	44.8 (38.5-54.1)	129 (92.5-166)	251 (202-352)	1270
Males	07-08	19.6 (16.8-22.7)	16.8 (14.6-20.0)	34.8 (28.7-41.8)	90.3 (65.2-119)	164 (111-258)	1294
Males	09-10	13.6 (11.7-15.9)	11.6 (10.5-13.1)	22.9 (17.8-27.4)	52.8 (39.1-74.3)	103 (73.3-173)	1399
Females	01-02	19.7 (17.3-22.4)	17.6 (15.4-19.5)	32.1 (26.8-38.6)	70.5 (57.8-93.7)	156 (93.7-201)	1411
Females	03-04	21.9 (19.7-24.5)	18.7 (16.8-20.9)	39.3 (33.8-46.9)	94.3 (72.8-136)	171 (146-261)	1355
Females	05-06	25.9 (23.2-28.8)	22.5 (19.6-25.5)	47.3 (40.5-52.3)	108 (88.8-131)	202 (157-278)	1278
Females	07-08	25.2 (22.1-28.6)	22.1 (19.6-24.4)	47.4 (38.5-56.1)	112 (84.6-150)	190 (162-268)	1310
Females	09-10	13.3 (11.4-15.6)	12.4 (10.4-14.6)	21.9 (18.3-26.7)	38.8 (30.9-52.2)	74.0 (46.9-115)	1350

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEHP_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP) (creatinine corrected) (2001 – 2010)

CAS Number 40321-99-1

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	17.4 (15.9-19.1)	15.7 (14.4-17.5)	30.6 (26.0-34.7)	65.9 (50.6-83.9)	103 (75.5-128)	677
Mexican Americans	03-04	17.1 (14.3-20.4)	15.4 (13.2-17.7)	29.3 (23.8-36.8)	57.3 (45.7-97.6)	105 (70.1-195)	652
Mexican Americans	05-06	20.7 (17.2-25.0)	17.5 (15.3-21.3)	37.3 (30.9-45.7)	99.9 (67.6-159)	181 (110-357)	637
Mexican Americans	07-08	22.1 (17.7-27.7)	18.8 (15.2-23.4)	38.6 (28.3-54.9)	91.4 (61.0-170)	197 (141-282)	531
Mexican Americans	09-10	15.2 (12.9-17.8)	14.6 (12.8-16.2)	27.0 (21.3-33.3)	60.0 (42.3-77.7)	94.8 (66.4-142)	566
Non-Hispanic blacks	01-02	20.9 (18.8-23.3)	19.7 (17.5-21.8)	38.3 (32.1-46.0)	93.5 (69.2-123)	164 (130-183)	703
Non-Hispanic blacks	03-04	21.9 (20.1-23.8)	19.5 (17.3-22.6)	40.1 (35.8-45.3)	102 (75.5-122)	164 (133-269)	699
Non-Hispanic blacks	05-06	24.5 (21.2-28.2)	18.9 (17.1-22.8)	46.1 (37.9-59.7)	128 (100-158)	308 (158-399)	678
Non-Hispanic blacks	07-08	20.0 (18.1-22.0)	18.3 (16.5-19.2)	36.9 (27.9-46.7)	85.5 (65.8-103)	136 (107-227)	597
Non-Hispanic blacks	09-10	11.2 (8.71-14.5)	10.5 (8.26-13.5)	18.9 (13.6-25.3)	32.9 (22.3-58.4)	47.2 (33.6-153)	516
Non-Hispanic whites	01-02	18.9 (17.0-21.0)	16.3 (14.8-18.4)	32.1 (27.3-37.3)	70.8 (56.9-93.7)	177 (98.0-242)	1216
Non-Hispanic whites	03-04	20.5 (18.5-22.8)	17.8 (16.2-19.7)	35.3 (29.7-44.9)	96.2 (75.8-136)	211 (136-283)	1088
Non-Hispanic whites	05-06	25.6 (23.1-28.2)	22.4 (19.6-24.5)	47.6 (40.7-54.1)	119 (98.2-148)	231 (181-297)	1038
Non-Hispanic whites	07-08	22.2 (18.7-26.3)	19.5 (16.7-23.0)	40.4 (32.1-54.8)	99.1 (68.1-145)	179 (129-258)	1077
Non-Hispanic whites	09-10	13.7 (11.7-16.1)	11.9 (10.4-13.9)	22.4 (18.0-27.6)	43.0 (34.2-61.0)	84.1 (54.7-142)	1206

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEHP_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(2-ethyl-5-oxohexyl) phthalate (MEOHP) (2001 – 2010)

CAS Number 40321-98-0

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	13.5 (12.0-15.0)	14.0 (12.5-15.1)	29.6 (25.2-34.0)	59.9 (50.4-70.9)	120 (87.2-156)	2782
Total population	03-04	14.5 (13.0-16.1)	14.4 (12.4-16.7)	31.4 (27.4-36.6)	76.7 (59.4-102)	157 (106-232)	2605
Total population	05-06	16.2 (14.6-18.0)	15.1 (13.5-17.1)	35.5 (32.1-40.3)	94.8 (78.5-112)	183 (147-250)	2548
Total population	07-08	12.2 (10.3-14.3)	11.3 (10.0-13.3)	27.1 (21.8-33.8)	64.2 (47.3-93.6)	130 (93.6-177)	2604
Total population	09-10	8.02 (7.11-9.06)	8.02 (7.27-9.04)	16.1 (13.8-19.0)	32.5 (25.2-41.8)	55.7 (41.8-80.9)	2749
Age 6-11 years	01-02	23.3 (20.9-26.1)	22.9 (18.5-28.1)	46.5 (38.1-52.0)	81.6 (64.7-109)	142 (93.9-178)	393
Age 6-11 years	03-04	25.1 (19.6-32.3)	25.8 (19.3-31.4)	51.1 (32.1-76.5)	97.9 (58.8-197)	197 (97.6-261)	342
Age 6-11 years	05-06	23.0 (20.3-26.1)	24.5 (19.9-27.6)	44.3 (38.1-52.3)	83.8 (63.6-115)	126 (77.3-253)	356
Age 6-11 years	07-08	16.9 (13.9-20.6)	16.6 (12.4-22.6)	34.5 (26.2-40.9)	64.4 (46.9-129)	137 (63.8-179)	389
Age 6-11 years	09-10	9.78 (8.72-11.0)	11.1 (8.87-12.7)	20.0 (17.1-21.6)	35.4 (24.8-41.4)	48.4 (36.0-74.0)	415
Age 12-19 years	01-02	17.5 (15.1-20.3)	18.6 (16.2-20.7)	35.0 (27.7-42.1)	70.7 (52.2-104)	118 (74.0-174)	742
Age 12-19 years	03-04	19.5 (16.0-23.7)	20.3 (18.4-23.5)	37.8 (32.6-44.6)	110 (54.6-168)	212 (103-326)	729
Age 12-19 years	05-06	23.0 (18.7-28.4)	22.1 (18.0-26.2)	50.7 (42.7-62.2)	134 (82.3-240)	263 (134-511)	702
Age 12-19 years	07-08	16.9 (12.8-22.3)	15.9 (11.9-19.3)	38.2 (24.0-55.5)	121 (58.1-258)	258 (120-354)	401
Age 12-19 years	09-10	10.0 (8.32-12.1)	9.82 (7.96-12.3)	19.0 (15.9-23.5)	40.0 (26.7-61.5)	68.4 (32.6-154)	420
Age 20+ years	01-02	12.0 (10.5-13.9)	12.3 (10.4-14.1)	26.0 (21.6-32.1)	52.3 (41.8-68.3)	116 (74.9-160)	1647
Age 20+ years	03-04	12.9 (11.8-14.1)	12.4 (10.9-14.5)	27.0 (25.0-30.9)	68.9 (55.0-86.5)	139 (92.7-216)	1534
Age 20+ years	05-06	14.7 (13.2-16.4)	13.4 (12.2-15.1)	31.9 (28.2-36.2)	91.6 (74.6-104)	182 (138-247)	1490
Age 20+ years	07-08	11.1 (9.48-13.1)	10.7 (9.30-12.3)	25.5 (20.2-31.4)	59.8 (42.3-88.9)	108 (80.0-155)	1814
Age 20+ years	09-10	7.59 (6.64-8.68)	7.55 (6.69-8.58)	15.3 (12.6-18.6)	30.6 (24.1-41.5)	54.9 (41.8-81.0)	1914
Males	01-02	14.5 (13.0-16.2)	14.6 (13.1-16.2)	31.6 (25.6-34.7)	60.4 (52.3-71.4)	129 (84.4-167)	1371
Males	03-04	15.6 (13.6-17.9)	14.7 (12.7-18.1)	31.8 (27.2-39.5)	83.8 (59.4-134)	185 (96.2-277)	1250
Males	05-06	18.3 (16.0-20.9)	16.3 (14.7-19.7)	39.3 (33.4-48.1)	104 (80.7-140)	258 (180-337)	1270
Males	07-08	12.5 (10.5-15.0)	11.3 (9.80-13.4)	26.1 (21.8-32.2)	61.8 (46.8-98.1)	139 (83.7-189)	1294
Males	09-10	9.14 (8.01-10.4)	8.76 (7.87-9.88)	18.2 (14.8-21.0)	39.3 (27.5-50.9)	69.6 (50.0-109)	1399
Females	01-02	12.5 (10.8-14.6)	13.1 (11.2-15.0)	28.1 (23.7-33.5)	57.5 (45.8-72.7)	115 (81.8-147)	1411
Females	03-04	13.4 (11.9-15.1)	13.7 (11.4-16.4)	29.5 (26.1-36.6)	68.6 (53.7-88.1)	143 (88.2-210)	1355
Females	05-06	14.4 (12.6-16.5)	13.8 (12.5-15.7)	32.5 (29.3-36.4)	81.7 (68.6-104)	159 (114-182)	1278
Females	07-08	11.8 (10.0-14.0)	11.7 (9.80-13.5)	27.9 (21.3-37.5)	64.2 (43.9-93.6)	122 (92.0-191)	1310
Females	09-10	7.09 (6.17-8.14)	7.35 (6.13-8.67)	15.2 (12.1-17.5)	27.1 (21.6-36.9)	48.2 (31.3-67.1)	1350

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 1.1, 0.5, 0.7,0.6, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEHP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(2-ethyl-5-oxohexyl) phthalate (MEOHP) (2001 – 2010)

CAS Number 40321-98-0

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	13.1 (11.6-14.9)	13.4 (11.6-15.0)	25.5 (21.6-30.8)	56.6 (40.6-70.3)	77.3 (70.5-101)	677
Mexican Americans	03-04	12.8 (10.5-15.5)	13.6 (11.4-15.6)	25.3 (20.4-29.9)	46.6 (32.3-70.8)	76.0 (51.6-153)	652
Mexican Americans	05-06	14.8 (11.7-18.8)	12.8 (10.5-16.1)	30.9 (22.6-42.9)	79.1 (51.7-131)	152 (92.9-276)	637
Mexican Americans	07-08	12.6 (10.5-15.1)	11.4 (10.4-12.9)	25.1 (18.7-37.2)	53.4 (43.2-91.7)	118 (88.4-147)	531
Mexican Americans	09-10	9.57 (8.10-11.3)	9.65 (8.17-11.3)	19.2 (16.3-23.3)	39.0 (30.9-54.7)	64.6 (43.0-95.3)	566
Non-Hispanic blacks	01-02	19.6 (17.1-22.5)	20.1 (17.9-22.4)	39.0 (34.8-44.2)	80.5 (71.4-97.4)	153 (102-228)	703
Non-Hispanic blacks	03-04	20.2 (17.7-23.0)	20.1 (17.0-22.5)	40.0 (33.9-46.9)	92.6 (68.8-130)	173 (104-247)	699
Non-Hispanic blacks	05-06	21.8 (18.9-25.2)	18.8 (16.8-21.0)	46.0 (38.0-59.1)	130 (104-168)	243 (159-304)	678
Non-Hispanic blacks	07-08	14.2 (12.7-15.9)	14.0 (12.7-16.3)	30.5 (25.8-35.9)	64.2 (52.1-76.1)	110 (71.9-136)	597
Non-Hispanic blacks	09-10	9.57 (8.17-11.2)	9.64 (8.15-11.1)	19.8 (16.5-22.1)	31.4 (25.5-44.0)	50.9 (31.4-129)	516
Non-Hispanic whites	01-02	12.8 (11.2-14.6)	13.2 (11.6-14.6)	28.5 (23.6-34.0)	58.6 (48.8-70.9)	126 (83.7-172)	1216
Non-Hispanic whites	03-04	13.8 (12.4-15.4)	13.4 (11.3-16.3)	31.0 (27.0-36.3)	77.6 (59.4-102)	161 (98.7-241)	1088
Non-Hispanic whites	05-06	15.5 (13.9-17.3)	15.0 (13.3-16.5)	35.3 (30.1-40.8)	92.6 (74.6-111)	182 (134-247)	1038
Non-Hispanic whites	07-08	11.7 (9.66-14.2)	11.0 (9.20-13.6)	26.9 (20.2-35.1)	64.2 (43.4-108)	137 (90.0-197)	1077
Non-Hispanic whites	09-10	7.59 (6.60-8.73)	7.55 (6.81-8.63)	15.7 (12.9-18.6)	29.1 (22.9-46.5)	55.7 (41.5-83.5)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 1.1, 0.5, 0.7,0.6, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEHP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(2-ethyl-5-oxohexyl) phthalate (MEOHP) (creatinine corrected) (2001 – 2010)

CAS Number 40321-98-0

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	12.6 (11.5-13.9)	11.2 (10.2-12.3)	21.3 (18.3-23.8)	45.2 (37.1-58.1)	87.0 (68.0-124)	2782
Total population	03-04	13.6 (12.4-14.8)	12.1 (11.0-12.9)	24.3 (20.9-27.8)	63.0 (47.8-75.8)	118 (94.1-153)	2605
Total population	05-06	15.8 (14.2-17.5)	13.5 (12.4-14.7)	28.9 (26.0-33.8)	77.7 (62.4-91.1)	144 (118-172)	2548
Total population	07-08	12.3 (10.7-14.0)	11.0 (9.72-12.2)	22.3 (18.4-27.9)	52.9 (37.9-74.6)	107 (74.8-136)	2604
Total population	09-10	8.37 (7.31-9.59)	7.44 (6.71-8.42)	13.5 (11.5-15.7)	25.9 (21.4-34.6)	47.7 (34.6-67.8)	2749
Age 6-11 years	01-02	26.6 (24.0-29.4)	22.8 (20.3-25.0)	43.3 (33.6-47.1)	74.7 (69.0-91.9)	131 (83.0-183)	393
Age 6-11 years	03-04	26.6 (21.4-33.0)	25.3 (17.8-32.4)	43.6 (34.2-63.2)	77.1 (63.0-118)	121 (76.3-435)	342
Age 6-11 years	05-06	25.4 (22.5-28.6)	24.4 (21.4-26.4)	42.7 (36.0-46.9)	70.4 (52.8-117)	136 (77.2-195)	356
Age 6-11 years	07-08	20.8 (17.1-25.4)	18.5 (15.6-21.5)	35.0 (26.4-46.0)	84.1 (47.2-137)	145 (84.8-187)	389
Age 6-11 years	09-10	12.7 (11.4-14.2)	12.6 (11.5-14.1)	20.8 (16.5-25.1)	33.3 (29.5-44.1)	45.5 (33.7-74.5)	415
Age 12-19 years	01-02	13.5 (12.0-15.2)	12.0 (10.8-14.3)	23.4 (20.0-28.5)	48.4 (39.2-54.9)	70.5 (55.0-97.2)	742
Age 12-19 years	03-04	14.6 (12.6-16.9)	12.7 (11.6-14.4)	25.5 (20.7-33.8)	67.9 (42.3-143)	153 (61.8-209)	729
Age 12-19 years	05-06	17.2 (14.1-20.9)	15.3 (12.5-18.6)	32.5 (25.7-41.3)	84.2 (49.1-147)	163 (93.1-250)	702
Age 12-19 years	07-08	13.2 (10.3-16.7)	11.1 (9.08-13.5)	25.9 (18.9-35.6)	86.3 (39.4-128)	132 (84.3-203)	401
Age 12-19 years	09-10	8.06 (6.57-9.88)	7.05 (6.16-8.25)	13.3 (9.53-18.3)	24.8 (17.8-47.9)	55.2 (23.6-110)	420
Age 20+ years	01-02	11.4 (10.2-12.8)	10.1 (8.89-11.4)	17.5 (15.2-21.8)	38.4 (30.5-52.5)	84.3 (53.3-128)	1647
Age 20+ years	03-04	12.4 (11.5-13.3)	11.0 (10.0-12.0)	20.9 (18.6-22.8)	53.9 (40.7-70.2)	109 (88.6-130)	1534
Age 20+ years	05-06	14.8 (13.3-16.4)	12.4 (11.2-13.5)	26.7 (23.8-31.3)	76.3 (61.0-89.9)	144 (106-170)	1490
Age 20+ years	07-08	11.4 (10.0-13.0)	10.0 (9.15-11.2)	20.8 (16.7-25.6)	47.3 (33.2-65.3)	87.4 (62.7-136)	1814
Age 20+ years	09-10	8.04 (6.99-9.24)	7.19 (6.36-8.00)	12.7 (10.7-14.7)	24.3 (19.7-34.6)	47.4 (33.7-67.3)	1914
Males	01-02	11.8 (10.7-13.0)	10.2 (8.93-11.7)	21.2 (18.5-23.3)	46.1 (35.3-58.7)	84.2 (69.6-104)	1371
Males	03-04	12.3 (11.1-13.5)	11.1 (10.0-12.0)	21.6 (17.6-26.9)	59.1 (45.4-72.0)	120 (72.0-162)	1250
Males	05-06	14.7 (12.9-16.7)	12.6 (10.9-14.3)	27.1 (23.3-35.6)	79.5 (59.6-96.9)	147 (120-190)	1270
Males	07-08	10.5 (9.08-12.2)	9.25 (8.08-10.6)	18.9 (15.9-23.1)	46.7 (32.6-62.4)	86.4 (56.5-144)	1294
Males	09-10	8.19 (7.15-9.38)	7.07 (6.59-7.55)	13.4 (10.8-15.8)	30.2 (21.7-41.2)	52.1 (41.2-82.3)	1399
Females	01-02	13.5 (11.9-15.2)	12.0 (10.8-13.7)	21.5 (18.0-25.6)	44.8 (36.8-61.6)	92.3 (61.0-139)	1411
Females	03-04	14.9 (13.4-16.7)	12.7 (11.4-14.2)	26.6 (21.8-30.6)	65.6 (48.0-90.1)	118 (97.0-157)	1355
Females	05-06	16.9 (15.1-19.0)	14.7 (13.2-16.5)	30.3 (26.6-34.7)	76.4 (57.6-97.2)	137 (106-170)	1278
Females	07-08	14.2 (12.5-16.0)	12.5 (11.5-13.8)	25.9 (21.2-31.0)	61.1 (40.9-84.1)	114 (84.3-142)	1310
Females	09-10	8.55 (7.37-9.93)	8.06 (6.76-9.33)	13.6 (11.6-16.2)	24.1 (20.0-32.7)	43.2 (27.7-64.5)	1350

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEHP_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(2-ethyl-5-oxohexyl) phthalate (MEOHP) (creatinine corrected) (2001 – 2010)

CAS Number 40321-98-0

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	12.4 (11.4-13.5)	11.0 (10.5-12.3)	20.9 (18.5-24.4)	44.6 (33.4-56.2)	65.9 (53.1-83.1)	677
Mexican Americans	03-04	11.5 (9.81-13.6)	10.7 (9.04-12.3)	18.8 (15.6-24.6)	39.1 (31.8-53.9)	63.0 (47.2-121)	652
Mexican Americans	05-06	13.3 (11.1-16.1)	11.4 (9.58-13.6)	24.0 (19.4-30.4)	61.2 (45.6-85.9)	102 (69.9-200)	637
Mexican Americans	07-08	12.3 (10.0-15.0)	10.6 (8.57-14.1)	21.7 (16.1-28.7)	53.1 (32.7-85.2)	113 (79.7-149)	531
Mexican Americans	09-10	9.50 (8.16-11.1)	8.72 (8.13-9.61)	16.6 (12.9-20.5)	35.4 (24.4-46.6)	56.7 (40.9-82.3)	566
Non-Hispanic blacks	01-02	13.8 (12.3-15.4)	13.1 (12.0-14.2)	23.9 (20.0-29.3)	58.3 (45.3-79.7)	101 (81.3-124)	703
Non-Hispanic blacks	03-04	14.3 (13.1-15.6)	13.3 (11.3-15.5)	24.8 (21.7-27.7)	61.2 (46.8-76.6)	105 (79.7-152)	699
Non-Hispanic blacks	05-06	15.3 (13.2-17.8)	11.6 (9.87-14.6)	29.1 (24.7-38.5)	77.1 (61.9-113)	172 (99.8-251)	678
Non-Hispanic blacks	07-08	11.0 (9.94-12.2)	9.90 (9.16-11.1)	20.6 (16.6-23.5)	42.2 (33.8-58.6)	75.8 (57.2-124)	597
Non-Hispanic blacks	09-10	6.92 (5.60-8.57)	6.49 (5.12-8.24)	11.4 (9.09-14.1)	19.2 (14.9-27.3)	28.1 (19.8-61.1)	516
Non-Hispanic whites	01-02	12.7 (11.4-14.0)	11.1 (9.90-12.3)	20.8 (18.0-23.9)	45.7 (35.9-64.9)	96.0 (68.5-161)	1216
Non-Hispanic whites	03-04	13.7 (12.2-15.3)	12.0 (10.5-12.9)	24.9 (20.7-28.6)	69.5 (51.4-95.3)	124 (90.3-182)	1088
Non-Hispanic whites	05-06	16.3 (14.8-18.0)	14.0 (12.9-15.7)	30.8 (27.3-34.8)	79.3 (66.0-93.8)	139 (117-163)	1038
Non-Hispanic whites	07-08	12.2 (10.3-14.5)	11.0 (9.38-13.1)	22.3 (17.4-30.4)	51.4 (35.7-77.7)	107 (74.6-139)	1077
Non-Hispanic whites	09-10	8.53 (7.35-9.90)	7.62 (6.76-8.54)	13.7 (11.2-16.2)	24.9 (20.3-35.7)	47.8 (32.8-76.4)	1206

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEHP_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(2-ethyl-5-carboxypentyl) phthalate (MECPP) (2003 – 2010)

CAS Number 40809-41-4

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	34.7 (31.0-38.9)	33.0 (29.1-37.4)	71.8 (61.7-84.8)	168 (133-240)	339 (235-506)	2605
Total population	05-06	38.6 (34.7-42.9)	35.6 (31.1-40.3)	79.7 (70.9-92.9)	211 (180-246)	386 (311-484)	2548
Total population	07-08	33.3 (28.7-38.6)	31.2 (27.1-36.0)	69.5 (55.8-86.3)	153 (120-216)	308 (220-397)	2604
Total population	09-10	20.7 (18.5-23.3)	20.4 (18.1-23.5)	39.9 (34.9-45.5)	78.4 (67.2-95.5)	127 (99.5-199)	2749
Age 6-11 years	03-04	58.2 (44.7-75.6)	51.6 (39.2-67.6)	112 (71.4-182)	314 (124-524)	391 (238-781)	342
Age 6-11 years	05-06	57.4 (50.2-65.7)	53.5 (42.7-67.2)	94.7 (83.2-108)	200 (154-247)	297 (196-548)	356
Age 6-11 years	07-08	46.6 (39.2-55.3)	44.1 (34.9-54.7)	92.7 (64.7-112)	156 (117-278)	357 (176-441)	389
Age 6-11 years	09-10	27.7 (24.7-31.2)	29.4 (25.4-33.2)	48.5 (39.0-60.2)	87.1 (64.4-102)	118 (87.1-202)	415
Age 12-19 years	03-04	44.6 (36.8-54.0)	42.7 (38.4-47.6)	86.5 (67.3-108)	220 (120-397)	448 (235-808)	729
Age 12-19 years	05-06	52.9 (43.0-65.2)	46.7 (39.4-61.6)	114 (85.6-173)	314 (195-515)	560 (324-1180)	702
Age 12-19 years	07-08	44.3 (35.2-55.9)	38.9 (28.9-49.3)	97.3 (64.3-127)	247 (140-456)	476 (231-977)	401
Age 12-19 years	09-10	26.2 (22.4-30.6)	25.7 (21.2-30.0)	50.1 (38.3-57.7)	90.3 (58.2-162)	147 (83.9-349)	420
Age 20+ years	03-04	31.3 (28.6-34.4)	29.2 (26.2-33.0)	63.5 (56.5-73.9)	157 (130-187)	312 (199-457)	1534
Age 20+ years	05-06	35.1 (31.5-39.0)	31.3 (28.1-35.7)	72.7 (65.4-82.4)	193 (163-237)	377 (285-460)	1490
Age 20+ years	07-08	30.7 (26.4-35.8)	29.2 (24.3-34.4)	63.2 (51.6-80.0)	145 (109-206)	286 (182-378)	1814
Age 20+ years	09-10	19.4 (17.0-22.0)	18.8 (15.7-22.3)	37.7 (32.8-44.0)	76.9 (63.1-92.8)	126 (96.1-197)	1914
Males	03-04	37.9 (33.1-43.5)	34.7 (30.0-39.5)	73.7 (60.8-91.9)	187 (133-300)	388 (222-660)	1250
Males	05-06	43.6 (38.1-49.8)	39.7 (31.9-46.2)	87.0 (76.8-103)	260 (188-308)	460 (347-670)	1270
Males	07-08	34.4 (29.3-40.5)	31.5 (27.3-35.7)	65.1 (52.1-87.4)	161 (120-217)	321 (213-422)	1294
Males	09-10	23.4 (20.7-26.4)	23.0 (20.2-25.6)	44.9 (40.1-51.0)	87.1 (70.3-110)	162 (107-288)	1399
Females	03-04	31.9 (28.1-36.2)	31.3 (27.5-35.8)	69.3 (58.9-81.9)	154 (128-199)	312 (182-441)	1355
Females	05-06	34.3 (30.4-38.6)	31.7 (28.0-36.6)	71.0 (63.0-85.3)	192 (156-217)	309 (251-386)	1278
Females	07-08	32.3 (27.8-37.5)	31.0 (26.4-38.3)	73.0 (56.9-90.2)	147 (112-220)	297 (185-420)	1310
Females	09-10	18.5 (16.2-21.0)	18.8 (15.8-22.4)	34.7 (29.3-41.5)	72.9 (56.3-93.2)	111 (90.3-146)	1350
Mexican Americans	03-04	31.9 (27.1-37.6)	31.5 (26.8-37.4)	57.4 (45.9-71.8)	116 (86.0-162)	175 (133-355)	652
Mexican Americans	05-06	39.4 (30.3-51.2)	34.2 (24.1-47.1)	74.6 (54.0-111)	220 (124-338)	394 (222-673)	637
Mexican Americans	07-08	36.7 (30.6-44.0)	31.3 (27.0-35.7)	71.9 (54.9-91.7)	162 (123-241)	321 (209-477)	531
Mexican Americans	09-10	26.2 (22.5-30.4)	25.8 (22.3-29.8)	51.0 (41.3-57.4)	92.6 (74.5-122)	160 (113-245)	566
Non-Hispanic blacks	03-04	42.6 (37.0-49.2)	38.3 (33.8-46.9)	82.5 (68.7-103)	191 (146-246)	339 (244-468)	699
Non-Hispanic blacks	05-06	46.6 (41.3-52.5)	40.3 (35.6-46.1)	96.3 (76.6-132)	256 (208-347)	455 (328-528)	678
Non-Hispanic blacks	07-08	35.0 (31.1-39.4)	35.6 (30.7-38.8)	71.6 (59.1-84.5)	151 (113-192)	235 (184-338)	597
Non-Hispanic blacks	09-10	21.9 (18.6-25.7)	22.3 (18.2-25.6)	40.5 (35.7-47.1)	77.0 (61.1-97.1)	127 (76.0-268)	516
Non-Hispanic whites	03-04	33.8 (30.1-37.9)	32.1 (27.6-37.5)	72.4 (62.0-87.7)	167 (133-240)	354 (220-560)	1088
Non-Hispanic whites	05-06	37.0 (33.4-41.0)	35.4 (30.4-40.9)	79.7 (70.0-93.3)	203 (174-237)	380 (284-484)	1038
Non-Hispanic whites	07-08	32.0 (26.7-38.3)	30.4 (24.5-38.0)	67.6 (52.5-90.9)	145 (105-244)	316 (197-476)	1077
Non-Hispanic whites	09-10	19.6 (17.2-22.2)	19.3 (16.4-23.1)	39.3 (33.0-45.3)	75.0 (61.9-95.7)	120 (95.5-197)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.3, 0.6, 0.5, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEHP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(2-ethyl-5-carboxypentyl) phthalate (MECPP) (creatinine corrected) (2003 – 2010)

CAS Number 40809-41-4

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	32.6 (29.6-36.0)	27.0 (24.3-30.6)	54.6 (48.0-63.5)	139 (109-186)	251 (192-356)	2605
Total population	05-06	37.6 (33.7-42.0)	32.2 (29.5-37.0)	67.5 (58.2-80.8)	168 (139-209)	290 (261-328)	2548
Total population	07-08	33.6 (29.7-38.0)	29.1 (25.8-32.2)	58.7 (49.6-68.8)	138 (109-164)	233 (178-319)	2604
Total population	09-10	21.6 (19.0-24.7)	19.2 (16.8-22.1)	33.7 (30.0-40.0)	69.4 (54.0-84.3)	121 (85.1-184)	2749
Age 6-11 years	03-04	61.5 (49.0-77.2)	52.2 (41.6-73.8)	104 (74.2-140)	210 (111-500)	372 (192-988)	342
Age 6-11 years	05-06	63.2 (55.6-71.9)	54.2 (48.1-63.6)	92.8 (82.6-111)	160 (124-247)	312 (172-480)	356
Age 6-11 years	07-08	57.4 (49.2-66.9)	49.6 (42.7-61.5)	94.2 (79.5-122)	185 (138-294)	376 (188-404)	389
Age 6-11 years	09-10	36.1 (32.4-40.3)	33.6 (32.3-36.8)	55.4 (43.9-66.9)	88.7 (69.2-113)	121 (90.6-224)	415
Age 12-19 years	03-04	33.4 (28.7-38.7)	27.1 (23.9-32.0)	55.0 (43.8-83.8)	168 (92.5-289)	294 (159-387)	729
Age 12-19 years	05-06	39.5 (32.5-47.8)	33.9 (27.9-41.0)	72.7 (56.9-96.7)	197 (106-327)	385 (216-531)	702
Age 12-19 years	07-08	34.5 (28.1-42.3)	28.0 (23.2-35.0)	65.9 (47.5-85.9)	159 (90.1-233)	246 (159-489)	401
Age 12-19 years	09-10	21.1 (17.4-25.5)	18.2 (15.6-20.7)	33.2 (25.5-43.3)	64.9 (42.7-158)	158 (58.4-246)	420
Age 20+ years	03-04	30.1 (27.7-32.7)	25.1 (22.9-27.6)	49.1 (44.1-55.2)	126 (101-154)	237 (191-315)	1534
Age 20+ years	05-06	35.2 (31.2-39.6)	29.8 (26.1-33.3)	60.8 (54.2-74.0)	167 (131-206)	279 (247-322)	1490
Age 20+ years	07-08	31.5 (27.8-35.8)	27.8 (24.1-30.8)	53.1 (45.0-65.4)	128 (101-155)	214 (162-319)	1814
Age 20+ years	09-10	20.5 (17.9-23.5)	18.2 (15.9-20.5)	31.7 (27.4-36.8)	65.0 (52.1-80.6)	118 (81.3-173)	1914
Males	03-04	29.8 (26.8-33.1)	23.5 (21.4-27.1)	50.7 (42.2-61.7)	132 (98.0-191)	248 (159-422)	1250
Males	05-06	35.0 (30.7-39.9)	29.0 (25.7-32.1)	69.3 (54.2-82.9)	172 (141-210)	301 (249-376)	1270
Males	07-08	29.0 (25.3-33.2)	25.1 (21.7-28.8)	47.6 (40.8-57.4)	120 (91.7-157)	210 (157-331)	1294
Males	09-10	21.0 (18.4-23.9)	18.4 (16.1-20.4)	33.1 (29.2-38.5)	70.2 (53.4-94.6)	125 (92.8-210)	1399
Females	03-04	35.5 (31.6-40.0)	30.6 (26.4-35.5)	58.3 (48.8-71.8)	144 (108-192)	251 (192-349)	1355
Females	05-06	40.3 (36.2-44.9)	36.7 (31.6-40.0)	66.1 (58.2-83.7)	168 (127-206)	279 (240-341)	1278
Females	07-08	38.7 (34.5-43.3)	32.8 (30.0-36.4)	67.8 (58.5-80.0)	147 (117-176)	266 (176-379)	1310
Females	09-10	22.3 (19.3-25.7)	20.5 (17.2-23.9)	34.9 (30.0-41.7)	67.0 (53.5-80.8)	104 (80.8-170)	1350
Mexican Americans	03-04	28.8 (25.4-32.6)	24.7 (22.4-26.3)	46.7 (39.0-56.3)	94.7 (73.2-137)	152 (118-238)	652
Mexican Americans	05-06	35.5 (28.7-43.7)	29.8 (25.5-34.9)	61.5 (48.4-86.2)	165 (105-201)	278 (181-501)	637
Mexican Americans	07-08	35.8 (29.1-44.0)	30.6 (23.2-38.6)	64.1 (47.2-84.8)	151 (92.3-240)	286 (198-402)	531
Mexican Americans	09-10	26.0 (22.5-30.0)	23.8 (21.3-27.0)	40.1 (35.0-52.3)	88.8 (69.5-104)	148 (100-203)	566
Non-Hispanic blacks	03-04	30.3 (27.7-33.2)	27.0 (23.2-30.7)	51.1 (41.6-64.0)	135 (100-161)	212 (173-252)	699
Non-Hispanic blacks	05-06	32.7 (28.9-37.1)	27.1 (22.4-31.5)	62.4 (53.1-76.0)	166 (119-260)	370 (231-429)	678
Non-Hispanic blacks	07-08	27.2 (24.3-30.5)	23.5 (21.9-26.1)	49.1 (37.7-58.6)	103 (85.9-132)	178 (140-259)	597
Non-Hispanic blacks	09-10	15.9 (12.6-19.9)	14.5 (11.5-18.8)	26.3 (19.5-32.9)	48.0 (32.6-66.4)	70.7 (46.1-209)	516
Non-Hispanic whites	03-04	33.4 (29.5-37.7)	27.0 (23.5-31.6)	56.8 (48.6-69.4)	145 (109-198)	294 (193-385)	1088
Non-Hispanic whites	05-06	39.0 (34.9-43.4)	34.3 (30.3-39.1)	69.5 (59.5-83.7)	182 (143-214)	284 (237-324)	1038
Non-Hispanic whites	07-08	33.4 (28.4-39.3)	29.2 (25.1-34.6)	57.7 (46.6-72.4)	138 (101-166)	233 (164-338)	1077
Non-Hispanic whites	09-10	22.0 (19.1-25.3)	19.4 (16.8-22.9)	34.0 (29.3-42.5)	67.6 (52.5-84.3)	113 (81.3-188)	1206

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DEHP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(carboxynonyl) phthalate (MCNP) (2005 – 2010)

CAS Number 1373125-93-9

Metabolite of Di-isodecyl phthalate (DiDP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	2.73 (2.50-2.98)	2.70 (2.40-3.00)	5.30 (4.80-5.90)	10.2 (8.80-11.9)	17.5 (14.0-21.4)	2548
Total population	07-08	2.42 (2.17-2.71)	2.40 (2.20-2.70)	4.70 (4.20-5.30)	9.20 (8.00-10.6)	16.1 (12.3-21.0)	2604
Total population	09-10	2.88 (2.58-3.22)	2.91 (2.51-3.26)	5.52 (4.83-6.30)	10.6 (9.14-12.6)	16.8 (13.9-22.1)	2749
Age 6-11 years	05-06	4.54 (3.94-5.24)	4.70 (4.00-5.60)	8.10 (6.80-9.60)	14.6 (10.8-19.1)	22.8 (16.7-35.3)	356
Age 6-11 years	07-08	3.15 (2.65-3.74)	3.40 (2.90-3.80)	5.40 (4.60-6.80)	9.10 (7.40-12.3)	14.9 (9.10-24.8)	389
Age 6-11 years	09-10	3.45 (2.95-4.03)	3.59 (3.04-4.34)	6.39 (5.39-7.41)	9.65 (8.75-11.2)	14.5 (10.4-23.2)	415
Age 12-19 years	05-06	3.18 (2.74-3.68)	3.30 (2.90-3.80)	6.00 (4.70-7.20)	10.3 (7.60-13.7)	16.5 (11.5-21.5)	702
Age 12-19 years	07-08	2.86 (2.59-3.16)	2.70 (2.40-2.90)	5.10 (4.30-5.70)	10.3 (8.90-13.0)	16.8 (10.7-32.4)	401
Age 12-19 years	09-10	3.02 (2.61-3.51)	3.05 (2.41-3.65)	5.11 (4.49-6.43)	11.0 (7.24-14.6)	16.9 (10.9-32.0)	420
Age 20+ years	05-06	2.51 (2.27-2.78)	2.40 (2.20-2.70)	4.90 (4.40-5.40)	9.50 (7.90-11.9)	17.0 (13.1-21.5)	1490
Age 20+ years	07-08	2.29 (2.04-2.58)	2.30 (2.00-2.50)	4.50 (4.00-5.10)	9.10 (7.60-10.7)	16.1 (12.2-21.4)	1814
Age 20+ years	09-10	2.81 (2.49-3.16)	2.80 (2.44-3.09)	5.52 (4.69-6.45)	10.7 (8.95-13.5)	17.3 (13.5-23.7)	1914
Males	05-06	3.16 (2.82-3.54)	3.00 (2.70-3.50)	5.90 (5.10-6.90)	11.0 (8.80-14.0)	19.5 (14.0-28.0)	1270
Males	07-08	2.75 (2.50-3.03)	2.60 (2.40-2.90)	5.10 (4.50-5.70)	9.50 (8.00-12.2)	19.4 (12.4-29.1)	1294
Males	09-10	3.14 (2.80-3.53)	3.11 (2.72-3.61)	5.75 (5.13-6.56)	10.4 (9.14-11.5)	15.1 (12.5-20.5)	1399
Females	05-06	2.37 (2.13-2.65)	2.30 (2.00-2.70)	4.80 (4.30-5.30)	9.30 (7.60-11.5)	14.7 (13.1-18.2)	1278
Females	07-08	2.14 (1.84-2.49)	2.20 (1.80-2.60)	4.40 (3.80-4.90)	9.00 (7.30-10.3)	14.1 (10.8-18.5)	1310
Females	09-10	2.66 (2.32-3.04)	2.60 (2.21-2.98)	5.21 (4.43-6.17)	11.6 (8.88-14.8)	17.5 (14.6-23.4)	1350
Mexican Americans	05-06	2.72 (2.40-3.08)	2.70 (2.40-3.20)	4.90 (4.30-5.70)	9.00 (7.00-12.4)	14.4 (9.00-26.8)	637
Mexican Americans	07-08	2.37 (2.15-2.62)	2.30 (2.10-2.60)	4.30 (3.70-5.10)	8.40 (6.50-10.5)	12.3 (8.40-16.2)	531
Mexican Americans	09-10	2.35 (2.15-2.57)	2.51 (2.18-2.69)	4.35 (3.83-4.83)	7.72 (6.56-9.53)	11.0 (8.09-14.1)	566
Non-Hispanic blacks	05-06	3.18 (2.75-3.67)	3.20 (2.70-3.80)	5.90 (4.90-7.30)	13.0 (9.50-14.6)	19.2 (14.6-30.5)	678
Non-Hispanic blacks	07-08	2.89 (2.64-3.17)	2.90 (2.50-3.10)	5.60 (4.80-6.20)	11.9 (9.10-15.4)	21.7 (17.9-28.9)	597
Non-Hispanic blacks	09-10	3.51 (2.92-4.22)	3.64 (2.97-4.24)	6.94 (5.75-8.47)	13.2 (10.2-17.5)	20.8 (13.5-41.7)	516
Non-Hispanic whites	05-06	2.67 (2.39-2.98)	2.60 (2.30-2.90)	5.30 (4.70-6.10)	10.1 (8.20-12.6)	17.6 (12.6-24.3)	1038
Non-Hispanic whites	07-08	2.42 (2.09-2.81)	2.40 (2.10-2.70)	4.70 (4.10-5.60)	9.10 (7.60-11.6)	14.9 (10.5-29.1)	1077
Non-Hispanic whites	09-10	2.98 (2.61-3.40)	2.96 (2.53-3.48)	5.59 (4.78-6.57)	10.7 (8.83-14.3)	16.6 (12.6-23.7)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.6, 0.5, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DiDP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(carboxynonyl) phthalate (MCNP) (creatinine corrected) (2005 – 2010)

CAS Number 1373125-93-9

Metabolite of Di-isodecyl phthalate (DiDP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	2.66 (2.43-2.91)	2.48 (2.29-2.71)	4.48 (4.05-4.85)	8.67 (7.17-9.71)	13.2 (10.8-17.5)	2548
Total population	07-08	2.44 (2.25-2.65)	2.21 (2.00-2.36)	4.00 (3.68-4.44)	8.31 (6.96-9.04)	12.8 (11.2-15.1)	2604
Total population	09-10	3.01 (2.74-3.31)	2.79 (2.48-3.10)	5.04 (4.47-5.66)	9.76 (8.41-11.2)	15.5 (12.8-18.9)	2749
Age 6-11 years	05-06	5.00 (4.45-5.63)	5.06 (4.18-5.76)	7.48 (6.70-8.84)	16.1 (12.5-18.9)	23.5 (16.1-31.7)	356
Age 6-11 years	07-08	3.88 (3.34-4.50)	3.82 (3.17-4.18)	6.07 (5.14-7.00)	11.2 (9.01-13.6)	18.2 (12.6-27.0)	389
Age 6-11 years	09-10	4.49 (4.01-5.03)	4.33 (3.95-4.82)	7.30 (6.41-8.54)	11.2 (9.74-13.6)	14.9 (12.7-23.1)	415
Age 12-19 years	05-06	2.37 (2.04-2.75)	2.18 (1.91-2.52)	3.64 (2.94-4.55)	6.26 (5.15-8.70)	10.7 (7.57-14.1)	702
Age 12-19 years	07-08	2.23 (2.07-2.40)	1.96 (1.83-2.08)	3.68 (3.08-3.83)	6.39 (4.88-9.01)	10.0 (7.26-13.5)	401
Age 12-19 years	09-10	2.43 (2.10-2.81)	2.17 (1.79-2.54)	3.94 (3.23-4.87)	7.67 (5.32-11.2)	12.8 (8.43-14.4)	420
Age 20+ years	05-06	2.52 (2.29-2.78)	2.37 (2.14-2.57)	4.05 (3.77-4.51)	7.90 (6.46-9.40)	12.0 (9.71-16.7)	1490
Age 20+ years	07-08	2.36 (2.15-2.58)	2.14 (1.91-2.32)	3.88 (3.44-4.29)	8.21 (6.67-9.00)	12.3 (11.0-15.3)	1814
Age 20+ years	09-10	2.97 (2.69-3.29)	2.72 (2.43-3.03)	4.93 (4.32-5.62)	9.68 (7.90-11.6)	15.6 (11.9-22.5)	1914
Males	05-06	2.53 (2.28-2.82)	2.36 (2.14-2.56)	4.38 (3.74-5.04)	7.41 (6.47-8.88)	13.0 (9.40-19.6)	1270
Males	07-08	2.32 (2.11-2.55)	2.12 (1.90-2.32)	3.88 (3.50-4.29)	7.13 (5.78-9.15)	11.4 (9.68-15.5)	1294
Males	09-10	2.82 (2.55-3.12)	2.56 (2.28-2.96)	4.73 (4.19-5.49)	8.68 (7.21-10.2)	13.4 (11.2-15.4)	1399
Females	05-06	2.79 (2.47-3.15)	2.65 (2.34-2.95)	4.51 (4.03-5.15)	9.41 (6.82-11.6)	13.5 (10.7-19.7)	1278
Females	07-08	2.57 (2.33-2.83)	2.27 (2.03-2.57)	4.13 (3.78-4.82)	8.71 (7.41-9.50)	13.5 (12.0-16.0)	1310
Females	09-10	3.20 (2.88-3.57)	2.98 (2.72-3.28)	5.40 (4.70-6.23)	10.6 (8.39-13.8)	16.9 (12.5-27.3)	1350
Mexican Americans	05-06	2.45 (2.13-2.81)	2.32 (2.14-2.60)	4.04 (3.64-4.58)	6.96 (5.73-8.14)	11.0 (7.89-19.1)	637
Mexican Americans	07-08	2.32 (2.10-2.56)	2.10 (1.90-2.34)	4.12 (3.54-4.68)	6.89 (5.73-7.67)	9.75 (7.69-11.7)	531
Mexican Americans	09-10	2.33 (2.08-2.62)	2.12 (1.80-2.66)	3.80 (3.27-4.58)	7.02 (5.44-9.66)	11.3 (8.09-13.0)	566
Non-Hispanic blacks	05-06	2.24 (1.96-2.55)	1.97 (1.78-2.37)	3.60 (3.25-4.24)	7.82 (6.38-10.4)	12.1 (10.1-17.4)	678
Non-Hispanic blacks	07-08	2.25 (2.05-2.47)	2.00 (1.88-2.17)	3.88 (3.50-4.27)	8.18 (6.25-10.4)	14.9 (9.31-20.4)	597
Non-Hispanic blacks	09-10	2.54 (2.24-2.88)	2.46 (2.02-2.96)	4.52 (4.20-5.13)	8.51 (6.35-10.9)	11.3 (9.81-16.0)	516
Non-Hispanic whites	05-06	2.81 (2.51-3.14)	2.57 (2.33-2.85)	4.62 (4.10-5.19)	9.26 (7.00-10.8)	13.5 (10.3-23.5)	1038
Non-Hispanic whites	07-08	2.53 (2.23-2.86)	2.26 (1.98-2.57)	4.11 (3.66-4.70)	8.51 (6.59-10.2)	13.3 (10.7-17.6)	1077
Non-Hispanic whites	09-10	3.35 (2.98-3.77)	3.06 (2.76-3.36)	5.51 (4.74-6.35)	10.4 (8.43-13.5)	15.8 (12.3-24.8)	1206

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DiDP_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-isononyl phthalate (MiNP) (1999 – 2010)

CAS Number 297182-83-3

Metabolite of Di-isononyl phthalate (DiNP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	5.39 (<LOD-21.3)	2541
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2782
Total population	03-04	*	<LOD	<LOD	<LOD	1.54 (<LOD-2.00)	2605
Total population	05-06	*	<LOD	<LOD	1.69 (<LOD-2.00)	3.54 (2.31-6.16)	2548
Total population	07-08	*	<LOD	<LOD	1.54 (<LOD-1.69)	3.08 (2.16-4.16)	2604
Total population	09-10	*	<LOD	1.80 (1.49-2.13)	5.62 (4.48-7.28)	14.6 (10.7-18.3)	2749
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	9.55 (<LOD-34.7)	328
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	393
Age 6-11 years	03-04	*	<LOD	<LOD	1.54 (<LOD-2.31)	2.62 (1.85-4.77)	342
Age 6-11 years	05-06	*	<LOD	<LOD	1.69 (<LOD-2.00)	2.16 (2.00-2.62)	356
Age 6-11 years	07-08	*	<LOD	<LOD	1.39 (<LOD-2.00)	2.16 (1.54-3.85)	389
Age 6-11 years	09-10	*	<LOD	1.72 (1.09-2.94)	5.30 (3.08-8.98)	13.1 (5.33-21.5)	415
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	3.54 (<LOD-31.3)	752
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	1.39 (<LOD-1.69)	742
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	2.16 (<LOD-2.77)	729
Age 12-19 years	05-06	*	<LOD	<LOD	2.16 (<LOD-4.31)	5.39 (2.00-12.2)	702
Age 12-19 years	07-08	*	<LOD	<LOD	2.46 (1.39-5.39)	5.54 (2.46-8.01)	401
Age 12-19 years	09-10	*	<LOD	2.20 (1.42-3.96)	10.7 (4.87-17.1)	20.6 (14.8-36.1)	420
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	4.77 (<LOD-20.3)	1461
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1647
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1534
Age 20+ years	05-06	*	<LOD	<LOD	1.54 (<LOD-2.00)	3.54 (2.16-6.47)	1490
Age 20+ years	07-08	*	<LOD	<LOD	1.39 (<LOD-1.69)	2.77 (1.85-3.85)	1814
Age 20+ years	09-10	*	<LOD	1.76 (1.43-2.11)	5.44 (4.31-6.64)	12.9 (8.32-17.9)	1914
Males	99-00	*	<LOD	<LOD	<LOD	7.55 (<LOD-29.1)	1215
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1371
Males	03-04	*	<LOD	<LOD	<LOD	1.54 (<LOD-2.77)	1250
Males	05-06	*	<LOD	<LOD	2.00 (1.39-2.93)	4.00 (3.23-6.31)	1270
Males	07-08	*	<LOD	<LOD	1.54 (<LOD-2.16)	3.23 (2.31-4.93)	1294
Males	09-10	*	<LOD	2.06 (1.74-2.68)	7.19 (5.62-10.5)	17.1 (11.7-27.6)	1399
Females	99-00	*	<LOD	<LOD	<LOD	3.85 (<LOD-10.5)	1326
Females	01-02	*	<LOD	<LOD	<LOD	1.39 (<LOD-1.69)	1411
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1355
Females	05-06	*	<LOD	<LOD	1.39 (<LOD-1.54)	2.62 (1.85-4.31)	1278
Females	07-08	*	<LOD	<LOD	1.39 (<LOD-1.69)	2.77 (2.00-3.70)	1310
Females	09-10	*	<LOD	1.52 (1.12-1.91)	4.70 (3.80-5.47)	12.3 (6.61-16.5)	1350

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 1.23, 1.23, 1.54, 1.23, 1.23, and 0.77 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.54 for survey periods 1999-2008 compared with results previously reported.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DiNP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-isononyl phthalate (MiNP) (1999 – 2010)

CAS Number 297182-83-3

Metabolite of Di-isononyl phthalate (DiNP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	2.31 (<LOD-4.31)	814
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	1.54 (<LOD-2.16)	677
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	652
Mexican Americans	05-06	*	<LOD	<LOD	1.54 (<LOD-2.00)	4.31 (2.00-8.62)	637
Mexican Americans	07-08	*	<LOD	<LOD	1.39 (<LOD-2.93)	3.08 (2.00-3.85)	531
Mexican Americans	09-10	*	<LOD	1.52 (1.19-1.91)	5.11 (3.77-7.67)	12.9 (6.27-22.2)	566
Non-Hispanic blacks	99-00	*	<LOD	<LOD	3.54 (<LOD-21.3)	10.5 (<LOD-46.5)	603
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	1.54 (<LOD-2.62)	703
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	2.00 (1.54-3.08)	699
Non-Hispanic blacks	05-06	*	<LOD	<LOD	2.00 (1.54-2.77)	5.70 (3.54-8.62)	678
Non-Hispanic blacks	07-08	*	<LOD	<LOD	1.69 (<LOD-2.31)	3.70 (2.16-5.70)	597
Non-Hispanic blacks	09-10	*	<LOD	2.14 (1.79-2.56)	6.05 (4.48-10.5)	17.1 (8.32-21.9)	516
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	5.39 (<LOD-24.6)	912
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1216
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1088
Non-Hispanic whites	05-06	*	<LOD	<LOD	1.54 (<LOD-2.16)	3.23 (1.85-6.47)	1038
Non-Hispanic whites	07-08	*	<LOD	<LOD	1.39 (<LOD-2.00)	2.77 (1.69-4.93)	1077
Non-Hispanic whites	09-10	*	<LOD	1.83 (1.40-2.53)	5.67 (4.59-8.07)	14.7 (10.3-21.5)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 1.23, 1.23, 1.54, 1.23, 1.23, and 0.77 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.54 for survey periods 1999-2008 compared with results previously reported

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DiNP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-isononyl phthalate (MiNP) (creatinine corrected) (1999 – 2010)

CAS Number 297182-83-3

Metabolite of Di-isononyl phthalate (DiNP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	<LOD	6.61 (<LOD-12.8)	2541
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2782
Total population	03-04	*	<LOD	<LOD	<LOD	4.50 (<LOD-4.90)	2605
Total population	05-06	*	<LOD	<LOD	3.20 (<LOD-3.82)	5.16 (3.99-5.67)	2548
Total population	07-08	*	<LOD	<LOD	3.35 (<LOD-3.96)	5.05 (4.15-6.22)	2604
Total population	09-10	*	<LOD	2.16 (1.91-2.41)	5.40 (4.21-7.00)	11.8 (9.59-14.2)	2749
Age 6-11 years	99-00	*	<LOD	<LOD	<LOD	9.24 (<LOD-21.9)	328
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	393
Age 6-11 years	03-04	*	<LOD	<LOD	3.71 (<LOD-4.82)	5.04 (3.71-7.19)	342
Age 6-11 years	05-06	*	<LOD	<LOD	2.37 (<LOD-2.93)	3.03 (2.54-5.16)	356
Age 6-11 years	07-08	*	<LOD	<LOD	3.35 (<LOD-5.33)	5.33 (3.11-7.26)	389
Age 6-11 years	09-10	*	<LOD	2.53 (1.93-3.09)	6.61 (3.77-9.73)	10.7 (6.70-21.7)	415
Age 12-19 years	99-00	*	<LOD	<LOD	<LOD	3.08 (<LOD-11.8)	752
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	3.19 (<LOD-5.13)	742
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	3.03 (<LOD-3.99)	729
Age 12-19 years	05-06	*	<LOD	<LOD	2.66 (<LOD-3.59)	3.99 (2.97-5.28)	702
Age 12-19 years	07-08	*	<LOD	<LOD	2.56 (2.10-3.23)	3.68 (2.90-6.84)	401
Age 12-19 years	09-10	*	<LOD	2.14 (1.40-3.40)	7.58 (4.06-11.2)	13.2 (10.2-23.4)	420
Age 20+ years	99-00	*	<LOD	<LOD	<LOD	7.11 (<LOD-12.4)	1461
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1647
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1534
Age 20+ years	05-06	*	<LOD	<LOD	3.37 (<LOD-4.19)	5.17 (4.17-6.11)	1490
Age 20+ years	07-08	*	<LOD	<LOD	3.48 (<LOD-4.15)	5.45 (4.15-6.39)	1814
Age 20+ years	09-10	*	<LOD	2.12 (1.86-2.35)	5.00 (3.91-6.67)	11.7 (8.29-14.5)	1914
Males	99-00	*	<LOD	<LOD	<LOD	6.53 (<LOD-15.7)	1215
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1371
Males	03-04	*	<LOD	<LOD	<LOD	3.56 (<LOD-4.54)	1250
Males	05-06	*	<LOD	<LOD	2.51 (1.96-3.51)	3.99 (2.79-5.61)	1270
Males	07-08	*	<LOD	<LOD	2.42 (<LOD-2.95)	3.96 (3.23-5.05)	1294
Males	09-10	*	<LOD	1.91 (1.59-2.37)	5.54 (4.14-7.89)	12.9 (9.90-18.8)	1399
Females	99-00	*	<LOD	<LOD	<LOD	6.61 (<LOD-11.8)	1326
Females	01-02	*	<LOD	<LOD	<LOD	4.20 (<LOD-4.40)	1411
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1355
Females	05-06	*	<LOD	<LOD	3.67 (<LOD-4.39)	5.37 (4.88-6.27)	1278
Females	07-08	*	<LOD	<LOD	4.08 (<LOD-4.84)	5.81 (4.36-7.26)	1310
Females	09-10	*	<LOD	2.35 (2.01-2.49)	5.40 (4.13-7.00)	10.8 (7.58-14.9)	1350

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.54 for survey periods 1999-2008 compared with results previously reported

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DiNP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-isononyl phthalate (MiNP) (creatinine corrected) (1999 – 2010)

CAS Number 297182-83-3

Metabolite of Di-isononyl phthalate (DiNP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	<LOD	5.44 (<LOD-7.70)	814
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	3.70 (<LOD-4.20)	677
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	652
Mexican Americans	05-06	*	<LOD	<LOD	2.71 (<LOD-3.73)	4.88 (3.73-6.27)	637
Mexican Americans	07-08	*	<LOD	<LOD	2.81 (<LOD-3.23)	3.96 (3.23-5.13)	531
Mexican Americans	09-10	*	<LOD	1.74 (1.42-2.35)	4.35 (3.10-9.92)	11.5 (8.42-19.1)	566
Non-Hispanic blacks	99-00	*	<LOD	<LOD	3.13 (<LOD-8.18)	6.61 (<LOD-22.1)	603
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	2.71 (<LOD-3.30)	703
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	3.37 (2.57-3.85)	699
Non-Hispanic blacks	05-06	*	<LOD	<LOD	2.22 (1.83-2.59)	4.39 (2.83-6.75)	678
Non-Hispanic blacks	07-08	*	<LOD	<LOD	2.49 (<LOD-3.35)	4.19 (3.11-4.62)	597
Non-Hispanic blacks	09-10	*	<LOD	1.51 (1.25-1.80)	4.00 (2.90-5.61)	8.97 (5.15-15.1)	516
Non-Hispanic whites	99-00	*	<LOD	<LOD	<LOD	8.39 (<LOD-15.4)	912
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1216
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1088
Non-Hispanic whites	05-06	*	<LOD	<LOD	3.37 (<LOD-3.99)	4.88 (3.99-5.41)	1038
Non-Hispanic whites	07-08	*	<LOD	<LOD	3.60 (<LOD-4.15)	5.45 (3.96-6.96)	1077
Non-Hispanic whites	09-10	*	<LOD	2.41 (2.08-2.70)	6.00 (4.23-8.05)	12.9 (10.4-16.6)	1206

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.54 for survey periods 1999-2008 compared with results previously reported

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DiNP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(carboxyoctyl) phthalate (MCOP) (2005 – 2010)

CAS Number 898544-09-7

Metabolite of Di-isononyl phthalate (DiNP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	5.39 (4.68-6.22)	5.10 (4.40-6.00)	10.9 (9.10-13.1)	25.5 (19.1-35.4)	54.4 (32.5-85.2)	2548
Total population	07-08	6.79 (5.83-7.92)	6.40 (5.60-7.40)	14.9 (12.1-18.2)	34.6 (25.2-43.8)	63.0 (41.8-80.0)	2604
Total population	09-10	12.6 (10.4-15.2)	11.8 (9.26-14.7)	33.1 (25.8-40.2)	83.3 (61.2-113)	160 (117-191)	2749
Age 6-11 years	05-06	8.52 (7.19-10.1)	8.90 (7.60-9.90)	15.0 (11.3-19.3)	26.4 (19.9-37.3)	40.3 (26.4-61.6)	356
Age 6-11 years	07-08	10.8 (9.25-12.6)	10.7 (9.10-13.1)	19.8 (15.8-24.5)	33.8 (26.1-50.3)	59.9 (33.5-79.5)	389
Age 6-11 years	09-10	15.0 (10.8-20.7)	14.2 (9.15-20.7)	34.7 (18.6-56.5)	74.6 (41.6-135)	120 (74.6-340)	415
Age 12-19 years	05-06	6.61 (5.42-8.06)	6.30 (5.20-7.30)	11.9 (9.60-16.0)	28.4 (18.2-58.7)	63.2 (28.4-106)	702
Age 12-19 years	07-08	9.25 (7.33-11.7)	8.10 (6.80-10.3)	20.8 (15.4-28.7)	60.5 (29.6-79.4)	79.4 (49.7-166)	401
Age 12-19 years	09-10	16.1 (12.3-20.9)	14.5 (11.6-17.0)	39.8 (22.5-61.2)	96.8 (66.7-191)	209 (135-263)	420
Age 20+ years	05-06	4.96 (4.27-5.76)	4.50 (3.90-5.20)	9.70 (8.20-12.3)	25.1 (18.2-35.7)	54.4 (30.8-88.5)	1490
Age 20+ years	07-08	6.15 (5.20-7.29)	5.80 (5.00-6.60)	13.2 (10.5-16.8)	32.0 (23.0-41.8)	61.2 (38.9-80.0)	1814
Age 20+ years	09-10	11.9 (9.89-14.3)	11.0 (8.58-13.7)	32.1 (25.8-39.0)	83.7 (56.0-114)	158 (109-188)	1914
Males	05-06	6.24 (5.25-7.42)	5.70 (4.70-6.90)	12.1 (10.2-15.1)	30.8 (19.0-58.8)	66.4 (33.8-122)	1270
Males	07-08	7.14 (6.10-8.36)	6.60 (5.70-7.70)	15.6 (12.4-19.3)	35.7 (24.7-43.2)	61.2 (40.1-89.1)	1294
Males	09-10	14.0 (11.6-16.8)	13.4 (10.5-15.6)	36.0 (27.5-45.9)	92.9 (66.1-134)	168 (111-217)	1399
Females	05-06	4.69 (4.14-5.30)	4.50 (4.00-5.20)	9.30 (8.20-11.1)	21.5 (17.5-27.0)	41.7 (28.1-61.7)	1278
Females	07-08	6.48 (5.49-7.65)	6.20 (5.40-7.40)	14.3 (12.0-17.0)	32.6 (24.8-47.0)	64.8 (47.0-73.3)	1310
Females	09-10	11.4 (9.17-14.1)	10.6 (8.05-13.7)	29.6 (20.8-38.4)	70.4 (50.1-113)	146 (85.2-188)	1350
Mexican Americans	05-06	5.77 (4.84-6.87)	5.20 (4.50-5.70)	9.90 (8.50-12.0)	23.6 (14.9-49.7)	54.4 (23.0-185)	637
Mexican Americans	07-08	6.83 (6.23-7.49)	6.20 (5.60-6.80)	12.9 (11.3-14.9)	29.1 (25.2-33.8)	52.0 (36.8-61.2)	531
Mexican Americans	09-10	9.96 (7.99-12.4)	8.59 (6.21-12.1)	20.3 (15.8-32.6)	59.3 (44.0-69.5)	86.2 (63.2-136)	566
Non-Hispanic blacks	05-06	6.08 (5.60-6.61)	6.00 (5.10-6.70)	11.4 (10.4-13.0)	24.5 (20.3-28.1)	50.0 (32.0-70.3)	678
Non-Hispanic blacks	07-08	7.55 (6.21-9.17)	7.00 (6.00-8.00)	16.6 (12.0-22.9)	40.3 (25.5-51.9)	60.4 (41.8-97.8)	597
Non-Hispanic blacks	09-10	12.6 (9.85-16.1)	11.0 (7.35-16.2)	34.5 (26.5-42.1)	82.4 (63.8-109)	137 (83.3-188)	516
Non-Hispanic whites	05-06	5.25 (4.40-6.27)	5.00 (4.10-6.20)	11.1 (8.60-13.6)	25.5 (17.7-43.5)	56.1 (28.1-88.5)	1038
Non-Hispanic whites	07-08	6.81 (5.48-8.46)	6.40 (5.20-7.90)	15.1 (11.0-20.8)	35.7 (23.2-62.0)	64.7 (39.4-89.0)	1077
Non-Hispanic whites	09-10	13.4 (10.7-16.8)	12.9 (10.1-16.1)	34.8 (27.5-43.4)	88.9 (64.4-136)	168 (113-220)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.7, 0.7, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DiNP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(carboxyoctyl) phthalate (MCOP) (creatinine corrected) (2005 – 2010)

CAS Number 898544-09-7

Metabolite of Di-isononyl phthalate (DiNP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	5.26 (4.54-6.10)	4.53 (3.95-5.11)	9.25 (7.64-11.2)	24.0 (17.1-30.8)	40.2 (30.3-55.2)	2548
Total population	07-08	6.85 (6.05-7.75)	5.94 (5.19-6.67)	12.6 (10.8-14.4)	30.6 (23.4-38.5)	50.2 (40.0-60.0)	2604
Total population	09-10	13.1 (11.1-15.5)	11.6 (9.69-13.8)	29.3 (23.7-36.2)	72.3 (55.0-93.8)	119 (89.1-147)	2749
Age 6-11 years	05-06	9.38 (8.08-10.9)	8.48 (7.66-10.1)	14.8 (12.2-18.7)	30.3 (20.0-38.8)	40.1 (28.2-57.3)	356
Age 6-11 years	07-08	13.3 (11.4-15.5)	11.6 (9.90-14.2)	23.1 (16.2-32.5)	44.2 (27.0-64.1)	60.3 (44.2-110)	389
Age 6-11 years	09-10	19.5 (14.7-25.9)	18.6 (11.7-26.9)	35.9 (25.7-56.9)	87.8 (43.7-132)	139 (80.1-312)	415
Age 12-19 years	05-06	4.93 (4.10-5.93)	4.32 (3.61-4.89)	7.44 (5.93-11.0)	19.4 (12.4-31.8)	34.7 (24.1-58.3)	702
Age 12-19 years	07-08	7.20 (5.94-8.73)	6.28 (4.79-8.08)	12.6 (10.0-20.7)	32.7 (22.6-56.9)	56.9 (31.4-103)	401
Age 12-19 years	09-10	12.9 (10.5-15.8)	11.5 (8.38-15.1)	26.3 (19.2-37.9)	74.8 (43.5-120)	125 (101-167)	420
Age 20+ years	05-06	4.97 (4.26-5.81)	4.17 (3.68-4.77)	8.58 (7.23-10.6)	23.4 (15.5-31.8)	41.1 (29.2-55.9)	1490
Age 20+ years	07-08	6.32 (5.49-7.27)	5.31 (4.77-6.05)	11.8 (9.27-13.9)	27.5 (19.5-36.8)	47.7 (34.4-60.9)	1814
Age 20+ years	09-10	12.6 (10.7-14.8)	10.9 (9.42-12.7)	28.5 (23.3-35.9)	69.5 (52.5-89.4)	113 (81.9-153)	1914
Males	05-06	5.01 (4.21-5.97)	4.29 (3.75-5.03)	8.44 (7.17-10.9)	21.6 (15.1-35.4)	44.6 (25.7-85.9)	1270
Males	07-08	6.01 (5.29-6.84)	5.14 (4.54-6.26)	11.5 (9.32-13.6)	24.5 (19.2-31.0)	43.2 (31.2-54.9)	1294
Males	09-10	12.5 (10.6-14.7)	11.4 (9.29-13.9)	28.6 (23.5-36.6)	67.2 (52.0-85.9)	106 (82.2-138)	1399
Females	05-06	5.51 (4.75-6.39)	4.73 (4.23-5.32)	9.55 (8.26-12.2)	24.7 (17.3-30.3)	39.3 (30.3-45.0)	1278
Females	07-08	7.76 (6.84-8.81)	6.52 (5.95-7.39)	13.7 (11.9-16.5)	35.3 (26.6-44.2)	57.7 (43.5-74.4)	1310
Females	09-10	13.7 (11.5-16.4)	11.8 (9.80-14.4)	29.5 (22.8-37.9)	75.3 (54.2-110)	123 (93.8-197)	1350
Mexican Americans	05-06	5.19 (4.38-6.14)	4.50 (3.64-5.29)	8.04 (7.13-10.1)	19.5 (12.3-37.7)	43.6 (20.9-93.4)	637
Mexican Americans	07-08	6.66 (5.97-7.44)	5.29 (4.69-6.20)	11.6 (10.4-13.0)	25.7 (20.9-29.8)	38.3 (30.8-58.3)	531
Mexican Americans	09-10	9.89 (7.75-12.6)	8.53 (6.98-10.0)	20.9 (12.8-28.3)	51.6 (34.2-72.3)	89.4 (59.3-125)	566
Non-Hispanic blacks	05-06	4.28 (3.86-4.74)	3.67 (3.26-4.09)	7.60 (6.80-8.81)	17.1 (13.2-21.5)	31.8 (22.5-43.7)	678
Non-Hispanic blacks	07-08	5.87 (4.82-7.13)	5.37 (4.16-6.50)	11.1 (8.68-15.2)	28.1 (17.7-37.2)	40.2 (32.0-57.8)	597
Non-Hispanic blacks	09-10	9.11 (7.52-11.0)	7.62 (5.84-10.8)	19.8 (15.5-26.5)	47.6 (36.9-57.7)	77.8 (57.0-104)	516
Non-Hispanic whites	05-06	5.53 (4.61-6.63)	4.81 (4.13-5.56)	10.0 (7.63-13.3)	25.2 (16.3-34.5)	39.3 (26.8-59.7)	1038
Non-Hispanic whites	07-08	7.11 (5.91-8.56)	6.27 (5.09-7.50)	13.0 (10.4-16.3)	31.1 (21.3-43.2)	54.2 (40.2-64.1)	1077
Non-Hispanic whites	09-10	15.1 (12.6-18.1)	13.5 (11.3-16.4)	33.6 (27.0-43.5)	79.2 (60.0-106)	126 (97.9-186)	1206

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DiNP_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-methyl phthalate (MMP) (2001 – 2010)

CAS Number 4376-18-5

Metabolite of Dimethyl phthalate (DMP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	1.15 (.985-1.34)	1.50 (1.30-1.80)	3.30 (2.90-3.70)	6.00 (5.10-7.50)	9.80 (8.00-12.5)	2782
Total population	03-04	*	1.30 (<LOD-1.70)	3.90 (3.00-4.90)	9.70 (7.70-12.2)	16.3 (12.0-20.4)	2605
Total population	05-06	*	<LOD	2.50 (1.90-3.40)	7.40 (6.10-8.60)	12.4 (10.8-14.7)	2548
Total population	07-08	*	<LOD	2.20 (1.80-2.70)	6.50 (4.70-8.30)	11.3 (8.40-16.3)	2604
Total population	09-10	*	.940 (.670-1.21)	2.89 (2.51-3.28)	6.72 (5.76-8.16)	12.0 (9.29-15.3)	2749
Age 6-11 years	01-02	1.45 (1.13-1.87)	1.90 (1.40-2.80)	4.00 (3.40-4.90)	7.20 (6.00-8.00)	11.8 (7.60-20.8)	393
Age 6-11 years	03-04	2.10 (1.67-2.63)	1.70 (1.20-2.40)	4.30 (2.80-6.40)	9.50 (6.40-18.8)	18.8 (9.40-33.4)	342
Age 6-11 years	05-06	*	<LOD	4.00 (3.30-4.80)	10.6 (7.40-13.4)	15.4 (10.6-30.6)	356
Age 6-11 years	07-08	*	1.20 (<LOD-1.60)	3.70 (3.00-5.30)	8.00 (6.50-8.70)	12.1 (8.30-35.8)	389
Age 6-11 years	09-10	2.13 (1.83-2.47)	2.36 (1.72-2.92)	4.83 (3.85-5.61)	10.8 (8.59-16.7)	22.3 (11.4-25.8)	415
Age 12-19 years	01-02	1.59 (1.28-1.96)	2.10 (1.80-2.50)	3.90 (3.30-4.70)	8.50 (5.30-10.5)	13.0 (9.60-17.8)	742
Age 12-19 years	03-04	*	1.50 (1.00-2.20)	4.40 (3.00-7.00)	13.3 (7.40-20.9)	21.8 (17.8-31.5)	729
Age 12-19 years	05-06	*	<LOD	3.70 (2.70-4.60)	8.60 (7.00-9.50)	12.4 (9.30-20.7)	702
Age 12-19 years	07-08	*	<LOD	2.30 (1.70-3.20)	6.70 (4.20-8.90)	12.0 (7.90-17.4)	401
Age 12-19 years	09-10	1.45 (1.12-1.89)	1.37 (.870-1.98)	3.33 (2.76-4.53)	7.68 (5.27-11.7)	12.0 (7.33-19.6)	420
Age 20+ years	01-02	1.06 (.904-1.25)	1.40 (1.10-1.60)	3.10 (2.50-3.50)	5.60 (4.60-7.10)	9.20 (7.40-12.3)	1647
Age 20+ years	03-04	*	1.20 (<LOD-1.50)	3.80 (2.80-4.90)	9.30 (7.10-11.8)	14.3 (10.8-19.9)	1534
Age 20+ years	05-06	*	<LOD	2.20 (1.60-2.80)	6.90 (5.30-8.40)	11.9 (9.50-14.7)	1490
Age 20+ years	07-08	*	<LOD	2.00 (1.60-2.50)	6.00 (4.20-8.30)	11.1 (8.10-17.3)	1814
Age 20+ years	09-10	*	.750 (<LOD-1.02)	2.59 (2.19-2.90)	6.30 (5.22-7.60)	10.5 (8.49-14.2)	1914
Males	01-02	1.17 (.962-1.43)	1.50 (1.30-1.90)	3.30 (2.90-4.00)	5.90 (4.80-7.90)	9.20 (7.10-13.5)	1371
Males	03-04	*	1.30 (1.00-1.80)	4.00 (3.20-5.20)	10.0 (7.30-13.5)	17.7 (11.8-20.4)	1250
Males	05-06	*	<LOD	2.40 (1.80-3.50)	7.40 (5.70-9.20)	13.4 (11.0-15.7)	1270
Males	07-08	*	<LOD	2.40 (1.80-3.20)	6.90 (4.70-8.70)	10.3 (8.20-17.2)	1294
Males	09-10	*	1.04 (.730-1.40)	2.92 (2.60-3.47)	6.53 (5.38-8.66)	11.4 (8.86-13.9)	1399
Females	01-02	1.13 (.973-1.31)	1.40 (1.10-1.70)	3.30 (2.80-3.70)	6.40 (5.00-7.80)	10.3 (8.20-16.2)	1411
Females	03-04	*	1.20 (<LOD-1.60)	3.60 (2.80-4.70)	9.50 (7.70-12.2)	15.3 (11.7-22.9)	1355
Females	05-06	*	<LOD	2.60 (1.80-3.40)	7.40 (5.10-9.30)	12.0 (9.30-16.0)	1278
Females	07-08	*	<LOD	2.10 (1.70-2.50)	6.20 (4.30-8.20)	12.0 (7.90-16.1)	1310
Females	09-10	*	.840 (.600-1.09)	2.81 (2.30-3.25)	6.81 (5.49-8.27)	13.5 (8.91-16.8)	1350

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 0.2, 1.0, 1.1,1.1, and 0.5 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DMP_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-methyl phthalate (MMP) (2001 – 2010)

CAS Number 4376-18-5

Metabolite of Dimethyl phthalate (DMP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	1.21 (1.02-1.45)	1.60 (1.30-1.70)	3.30 (2.70-4.00)	5.60 (4.70-7.30)	8.60 (6.40-15.2)	677
Mexican Americans	03-04	*	1.40 (1.10-1.80)	4.00 (2.50-6.30)	9.60 (7.30-13.4)	15.0 (11.4-18.8)	652
Mexican Americans	05-06	*	<LOD	3.10 (2.20-4.30)	7.30 (5.90-9.40)	11.3 (8.50-18.0)	637
Mexican Americans	07-08	*	<LOD	2.50 (1.30-3.70)	6.40 (4.20-11.1)	12.1 (6.80-16.3)	531
Mexican Americans	09-10	1.36 (1.22-1.51)	1.26 (.970-1.53)	3.67 (2.97-4.16)	8.30 (6.51-9.24)	12.0 (9.36-18.2)	566
Non-Hispanic blacks	01-02	1.64 (1.37-1.98)	2.10 (1.70-2.70)	4.40 (3.60-5.10)	8.30 (6.20-10.1)	11.0 (9.50-13.4)	703
Non-Hispanic blacks	03-04	2.16 (1.64-2.84)	1.70 (1.00-2.80)	5.10 (3.70-7.00)	11.4 (7.30-17.3)	17.8 (10.2-39.4)	699
Non-Hispanic blacks	05-06	*	<LOD	3.70 (2.40-4.70)	8.20 (6.10-10.6)	13.0 (10.6-15.8)	678
Non-Hispanic blacks	07-08	*	<LOD	2.40 (1.50-3.40)	6.10 (4.10-8.80)	10.6 (6.70-16.4)	597
Non-Hispanic blacks	09-10	1.71 (1.32-2.21)	1.89 (1.33-2.66)	4.11 (3.38-5.12)	7.87 (5.90-12.5)	14.2 (8.47-17.0)	516
Non-Hispanic whites	01-02	1.08 (.906-1.29)	1.40 (1.10-1.70)	3.20 (2.50-3.60)	5.60 (4.70-6.70)	9.70 (7.10-14.0)	1216
Non-Hispanic whites	03-04	*	1.20 (<LOD-1.60)	3.60 (2.80-4.80)	9.70 (7.50-12.2)	16.5 (12.0-20.4)	1088
Non-Hispanic whites	05-06	*	<LOD	2.30 (1.70-2.80)	7.40 (5.50-8.80)	12.5 (10.4-15.0)	1038
Non-Hispanic whites	07-08	*	<LOD	2.10 (1.70-2.60)	6.80 (4.30-8.50)	11.2 (8.00-18.7)	1077
Non-Hispanic whites	09-10	*	.690 (<LOD-.930)	2.37 (1.95-2.85)	6.17 (5.23-8.04)	12.3 (8.97-15.9)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 0.2, 1.0, 1.1,1.1, and 0.5 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DMP_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-methyl phthalate (MMP) (creatinine corrected) (2001 – 2010)

CAS Number 4376-18-5

Metabolite of Dimethyl phthalate (DMP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	1.08 (.936-1.25)	1.33 (1.13-1.55)	2.62 (2.36-2.97)	5.00 (3.97-6.02)	8.00 (6.07-11.0)	2782
Total population	03-04	*	1.53 (<LOD-1.79)	3.45 (2.76-4.37)	7.95 (5.83-11.8)	13.5 (11.3-18.1)	2605
Total population	05-06	*	<LOD	2.85 (2.52-3.25)	6.53 (5.49-7.67)	12.2 (9.74-14.3)	2548
Total population	07-08	*	<LOD	2.79 (2.31-3.25)	5.68 (4.77-7.36)	10.8 (8.00-13.6)	2604
Total population	09-10	*	1.18 (1.03-1.38)	2.56 (2.29-2.92)	5.55 (4.81-6.54)	10.6 (7.70-13.1)	2749
Age 6-11 years	01-02	1.65 (1.28-2.14)	2.32 (1.72-2.86)	3.97 (3.27-4.71)	7.20 (5.99-9.41)	13.2 (7.60-22.5)	393
Age 6-11 years	03-04	2.22 (1.75-2.81)	1.88 (1.49-2.60)	4.96 (2.81-6.49)	9.67 (6.15-14.6)	16.2 (12.1-34.5)	342
Age 6-11 years	05-06	*	<LOD	4.59 (3.09-6.35)	11.0 (8.07-15.0)	18.6 (10.4-21.9)	356
Age 6-11 years	07-08	*	2.05 (<LOD-2.33)	4.56 (3.85-5.36)	9.06 (6.63-11.4)	13.6 (10.4-36.0)	389
Age 6-11 years	09-10	2.77 (2.44-3.15)	2.85 (2.46-3.29)	5.24 (4.34-6.18)	14.7 (9.87-16.6)	20.5 (14.7-27.7)	415
Age 12-19 years	01-02	1.23 (1.01-1.48)	1.51 (1.32-1.82)	2.84 (2.52-3.33)	5.36 (3.68-6.39)	7.27 (5.64-11.4)	742
Age 12-19 years	03-04	*	1.34 (1.12-1.73)	3.19 (2.26-4.43)	7.84 (4.95-12.1)	13.3 (9.49-19.1)	729
Age 12-19 years	05-06	*	<LOD	2.80 (2.15-3.55)	5.65 (4.33-6.52)	12.4 (6.45-18.9)	702
Age 12-19 years	07-08	*	<LOD	2.00 (1.63-2.63)	4.32 (3.10-6.05)	7.25 (4.77-10.8)	401
Age 12-19 years	09-10	1.17 (.907-1.51)	1.18 (.930-1.49)	2.24 (1.81-2.62)	4.17 (3.09-6.47)	7.33 (4.56-15.9)	420
Age 20+ years	01-02	1.00 (.868-1.16)	1.21 (1.05-1.40)	2.44 (2.14-2.68)	4.53 (3.49-6.02)	7.72 (5.52-11.4)	1647
Age 20+ years	03-04	*	1.52 (<LOD-1.79)	3.39 (2.69-4.31)	7.69 (5.40-11.8)	13.3 (10.1-18.9)	1534
Age 20+ years	05-06	*	<LOD	2.76 (2.44-3.12)	6.09 (5.00-7.75)	11.2 (9.17-13.4)	1490
Age 20+ years	07-08	*	<LOD	2.75 (2.26-3.25)	5.58 (4.33-7.59)	10.4 (7.09-14.8)	1814
Age 20+ years	09-10	*	1.09 (<LOD-1.23)	2.34 (2.02-2.69)	5.16 (4.25-6.39)	9.53 (7.07-12.1)	1914
Males	01-02	.954 (.794-1.15)	1.17 (1.02-1.40)	2.37 (2.03-2.75)	4.18 (3.45-5.64)	6.42 (4.94-9.59)	1371
Males	03-04	*	1.35 (1.15-1.52)	2.95 (2.26-4.09)	7.11 (5.00-10.2)	11.8 (9.05-13.3)	1250
Males	05-06	*	<LOD	2.19 (1.89-2.50)	5.03 (4.09-6.45)	10.2 (7.75-13.4)	1270
Males	07-08	*	<LOD	2.33 (1.92-2.88)	4.88 (3.85-7.25)	8.56 (6.25-13.8)	1294
Males	09-10	*	1.02 (.850-1.21)	2.49 (2.00-2.86)	5.23 (4.25-6.84)	9.51 (7.20-12.4)	1399
Females	01-02	1.21 (1.06-1.38)	1.45 (1.23-1.82)	2.87 (2.58-3.06)	5.56 (4.55-7.14)	10.0 (7.20-15.3)	1411
Females	03-04	*	1.83 (<LOD-2.10)	3.87 (3.04-4.96)	9.41 (6.41-13.6)	16.5 (12.5-23.5)	1355
Females	05-06	*	<LOD	3.47 (3.00-4.11)	7.67 (6.00-9.75)	13.2 (9.75-18.7)	1278
Females	07-08	*	<LOD	3.12 (2.72-3.71)	6.50 (5.20-8.67)	11.7 (8.56-14.8)	1310
Females	09-10	*	1.35 (1.16-1.57)	2.76 (2.34-3.18)	5.77 (4.94-7.22)	11.3 (8.29-15.5)	1350

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DMP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-methyl phthalate (MMP) (creatinine corrected) (2001 – 2010)

CAS Number 4376-18-5

Metabolite of Dimethyl phthalate (DMP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	1.14 (.975-1.34)	1.48 (1.30-1.63)	2.50 (2.20-2.94)	4.19 (3.77-5.76)	8.47 (5.58-12.5)	677
Mexican Americans	03-04	*	1.36 (1.15-1.71)	3.56 (2.45-4.90)	7.53 (5.62-9.64)	12.5 (9.44-16.9)	652
Mexican Americans	05-06	*	<LOD	2.86 (2.07-3.67)	6.48 (4.21-8.24)	11.5 (6.94-21.7)	637
Mexican Americans	07-08	*	<LOD	2.59 (2.06-3.39)	5.65 (3.60-8.13)	9.40 (6.06-13.9)	531
Mexican Americans	09-10	1.35 (1.19-1.53)	1.37 (1.13-1.67)	3.13 (2.61-3.57)	6.18 (5.33-8.40)	10.7 (8.33-15.2)	566
Non-Hispanic blacks	01-02	1.15 (.949-1.40)	1.39 (1.29-1.67)	2.70 (2.36-2.95)	4.87 (4.21-5.93)	8.09 (5.86-11.0)	703
Non-Hispanic blacks	03-04	1.53 (1.21-1.94)	1.40 (1.07-1.75)	3.14 (2.26-4.37)	7.50 (4.29-14.6)	13.7 (7.70-20.7)	699
Non-Hispanic blacks	05-06	*	<LOD	2.59 (1.87-3.28)	5.20 (4.53-6.29)	8.50 (6.79-10.3)	678
Non-Hispanic blacks	07-08	*	<LOD	2.10 (1.69-2.44)	4.22 (2.94-5.74)	7.36 (4.88-8.79)	597
Non-Hispanic blacks	09-10	1.24 (.983-1.56)	1.35 (1.08-1.58)	2.69 (2.22-3.23)	4.94 (4.03-6.54)	8.18 (5.74-15.5)	516
Non-Hispanic whites	01-02	1.07 (.914-1.26)	1.30 (1.05-1.58)	2.62 (2.32-2.99)	5.22 (3.68-6.82)	8.26 (6.07-12.6)	1216
Non-Hispanic whites	03-04	*	1.56 (<LOD-1.89)	3.50 (2.71-4.67)	8.10 (6.00-11.9)	13.6 (11.3-18.9)	1088
Non-Hispanic whites	05-06	*	<LOD	2.98 (2.60-3.39)	7.19 (5.58-9.51)	13.4 (10.4-16.6)	1038
Non-Hispanic whites	07-08	*	<LOD	2.89 (2.26-3.67)	6.01 (4.63-8.57)	11.7 (7.47-15.6)	1077
Non-Hispanic whites	09-10	*	1.13 (<LOD-1.29)	2.48 (2.06-2.80)	5.38 (4.44-6.76)	10.9 (7.68-13.8)	1206

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DMP_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(3-carboxypropyl) phthalate (MCPP) (2001 – 2010)

CAS Number 66851-46-5

Metabolite of Di-n-octyl phthalate (DOP) and of several high molecular weight phthalates

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	2.75 (2.49-3.04)	3.10 (2.80-3.30)	5.70 (5.10-6.40)	10.0 (8.90-11.3)	14.6 (12.7-17.5)	2782
Total population	03-04	2.91 (2.79-3.04)	3.10 (3.00-3.30)	5.70 (5.20-6.10)	10.2 (9.20-11.8)	15.3 (13.8-16.2)	2605
Total population	05-06	2.05 (1.87-2.26)	2.10 (1.90-2.40)	4.40 (4.00-4.80)	8.90 (7.60-10.1)	13.1 (10.6-17.4)	2548
Total population	07-08	2.76 (2.52-3.04)	2.70 (2.50-3.00)	5.80 (5.20-6.50)	11.1 (9.70-13.1)	18.1 (15.4-22.3)	2604
Total population	09-10	3.02 (2.58-3.53)	3.10 (2.57-3.65)	6.44 (5.44-7.70)	13.4 (11.4-16.5)	22.3 (19.5-26.2)	2749
Age 6-11 years	01-02	6.11 (5.46-6.84)	6.70 (5.40-7.50)	11.8 (10.2-13.3)	20.1 (17.8-23.1)	24.7 (22.2-31.6)	393
Age 6-11 years	03-04	6.86 (5.80-8.11)	7.10 (6.00-8.90)	12.7 (10.4-16.4)	22.0 (17.2-27.7)	29.2 (22.3-36.6)	342
Age 6-11 years	05-06	4.82 (4.09-5.68)	4.90 (4.30-5.90)	8.50 (6.70-10.4)	13.1 (10.3-17.9)	17.9 (12.6-34.5)	356
Age 6-11 years	07-08	6.01 (4.80-7.53)	6.40 (5.10-8.00)	11.3 (8.40-15.9)	20.3 (13.2-27.3)	23.9 (19.1-34.1)	389
Age 6-11 years	09-10	4.54 (3.74-5.52)	4.86 (3.71-6.49)	9.08 (7.14-11.2)	14.4 (10.8-20.3)	20.3 (14.3-51.9)	415
Age 12-19 years	01-02	3.71 (3.18-4.33)	4.00 (3.40-4.70)	7.10 (6.10-8.10)	11.5 (9.50-12.7)	14.1 (11.8-19.0)	742
Age 12-19 years	03-04	3.72 (3.33-4.15)	4.10 (3.50-4.60)	7.20 (5.80-8.40)	11.0 (9.50-13.6)	15.4 (13.4-17.9)	729
Age 12-19 years	05-06	2.96 (2.52-3.46)	3.10 (2.50-3.60)	5.90 (4.80-7.30)	11.8 (9.10-14.5)	17.0 (12.7-21.5)	702
Age 12-19 years	07-08	3.81 (3.15-4.61)	4.00 (3.20-4.70)	8.20 (6.90-9.40)	13.3 (11.1-17.1)	24.1 (13.8-25.6)	401
Age 12-19 years	09-10	3.65 (2.88-4.64)	3.74 (2.90-4.74)	7.16 (5.48-9.32)	15.9 (10.8-25.8)	32.3 (20.9-54.3)	420
Age 20+ years	01-02	2.37 (2.11-2.66)	2.60 (2.20-3.00)	4.80 (4.30-5.40)	8.10 (7.20-9.50)	12.0 (10.1-14.2)	1647
Age 20+ years	03-04	2.53 (2.41-2.66)	2.80 (2.60-2.90)	4.90 (4.50-5.20)	8.10 (7.50-8.90)	13.2 (10.8-14.3)	1534
Age 20+ years	05-06	1.76 (1.60-1.93)	1.70 (1.60-2.00)	3.60 (3.20-4.10)	7.10 (6.10-8.40)	11.3 (9.60-13.6)	1490
Age 20+ years	07-08	2.41 (2.18-2.67)	2.50 (2.20-2.60)	5.00 (4.60-5.50)	9.60 (8.00-11.1)	15.6 (12.9-19.9)	1814
Age 20+ years	09-10	2.80 (2.40-3.28)	2.88 (2.42-3.39)	6.00 (5.04-7.15)	13.1 (10.8-16.4)	21.8 (18.7-27.9)	1914
Males	01-02	2.89 (2.64-3.17)	3.10 (2.80-3.40)	5.70 (5.00-6.80)	9.90 (8.70-12.0)	14.2 (12.4-18.1)	1371
Males	03-04	3.25 (3.01-3.52)	3.30 (3.00-3.60)	6.00 (5.60-6.80)	11.8 (10.1-13.6)	16.0 (14.2-20.0)	1250
Males	05-06	2.32 (2.11-2.54)	2.40 (2.00-2.70)	4.70 (4.30-5.20)	9.60 (7.90-11.8)	14.5 (11.5-22.3)	1270
Males	07-08	3.02 (2.70-3.39)	2.90 (2.60-3.30)	5.80 (5.10-6.60)	12.3 (10.1-15.3)	21.3 (16.7-28.5)	1294
Males	09-10	3.37 (2.86-3.96)	3.42 (2.91-4.04)	7.09 (6.04-8.32)	15.5 (12.9-18.7)	23.6 (19.9-33.0)	1399
Females	01-02	2.62 (2.29-2.99)	3.00 (2.50-3.30)	5.70 (5.00-6.30)	10.0 (8.50-11.5)	14.7 (11.2-20.3)	1411
Females	03-04	2.63 (2.44-2.83)	3.00 (2.60-3.20)	5.20 (4.70-5.80)	9.20 (8.20-10.3)	13.4 (11.0-16.2)	1355
Females	05-06	1.83 (1.59-2.10)	1.80 (1.60-2.10)	4.00 (3.30-4.60)	8.00 (6.60-9.50)	12.1 (9.50-14.7)	1278
Females	07-08	2.54 (2.30-2.79)	2.60 (2.30-3.00)	5.90 (5.00-6.80)	10.5 (9.10-12.3)	15.4 (13.3-21.5)	1310
Females	09-10	2.72 (2.29-3.22)	2.79 (2.25-3.40)	5.78 (4.67-7.20)	12.6 (9.86-15.9)	20.7 (15.9-29.7)	1350

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 0.4, 0.2, 0.2,0.2, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DOP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(3-carboxypropyl) phthalate (MCPP) (2001 – 2010)

CAS Number 66851-46-5

Metabolite of Di-n-octyl phthalate (DOP) and of several high molecular weight phthalates

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	2.67 (2.26-3.16)	3.00 (2.30-3.50)	5.30 (4.40-5.90)	9.20 (7.30-12.4)	13.6 (10.4-18.7)	677
Mexican Americans	03-04	3.08 (2.86-3.32)	3.10 (2.80-3.40)	5.50 (4.80-6.10)	9.90 (7.90-12.6)	13.7 (11.5-19.8)	652
Mexican Americans	05-06	2.24 (1.71-2.94)	2.20 (1.60-3.10)	4.50 (3.30-6.50)	9.40 (6.50-13.1)	14.1 (9.90-25.4)	637
Mexican Americans	07-08	2.66 (2.37-3.00)	2.70 (2.40-3.20)	5.00 (4.30-5.70)	8.80 (7.60-11.2)	14.5 (11.5-17.8)	531
Mexican Americans	09-10	2.31 (1.95-2.74)	2.32 (1.92-2.93)	5.11 (4.44-5.58)	8.95 (7.39-11.3)	14.8 (11.1-23.2)	566
Non-Hispanic blacks	01-02	3.09 (2.81-3.40)	3.30 (2.90-3.60)	6.30 (5.50-6.50)	10.9 (9.10-13.0)	15.1 (13.5-22.4)	703
Non-Hispanic blacks	03-04	3.30 (3.01-3.62)	3.20 (2.90-3.60)	6.10 (5.50-6.90)	11.6 (9.30-13.4)	20.1 (13.6-25.5)	699
Non-Hispanic blacks	05-06	2.28 (2.03-2.57)	2.40 (2.10-2.80)	4.50 (3.80-5.60)	8.70 (7.10-10.3)	13.3 (10.4-16.5)	678
Non-Hispanic blacks	07-08	2.94 (2.50-3.44)	2.90 (2.50-3.40)	5.80 (4.90-6.80)	12.2 (8.50-17.1)	21.1 (13.7-42.4)	597
Non-Hispanic blacks	09-10	3.38 (2.66-4.31)	3.35 (2.49-4.56)	6.92 (5.86-8.97)	13.6 (10.2-21.0)	22.9 (17.9-28.7)	516
Non-Hispanic whites	01-02	2.72 (2.40-3.08)	3.00 (2.60-3.30)	5.80 (4.80-6.80)	10.3 (8.90-11.9)	15.8 (12.6-19.5)	1216
Non-Hispanic whites	03-04	2.87 (2.73-3.02)	3.10 (2.90-3.30)	5.60 (5.00-6.00)	10.1 (9.10-12.0)	15.2 (13.4-16.1)	1088
Non-Hispanic whites	05-06	1.97 (1.81-2.15)	2.00 (1.80-2.20)	4.20 (3.80-4.60)	8.70 (6.80-10.3)	13.1 (10.0-17.5)	1038
Non-Hispanic whites	07-08	2.84 (2.51-3.21)	2.90 (2.50-3.40)	6.10 (5.30-7.00)	11.4 (9.70-14.0)	18.1 (14.0-24.1)	1077
Non-Hispanic whites	09-10	3.17 (2.65-3.79)	3.16 (2.60-3.87)	6.86 (5.72-8.32)	14.5 (12.6-17.8)	23.6 (18.9-35.7)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 0.4, 0.2, 0.2,0.2, and 0.2 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DOP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(3-carboxypropyl) phthalate (MCPP) (creatinine corrected) (2001 – 2010)

CAS Number 66851-46-5

Metabolite of Di-n-octyl phthalate (DOP) and of several high molecular weight phthalates

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	2.58 (2.35-2.83)	2.47 (2.25-2.76)	4.08 (3.87-4.48)	7.24 (6.58-8.00)	11.4 (10.0-12.5)	2782
Total population	03-04	2.74 (2.56-2.93)	2.60 (2.42-2.79)	4.39 (3.94-4.86)	7.70 (6.65-8.60)	10.7 (9.53-11.9)	2605
Total population	05-06	2.00 (1.82-2.20)	1.86 (1.67-2.06)	3.55 (3.14-4.00)	6.80 (5.77-7.95)	10.3 (8.68-12.7)	2548
Total population	07-08	2.79 (2.63-2.96)	2.53 (2.37-2.70)	4.76 (4.33-5.16)	9.70 (8.52-10.9)	14.8 (12.7-17.0)	2604
Total population	09-10	3.15 (2.77-3.59)	2.94 (2.55-3.38)	5.71 (4.88-6.72)	11.8 (10.5-13.5)	18.8 (16.0-21.9)	2749
Age 6-11 years	01-02	6.96 (6.29-7.70)	7.08 (5.83-7.87)	11.2 (9.15-14.0)	20.7 (15.5-22.3)	26.4 (20.7-27.0)	393
Age 6-11 years	03-04	7.25 (6.43-8.18)	7.06 (5.93-7.59)	11.2 (9.38-12.4)	19.1 (14.4-25.6)	26.9 (19.3-29.0)	342
Age 6-11 years	05-06	5.31 (4.57-6.17)	5.06 (4.57-5.79)	8.78 (7.50-10.0)	13.7 (10.2-21.3)	21.3 (13.2-36.7)	356
Age 6-11 years	07-08	7.41 (5.87-9.34)	6.81 (5.50-9.05)	11.6 (9.43-14.1)	20.2 (12.7-39.2)	30.4 (16.5-68.9)	389
Age 6-11 years	09-10	5.92 (5.09-6.88)	5.94 (5.09-6.92)	9.47 (8.38-10.3)	15.5 (10.7-23.7)	22.7 (13.6-47.2)	415
Age 12-19 years	01-02	2.86 (2.52-3.25)	2.94 (2.50-3.36)	4.59 (4.03-5.23)	6.69 (6.30-7.25)	9.55 (8.03-10.7)	742
Age 12-19 years	03-04	2.78 (2.54-3.05)	2.75 (2.53-2.99)	4.55 (4.05-5.15)	6.61 (6.15-7.20)	8.24 (7.00-10.2)	729
Age 12-19 years	05-06	2.20 (1.90-2.55)	2.07 (1.76-2.46)	3.67 (2.99-4.39)	6.84 (5.35-8.67)	9.67 (7.12-11.4)	702
Age 12-19 years	07-08	2.96 (2.59-3.38)	2.95 (2.51-3.62)	5.04 (4.33-6.00)	8.18 (6.75-10.4)	10.9 (9.38-15.1)	401
Age 12-19 years	09-10	2.94 (2.40-3.60)	2.67 (2.26-3.28)	4.68 (4.04-5.56)	10.8 (7.30-17.8)	21.4 (15.6-29.9)	420
Age 20+ years	01-02	2.24 (2.03-2.47)	2.20 (2.00-2.40)	3.51 (3.11-3.95)	5.39 (4.82-6.18)	7.71 (6.71-9.28)	1647
Age 20+ years	03-04	2.43 (2.27-2.61)	2.38 (2.19-2.56)	3.70 (3.33-4.08)	6.09 (5.38-7.06)	8.79 (7.84-9.56)	1534
Age 20+ years	05-06	1.76 (1.60-1.94)	1.67 (1.47-1.86)	2.96 (2.60-3.38)	5.55 (4.61-6.46)	8.46 (7.00-10.3)	1490
Age 20+ years	07-08	2.48 (2.33-2.64)	2.26 (2.14-2.36)	4.00 (3.68-4.39)	8.03 (7.11-9.09)	12.7 (11.1-14.8)	1814
Age 20+ years	09-10	2.97 (2.60-3.39)	2.75 (2.38-3.22)	5.25 (4.45-6.31)	11.3 (9.63-13.2)	18.1 (15.4-21.6)	1914
Males	01-02	2.35 (2.17-2.56)	2.20 (2.02-2.42)	3.76 (3.45-4.20)	7.17 (6.27-8.06)	11.5 (9.28-15.1)	1371
Males	03-04	2.55 (2.39-2.72)	2.36 (2.22-2.47)	4.14 (3.52-4.86)	7.84 (6.80-8.79)	11.6 (10.2-13.5)	1250
Males	05-06	1.86 (1.70-2.03)	1.70 (1.53-1.88)	3.33 (2.92-3.70)	6.70 (5.59-8.33)	10.7 (8.72-14.2)	1270
Males	07-08	2.54 (2.34-2.76)	2.32 (2.10-2.50)	4.17 (3.80-4.81)	8.91 (7.37-11.2)	14.7 (12.9-17.5)	1294
Males	09-10	3.02 (2.61-3.49)	2.82 (2.43-3.36)	5.51 (4.70-6.36)	10.9 (9.84-12.1)	18.5 (13.7-23.7)	1399
Females	01-02	2.81 (2.48-3.18)	2.76 (2.46-3.02)	4.39 (3.97-4.92)	7.66 (6.17-8.69)	11.0 (8.62-15.9)	1411
Females	03-04	2.93 (2.68-3.20)	2.89 (2.58-3.23)	4.53 (4.09-5.00)	7.58 (6.44-8.57)	10.0 (8.60-11.6)	1355
Females	05-06	2.15 (1.88-2.45)	2.00 (1.72-2.44)	3.77 (3.15-4.47)	6.90 (5.62-8.43)	10.0 (8.14-12.5)	1278
Females	07-08	3.04 (2.84-3.25)	2.80 (2.50-3.11)	5.08 (4.64-5.52)	10.3 (8.67-11.3)	15.0 (11.8-17.8)	1310
Females	09-10	3.28 (2.88-3.74)	3.00 (2.58-3.46)	5.87 (4.96-7.05)	13.0 (10.3-14.8)	19.1 (15.4-29.5)	1350

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DOP_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-(3-carboxypropyl) phthalate (MCPP) (creatinine corrected) (2001 – 2010)

CAS Number 66851-46-5

Metabolite of Di-n-octyl phthalate (DOP) and of several high molecular weight phthalates

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	2.52 (2.21-2.88)	2.37 (2.07-2.73)	4.29 (3.73-5.00)	7.36 (5.58-10.3)	11.4 (8.36-14.5)	677
Mexican Americans	03-04	2.78 (2.56-3.02)	2.63 (2.30-2.96)	4.32 (3.66-4.96)	8.14 (6.72-10.3)	12.8 (9.37-17.1)	652
Mexican Americans	05-06	2.02 (1.62-2.51)	1.79 (1.42-2.53)	3.85 (2.74-5.22)	7.00 (5.40-8.82)	10.2 (7.64-16.4)	637
Mexican Americans	07-08	2.60 (2.26-2.99)	2.45 (2.05-3.10)	4.31 (3.49-5.22)	8.31 (6.67-9.76)	12.9 (9.50-15.5)	531
Mexican Americans	09-10	2.29 (1.92-2.74)	2.08 (1.76-2.60)	4.29 (3.61-5.05)	9.02 (7.16-11.4)	13.7 (10.9-17.8)	566
Non-Hispanic blacks	01-02	2.17 (2.02-2.33)	2.07 (1.88-2.28)	3.68 (3.25-4.07)	6.73 (5.46-7.70)	10.0 (8.27-13.1)	703
Non-Hispanic blacks	03-04	2.34 (2.13-2.58)	2.17 (1.99-2.45)	3.96 (3.33-4.43)	6.93 (6.03-8.80)	13.4 (9.32-15.9)	699
Non-Hispanic blacks	05-06	1.61 (1.42-1.81)	1.58 (1.38-1.77)	2.76 (2.27-3.37)	5.63 (4.33-7.59)	8.68 (6.86-10.4)	678
Non-Hispanic blacks	07-08	2.28 (1.96-2.65)	2.11 (1.72-2.35)	3.91 (3.33-4.56)	7.97 (5.58-12.8)	16.4 (8.21-57.0)	597
Non-Hispanic blacks	09-10	2.45 (2.02-2.97)	2.26 (1.81-2.84)	4.14 (3.35-5.19)	8.02 (6.24-11.3)	14.7 (9.92-19.7)	516
Non-Hispanic whites	01-02	2.69 (2.42-3.00)	2.57 (2.25-2.94)	4.19 (3.87-4.79)	7.63 (6.58-8.45)	11.8 (10.0-14.7)	1216
Non-Hispanic whites	03-04	2.83 (2.60-3.09)	2.65 (2.43-2.96)	4.55 (3.90-5.16)	7.79 (6.59-8.79)	10.6 (9.43-11.3)	1088
Non-Hispanic whites	05-06	2.08 (1.92-2.24)	1.95 (1.76-2.12)	3.60 (3.26-4.00)	6.47 (5.56-7.93)	10.3 (7.95-13.1)	1038
Non-Hispanic whites	07-08	2.96 (2.72-3.23)	2.70 (2.50-2.93)	5.06 (4.35-5.77)	10.3 (8.61-11.5)	15.1 (12.3-19.3)	1077
Non-Hispanic whites	09-10	3.57 (3.12-4.07)	3.28 (2.81-3.73)	6.33 (5.25-7.39)	13.2 (11.1-14.9)	21.6 (16.6-26.2)	1206

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DOP_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-n-octyl phthalate (MOP) (1999 – 2010)‡

CAS Number 5393-19-1

Metabolite of Di-n-octyl phthalate (DOP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	2.69 (2.02-3.36)	4.87 (3.86-5.71)	2541
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2782
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2605
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2548
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2604
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2749
Age 6-11 years	99-00	*	<LOD	<LOD	3.70 (<LOD-5.88)	5.38 (2.86-8.40)	328
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	393
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	342
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	356
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	389
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	415
Age 12-19 years	99-00	*	<LOD	<LOD	2.86 (<LOD-4.20)	4.70 (3.36-7.06)	752
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	742
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	729
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	702
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	401
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	420
Age 20+ years	99-00	*	<LOD	<LOD	2.52 (1.85-3.19)	4.87 (3.53-5.88)	1461
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1647
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1534
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1490
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1814
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	1914
Males	99-00	*	<LOD	<LOD	2.69 (1.85-3.70)	4.70 (3.36-5.88)	1215
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1371
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1250
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1270
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1294
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1399
Females	99-00	*	<LOD	<LOD	2.52 (2.02-3.53)	5.21 (3.70-6.38)	1326
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1411
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1355
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1278
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1310
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1350

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 1.51, 1.68, 1.68, 1.85, 1.85 and 0.84 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.68 for survey periods 1999-2008 compared with results previously reported.

'‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DOP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-n-octyl phthalate (MOP) (1999 – 2010)‡

CAS Number 5393-19-1

Metabolite of Di-n-octyl phthalate (DOP)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	1.85 (<LOD-2.35)	2.69 (2.35-4.37)	814
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	677
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	652
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	637
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	531
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	566
Non-Hispanic blacks	99-00	*	<LOD	<LOD	3.19 (<LOD-5.04)	5.04 (3.70-6.89)	603
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	703
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	699
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	678
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	597
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	516
Non-Hispanic whites	99-00	*	<LOD	<LOD	2.69 (2.02-3.53)	5.04 (3.86-5.88)	912
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1216
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1088
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1038
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1077
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 1.51, 1.68, 1.68, 1.85, 1.85 and 0.84 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.68 for survey periods 1999-2008 compared with results previously reported.

'‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DOP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-n-octyl phthalate (MOP) (creatinine corrected) (1999 – 2010)‡

CAS Number 5393-19-1

Metabolite of Di-n-octyl phthalate (DOP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	*	<LOD	<LOD	4.03 (3.48-4.38)	5.93 (4.96-7.21)	2541
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	2782
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	2605
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2548
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2604
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2749
Age 6-11 years	99-00	*	<LOD	<LOD	3.73 (<LOD-6.30)	6.30 (3.31-17.2)	328
Age 6-11 years	01-02	*	<LOD	<LOD	<LOD	<LOD	393
Age 6-11 years	03-04	*	<LOD	<LOD	<LOD	<LOD	342
Age 6-11 years	05-06	*	<LOD	<LOD	<LOD	<LOD	356
Age 6-11 years	07-08	*	<LOD	<LOD	<LOD	<LOD	389
Age 6-11 years	09-10	*	<LOD	<LOD	<LOD	<LOD	415
Age 12-19 years	99-00	*	<LOD	<LOD	2.50 (<LOD-2.87)	3.16 (2.59-5.59)	752
Age 12-19 years	01-02	*	<LOD	<LOD	<LOD	<LOD	742
Age 12-19 years	03-04	*	<LOD	<LOD	<LOD	<LOD	729
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	702
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	401
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	420
Age 20+ years	99-00	*	<LOD	<LOD	4.37 (3.48-4.89)	5.93 (5.04-7.76)	1461
Age 20+ years	01-02	*	<LOD	<LOD	<LOD	<LOD	1647
Age 20+ years	03-04	*	<LOD	<LOD	<LOD	<LOD	1534
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	1490
Age 20+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	1814
Age 20+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	1914
Males	99-00	*	<LOD	<LOD	3.06 (2.59-3.48)	4.30 (3.26-5.80)	1215
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	1371
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	1250
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1270
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1294
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1399
Females	99-00	*	<LOD	<LOD	5.04 (4.20-5.96)	7.21 (5.59-10.5)	1326
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	1411
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	1355
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1278
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1310
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1350

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.68 for survey periods 1999-2008 compared with results previously reported..

'‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DOP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Urinary Mono-n-octyl phthalate (MOP) (creatinine corrected) (1999 – 2010)‡

CAS Number 5393-19-1

Metabolite of Di-n-octyl phthalate (DOP)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.**

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	*	<LOD	<LOD	3.06 (<LOD-4.70)	5.59 (4.37-6.72)	814
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	677
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	652
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	637
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	531
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	566
Non-Hispanic blacks	99-00	*	<LOD	<LOD	2.28 (<LOD-3.26)	3.73 (2.52-5.49)	603
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	703
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	699
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	678
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	597
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	516
Non-Hispanic whites	99-00	*	<LOD	<LOD	4.38 (3.60-5.17)	6.12 (5.29-8.40)	912
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	1216
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	1088
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1038
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1077
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1206

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.68 for survey periods 1999-2008 compared with results previously reported.

'‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DOP_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Phthalates_FactSheet.html

Phytoestrogens and Metabolites

Urinary Daidzein (1999 – 2010)‡

CAS Number 486-66-8

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	75.1 (61.9-91.1)	69.8 (57.8-82.6)	229 (184-298)	538 (471-702)	1320 (1020-1540)	2553
Total population	01-02	51.7 (46.6-57.5)	52.3 (48.9-57.4)	192 (151-226)	577 (447-725)	1250 (863-1640)	2794
Total population	03-04	66.7 (60.4-73.7)	62.0 (54.1-69.7)	195 (171-219)	590 (500-675)	1070 (893-1330)	2594
Total population	05-06	66.5 (59.7-74.1)	58.8 (51.0-67.7)	204 (187-226)	648 (485-745)	1180 (1000-1350)	2528
Total population	07-08	67.1 (60.2-74.8)	57.6 (49.1-66.0)	203 (182-222)	747 (551-994)	1740 (1210-2240)	2424
Total population	09-10	69.3 (61.6-77.9)	57.2 (48.8-64.3)	228 (190-262)	753 (671-880)	1850 (1380-2480)	2792
Age 6-11 years	99-00	90.5 (75.1-109)	101 (70.3-138)	257 (172-430)	510 (437-840)	1130 (657-1740)	330
Age 6-11 years	01-02	84.9 (71.6-101)	72.7 (56.3-97.0)	261 (155-385)	605 (437-989)	1060 (645-1500)	396
Age 6-11 years	03-04	84.9 (71.6-101)	66.8 (55.4-92.8)	229 (151-314)	574 (371-654)	818 (625-1060)	341
Age 6-11 years	05-06	94.1 (74.3-119)	74.0 (56.0-95.9)	287 (149-471)	1010 (557-1600)	1870 (1040-3830)	351
Age 6-11 years	07-08	105 (80.2-137)	90.6 (61.4-123)	277 (183-431)	1370 (491-2190)	2190 (1340-3500)	360
Age 6-11 years	09-10	109 (88.1-135)	98.5 (75.4-119)	461 (262-605)	1000 (730-1520)	1900 (1120-2800)	371
Age 12-19 years	99-00	123 (91.4-166)	124 (85.6-168)	326 (227-454)	833 (445-1490)	1460 (861-2410)	753
Age 12-19 years	01-02	69.3 (52.6-91.3)	70.2 (52.5-87.5)	255 (185-344)	774 (573-984)	1360 (922-1950)	744
Age 12-19 years	03-04	89.0 (75.2-105)	78.0 (59.0-104)	248 (197-332)	808 (500-968)	1200 (900-1790)	729
Age 12-19 years	05-06	94.4 (76.0-117)	77.1 (59.7-103)	286 (200-416)	836 (530-1170)	1390 (929-2220)	693
Age 12-19 years	07-08	79.7 (64.4-98.6)	76.0 (52.2-107)	256 (189-300)	828 (396-1100)	1220 (874-2070)	375
Age 12-19 years	09-10	94.2 (74.1-120)	82.9 (60.8-116)	295 (201-395)	1020 (690-1210)	1390 (1150-2500)	447
Age 20+ years	99-00	67.6 (55.4-82.4)	60.9 (49.3-74.1)	215 (167-239)	518 (459-573)	1320 (978-1540)	1470
Age 20+ years	01-02	46.4 (41.4-52.0)	49.1 (40.8-53.4)	176 (133-216)	520 (396-703)	1210 (771-1900)	1654
Age 20+ years	03-04	61.9 (55.2-69.4)	57.9 (48.7-68.5)	180 (150-214)	554 (416-695)	1110 (857-1360)	1524
Age 20+ years	05-06	60.5 (53.4-68.7)	54.0 (46.8-63.8)	197 (169-209)	512 (427-664)	1100 (795-1270)	1484
Age 20+ years	07-08	62.2 (55.0-70.4)	51.7 (44.3-60.3)	189 (169-211)	686 (514-939)	1640 (1060-2500)	1689
Age 20+ years	09-10	63.0 (54.7-72.5)	49.3 (43.0-59.8)	203 (168-250)	701 (572-856)	1980 (1220-2780)	1974
Males	99-00	88.9 (71.4-111)	80.6 (66.6-112)	262 (198-355)	587 (501-989)	1540 (989-2080)	1220
Males	01-02	49.8 (42.8-57.9)	50.8 (46.0-55.0)	190 (137-240)	498 (386-694)	920 (717-1380)	1375
Males	03-04	73.8 (63.4-85.9)	65.2 (56.1-76.4)	214 (156-311)	709 (535-900)	1200 (969-1380)	1244
Males	05-06	73.9 (65.3-83.6)	66.4 (53.8-78.5)	210 (180-241)	694 (471-823)	1180 (979-1400)	1252
Males	07-08	72.7 (62.2-85.0)	63.4 (49.3-76.5)	210 (174-259)	706 (520-1180)	2010 (1210-3520)	1198
Males	09-10	68.8 (59.0-80.3)	55.0 (46.0-65.0)	207 (168-257)	674 (559-840)	1430 (1160-2370)	1377
Females	99-00	64.1 (52.9-77.6)	57.8 (45.0-73.2)	199 (150-244)	476 (389-722)	1220 (566-1700)	1333
Females	01-02	53.6 (48.1-59.8)	55.7 (49.8-62.7)	199 (149-234)	642 (511-816)	1470 (1170-1980)	1419
Females	03-04	60.7 (53.6-68.8)	57.4 (49.1-67.6)	175 (159-201)	466 (381-622)	884 (654-1380)	1350
Females	05-06	60.1 (52.5-68.9)	52.5 (45.0-61.1)	200 (166-231)	587 (420-717)	1140 (811-1440)	1276
Females	07-08	62.2 (54.4-71.0)	52.2 (44.4-58.7)	191 (169-217)	752 (476-905)	1570 (994-2180)	1226
Females	09-10	69.8 (60.7-80.3)	60.2 (46.1-71.1)	249 (200-309)	840 (694-973)	2140 (1210-2910)	1415

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.5, 1.6, 0.3, 0.4, 0.4, and 0.4 respectively.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Daidzein (1999 – 2010)‡

CAS Number 486-66-8

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	78.9 (59.8-104)	66.2 (48.4-87.1)	254 (170-402)	806 (534-1020)	1360 (968-2780)	816
Mexican Americans	01-02	39.2 (28.5-54.0)	39.9 (28.8-59.9)	169 (100-291)	515 (388-669)	896 (613-1480)	679
Mexican Americans	03-04	57.4 (50.2-65.7)	45.5 (35.2-53.3)	178 (130-236)	686 (487-934)	1390 (934-1650)	653
Mexican Americans	05-06	60.6 (53.3-68.9)	54.1 (44.3-65.2)	193 (155-239)	671 (424-966)	1350 (966-1550)	634
Mexican Americans	07-08	60.5 (46.6-78.6)	45.8 (34.4-67.3)	206 (143-313)	815 (510-1010)	1410 (994-2010)	520
Mexican Americans	09-10	60.6 (48.8-75.2)	48.8 (38.6-74.3)	219 (142-283)	622 (495-853)	1190 (884-1570)	604
Non-Hispanic blacks	99-00	91.9 (71.9-118)	103 (81.6-133)	286 (243-377)	553 (459-824)	1190 (640-1900)	607
Non-Hispanic blacks	01-02	66.1 (48.2-90.7)	72.9 (52.8-97.3)	255 (182-393)	757 (448-1400)	1410 (757-2480)	706
Non-Hispanic blacks	03-04	75.0 (56.1-100)	66.0 (50.7-86.6)	241 (151-340)	622 (408-875)	1190 (660-2300)	699
Non-Hispanic blacks	05-06	81.3 (71.6-92.4)	76.5 (64.7-97.1)	254 (199-331)	676 (463-874)	1210 (760-1790)	662
Non-Hispanic blacks	07-08	84.0 (63.3-111)	69.8 (43.4-102)	338 (248-419)	1080 (735-1500)	2180 (1230-2610)	562
Non-Hispanic blacks	09-10	77.2 (64.6-92.1)	69.9 (58.1-82.6)	229 (192-281)	711 (534-1080)	1350 (894-3480)	534
Non-Hispanic whites	99-00	74.4 (61.5-89.9)	66.9 (56.2-78.2)	216 (157-298)	512 (438-745)	1360 (989-1710)	917
Non-Hispanic whites	01-02	48.6 (43.8-54.0)	49.8 (42.8-54.2)	171 (137-204)	504 (389-658)	1140 (774-1620)	1222
Non-Hispanic whites	03-04	65.8 (58.6-74.0)	62.0 (52.8-71.9)	191 (165-215)	572 (416-722)	1070 (823-1330)	1079
Non-Hispanic whites	05-06	62.0 (54.4-70.7)	54.2 (46.9-64.1)	200 (164-216)	581 (430-717)	1040 (811-1310)	1039
Non-Hispanic whites	07-08	63.6 (56.8-71.2)	56.7 (46.2-65.0)	180 (158-212)	603 (455-832)	1430 (915-2170)	993
Non-Hispanic whites	09-10	68.3 (58.2-80.2)	55.0 (45.5-66.8)	219 (168-284)	726 (584-887)	1740 (1150-2510)	1186

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.5, 1.6, 0.3, 0.4, 0.4, and 0.4 respectively.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Daidzein (creatinine corrected) (1999 – 2010)‡

CAS Number 486-66-8

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	68.5 (55.9-83.9)	65.1 (52.8-80.8)	204 (156-249)	560 (471-629)	944 (836-1150)	2553
Total population	01-02	48.5 (43.7-54.0)	48.3 (43.1-56.5)	166 (140-196)	500 (391-608)	957 (801-1180)	2794
Total population	03-04	62.5 (58.3-67.0)	56.1 (50.0-63.5)	164 (144-187)	502 (429-591)	1060 (825-1150)	2594
Total population	05-06	64.8 (58.7-71.6)	52.4 (47.4-59.7)	184 (162-209)	564 (461-679)	1070 (896-1310)	2528
Total population	07-08	67.5 (60.5-75.2)	55.6 (47.4-64.0)	197 (178-217)	672 (538-897)	1400 (1070-2250)	2424
Total population	09-10	74.2 (67.0-82.2)	55.9 (51.6-61.7)	219 (184-272)	790 (688-1090)	1920 (1550-2390)	2791
Age 6-11 years	99-00	92.6 (76.3-112)	93.1 (71.2-114)	251 (157-324)	552 (363-838)	1070 (781-2150)	330
Age 6-11 years	01-02	96.4 (79.0-118)	85.9 (60.3-127)	275 (159-395)	655 (452-733)	938 (683-1140)	396
Age 6-11 years	03-04	90.4 (77.2-106)	72.8 (58.1-99.5)	201 (152-240)	454 (329-638)	702 (526-1200)	341
Age 6-11 years	05-06	104 (83.1-130)	73.8 (59.5-96.7)	305 (175-453)	1040 (686-1830)	2430 (1190-3630)	351
Age 6-11 years	07-08	128 (101-164)	106 (80.0-141)	307 (197-429)	1420 (543-2630)	2630 (1380-3670)	360
Age 6-11 years	09-10	149 (124-179)	128 (91.0-162)	500 (346-601)	1230 (814-1530)	2150 (1450-3070)	370
Age 12-19 years	99-00	83.1 (58.4-118)	85.6 (53.8-126)	207 (138-386)	628 (295-1060)	1000 (628-2380)	753
Age 12-19 years	01-02	53.4 (40.8-70.0)	50.9 (38.3-77.6)	181 (142-248)	549 (385-718)	1030 (622-1360)	744
Age 12-19 years	03-04	66.6 (55.7-79.6)	56.4 (43.9-74.6)	179 (151-217)	517 (370-753)	877 (617-1240)	729
Age 12-19 years	05-06	70.0 (56.9-86.2)	55.1 (42.9-74.3)	203 (149-263)	545 (338-845)	914 (659-1750)	693
Age 12-19 years	07-08	61.3 (51.5-72.9)	61.9 (39.9-75.0)	191 (144-217)	470 (295-645)	821 (544-1110)	375
Age 12-19 years	09-10	88.6 (71.3-110)	76.5 (53.6-107)	249 (177-312)	689 (522-969)	1410 (823-2740)	447
Age 20+ years	99-00	63.8 (51.5-79.1)	59.3 (48.7-75.0)	194 (151-234)	554 (471-624)	908 (783-1180)	1470
Age 20+ years	01-02	43.9 (39.4-48.9)	43.8 (37.4-53.3)	153 (125-186)	428 (348-590)	946 (728-1220)	1654
Age 20+ years	03-04	59.2 (54.3-64.5)	51.7 (46.4-62.6)	155 (131-185)	501 (404-658)	1090 (808-1240)	1524
Age 20+ years	05-06	60.7 (54.3-67.8)	50.6 (43.1-59.5)	171 (151-199)	483 (434-609)	1030 (847-1200)	1484
Age 20+ years	07-08	63.9 (56.0-72.9)	49.2 (42.6-57.7)	187 (164-216)	675 (514-904)	1340 (962-2780)	1689
Age 20+ years	09-10	67.1 (59.4-75.7)	50.3 (44.2-55.5)	194 (168-232)	775 (613-1120)	1980 (1550-2640)	1974
Males	99-00	69.7 (54.7-88.8)	70.2 (51.3-84.3)	198 (147-276)	623 (494-836)	1050 (884-1290)	1220
Males	01-02	40.5 (34.8-47.1)	41.7 (34.5-47.9)	139 (107-179)	348 (260-553)	788 (585-947)	1375
Males	03-04	57.7 (49.4-67.3)	48.9 (41.6-58.2)	160 (126-205)	467 (368-600)	919 (665-1200)	1244
Males	05-06	59.5 (53.3-66.3)	51.0 (43.2-57.6)	164 (134-203)	467 (403-612)	927 (781-1100)	1252
Males	07-08	61.3 (52.5-71.7)	48.7 (41.5-63.2)	178 (141-205)	585 (412-845)	1290 (907-2810)	1198
Males	09-10	62.8 (54.8-72.1)	49.9 (42.6-57.3)	174 (145-196)	613 (497-790)	1740 (1170-2570)	1376
Females	99-00	67.4 (54.8-82.9)	62.7 (51.1-80.9)	207 (152-250)	509 (356-624)	850 (610-1410)	1333
Females	01-02	57.6 (50.8-65.2)	59.5 (48.1-73.4)	191 (159-227)	615 (536-722)	1180 (924-1430)	1419
Females	03-04	67.4 (60.8-74.9)	65.1 (54.6-73.4)	165 (143-191)	564 (409-699)	1090 (757-1370)	1350
Females	05-06	70.4 (61.3-80.8)	57.1 (45.1-71.7)	194 (169-216)	609 (463-887)	1200 (957-1750)	1276
Females	07-08	73.8 (64.9-84.0)	63.0 (52.1-77.2)	223 (190-259)	763 (577-1000)	1410 (1070-1990)	1226
Females	09-10	87.2 (77.9-97.7)	64.1 (55.6-76.7)	292 (240-336)	972 (800-1230)	2280 (1560-2880)	1415

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Daidzein (creatinine corrected) (1999 – 2010)‡

CAS Number 486-66-8

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	72.5 (59.1-88.9)	64.2 (47.1-91.1)	243 (176-310)	677 (468-1080)	1380 (753-2690)	816
Mexican Americans	01-02	36.9 (27.8-49.0)	37.1 (24.8-57.9)	146 (101-225)	441 (307-596)	722 (565-1160)	679
Mexican Americans	03-04	51.8 (45.0-59.6)	47.7 (35.9-58.3)	159 (117-209)	502 (354-686)	1130 (779-1390)	653
Mexican Americans	05-06	54.7 (45.6-65.7)	47.2 (35.7-61.1)	174 (136-219)	558 (380-617)	925 (642-1140)	634
Mexican Americans	07-08	59.5 (44.1-80.1)	41.1 (27.4-76.1)	200 (150-288)	715 (502-1060)	1410 (1090-1860)	520
Mexican Americans	09-10	63.7 (52.5-77.1)	49.2 (37.9-65.4)	213 (167-273)	614 (487-861)	1380 (865-1940)	604
Non-Hispanic blacks	99-00	59.1 (46.5-75.1)	67.6 (52.1-87.1)	172 (134-207)	381 (316-533)	802 (562-1010)	607
Non-Hispanic blacks	01-02	46.4 (33.7-63.8)	49.8 (35.5-69.7)	169 (104-249)	504 (263-773)	939 (542-1530)	706
Non-Hispanic blacks	03-04	53.1 (42.5-66.4)	44.7 (28.6-72.1)	147 (121-191)	415 (275-538)	727 (538-1040)	699
Non-Hispanic blacks	05-06	57.0 (50.3-64.5)	48.5 (40.3-59.7)	157 (124-221)	467 (370-654)	913 (603-1290)	662
Non-Hispanic blacks	07-08	65.0 (48.7-86.6)	53.0 (36.0-80.6)	240 (171-292)	728 (520-937)	1330 (800-2670)	562
Non-Hispanic blacks	09-10	62.1 (53.0-72.8)	55.7 (42.7-65.0)	179 (157-223)	576 (457-690)	956 (710-1840)	533
Non-Hispanic whites	99-00	72.8 (60.3-88.0)	67.5 (55.3-81.5)	207 (160-249)	560 (442-659)	908 (742-1350)	917
Non-Hispanic whites	01-02	48.1 (43.4-53.3)	47.0 (42.0-56.0)	163 (137-191)	463 (375-627)	957 (805-1220)	1222
Non-Hispanic whites	03-04	64.9 (59.8-70.3)	58.2 (50.4-66.3)	165 (138-204)	516 (385-667)	1090 (786-1250)	1079
Non-Hispanic whites	05-06	65.2 (57.9-73.3)	52.7 (46.5-60.7)	184 (155-211)	564 (443-737)	1070 (894-1390)	1039
Non-Hispanic whites	07-08	66.2 (58.4-75.1)	57.7 (46.0-65.5)	187 (160-216)	604 (474-763)	1210 (907-1670)	993
Non-Hispanic whites	09-10	76.6 (67.1-87.4)	56.7 (51.2-64.1)	225 (173-306)	809 (617-1180)	1920 (1410-2470)	1186

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Enterodiol (1999 – 2010)‡

CAS Number 80226-00-2

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	26.6 (21.9-32.3)	34.0 (29.4-38.7)	78.8 (62.6-95.5)	165 (135-215)	266 (215-335)	2527
Total population	01-02	35.7 (32.5-39.3)	39.4 (36.3-43.4)	89.2 (80.7-96.9)	181 (162-205)	253 (223-308)	2794
Total population	03-04	39.5 (36.1-43.3)	44.9 (40.6-50.3)	106 (97.2-115)	242 (212-264)	367 (311-423)	2594
Total population	05-06	37.7 (33.2-42.9)	42.4 (39.4-47.2)	106 (95.5-120)	244 (226-266)	379 (305-440)	2528
Total population	07-08	36.8 (32.0-42.4)	43.5 (37.8-49.2)	109 (92.1-124)	238 (199-294)	429 (279-723)	2424
Total population	09-10	39.5 (36.3-43.1)	44.5 (41.0-48.5)	107 (98.4-120)	264 (226-288)	545 (446-651)	2792
Age 6-11 years	99-00	26.5 (17.1-41.0)	29.4 (21.2-44.2)	78.7 (44.2-109)	215 (91.1-279)	276 (131-458)	327
Age 6-11 years	01-02	33.6 (29.8-37.8)	35.5 (29.4-43.7)	78.1 (63.8-87.0)	152 (113-171)	203 (167-327)	396
Age 6-11 years	03-04	42.0 (34.5-51.1)	42.1 (34.4-49.2)	91.4 (74.4-110)	199 (126-289)	312 (217-525)	341
Age 6-11 years	05-06	33.2 (26.1-42.3)	38.5 (34.7-43.2)	70.4 (55.7-91.7)	129 (99.1-162)	181 (129-366)	351
Age 6-11 years	07-08	38.5 (30.1-49.3)	42.9 (31.3-55.3)	80.4 (62.7-118)	181 (119-318)	318 (186-439)	360
Age 6-11 years	09-10	38.6 (33.9-44.0)	39.9 (32.5-44.2)	88.8 (67.7-106)	195 (131-265)	277 (210-380)	371
Age 12-19 years	99-00	29.8 (23.8-37.2)	34.0 (27.4-42.0)	84.4 (59.1-101)	166 (112-234)	253 (182-337)	744
Age 12-19 years	01-02	35.3 (30.5-40.9)	37.7 (34.8-43.4)	84.2 (72.1-96.9)	165 (128-206)	238 (169-343)	744
Age 12-19 years	03-04	45.1 (39.4-51.6)	46.3 (38.7-56.9)	99.5 (84.9-109)	191 (161-269)	325 (275-415)	729
Age 12-19 years	05-06	39.1 (34.0-45.0)	41.1 (36.8-46.5)	92.0 (80.2-109)	193 (151-238)	265 (231-303)	693
Age 12-19 years	07-08	37.3 (29.5-47.2)	45.8 (32.2-54.1)	97.9 (73.4-126)	199 (151-253)	293 (212-483)	375
Age 12-19 years	09-10	37.5 (30.4-46.2)	38.3 (32.5-50.7)	98.0 (72.3-119)	184 (122-286)	315 (177-820)	447
Age 20+ years	99-00	26.1 (21.8-31.3)	34.3 (29.8-38.7)	78.3 (63.5-94.8)	160 (132-196)	263 (189-335)	1456
Age 20+ years	01-02	36.1 (31.8-41.0)	40.4 (36.0-45.7)	91.2 (79.3-105)	190 (161-220)	256 (224-312)	1654
Age 20+ years	03-04	38.4 (34.2-43.0)	44.9 (40.1-51.9)	112 (98.8-125)	255 (215-274)	398 (320-448)	1524
Age 20+ years	05-06	38.1 (32.7-44.4)	43.8 (39.0-49.5)	116 (103-130)	266 (242-281)	413 (326-479)	1484
Age 20+ years	07-08	36.5 (31.2-42.8)	43.5 (37.6-49.3)	116 (97.5-130)	247 (194-326)	473 (300-757)	1689
Age 20+ years	09-10	40.0 (36.2-44.1)	47.6 (42.2-53.0)	114 (101-130)	277 (230-366)	596 (460-746)	1974
Males	99-00	25.3 (19.5-32.7)	33.0 (28.0-38.0)	72.6 (54.7-94.3)	149 (109-219)	258 (169-286)	1206
Males	01-02	35.2 (31.8-39.1)	40.5 (36.8-44.8)	90.6 (82.3-103)	184 (158-198)	263 (223-338)	1375
Males	03-04	39.7 (36.2-43.6)	45.1 (40.5-51.1)	102 (92.9-115)	231 (186-266)	361 (268-460)	1244
Males	05-06	40.4 (32.8-49.8)	46.2 (38.9-52.3)	107 (90.6-127)	264 (227-289)	413 (287-496)	1252
Males	07-08	33.1 (28.6-38.2)	39.8 (34.7-43.3)	91.8 (78.6-116)	216 (180-242)	378 (238-738)	1198
Males	09-10	37.4 (30.9-45.3)	41.7 (35.5-48.4)	94.7 (78.9-111)	227 (173-312)	476 (366-664)	1377
Females	99-00	27.9 (23.4-33.3)	36.0 (29.9-40.3)	84.4 (71.8-97.9)	177 (146-219)	280 (219-375)	1321
Females	01-02	36.2 (32.2-40.7)	38.5 (35.3-43.4)	87.0 (75.6-98.5)	175 (152-212)	248 (220-283)	1419
Females	03-04	39.3 (33.8-45.5)	44.9 (38.3-53.0)	110 (97.3-124)	250 (203-294)	398 (309-464)	1350
Females	05-06	35.4 (30.3-41.2)	41.1 (35.6-45.4)	106 (94.2-123)	225 (186-267)	352 (268-477)	1276
Females	07-08	40.7 (33.0-50.2)	48.4 (39.3-58.1)	123 (101-145)	258 (206-336)	479 (311-757)	1226
Females	09-10	41.7 (37.6-46.3)	48.9 (41.6-56.7)	123 (111-140)	277 (243-304)	553 (448-778)	1415

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.8, 1.5, 0.3, 0.04, 0.04, and 0.04 respectively.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Enterodiol (1999 – 2010)‡

CAS Number 80226-00-2

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	21.7 (19.5-24.1)	28.0 (24.7-34.7)	70.4 (60.8-78.8)	143 (117-169)	213 (169-256)	791
Mexican Americans	01-02	30.5 (25.7-36.3)	34.0 (29.0-39.2)	75.9 (58.8-89.7)	159 (119-202)	244 (192-298)	679
Mexican Americans	03-04	33.1 (26.4-41.6)	38.7 (31.2-47.6)	95.2 (78.1-115)	198 (125-307)	307 (186-480)	653
Mexican Americans	05-06	38.1 (32.2-45.1)	40.6 (34.6-47.6)	102 (86.8-123)	262 (177-359)	383 (289-511)	634
Mexican Americans	07-08	28.2 (24.8-32.0)	29.7 (26.7-33.4)	70.8 (59.9-83.8)	173 (139-208)	305 (207-456)	520
Mexican Americans	09-10	27.9 (24.5-31.7)	31.1 (28.8-36.7)	75.5 (66.6-85.5)	157 (120-192)	255 (174-408)	604
Non-Hispanic blacks	99-00	25.8 (21.7-30.7)	31.2 (24.4-35.9)	66.0 (50.2-86.7)	157 (122-193)	260 (185-336)	608
Non-Hispanic blacks	01-02	35.0 (28.9-42.3)	38.7 (33.2-49.2)	83.7 (70.0-103)	169 (132-191)	225 (175-339)	706
Non-Hispanic blacks	03-04	40.4 (34.9-46.7)	47.1 (40.4-53.7)	100 (81.3-123)	212 (157-254)	293 (232-417)	699
Non-Hispanic blacks	05-06	34.7 (30.1-40.1)	38.4 (32.6-44.7)	85.1 (70.9-109)	190 (137-242)	269 (245-364)	662
Non-Hispanic blacks	07-08	34.4 (26.9-44.0)	38.9 (28.9-48.5)	95.7 (78.5-126)	202 (147-252)	327 (232-514)	562
Non-Hispanic blacks	09-10	32.4 (27.3-38.4)	35.7 (30.4-42.3)	98.5 (76.2-126)	211 (178-245)	307 (221-546)	534
Non-Hispanic whites	99-00	29.2 (24.0-35.4)	37.6 (31.3-43.8)	85.8 (68.3-99.4)	171 (138-228)	270 (187-375)	915
Non-Hispanic whites	01-02	35.6 (31.8-40.0)	40.4 (36.1-44.7)	89.6 (78.5-101)	175 (153-198)	254 (214-337)	1222
Non-Hispanic whites	03-04	39.8 (35.5-44.7)	45.8 (38.9-54.9)	109 (95.8-126)	255 (206-267)	365 (294-424)	1079
Non-Hispanic whites	05-06	37.3 (31.2-44.6)	42.6 (37.1-50.1)	108 (94.0-127)	243 (219-267)	371 (285-456)	1039
Non-Hispanic whites	07-08	39.1 (31.5-48.5)	46.8 (39.3-55.5)	116 (91.8-140)	257 (188-369)	444 (269-839)	993
Non-Hispanic whites	09-10	44.1 (39.0-49.9)	51.7 (44.2-56.7)	114 (100-129)	277 (236-311)	596 (414-778)	1186

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.8, 1.5, 0.3, 0.04, 0.04, and 0.04 respectively.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Enterodiol (creatinine corrected) (1999 – 2010)‡

CAS Number 80226-00-2

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	24.2 (20.3-28.9)	29.9 (25.0-34.7)	70.5 (59.6-82.1)	146 (124-177)	240 (199-320)	2527
Total population	01-02	33.5 (30.7-36.7)	37.6 (33.0-42.1)	79.2 (72.6-87.3)	149 (136-164)	224 (197-250)	2794
Total population	03-04	37.0 (33.6-40.7)	41.7 (37.9-45.4)	95.9 (85.6-106)	194 (171-213)	294 (247-368)	2594
Total population	05-06	36.8 (32.7-41.4)	41.0 (35.9-46.3)	103 (94.3-114)	204 (174-219)	323 (280-424)	2528
Total population	07-08	37.0 (32.3-42.3)	42.1 (36.8-48.1)	103 (87.1-117)	224 (164-328)	395 (292-634)	2424
Total population	09-10	42.3 (38.9-46.1)	47.1 (44.9-49.8)	108 (101-117)	281 (234-333)	522 (415-602)	2791
Age 6-11 years	99-00	27.0 (18.6-39.3)	33.7 (21.8-43.7)	62.7 (43.0-108)	168 (81.6-290)	290 (150-411)	327
Age 6-11 years	01-02	38.1 (32.5-44.7)	39.3 (30.8-53.1)	78.3 (66.6-103)	188 (147-244)	304 (242-389)	396
Age 6-11 years	03-04	44.7 (37.4-53.5)	46.6 (38.5-58.3)	93.3 (73.9-125)	177 (128-205)	215 (181-413)	341
Age 6-11 years	05-06	36.6 (28.9-46.4)	37.8 (32.3-46.5)	75.6 (60.9-105)	156 (109-219)	223 (165-326)	351
Age 6-11 years	07-08	47.2 (37.5-59.4)	48.0 (38.0-65.2)	86.3 (67.9-178)	230 (181-297)	335 (230-854)	360
Age 6-11 years	09-10	52.6 (45.0-61.4)	54.3 (39.8-64.5)	104 (79.5-139)	235 (145-335)	336 (239-413)	370
Age 12-19 years	99-00	20.1 (16.7-24.2)	24.1 (19.6-30.1)	55.1 (42.6-71.7)	99.5 (91.5-116)	158 (121-177)	744
Age 12-19 years	01-02	27.2 (23.3-31.8)	28.7 (24.9-34.9)	62.7 (54.9-71.0)	104 (84.2-139)	152 (111-225)	744
Age 12-19 years	03-04	33.8 (30.3-37.7)	34.8 (33.2-38.8)	67.6 (64.1-73.9)	130 (107-164)	221 (138-324)	729
Age 12-19 years	05-06	29.0 (25.2-33.3)	31.4 (27.8-36.1)	68.8 (57.7-80.7)	131 (113-160)	167 (160-216)	693
Age 12-19 years	07-08	28.7 (22.3-36.9)	33.8 (25.1-43.3)	73.4 (52.9-99.3)	131 (100-207)	207 (128-280)	375
Age 12-19 years	09-10	35.3 (29.5-42.1)	37.8 (29.7-44.1)	81.7 (66.9-101)	170 (111-303)	306 (170-763)	447
Age 20+ years	99-00	24.7 (20.6-29.5)	30.6 (26.0-34.8)	73.0 (62.5-84.5)	157 (129-184)	242 (199-344)	1456
Age 20+ years	01-02	34.2 (30.3-38.5)	39.6 (32.5-45.3)	84.1 (73.8-93.3)	152 (136-169)	224 (193-250)	1654
Age 20+ years	03-04	36.7 (32.5-41.4)	42.0 (37.1-47.8)	103 (91.8-111)	205 (173-239)	327 (256-431)	1524
Age 20+ years	05-06	38.2 (33.1-44.0)	43.1 (36.4-49.4)	111 (96.0-128)	216 (187-242)	358 (291-475)	1484
Age 20+ years	07-08	37.5 (32.2-43.7)	42.5 (36.8-49.9)	109 (90.7-134)	242 (167-372)	447 (328-718)	1689
Age 20+ years	09-10	42.6 (39.0-46.4)	48.3 (46.0-51.1)	113 (103-128)	303 (252-355)	579 (461-747)	1974
Males	99-00	19.8 (15.4-25.4)	25.4 (20.0-31.4)	55.1 (46.4-64.2)	122 (94.6-168)	199 (145-282)	1206
Males	01-02	28.7 (26.0-31.7)	31.4 (27.0-36.8)	71.3 (64.2-78.0)	136 (114-160)	212 (179-259)	1375
Males	03-04	31.1 (27.5-35.0)	34.8 (32.3-38.5)	78.0 (68.8-92.7)	165 (128-211)	249 (187-361)	1244
Males	05-06	32.5 (26.7-39.5)	34.2 (29.5-41.1)	90.9 (75.2-102)	192 (147-235)	311 (218-490)	1252
Males	07-08	27.9 (23.9-32.6)	33.0 (28.5-38.6)	79.3 (72.4-87.1)	164 (122-234)	259 (172-499)	1198
Males	09-10	34.2 (27.9-42.0)	39.0 (33.0-45.6)	80.9 (69.7-103)	197 (150-253)	345 (235-494)	1376
Females	99-00	29.3 (25.0-34.4)	35.4 (29.5-41.6)	85.2 (74.5-92.3)	165 (141-201)	321 (226-370)	1321
Females	01-02	38.9 (34.9-43.3)	43.9 (39.3-48.7)	88.3 (74.7-102)	157 (139-174)	235 (180-304)	1419
Females	03-04	43.6 (38.3-49.7)	49.0 (43.4-57.7)	109 (98.8-123)	215 (178-270)	377 (278-443)	1350
Females	05-06	41.4 (36.1-47.4)	48.2 (41.8-55.7)	116 (98.0-131)	210 (183-231)	376 (235-470)	1276
Females	07-08	48.4 (40.6-57.6)	53.2 (44.2-62.9)	128 (105-154)	300 (215-388)	529 (372-759)	1226
Females	09-10	52.1 (46.7-58.1)	59.4 (49.4-66.2)	139 (121-156)	384 (311-450)	694 (526-938)	1415

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Enterodiol (creatinine corrected) (1999 – 2010)‡

CAS Number 80226-00-2

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	19.6 (17.3-22.2)	23.5 (19.7-28.7)	60.6 (49.8-77.7)	134 (114-154)	193 (154-227)	791
Mexican Americans	01-02	28.7 (24.5-33.7)	31.0 (27.0-37.3)	64.1 (55.0-77.5)	133 (94.4-183)	223 (143-337)	679
Mexican Americans	03-04	29.9 (23.8-37.4)	34.0 (26.5-42.8)	74.1 (62.0-101)	176 (118-234)	241 (189-364)	653
Mexican Americans	05-06	34.4 (28.3-41.8)	35.3 (30.7-40.0)	84.6 (71.2-110)	200 (145-271)	315 (221-515)	634
Mexican Americans	07-08	27.7 (24.5-31.3)	29.5 (23.9-33.8)	75.9 (61.3-88.2)	169 (124-198)	240 (178-387)	520
Mexican Americans	09-10	29.3 (25.8-33.3)	33.6 (29.5-38.0)	72.3 (61.4-82.7)	157 (116-193)	265 (193-351)	604
Non-Hispanic blacks	99-00	16.6 (13.9-19.7)	18.8 (14.4-22.9)	47.3 (37.7-55.8)	113 (85.9-145)	169 (131-272)	608
Non-Hispanic blacks	01-02	24.5 (19.7-30.6)	27.0 (22.6-33.3)	57.5 (48.2-73.2)	117 (92.2-143)	157 (118-246)	706
Non-Hispanic blacks	03-04	28.6 (24.5-33.4)	30.4 (26.1-36.1)	68.3 (53.4-87.5)	126 (96.3-191)	203 (153-227)	699
Non-Hispanic blacks	05-06	24.3 (20.5-28.9)	25.3 (22.1-30.4)	68.6 (50.3-86.0)	125 (110-147)	190 (139-245)	662
Non-Hispanic blacks	07-08	26.6 (20.8-34.0)	30.0 (23.6-38.0)	62.9 (51.9-80.8)	139 (102-191)	257 (156-459)	562
Non-Hispanic blacks	09-10	26.1 (22.1-30.8)	29.7 (25.5-35.9)	73.9 (56.7-88.3)	153 (115-191)	252 (191-339)	533
Non-Hispanic whites	99-00	28.6 (24.3-33.6)	34.4 (28.9-39.3)	75.8 (65.3-87.2)	163 (130-197)	252 (203-363)	915
Non-Hispanic whites	01-02	35.3 (31.6-39.4)	40.9 (34.3-46.8)	83.3 (74.7-90.3)	152 (136-173)	225 (189-275)	1222
Non-Hispanic whites	03-04	39.3 (34.4-44.8)	45.5 (38.4-53.0)	105 (90.2-116)	202 (168-234)	299 (244-374)	1079
Non-Hispanic whites	05-06	39.2 (33.3-46.1)	45.0 (39.4-50.2)	111 (96.2-124)	210 (175-235)	331 (277-439)	1039
Non-Hispanic whites	07-08	40.7 (32.7-50.6)	46.4 (38.6-56.7)	109 (86.3-138)	240 (154-384)	424 (257-802)	993
Non-Hispanic whites	09-10	49.5 (43.6-56.1)	53.5 (48.3-59.0)	123 (106-140)	325 (252-384)	572 (414-766)	1186

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Enterolactone (1999 – 2010)‡

CAS Number 77756-20-8

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	239 (200-286)	315 (245-381)	726 (595-879)	1970 (1440-2370)	2800 (2500-3140)	2548
Total population	01-02	259 (233-287)	350 (314-389)	807 (739-873)	1590 (1440-1820)	2720 (1870-3430)	2794
Total population	03-04	298 (265-334)	395 (331-464)	900 (819-969)	1790 (1560-2040)	2620 (2360-2880)	2594
Total population	05-06	283 (245-327)	385 (338-460)	935 (824-1060)	1850 (1710-2040)	2880 (2480-3160)	2528
Total population	07-08	242 (211-277)	311 (263-371)	876 (741-1010)	1740 (1480-2050)	2910 (2170-3320)	2424
Total population	09-10	215 (193-240)	267 (229-306)	734 (659-853)	1760 (1490-2090)	2690 (2220-3160)	2792
Age 6-11 years	99-00	308 (219-432)	356 (243-474)	721 (520-1320)	1730 (973-2840)	2840 (1700-3590)	331
Age 6-11 years	01-02	288 (245-339)	329 (271-412)	680 (566-794)	1380 (929-1620)	2200 (1420-2550)	396
Age 6-11 years	03-04	384 (287-513)	414 (299-567)	926 (589-1190)	1660 (1140-2280)	2360 (1700-3440)	341
Age 6-11 years	05-06	300 (242-373)	399 (280-546)	851 (667-984)	1390 (1000-1770)	1910 (1390-2460)	351
Age 6-11 years	07-08	255 (203-320)	314 (247-418)	706 (547-882)	1340 (897-1610)	1730 (1150-2600)	360
Age 6-11 years	09-10	255 (206-316)	275 (209-346)	666 (552-749)	1480 (1180-1720)	1870 (1500-2870)	371
Age 12-19 years	99-00	250 (191-327)	317 (242-410)	672 (454-888)	1760 (973-2480)	2920 (1950-4330)	746
Age 12-19 years	01-02	267 (231-308)	321 (255-399)	729 (617-856)	1480 (1230-1800)	2180 (1560-3440)	744
Age 12-19 years	03-04	314 (267-369)	400 (333-468)	866 (736-1050)	1690 (1410-2080)	2620 (2000-2890)	729
Age 12-19 years	05-06	292 (245-348)	393 (350-492)	877 (681-1010)	1620 (1470-1800)	2360 (1780-2960)	693
Age 12-19 years	07-08	250 (203-309)	281 (217-444)	832 (645-1000)	1450 (1100-2030)	2390 (1450-3320)	375
Age 12-19 years	09-10	194 (154-244)	229 (181-318)	632 (479-735)	1340 (812-2040)	2190 (1340-2960)	447
Age 20+ years	99-00	230 (193-274)	310 (242-375)	734 (599-888)	2000 (1490-2390)	2790 (2510-3540)	1471
Age 20+ years	01-02	254 (223-289)	357 (314-397)	835 (760-914)	1660 (1460-1890)	2840 (1890-3610)	1654
Age 20+ years	03-04	286 (253-324)	394 (311-465)	900 (824-960)	1820 (1560-2060)	2630 (2350-3100)	1524
Age 20+ years	05-06	280 (238-330)	379 (332-460)	958 (843-1110)	1970 (1760-2310)	3130 (2540-3570)	1484
Age 20+ years	07-08	239 (205-280)	311 (258-374)	923 (746-1090)	1800 (1480-2370)	3000 (2210-4030)	1689
Age 20+ years	09-10	215 (189-243)	272 (228-320)	768 (666-930)	1850 (1590-2140)	2770 (2350-3690)	1974
Males	99-00	254 (212-304)	351 (266-418)	778 (579-1050)	2000 (1580-2400)	2730 (2430-3350)	1219
Males	01-02	262 (233-295)	340 (314-387)	873 (769-957)	1810 (1490-2470)	3050 (1990-4070)	1375
Males	03-04	314 (280-351)	425 (376-477)	938 (840-1060)	1760 (1540-2050)	2620 (2060-3230)	1244
Males	05-06	301 (247-368)	421 (341-515)	1000 (854-1150)	2020 (1730-2330)	3130 (2660-3340)	1252
Males	07-08	245 (215-278)	321 (261-389)	882 (714-1030)	1620 (1420-2050)	2700 (2000-3360)	1198
Males	09-10	210 (173-256)	254 (207-324)	718 (583-870)	1670 (1300-2110)	2680 (1850-4060)	1377
Females	99-00	226 (180-284)	287 (236-339)	684 (560-799)	1890 (1200-2460)	2830 (2100-4330)	1329
Females	01-02	255 (226-288)	357 (298-397)	759 (680-840)	1450 (1190-1700)	2200 (1710-2950)	1419
Females	03-04	283 (233-343)	371 (278-465)	859 (706-984)	1810 (1440-2170)	2630 (2210-3440)	1350
Females	05-06	267 (220-324)	359 (318-445)	874 (716-1030)	1770 (1440-2020)	2660 (2040-3270)	1276
Females	07-08	240 (196-293)	301 (234-394)	875 (747-1030)	1870 (1510-2200)	2920 (2160-3510)	1226
Females	09-10	220 (196-247)	281 (237-325)	749 (662-868)	1850 (1520-2220)	2690 (2350-3200)	1415

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.6, 1.9, 0.3, 0.1, 0.1, and 0.1 respectively.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Enterolactone (1999 – 2010)‡

CAS Number 77756-20-8

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	212 (169-265)	281 (230-335)	631 (539-732)	1650 (950-2210)	2690 (2380-3350)	813
Mexican Americans	01-02	275 (221-342)	347 (312-395)	778 (671-913)	1520 (1090-1920)	2340 (1610-2990)	679
Mexican Americans	03-04	275 (239-316)	376 (316-435)	849 (744-958)	1560 (1320-1860)	2240 (1860-3100)	653
Mexican Americans	05-06	359 (311-415)	420 (364-515)	914 (750-1080)	1710 (1340-2060)	2660 (1950-3180)	634
Mexican Americans	07-08	227 (182-283)	320 (240-385)	747 (634-876)	1520 (1300-1740)	2070 (1650-2840)	520
Mexican Americans	09-10	198 (166-237)	265 (215-303)	642 (524-752)	1290 (981-1640)	1930 (1380-2280)	604
Non-Hispanic blacks	99-00	262 (196-349)	363 (293-440)	759 (629-925)	1730 (1000-2420)	2500 (1870-3280)	605
Non-Hispanic blacks	01-02	278 (226-342)	418 (341-479)	769 (686-853)	1450 (1160-1840)	2000 (1540-2420)	706
Non-Hispanic blacks	03-04	328 (285-378)	437 (362-526)	942 (768-1110)	1580 (1360-1820)	2280 (1880-2640)	699
Non-Hispanic blacks	05-06	276 (237-322)	411 (346-483)	924 (827-1050)	1660 (1430-2040)	2620 (2220-3080)	662
Non-Hispanic blacks	07-08	252 (185-343)	362 (272-452)	902 (700-1120)	1820 (1320-2100)	2350 (1920-3160)	562
Non-Hispanic blacks	09-10	187 (140-250)	267 (180-346)	777 (543-945)	1410 (1150-1810)	1920 (1580-2340)	534
Non-Hispanic whites	99-00	247 (196-311)	317 (240-403)	752 (616-955)	2040 (1600-2450)	3000 (2460-3880)	917
Non-Hispanic whites	01-02	267 (235-303)	357 (307-397)	834 (750-923)	1630 (1420-1890)	2780 (1820-3740)	1222
Non-Hispanic whites	03-04	299 (254-352)	396 (299-488)	900 (789-996)	1810 (1510-2140)	2680 (2310-3230)	1079
Non-Hispanic whites	05-06	274 (228-329)	373 (318-460)	923 (745-1080)	1800 (1610-2020)	2910 (2360-3220)	1039
Non-Hispanic whites	07-08	265 (218-322)	328 (266-409)	926 (733-1130)	1790 (1420-2580)	3030 (2050-4310)	993
Non-Hispanic whites	09-10	236 (210-265)	293 (244-334)	765 (660-899)	1900 (1590-2310)	2990 (2210-4300)	1186

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.6, 1.9, 0.3, 0.1, 0.1, and 0.1 respectively.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Enterolactone (creatinine corrected) (1999 – 2010)‡

CAS Number 77756-20-8

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	218 (184-260)	284 (247-336)	733 (613-869)	1580 (1290-1830)	2250 (1860-2830)	2548
Total population	01-02	243 (220-268)	324 (293-360)	756 (668-858)	1430 (1250-1580)	2120 (1720-2450)	2794
Total population	03-04	279 (245-317)	371 (324-430)	810 (697-911)	1590 (1350-1910)	2400 (2000-2890)	2594
Total population	05-06	276 (237-321)	382 (329-448)	856 (775-975)	1640 (1480-1840)	2650 (2240-3380)	2528
Total population	07-08	243 (211-281)	345 (292-402)	826 (733-946)	1650 (1390-2050)	2730 (2080-3510)	2424
Total population	09-10	230 (206-258)	301 (268-342)	779 (695-882)	1800 (1540-2090)	2820 (2400-3420)	2791
Age 6-11 years	99-00	315 (238-416)	384 (266-435)	704 (495-1110)	1580 (1110-2010)	2100 (1580-3040)	331
Age 6-11 years	01-02	327 (274-391)	349 (263-478)	738 (603-994)	1420 (1140-1800)	2020 (1420-2940)	396
Age 6-11 years	03-04	409 (310-540)	470 (354-632)	904 (669-1150)	1480 (1090-2420)	2300 (1480-2690)	341
Age 6-11 years	05-06	331 (268-408)	459 (325-528)	778 (637-1010)	1480 (1130-1750)	1820 (1430-2510)	351
Age 6-11 years	07-08	313 (255-384)	402 (309-484)	766 (725-824)	1310 (1020-1590)	1650 (1310-2220)	360
Age 6-11 years	09-10	346 (283-424)	416 (323-471)	753 (607-904)	1440 (1100-2000)	2290 (1440-3340)	370
Age 12-19 years	99-00	169 (133-214)	210 (172-264)	486 (371-615)	1150 (742-1540)	1850 (1310-2350)	746
Age 12-19 years	01-02	206 (178-239)	255 (223-293)	619 (466-753)	1110 (869-1480)	1500 (1140-2080)	744
Age 12-19 years	03-04	235 (202-273)	285 (255-307)	631 (533-744)	1230 (993-1350)	1510 (1240-2230)	729
Age 12-19 years	05-06	216 (184-254)	297 (255-336)	627 (514-701)	1010 (853-1170)	1410 (1150-1700)	693
Age 12-19 years	07-08	192 (149-248)	273 (197-373)	540 (477-676)	936 (708-1220)	1620 (936-3420)	375
Age 12-19 years	09-10	182 (147-226)	228 (176-295)	514 (362-809)	1140 (817-1530)	1740 (1140-3160)	447
Age 20+ years	99-00	217 (181-261)	288 (249-350)	785 (653-923)	1640 (1330-1890)	2310 (1890-3110)	1471
Age 20+ years	01-02	240 (213-271)	331 (300-375)	786 (672-915)	1460 (1300-1630)	2180 (1890-2470)	1654
Age 20+ years	03-04	274 (236-318)	377 (316-448)	823 (697-937)	1700 (1430-1980)	2480 (2040-3100)	1524
Age 20+ years	05-06	281 (236-335)	399 (326-491)	942 (831-1040)	1730 (1570-2200)	2930 (2350-3530)	1484
Age 20+ years	07-08	246 (210-287)	350 (291-418)	906 (784-1040)	1810 (1420-2360)	2820 (2320-3570)	1689
Age 20+ years	09-10	229 (203-257)	300 (271-346)	828 (727-939)	1920 (1640-2350)	3070 (2530-3760)	1974
Males	99-00	199 (170-234)	263 (228-309)	664 (490-828)	1380 (1200-1710)	2030 (1780-2480)	1219
Males	01-02	213 (191-238)	287 (255-316)	682 (601-764)	1350 (1090-1580)	1980 (1570-2550)	1375
Males	03-04	245 (215-280)	330 (288-372)	729 (676-808)	1330 (1160-1580)	2040 (1590-2380)	1244
Males	05-06	243 (196-300)	336 (279-418)	800 (707-897)	1500 (1270-1680)	2200 (1890-2480)	1252
Males	07-08	206 (176-241)	303 (251-358)	715 (594-859)	1410 (1080-1850)	2140 (1560-3060)	1198
Males	09-10	192 (157-235)	261 (210-310)	650 (543-766)	1440 (1170-1670)	2300 (1540-3220)	1376
Females	99-00	238 (191-297)	303 (260-379)	819 (662-968)	1720 (1390-2010)	2550 (1940-3390)	1329
Females	01-02	274 (241-312)	356 (313-407)	833 (710-1000)	1490 (1320-1670)	2150 (1890-2410)	1419
Females	03-04	314 (257-385)	414 (327-510)	866 (704-1090)	1840 (1460-2280)	2840 (2220-3910)	1350
Females	05-06	313 (261-375)	419 (337-529)	954 (809-1060)	1840 (1550-2320)	3100 (2350-4580)	1276
Females	07-08	285 (234-346)	396 (327-469)	966 (843-1060)	1910 (1560-2410)	3040 (2730-3740)	1226
Females	09-10	274 (244-309)	362 (305-416)	907 (789-1100)	2200 (1730-2810)	3570 (2800-4200)	1415

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Enterolactone (creatinine corrected) (1999 – 2010)‡

CAS Number 77756-20-8

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	194 (165-228)	254 (225-282)	605 (519-695)	1340 (969-1740)	2100 (1620-2790)	813
Mexican Americans	01-02	259 (213-314)	362 (296-409)	730 (586-905)	1240 (1010-1490)	1630 (1240-2540)	679
Mexican Americans	03-04	248 (217-282)	350 (310-403)	724 (657-826)	1320 (1020-1560)	1820 (1460-2170)	653
Mexican Americans	05-06	324 (267-393)	379 (315-471)	773 (679-953)	1560 (1290-1680)	2060 (1630-2560)	634
Mexican Americans	07-08	223 (185-268)	312 (267-379)	733 (642-871)	1330 (1110-1580)	1860 (1620-2160)	520
Mexican Americans	09-10	208 (174-249)	284 (214-322)	624 (505-728)	1270 (1090-1460)	1870 (1460-2130)	604
Non-Hispanic blacks	99-00	168 (125-226)	214 (173-274)	546 (411-732)	1130 (874-1450)	1590 (1120-2560)	605
Non-Hispanic blacks	01-02	195 (155-245)	302 (257-331)	562 (470-629)	985 (821-1130)	1490 (1080-1730)	706
Non-Hispanic blacks	03-04	233 (197-274)	303 (276-347)	621 (512-707)	1050 (917-1350)	1550 (1170-2220)	699
Non-Hispanic blacks	05-06	193 (167-223)	286 (252-331)	630 (556-729)	1120 (967-1230)	1490 (1220-1650)	662
Non-Hispanic blacks	07-08	195 (144-264)	291 (191-408)	659 (564-741)	1220 (993-1360)	1480 (1350-2060)	562
Non-Hispanic blacks	09-10	150 (113-200)	256 (183-328)	539 (457-659)	927 (757-1160)	1310 (1000-1720)	533
Non-Hispanic whites	99-00	241 (194-300)	323 (279-388)	828 (674-997)	1780 (1390-2020)	2490 (1930-3340)	917
Non-Hispanic whites	01-02	264 (232-301)	339 (299-393)	833 (719-944)	1530 (1340-1880)	2410 (1940-2800)	1222
Non-Hispanic whites	03-04	294 (246-353)	399 (326-488)	836 (707-980)	1660 (1330-2040)	2500 (1990-3350)	1079
Non-Hispanic whites	05-06	288 (238-347)	403 (326-500)	926 (809-1050)	1700 (1500-2200)	2930 (2230-3710)	1039
Non-Hispanic whites	07-08	276 (225-337)	386 (318-467)	911 (736-1100)	1870 (1370-2730)	2850 (2200-3640)	993
Non-Hispanic whites	09-10	264 (233-299)	329 (290-385)	895 (779-1030)	2140 (1640-2780)	3420 (2740-3990)	1186

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Equol (1999 – 2010)‡

CAS Number 531-95-3

Metabolite of Daidzein

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	8.37 (7.21-9.72)	8.02 (6.27-9.90)	17.2 (15.2-19.8)	35.0 (28.9-41.6)	53.7 (40.1-74.2)	2182
Total population	01-02	9.17 (7.76-10.8)	9.00 (7.40-10.5)	19.6 (16.6-23.5)	42.1 (34.3-51.5)	73.5 (53.6-89.2)	2794
Total population	03-04	8.02 (7.07-9.10)	8.00 (6.80-9.40)	18.2 (15.2-20.8)	36.6 (31.3-40.0)	64.9 (45.4-97.9)	2590
Total population	05-06	8.40 (7.63-9.24)	8.61 (7.89-9.17)	18.1 (16.4-20.4)	37.6 (33.9-41.8)	64.5 (54.8-85.3)	2527
Total population	07-08	7.29 (6.21-8.57)	7.18 (6.18-8.44)	15.3 (12.5-18.5)	30.7 (24.5-43.2)	65.9 (50.7-131)	2424
Total population	09-10	7.82 (6.91-8.85)	7.39 (6.59-8.34)	17.1 (14.9-18.9)	38.0 (33.9-42.4)	68.6 (52.4-95.6)	2792
Age 6-11 years	99-00	10.5 (7.65-14.3)	11.7 (5.43-18.6)	24.9 (17.5-29.5)	34.4 (29.5-53.3)	56.1 (30.1-149)	272
Age 6-11 years	01-02	12.2 (10.2-14.6)	13.7 (11.1-16.2)	26.2 (17.9-37.9)	50.4 (35.0-84.3)	85.4 (50.4-159)	396
Age 6-11 years	03-04	12.4 (9.71-15.8)	12.1 (8.40-17.8)	24.4 (20.1-31.2)	46.7 (33.5-82.3)	85.8 (44.9-118)	341
Age 6-11 years	05-06	13.3 (11.3-15.7)	13.5 (12.1-16.8)	26.5 (20.8-34.1)	45.6 (39.3-69.6)	70.3 (44.7-144)	351
Age 6-11 years	07-08	10.9 (8.38-14.3)	11.3 (8.60-13.2)	22.0 (15.8-27.5)	55.9 (24.2-77.8)	73.3 (59.5-115)	360
Age 6-11 years	09-10	13.4 (9.85-18.4)	12.7 (9.01-16.7)	28.5 (22.6-41.8)	68.0 (45.3-179)	242 (68.0-598)	371
Age 12-19 years	99-00	10.9 (8.64-13.8)	10.8 (8.52-13.4)	22.3 (16.0-34.9)	42.9 (34.1-71.3)	71.6 (48.1-210)	657
Age 12-19 years	01-02	10.2 (8.50-12.1)	10.5 (8.20-12.5)	20.5 (16.8-24.8)	43.1 (30.1-56.1)	70.0 (46.3-99.2)	744
Age 12-19 years	03-04	10.6 (8.97-12.4)	10.5 (8.70-12.2)	22.6 (19.3-26.4)	39.9 (34.8-45.1)	61.9 (45.1-113)	729
Age 12-19 years	05-06	11.6 (10.3-13.0)	11.4 (9.25-12.3)	23.2 (20.3-28.8)	46.3 (37.2-64.0)	81.8 (50.1-146)	693
Age 12-19 years	07-08	8.47 (7.19-9.98)	7.91 (6.79-9.30)	16.0 (12.8-19.0)	32.7 (24.5-43.2)	65.6 (33.6-148)	375
Age 12-19 years	09-10	11.4 (8.90-14.6)	9.60 (7.57-14.1)	24.6 (19.6-29.6)	48.0 (35.9-112)	220 (69.4-701)	447
Age 20+ years	99-00	7.79 (6.79-8.94)	7.43 (5.71-8.85)	16.0 (13.6-18.1)	33.1 (24.4-39.7)	52.2 (36.3-93.9)	1253
Age 20+ years	01-02	8.70 (7.29-10.4)	8.00 (6.20-10.2)	18.6 (15.0-22.3)	41.3 (34.1-47.4)	73.5 (53.9-89.0)	1654
Age 20+ years	03-04	7.28 (6.37-8.33)	7.20 (6.00-8.70)	16.0 (14.2-19.2)	33.9 (28.2-38.9)	63.0 (41.3-121)	1520
Age 20+ years	05-06	7.58 (6.82-8.42)	7.57 (7.01-8.30)	16.6 (14.9-18.2)	33.6 (29.1-42.6)	58.1 (50.6-89.0)	1483
Age 20+ years	07-08	6.82 (5.70-8.17)	6.75 (5.70-7.98)	14.3 (11.6-18.3)	28.9 (23.6-41.9)	65.8 (47.7-135)	1689
Age 20+ years	09-10	6.97 (6.07-8.00)	6.72 (5.78-7.75)	15.0 (13.1-17.1)	33.2 (28.4-38.3)	57.7 (44.6-75.4)	1974
Males	99-00	9.15 (7.37-11.4)	8.44 (6.36-11.2)	19.0 (15.9-24.0)	35.6 (29.2-54.8)	71.3 (39.7-166)	1042
Males	01-02	9.41 (7.99-11.1)	9.20 (7.70-10.8)	20.1 (16.7-26.1)	43.1 (32.4-53.1)	61.7 (51.8-81.5)	1375
Males	03-04	8.56 (7.54-9.72)	8.70 (7.20-10.2)	19.0 (15.9-21.6)	38.0 (31.9-44.2)	72.6 (45.4-100)	1240
Males	05-06	9.13 (7.99-10.4)	9.42 (8.16-10.8)	20.0 (16.7-23.8)	39.4 (33.8-45.3)	63.1 (52.0-88.1)	1252
Males	07-08	7.58 (6.40-8.97)	7.74 (6.62-8.80)	15.5 (12.5-18.2)	32.7 (24.5-41.9)	65.6 (47.7-133)	1198
Males	09-10	8.20 (7.14-9.42)	8.18 (6.86-9.67)	18.4 (15.2-21.3)	39.3 (31.4-48.0)	70.7 (53.4-112)	1377
Females	99-00	7.70 (6.79-8.75)	7.57 (5.79-9.04)	15.6 (12.7-18.9)	33.6 (26.7-37.7)	48.2 (37.1-62.9)	1140
Females	01-02	8.94 (7.38-10.8)	8.60 (6.70-10.7)	19.0 (15.6-22.9)	41.6 (33.3-51.5)	79.8 (56.6-122)	1419
Females	03-04	7.55 (6.44-8.84)	7.30 (6.20-9.00)	16.9 (14.7-19.8)	33.8 (28.3-40.0)	60.3 (42.5-116)	1350
Females	05-06	7.75 (6.85-8.78)	7.57 (6.87-8.37)	16.7 (15.0-18.0)	35.6 (30.9-43.1)	69.2 (51.7-125)	1275
Females	07-08	7.03 (5.84-8.47)	6.75 (5.85-7.85)	15.1 (12.3-19.0)	30.0 (24.4-48.3)	76.3 (49.5-163)	1226
Females	09-10	7.47 (6.33-8.81)	6.75 (5.70-7.85)	15.4 (13.1-18.5)	36.4 (29.4-45.3)	65.2 (46.4-130)	1415

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 3.0, 3.3, 0.3, 0.06, 0.06, and 0.06 respectively.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Equol (1999 – 2010)‡

CAS Number 531-95-3

Metabolite of Daidzein

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	5.24 (4.77-5.76)	4.51 (3.65-5.18)	9.48 (7.96-10.3)	18.5 (14.5-22.6)	30.9 (21.6-48.4)	726
Mexican Americans	01-02	7.22 (6.04-8.62)	6.50 (4.40-9.10)	14.2 (11.3-20.1)	31.4 (21.1-41.0)	42.4 (38.1-60.2)	679
Mexican Americans	03-04	6.08 (5.08-7.28)	5.70 (4.70-6.80)	12.5 (9.80-15.4)	26.1 (18.1-39.7)	43.6 (34.3-88.2)	653
Mexican Americans	05-06	6.04 (5.31-6.87)	6.13 (5.28-7.35)	13.3 (11.2-14.7)	25.2 (19.6-33.4)	47.6 (33.6-67.1)	634
Mexican Americans	07-08	5.52 (5.02-6.07)	5.15 (4.71-5.86)	11.4 (10.1-14.0)	23.2 (20.2-30.3)	39.9 (30.7-60.9)	520
Mexican Americans	09-10	5.07 (4.51-5.71)	5.13 (4.45-5.74)	11.1 (8.72-13.0)	20.2 (17.1-29.7)	46.3 (29.7-75.4)	604
Non-Hispanic blacks	99-00	6.73 (5.20-8.71)	6.24 (3.86-10.0)	15.1 (12.7-17.6)	27.6 (19.4-35.6)	36.4 (28.9-49.4)	514
Non-Hispanic blacks	01-02	7.15 (6.06-8.43)	6.10 (4.70-7.60)	14.7 (12.0-18.7)	30.9 (22.8-41.9)	45.7 (36.1-90.5)	706
Non-Hispanic blacks	03-04	7.35 (6.16-8.79)	7.90 (6.00-9.60)	16.5 (14.2-18.3)	32.0 (25.1-37.5)	47.0 (37.8-68.2)	696
Non-Hispanic blacks	05-06	6.96 (5.89-8.22)	6.37 (5.44-7.95)	15.1 (11.7-20.2)	30.1 (23.8-39.4)	48.8 (38.7-64.9)	662
Non-Hispanic blacks	07-08	6.73 (5.28-8.59)	6.69 (5.17-8.19)	15.2 (11.9-18.5)	31.3 (21.7-50.7)	72.0 (36.1-402)	562
Non-Hispanic blacks	09-10	5.59 (4.98-6.27)	5.98 (5.37-6.48)	12.2 (10.8-14.2)	25.0 (21.6-31.0)	43.3 (32.4-53.7)	534
Non-Hispanic whites	99-00	9.26 (7.80-11.0)	8.98 (6.73-11.9)	19.0 (16.1-22.8)	36.2 (30.1-45.4)	56.1 (42.1-89.4)	758
Non-Hispanic whites	01-02	9.91 (7.95-12.4)	10.0 (7.30-12.6)	22.0 (17.4-27.4)	44.4 (35.1-57.5)	74.4 (55.1-107)	1222
Non-Hispanic whites	03-04	8.52 (7.26-10.0)	8.80 (7.10-10.3)	19.3 (15.4-23.0)	37.7 (31.7-44.2)	73.1 (46.7-120)	1078
Non-Hispanic whites	05-06	9.05 (8.08-10.1)	9.49 (8.47-10.4)	19.4 (16.6-23.2)	39.2 (33.9-45.1)	69.2 (52.2-130)	1038
Non-Hispanic whites	07-08	8.01 (6.45-9.93)	8.19 (6.59-9.49)	16.1 (12.5-21.7)	32.7 (24.1-55.9)	79.5 (47.7-152)	993
Non-Hispanic whites	09-10	9.45 (8.04-11.1)	9.15 (7.87-10.2)	19.3 (17.5-22.4)	41.3 (35.4-48.7)	75.4 (52.4-189)	1186

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 3.0, 3.3, 0.3, 0.06, 0.06, and 0.06 respectively.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Equol (creatinine corrected) (1999 – 2010)‡

CAS Number 531-95-3

Metabolite of Daidzein

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	7.70 (6.82-8.70)	7.96 (6.87-9.35)	16.2 (13.2-18.6)	30.6 (26.9-35.1)	50.3 (41.8-67.3)	2182
Total population	01-02	8.60 (7.26-10.2)	7.98 (6.62-9.76)	17.6 (14.8-21.8)	37.8 (30.3-46.3)	62.6 (50.0-85.0)	2794
Total population	03-04	7.52 (6.83-8.29)	7.29 (6.56-8.18)	14.6 (13.3-15.7)	27.8 (24.7-31.9)	50.6 (39.9-75.0)	2590
Total population	05-06	8.18 (7.33-9.14)	7.92 (7.01-8.76)	15.9 (14.2-17.4)	32.7 (29.9-35.1)	69.1 (48.4-105)	2527
Total population	07-08	7.33 (6.34-8.48)	6.91 (6.13-7.86)	14.4 (12.2-16.7)	28.9 (23.5-37.4)	60.9 (40.5-93.1)	2424
Total population	09-10	8.38 (7.52-9.33)	7.70 (6.80-8.69)	16.6 (15.3-18.1)	36.3 (30.5-44.5)	73.4 (54.2-122)	2791
Age 6-11 years	99-00	10.3 (7.83-13.5)	11.4 (7.46-16.3)	22.6 (14.7-27.2)	32.7 (25.5-46.0)	47.8 (32.7-150)	272
Age 6-11 years	01-02	13.9 (11.2-17.2)	14.0 (10.6-17.0)	28.8 (19.6-39.8)	54.4 (34.9-99.8)	88.2 (56.8-186)	396
Age 6-11 years	03-04	13.2 (10.9-15.9)	13.2 (9.19-17.5)	24.2 (20.6-28.0)	41.6 (35.2-64.1)	93.5 (45.4-117)	341
Age 6-11 years	05-06	14.7 (12.6-17.1)	15.3 (13.8-17.4)	26.2 (21.2-34.4)	48.0 (40.6-70.3)	88.9 (55.4-267)	351
Age 6-11 years	07-08	13.4 (10.8-16.6)	13.1 (10.6-15.2)	22.6 (16.9-32.8)	45.2 (28.8-84.4)	72.8 (45.8-199)	360
Age 6-11 years	09-10	18.3 (13.5-24.7)	15.7 (11.5-19.3)	42.0 (28.1-54.1)	84.1 (63.5-183)	232 (98.4-498)	370
Age 12-19 years	99-00	7.61 (6.17-9.39)	8.02 (6.72-9.29)	14.0 (11.4-20.4)	27.5 (20.8-38.3)	47.4 (27.5-149)	657
Age 12-19 years	01-02	7.83 (6.68-9.17)	7.77 (6.29-9.13)	17.4 (14.9-19.2)	31.9 (25.3-41.7)	54.3 (33.0-76.7)	744
Age 12-19 years	03-04	7.91 (6.59-9.49)	8.11 (6.80-9.09)	14.5 (11.8-17.5)	30.1 (21.0-38.2)	40.6 (32.6-66.9)	729
Age 12-19 years	05-06	8.61 (7.54-9.83)	8.03 (7.00-9.21)	16.3 (13.4-19.0)	31.8 (25.3-37.6)	62.0 (37.0-129)	693
Age 12-19 years	07-08	6.51 (5.69-7.46)	5.83 (4.78-6.71)	12.6 (10.5-16.4)	28.7 (20.8-35.3)	50.4 (30.7-72.7)	375
Age 12-19 years	09-10	10.7 (8.50-13.5)	8.95 (7.40-10.3)	20.6 (15.9-23.3)	46.3 (31.3-101)	215 (58.9-919)	447
Age 20+ years	99-00	7.45 (6.60-8.41)	7.63 (6.35-9.22)	15.3 (12.7-17.7)	30.8 (25.0-37.2)	53.2 (41.2-71.8)	1253
Age 20+ years	01-02	8.23 (6.93-9.79)	7.52 (5.97-9.56)	16.6 (14.0-20.7)	36.4 (29.3-42.9)	58.7 (47.9-85.0)	1654
Age 20+ years	03-04	6.98 (6.30-7.73)	6.76 (6.05-7.65)	13.6 (12.5-14.8)	24.6 (21.9-29.4)	42.8 (35.7-81.6)	1520
Age 20+ years	05-06	7.60 (6.72-8.59)	7.43 (6.63-8.21)	14.1 (12.4-16.4)	30.1 (23.9-34.9)	65.9 (42.7-123)	1483
Age 20+ years	07-08	7.00 (5.90-8.31)	6.64 (5.73-7.57)	13.2 (11.2-16.2)	26.4 (21.6-38.4)	57.7 (38.4-97.0)	1689
Age 20+ years	09-10	7.43 (6.61-8.34)	6.97 (6.09-8.08)	15.0 (13.5-16.7)	29.2 (25.3-34.5)	54.7 (41.4-75.7)	1974
Males	99-00	7.01 (5.93-8.29)	7.32 (5.63-8.78)	13.8 (11.7-17.6)	29.3 (21.4-41.8)	54.1 (35.8-81.0)	1042
Males	01-02	7.66 (6.39-9.18)	7.43 (5.81-9.16)	16.2 (14.0-19.4)	32.9 (27.9-40.4)	54.3 (37.8-67.1)	1375
Males	03-04	6.71 (6.02-7.47)	6.63 (5.78-7.29)	13.3 (11.9-15.5)	25.7 (23.1-30.3)	51.1 (37.1-76.7)	1240
Males	05-06	7.35 (6.40-8.43)	7.03 (5.90-8.67)	14.9 (12.0-18.3)	31.4 (26.8-34.0)	57.6 (42.7-83.5)	1252
Males	07-08	6.39 (5.52-7.41)	6.10 (5.28-6.85)	12.2 (10.6-14.3)	25.7 (20.4-33.0)	48.4 (35.3-77.1)	1198
Males	09-10	7.49 (6.54-8.59)	6.90 (5.98-8.20)	15.7 (14.1-17.3)	32.4 (25.3-44.1)	73.4 (44.2-130)	1376
Females	99-00	8.41 (7.33-9.66)	8.71 (7.33-10.1)	17.7 (15.1-20.0)	31.6 (27.5-37.2)	46.3 (41.0-56.5)	1140
Females	01-02	9.60 (7.99-11.5)	8.66 (6.97-10.6)	19.2 (15.7-23.7)	41.7 (32.3-55.9)	85.0 (61.7-115)	1419
Females	03-04	8.38 (7.39-9.51)	8.29 (7.03-9.28)	15.1 (14.0-16.6)	30.6 (25.0-32.5)	45.4 (38.7-102)	1350
Females	05-06	9.07 (8.04-10.2)	8.49 (7.90-9.22)	16.7 (15.3-18.1)	34.3 (29.9-40.7)	85.1 (48.4-144)	1275
Females	07-08	8.35 (6.98-9.99)	7.97 (6.83-9.31)	16.0 (13.4-20.0)	32.8 (23.7-46.1)	67.5 (41.6-167)	1226
Females	09-10	9.34 (7.98-10.9)	8.44 (7.24-9.76)	17.4 (15.1-20.4)	39.6 (30.7-54.2)	72.9 (51.6-158)	1415

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Equol (creatinine corrected) (1999 – 2010)‡

CAS Number 531-95-3

Metabolite of Daidzein

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	4.89 (4.36-5.47)	4.73 (3.90-5.27)	8.85 (8.18-9.91)	22.3 (16.5-26.8)	37.1 (25.3-57.6)	726
Mexican Americans	01-02	6.79 (5.82-7.92)	6.81 (5.55-8.04)	14.9 (11.7-17.8)	29.1 (22.9-36.0)	41.3 (31.4-47.1)	679
Mexican Americans	03-04	5.48 (4.60-6.54)	4.72 (3.95-5.78)	10.1 (7.76-13.4)	24.4 (17.2-30.9)	35.6 (27.6-102)	653
Mexican Americans	05-06	5.45 (4.84-6.14)	5.00 (4.37-5.85)	9.94 (8.80-12.4)	22.3 (19.3-30.0)	39.4 (30.0-61.9)	634
Mexican Americans	07-08	5.42 (4.82-6.09)	4.87 (4.28-5.66)	10.9 (9.21-12.2)	20.9 (17.0-26.9)	34.9 (26.9-60.9)	520
Mexican Americans	09-10	5.33 (4.60-6.18)	5.00 (4.17-6.16)	9.49 (8.54-11.2)	19.6 (15.1-35.6)	48.5 (30.3-126)	604
Non-Hispanic blacks	99-00	4.36 (3.41-5.57)	4.57 (2.94-6.23)	10.2 (7.96-12.0)	17.1 (14.8-19.8)	26.0 (19.6-32.0)	514
Non-Hispanic blacks	01-02	5.01 (4.26-5.89)	4.48 (3.80-5.42)	11.0 (8.80-13.0)	22.7 (16.5-29.3)	35.4 (24.8-46.7)	706
Non-Hispanic blacks	03-04	5.23 (4.44-6.16)	5.28 (4.67-6.10)	10.3 (8.61-12.3)	20.2 (17.1-23.8)	29.4 (23.9-42.3)	696
Non-Hispanic blacks	05-06	4.88 (4.11-5.78)	4.72 (3.55-6.00)	9.40 (7.54-12.0)	21.5 (16.8-24.4)	31.6 (24.4-51.4)	662
Non-Hispanic blacks	07-08	5.21 (4.11-6.61)	4.73 (3.77-6.22)	9.81 (7.77-12.7)	19.3 (14.7-28.8)	50.6 (24.2-314)	562
Non-Hispanic blacks	09-10	4.50 (4.03-5.01)	4.57 (3.80-5.29)	9.76 (8.00-11.3)	18.4 (15.6-22.3)	26.8 (22.8-29.7)	533
Non-Hispanic whites	99-00	9.13 (7.85-10.6)	9.51 (7.63-11.2)	18.0 (15.2-21.6)	35.4 (29.5-41.3)	56.5 (46.0-73.0)	758
Non-Hispanic whites	01-02	9.81 (7.93-12.1)	9.17 (7.06-12.2)	19.8 (15.4-25.6)	41.3 (30.7-55.9)	66.4 (56.8-85.0)	1222
Non-Hispanic whites	03-04	8.40 (7.50-9.41)	8.17 (7.13-9.19)	15.6 (14.1-17.1)	30.6 (25.0-32.8)	56.8 (38.0-107)	1078
Non-Hispanic whites	05-06	9.51 (8.48-10.7)	9.17 (8.06-10.5)	17.1 (15.0-19.4)	34.5 (31.0-40.6)	77.7 (48.4-129)	1038
Non-Hispanic whites	07-08	8.33 (6.76-10.3)	7.94 (6.62-9.61)	15.7 (12.5-20.4)	30.7 (23.4-46.1)	65.2 (38.9-144)	993
Non-Hispanic whites	09-10	10.6 (9.17-12.2)	9.69 (8.74-10.8)	20.5 (17.8-22.5)	44.2 (33.4-60.8)	84.1 (60.3-187)	1186

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Genistein (1999 – 2010)‡

CAS Number 446-72-0

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	24.4 (19.7-30.3)	27.0 (22.5-32.8)	93.6 (75.8-118)	284 (244-331)	563 (413-709)	2557
Total population	01-02	33.0 (30.1-36.2)	29.0 (26.8-31.8)	92.5 (77.9-109)	306 (240-372)	619 (523-719)	2794
Total population	03-04	31.1 (29.0-33.3)	26.2 (23.9-29.7)	87.8 (78.8-102)	286 (239-313)	528 (402-610)	2594
Total population	05-06	28.7 (25.8-32.0)	26.0 (20.9-29.7)	81.0 (73.3-92.4)	261 (232-308)	523 (422-591)	2528
Total population	07-08	31.3 (27.3-35.8)	25.7 (22.8-28.9)	89.7 (73.4-109)	309 (227-411)	665 (527-999)	2424
Total population	09-10	32.5 (29.3-36.2)	28.2 (23.2-33.1)	102 (88.8-120)	356 (295-428)	691 (530-1060)	2792
Age 6-11 years	99-00	27.6 (21.1-36.1)	31.9 (18.1-42.6)	104 (67.6-151)	220 (151-315)	376 (272-725)	331
Age 6-11 years	01-02	39.2 (33.4-46.0)	31.7 (25.8-39.6)	94.1 (62.3-158)	258 (190-426)	502 (258-830)	396
Age 6-11 years	03-04	33.6 (27.8-40.6)	29.3 (23.1-37.8)	79.4 (56.7-111)	193 (146-274)	351 (207-376)	341
Age 6-11 years	05-06	38.6 (29.8-49.9)	34.6 (25.3-42.5)	109 (76.6-181)	367 (252-568)	629 (367-2390)	351
Age 6-11 years	07-08	43.7 (32.6-58.5)	34.3 (22.1-56.4)	139 (82.5-194)	505 (251-763)	840 (505-2200)	360
Age 6-11 years	09-10	46.1 (37.8-56.3)	38.4 (30.7-46.9)	167 (96.9-253)	467 (280-616)	958 (528-1210)	371
Age 12-19 years	99-00	43.7 (34.2-55.7)	45.4 (34.3-60.5)	138 (93.7-179)	319 (245-464)	547 (321-777)	754
Age 12-19 years	01-02	34.1 (27.2-42.8)	29.0 (26.1-32.9)	90.6 (71.5-113)	278 (216-363)	470 (360-687)	744
Age 12-19 years	03-04	34.7 (29.3-41.0)	29.0 (23.4-37.6)	111 (69.3-141)	304 (206-376)	530 (358-671)	729
Age 12-19 years	05-06	34.1 (28.8-40.5)	26.9 (20.5-35.6)	90.5 (76.1-115)	307 (209-394)	486 (372-982)	693
Age 12-19 years	07-08	35.2 (28.5-43.5)	28.4 (23.7-34.5)	111 (63.7-138)	279 (160-483)	538 (320-954)	375
Age 12-19 years	09-10	39.2 (29.5-52.0)	34.4 (23.5-47.1)	141 (77.0-188)	373 (242-520)	620 (445-1160)	447
Age 20+ years	99-00	21.9 (17.6-27.2)	24.0 (21.7-28.4)	86.2 (67.5-108)	293 (235-343)	566 (412-744)	1472
Age 20+ years	01-02	32.1 (28.8-35.8)	28.8 (25.4-33.4)	93.4 (77.3-110)	312 (235-389)	627 (537-790)	1654
Age 20+ years	03-04	30.2 (27.8-32.8)	25.9 (22.3-29.8)	87.8 (77.9-103)	296 (239-321)	557 (412-653)	1524
Age 20+ years	05-06	27.0 (23.9-30.6)	25.0 (19.8-28.8)	77.4 (66.7-89.5)	244 (190-308)	518 (413-591)	1484
Age 20+ years	07-08	29.6 (25.4-34.5)	24.7 (21.3-28.4)	84.1 (68.0-98.0)	278 (207-422)	671 (512-1150)	1689
Age 20+ years	09-10	30.5 (26.7-34.8)	26.3 (20.3-31.7)	97.5 (77.3-115)	327 (281-425)	691 (523-1110)	1974
Males	99-00	29.8 (22.2-40.0)	31.9 (26.3-37.2)	108 (79.1-151)	335 (257-440)	709 (437-981)	1222
Males	01-02	32.2 (27.9-37.2)	29.5 (25.4-33.7)	91.2 (73.4-103)	239 (190-331)	474 (335-719)	1375
Males	03-04	33.7 (29.6-38.4)	27.3 (23.4-33.0)	92.6 (68.6-124)	310 (228-351)	562 (443-653)	1244
Males	05-06	32.1 (28.6-36.0)	29.1 (22.7-33.8)	90.2 (77.5-101)	269 (216-340)	494 (394-591)	1252
Males	07-08	33.3 (27.7-40.0)	26.2 (22.3-31.2)	98.0 (71.9-119)	316 (220-477)	723 (501-1510)	1198
Males	09-10	33.5 (29.3-38.2)	28.8 (23.6-35.5)	89.8 (74.7-114)	351 (286-425)	623 (476-967)	1377
Females	99-00	20.3 (17.0-24.2)	23.1 (20.1-26.3)	84.7 (59.6-105)	242 (203-288)	446 (339-619)	1335
Females	01-02	33.7 (30.9-36.8)	28.7 (26.0-32.3)	97.0 (79.9-118)	387 (253-500)	666 (598-807)	1419
Females	03-04	28.7 (25.5-32.4)	25.0 (22.4-28.4)	85.0 (71.2-106)	256 (218-308)	467 (356-620)	1350
Females	05-06	25.9 (22.3-29.9)	22.4 (17.9-27.4)	74.5 (61.0-87.0)	246 (195-329)	526 (398-657)	1276
Females	07-08	29.5 (25.1-34.6)	24.6 (22.2-28.4)	83.5 (63.7-109)	296 (194-432)	661 (448-964)	1226
Females	09-10	31.7 (27.6-36.4)	27.0 (21.8-32.1)	115 (101-129)	371 (290-489)	826 (523-1530)	1415

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.3, 0.8, 0.3, 1.0, 0.2, and 0.2 respectively.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Genistein (1999 – 2010)‡

CAS Number 446-72-0

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	31.1 (25.1-38.5)	30.0 (25.1-37.3)	117 (82.9-179)	328 (248-494)	573 (419-1180)	819
Mexican Americans	01-02	28.3 (22.0-36.4)	25.6 (19.6-32.5)	74.8 (48.8-111)	225 (174-314)	424 (323-523)	679
Mexican Americans	03-04	31.1 (27.5-35.2)	25.2 (19.1-32.6)	83.2 (63.6-120)	319 (252-537)	653 (537-851)	653
Mexican Americans	05-06	27.6 (24.4-31.2)	26.6 (21.5-30.2)	77.0 (63.3-87.3)	255 (187-319)	412 (320-568)	634
Mexican Americans	07-08	30.5 (24.3-38.4)	24.0 (18.9-30.2)	86.8 (68.0-123)	318 (210-414)	603 (414-1130)	520
Mexican Americans	09-10	28.7 (23.7-34.7)	24.2 (18.4-32.3)	84.8 (57.8-120)	257 (197-327)	484 (334-623)	604
Non-Hispanic blacks	99-00	26.7 (19.2-37.0)	32.9 (24.4-41.5)	103 (84.8-137)	257 (213-367)	495 (329-926)	608
Non-Hispanic blacks	01-02	37.6 (27.4-51.6)	35.3 (23.6-49.5)	95.5 (71.1-142)	378 (192-530)	598 (375-1120)	706
Non-Hispanic blacks	03-04	32.3 (24.0-43.4)	27.4 (18.8-44.9)	84.8 (60.5-113)	279 (163-412)	514 (323-852)	699
Non-Hispanic blacks	05-06	31.0 (26.7-36.1)	27.9 (23.0-34.9)	92.3 (69.3-106)	265 (187-355)	458 (371-643)	662
Non-Hispanic blacks	07-08	36.2 (29.3-44.7)	27.3 (22.6-36.8)	124 (84.3-157)	395 (310-530)	912 (567-1490)	562
Non-Hispanic blacks	09-10	33.5 (29.0-38.6)	27.8 (23.2-36.4)	99.6 (79.3-120)	321 (218-392)	625 (410-1010)	534
Non-Hispanic whites	99-00	23.6 (19.1-29.3)	25.6 (21.7-32.0)	91.4 (68.0-122)	288 (227-353)	566 (395-734)	917
Non-Hispanic whites	01-02	30.9 (27.8-34.4)	27.6 (24.6-30.8)	89.7 (71.1-105)	278 (226-365)	626 (485-755)	1222
Non-Hispanic whites	03-04	30.8 (28.2-33.6)	26.2 (22.6-31.0)	93.6 (78.8-112)	279 (225-313)	504 (376-610)	1079
Non-Hispanic whites	05-06	26.9 (23.6-30.6)	23.8 (19.0-29.1)	77.2 (66.2-87.9)	244 (198-316)	518 (391-609)	1039
Non-Hispanic whites	07-08	29.3 (25.2-34.0)	25.2 (22.1-28.5)	84.1 (65.8-102)	235 (182-346)	620 (446-840)	993
Non-Hispanic whites	09-10	31.9 (27.4-37.2)	28.3 (21.3-34.6)	102 (75.4-125)	334 (280-450)	691 (501-1060)	1186

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.3, 0.8, 0.3, 1.0, 0.2, and 0.2 respectively.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Genistein (creatinine corrected) (1999 – 2010)‡

CAS Number 446-72-0

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	22.3 (17.7-28.1)	23.8 (18.8-28.9)	84.7 (67.2-105)	222 (182-279)	381 (334-497)	2557
Total population	01-02	30.9 (28.5-33.6)	25.9 (23.4-29.2)	83.3 (72.2-96.3)	256 (211-296)	427 (375-490)	2794
Total population	03-04	29.1 (27.3-31.0)	24.5 (21.3-27.4)	77.7 (67.3-90.9)	231 (203-279)	510 (388-619)	2594
Total population	05-06	28.0 (25.3-31.0)	23.2 (20.3-26.4)	72.0 (63.1-85.2)	242 (197-280)	577 (406-734)	2528
Total population	07-08	31.4 (27.3-36.1)	23.7 (21.0-27.7)	85.2 (70.3-99.5)	264 (214-375)	751 (464-1130)	2424
Total population	09-10	34.9 (31.6-38.4)	25.4 (22.8-30.0)	100 (83.3-124)	367 (313-424)	863 (612-1090)	2791
Age 6-11 years	99-00	28.3 (21.1-37.9)	27.8 (15.8-41.3)	94.3 (60.5-145)	209 (148-317)	490 (279-895)	331
Age 6-11 years	01-02	44.5 (37.0-53.5)	37.9 (29.7-49.0)	112 (76.5-146)	252 (173-371)	504 (252-713)	396
Age 6-11 years	03-04	35.8 (29.7-43.0)	35.4 (24.9-43.2)	78.6 (60.9-119)	172 (130-243)	297 (168-618)	341
Age 6-11 years	05-06	42.5 (33.1-54.6)	34.1 (23.7-41.9)	138 (89.5-195)	414 (256-850)	1040 (429-1590)	351
Age 6-11 years	07-08	53.5 (41.5-69.0)	44.2 (33.0-63.9)	149 (83.2-224)	451 (236-937)	940 (411-1800)	360
Age 6-11 years	09-10	62.8 (52.5-75.1)	47.8 (36.7-63.0)	200 (144-249)	493 (405-644)	875 (551-1140)	370
Age 12-19 years	99-00	29.4 (22.3-38.8)	32.0 (23.8-41.6)	83.2 (64.1-104)	184 (130-295)	336 (184-816)	754
Age 12-19 years	01-02	26.3 (21.3-32.5)	21.0 (17.8-26.5)	66.2 (47.9-91.5)	200 (149-298)	321 (261-435)	744
Age 12-19 years	03-04	25.9 (21.8-30.9)	21.8 (17.0-29.1)	65.6 (51.0-83.1)	201 (145-313)	366 (297-455)	729
Age 12-19 years	05-06	25.3 (22.1-29.0)	19.6 (16.4-24.0)	76.5 (51.4-91.6)	164 (130-249)	368 (213-520)	693
Age 12-19 years	07-08	27.1 (23.1-31.7)	23.7 (17.8-29.3)	77.7 (56.2-95.3)	159 (125-264)	324 (214-568)	375
Age 12-19 years	09-10	36.8 (28.5-47.7)	27.6 (20.4-40.1)	102 (67.5-174)	371 (234-455)	848 (424-1100)	447
Age 20+ years	99-00	20.6 (16.3-26.2)	21.6 (17.7-26.2)	83.1 (64.9-107)	234 (190-287)	381 (325-562)	1472
Age 20+ years	01-02	30.4 (27.6-33.4)	24.8 (21.9-30.0)	83.1 (68.5-99.0)	269 (208-328)	435 (374-518)	1654
Age 20+ years	03-04	28.9 (26.7-31.3)	24.0 (20.1-27.4)	78.5 (66.1-92.9)	253 (209-302)	542 (399-673)	1524
Age 20+ years	05-06	27.1 (24.3-30.3)	23.0 (19.7-26.8)	70.3 (61.2-81.3)	233 (184-275)	575 (349-762)	1484
Age 20+ years	07-08	30.4 (25.8-35.8)	22.8 (19.9-25.9)	81.2 (63.2-99.5)	263 (205-423)	842 (464-1310)	1689
Age 20+ years	09-10	32.5 (28.9-36.5)	23.1 (20.5-28.2)	91.9 (72.8-116)	340 (295-409)	863 (590-1150)	1974
Males	99-00	23.3 (16.8-32.3)	23.8 (17.5-32.2)	86.2 (64.7-115)	236 (178-330)	523 (323-889)	1222
Males	01-02	26.2 (23.1-29.8)	22.0 (19.4-26.0)	67.6 (57.4-78.1)	186 (144-237)	350 (278-418)	1375
Males	03-04	26.4 (22.8-30.5)	21.5 (17.3-26.2)	70.0 (51.1-90.5)	203 (159-235)	415 (346-600)	1244
Males	05-06	25.8 (23.4-28.4)	22.8 (19.3-26.4)	65.0 (54.6-82.2)	207 (154-261)	431 (305-628)	1252
Males	07-08	28.1 (23.4-33.7)	20.9 (17.6-24.8)	76.1 (58.9-92.9)	249 (174-369)	634 (370-1130)	1198
Males	09-10	30.6 (27.3-34.3)	23.5 (20.7-27.5)	78.7 (63.0-101)	313 (241-370)	631 (453-1020)	1376
Females	99-00	21.3 (17.5-26.0)	23.2 (17.5-29.3)	83.1 (57.2-106)	211 (154-283)	357 (283-398)	1335
Females	01-02	36.2 (32.8-39.9)	29.6 (25.2-34.3)	107 (88.4-129)	321 (269-355)	547 (427-729)	1419
Females	03-04	31.9 (28.7-35.5)	27.1 (23.6-31.6)	87.1 (71.1-102)	278 (209-324)	548 (363-763)	1350
Females	05-06	30.3 (25.8-35.5)	23.5 (19.8-29.1)	81.3 (67.4-104)	271 (208-406)	658 (444-894)	1276
Females	07-08	35.0 (30.1-40.8)	27.7 (23.0-34.7)	95.6 (80.3-107)	290 (220-506)	842 (506-1350)	1226
Females	09-10	39.6 (35.2-44.5)	29.4 (23.9-35.5)	131 (101-151)	430 (340-542)	944 (670-1540)	1415

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary Genistein (creatinine corrected) (1999 – 2010)‡

CAS Number 446-72-0

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	28.4 (23.3-34.7)	27.9 (22.5-35.0)	109 (91.5-137)	257 (209-380)	562 (257-981)	819
Mexican Americans	01-02	26.6 (21.6-32.9)	21.0 (16.1-28.9)	61.6 (50.6-76.8)	205 (147-270)	372 (271-479)	679
Mexican Americans	03-04	28.0 (24.8-31.8)	23.5 (18.5-28.1)	69.2 (52.3-92.8)	254 (187-390)	608 (417-764)	653
Mexican Americans	05-06	24.9 (22.1-28.0)	21.7 (17.8-23.8)	72.4 (56.2-90.2)	202 (140-274)	338 (275-648)	634
Mexican Americans	07-08	30.0 (23.2-38.8)	22.5 (16.5-30.5)	88.3 (55.4-127)	287 (210-373)	583 (385-921)	520
Mexican Americans	09-10	30.1 (25.4-35.7)	23.2 (19.0-30.5)	79.2 (60.6-108)	262 (192-353)	601 (371-818)	604
Non-Hispanic blacks	99-00	17.1 (12.4-23.7)	19.5 (15.7-26.1)	59.5 (43.1-93.7)	179 (132-245)	299 (222-446)	608
Non-Hispanic blacks	01-02	26.4 (19.3-36.1)	22.7 (16.4-33.6)	69.4 (42.2-115)	217 (139-317)	384 (217-747)	706
Non-Hispanic blacks	03-04	22.8 (18.1-28.8)	19.6 (14.3-27.1)	55.0 (39.6-78.1)	182 (107-240)	311 (210-514)	699
Non-Hispanic blacks	05-06	21.7 (18.8-25.1)	18.6 (14.9-21.6)	55.3 (42.6-78.7)	157 (124-235)	351 (235-543)	662
Non-Hispanic blacks	07-08	28.0 (22.5-34.9)	20.8 (15.9-25.9)	91.2 (63.7-112)	252 (184-413)	668 (310-1530)	562
Non-Hispanic blacks	09-10	26.9 (23.7-30.6)	19.5 (17.6-23.1)	78.0 (58.1-107)	245 (158-341)	505 (341-879)	533
Non-Hispanic whites	99-00	23.2 (18.5-29.0)	24.9 (19.0-31.7)	86.1 (68.4-105)	232 (178-295)	381 (325-523)	917
Non-Hispanic whites	01-02	30.6 (28.2-33.2)	25.4 (22.7-29.5)	82.0 (68.3-96.3)	248 (207-320)	427 (365-518)	1222
Non-Hispanic whites	03-04	30.4 (27.9-33.0)	26.2 (21.5-31.4)	79.6 (69.1-99.6)	238 (195-321)	534 (352-688)	1079
Non-Hispanic whites	05-06	28.2 (25.1-31.8)	23.5 (19.8-29.0)	71.7 (58.9-89.6)	242 (192-305)	615 (423-802)	1039
Non-Hispanic whites	07-08	30.5 (25.8-36.0)	23.7 (20.2-28.3)	80.1 (63.4-96.6)	256 (185-369)	651 (412-1010)	993
Non-Hispanic whites	09-10	35.8 (31.2-41.0)	25.6 (22.5-32.7)	107 (78.5-140)	398 (304-448)	881 (576-1300)	1186

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary O-Desmethylangolensin (1999 – 2010)‡

CAS Number 21255-69-6

Metabolite of Daidzein

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	4.39 (3.37-5.73)	4.98 (3.65-6.77)	22.7 (18.7-30.1)	100 (74.8-141)	222 (182-250)	2271
Total population	01-02	4.08 (3.53-4.73)	3.30 (2.70-4.20)	19.8 (16.7-24.6)	96.0 (70.1-135)	260 (161-437)	2794
Total population	03-04	4.91 (4.34-5.55)	4.60 (4.00-5.20)	23.6 (18.6-27.2)	95.9 (70.7-122)	230 (185-342)	2581
Total population	05-06	4.71 (4.17-5.31)	3.80 (3.10-4.30)	22.5 (19.7-26.6)	101 (86.4-124)	266 (200-385)	2528
Total population	07-08	4.65 (4.02-5.39)	3.40 (2.90-4.20)	23.0 (17.9-29.8)	132 (98.2-181)	328 (236-501)	2424
Total population	09-10	4.73 (4.08-5.48)	3.60 (2.90-4.30)	21.8 (16.8-28.4)	125 (99.2-156)	394 (237-615)	2792
Age 6-11 years	99-00	5.60 (3.85-8.15)	7.52 (3.43-15.2)	36.2 (20.3-45.0)	78.7 (43.4-191)	176 (74.8-264)	287
Age 6-11 years	01-02	6.19 (4.51-8.49)	5.90 (3.80-9.30)	26.9 (15.7-52.1)	122 (61.5-215)	281 (161-466)	396
Age 6-11 years	03-04	6.33 (4.30-9.30)	6.10 (3.50-10.6)	24.0 (17.0-33.8)	70.8 (51.4-122)	138 (80.9-256)	341
Age 6-11 years	05-06	7.20 (5.20-9.96)	6.20 (4.00-11.0)	37.8 (24.2-55.2)	145 (83.9-295)	386 (201-516)	351
Age 6-11 years	07-08	7.50 (5.43-10.4)	5.40 (3.90-9.70)	34.5 (16.5-52.6)	133 (79.9-275)	490 (133-3020)	360
Age 6-11 years	09-10	7.85 (6.20-9.94)	7.00 (4.30-11.7)	34.9 (27.7-49.6)	153 (89.1-199)	263 (167-467)	371
Age 12-19 years	99-00	6.04 (3.76-9.70)	7.60 (5.13-13.5)	36.6 (22.0-57.3)	107 (63.4-165)	194 (107-238)	667
Age 12-19 years	01-02	5.92 (4.46-7.87)	5.20 (3.70-7.60)	33.6 (18.0-56.8)	125 (91.2-172)	299 (172-435)	744
Age 12-19 years	03-04	6.37 (4.95-8.18)	5.30 (3.80-8.10)	33.9 (18.2-50.5)	110 (82.2-198)	257 (175-415)	729
Age 12-19 years	05-06	8.50 (6.48-11.2)	8.10 (5.50-11.6)	41.3 (33.6-49.6)	105 (80.2-213)	385 (139-829)	693
Age 12-19 years	07-08	4.74 (3.00-7.48)	3.80 (2.20-7.20)	20.6 (11.2-34.6)	105 (29.5-357)	328 (78.1-638)	375
Age 12-19 years	09-10	6.40 (4.93-8.31)	5.30 (4.00-7.70)	26.8 (16.6-47.8)	117 (77.8-165)	377 (156-965)	447
Age 20+ years	99-00	4.05 (3.12-5.26)	4.46 (3.31-5.64)	19.8 (16.0-26.5)	101 (80.8-150)	228 (179-259)	1317
Age 20+ years	01-02	3.65 (3.08-4.32)	2.80 (2.30-3.70)	17.0 (13.9-22.4)	81.5 (63.0-128)	260 (135-526)	1654
Age 20+ years	03-04	4.56 (4.02-5.17)	4.40 (3.60-4.90)	22.0 (17.8-25.6)	94.0 (67.6-131)	230 (187-398)	1511
Age 20+ years	05-06	4.09 (3.51-4.77)	3.20 (2.60-4.00)	17.9 (14.9-22.3)	91.2 (72.3-124)	248 (182-302)	1484
Age 20+ years	07-08	4.41 (3.72-5.22)	3.20 (2.40-4.20)	23.0 (17.5-30.7)	133 (93.3-187)	320 (206-589)	1689
Age 20+ years	09-10	4.28 (3.59-5.11)	3.00 (2.40-3.90)	19.3 (14.9-27.0)	127 (95.2-159)	438 (225-681)	1974
Males	99-00	4.97 (3.71-6.66)	5.62 (4.12-8.73)	29.1 (19.8-42.9)	121 (74.1-190)	235 (177-332)	1087
Males	01-02	3.81 (3.08-4.71)	3.30 (2.60-4.50)	17.4 (13.2-24.6)	82.8 (58.4-116)	194 (123-324)	1375
Males	03-04	4.90 (3.93-6.12)	4.60 (3.40-5.50)	23.0 (16.6-30.1)	92.9 (70.7-129)	222 (159-332)	1240
Males	05-06	4.93 (4.13-5.89)	4.00 (3.40-5.50)	22.3 (16.7-28.1)	90.8 (63.5-137)	235 (171-311)	1252
Males	07-08	4.49 (3.67-5.49)	3.10 (2.50-4.10)	22.1 (14.5-33.7)	117 (81.4-194)	293 (195-589)	1198
Males	09-10	4.39 (3.46-5.59)	3.30 (2.40-4.40)	18.1 (14.5-24.3)	99.2 (65.2-142)	293 (153-615)	1377
Females	99-00	3.92 (2.97-5.16)	4.22 (3.18-5.51)	19.4 (14.1-26.1)	83.8 (61.1-114)	192 (123-250)	1184
Females	01-02	4.36 (3.64-5.23)	3.40 (2.50-4.60)	21.3 (16.8-29.2)	107 (70.6-199)	394 (230-746)	1419
Females	03-04	4.91 (4.26-5.66)	4.60 (3.90-5.50)	23.9 (18.1-27.4)	99.3 (63.5-155)	283 (160-433)	1341
Females	05-06	4.50 (3.90-5.20)	3.30 (2.70-4.30)	22.8 (17.9-28.3)	121 (83.2-168)	284 (182-499)	1276
Females	07-08	4.82 (4.03-5.75)	3.90 (2.90-5.30)	24.6 (18.1-33.9)	137 (99.3-195)	362 (236-468)	1226
Females	09-10	5.09 (4.19-6.18)	3.90 (2.70-5.00)	28.5 (18.4-42.8)	152 (110-230)	494 (309-766)	1415

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.2, 0.4, 0.2, 0.2, 0.2, and 0.2 respectively.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary O-Desmethylangolensin (1999 – 2010)‡

CAS Number 21255-69-6

Metabolite of Daidzein

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	2.41 (1.55-3.73)	2.14 (1.31-3.37)	21.0 (10.6-30.5)	97.6 (59.7-140)	191 (122-320)	721
Mexican Americans	01-02	2.44 (1.51-3.94)	1.40 (.500-3.40)	13.1 (5.80-27.6)	66.4 (33.5-102)	152 (75.8-265)	679
Mexican Americans	03-04	2.54 (1.86-3.48)	1.90 (1.00-3.40)	14.4 (9.00-18.1)	62.3 (40.3-99.5)	146 (99.5-254)	652
Mexican Americans	05-06	3.04 (2.29-4.05)	2.10 (1.40-2.90)	14.5 (8.20-24.7)	62.8 (39.1-104)	158 (87.0-246)	634
Mexican Americans	07-08	3.16 (2.40-4.15)	2.50 (1.50-3.30)	14.7 (10.5-20.7)	84.9 (52.1-152)	211 (159-340)	520
Mexican Americans	09-10	3.44 (2.78-4.27)	2.70 (2.10-3.50)	15.2 (10.6-21.2)	93.1 (63.5-114)	216 (127-294)	604
Non-Hispanic blacks	99-00	5.74 (4.55-7.24)	8.71 (5.82-10.9)	33.5 (22.1-52.4)	108 (78.3-156)	192 (149-255)	538
Non-Hispanic blacks	01-02	5.35 (4.00-7.14)	5.30 (2.90-7.30)	32.7 (22.0-52.4)	128 (75.9-216)	308 (150-436)	706
Non-Hispanic blacks	03-04	5.49 (4.05-7.46)	4.20 (3.30-6.10)	26.1 (13.4-49.0)	117 (86.2-166)	221 (177-354)	698
Non-Hispanic blacks	05-06	5.83 (4.49-7.58)	4.90 (3.90-6.30)	32.6 (21.2-46.7)	110 (72.4-189)	297 (162-398)	662
Non-Hispanic blacks	07-08	6.63 (4.50-9.75)	5.80 (3.90-9.10)	40.8 (23.6-63.3)	183 (119-230)	347 (199-822)	562
Non-Hispanic blacks	09-10	5.03 (3.75-6.74)	4.30 (2.90-6.00)	27.0 (16.7-35.9)	120 (80.5-168)	293 (168-464)	534
Non-Hispanic whites	99-00	4.50 (3.26-6.22)	4.99 (3.43-7.10)	22.5 (17.1-34.4)	103 (72.0-152)	228 (177-259)	826
Non-Hispanic whites	01-02	4.13 (3.43-4.96)	3.40 (2.60-4.40)	17.9 (15.5-23.8)	98.7 (67.4-153)	260 (153-526)	1222
Non-Hispanic whites	03-04	5.27 (4.63-5.99)	5.30 (4.40-6.00)	24.2 (18.8-28.5)	99.5 (67.6-149)	246 (183-409)	1070
Non-Hispanic whites	05-06	4.72 (4.09-5.45)	3.80 (3.20-4.70)	21.9 (17.5-27.6)	97.7 (72.3-142)	246 (181-363)	1039
Non-Hispanic whites	07-08	4.67 (3.88-5.62)	3.50 (2.80-4.60)	21.3 (16.9-27.8)	113 (79.9-193)	357 (193-628)	993
Non-Hispanic whites	09-10	4.95 (4.20-5.84)	3.70 (2.90-4.50)	20.4 (16.0-30.1)	139 (97.5-156)	471 (206-766)	1186

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.2, 0.4, 0.2, 0.2, 0.2, and 0.2 respectively.

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary O-Desmethylangolensin (creatinine corrected) (1999 – 2010)‡

CAS Number 21255-69-6

Metabolite of Daidzein

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	99-00	4.03 (2.97-5.45)	4.44 (3.10-6.35)	21.8 (15.3-31.6)	90.4 (62.9-122)	167 (140-218)	2271
Total population	01-02	3.83 (3.32-4.43)	3.24 (2.55-4.12)	18.9 (16.1-23.2)	85.2 (65.1-117)	281 (149-412)	2794
Total population	03-04	4.58 (4.20-5.01)	4.09 (3.53-4.59)	19.6 (17.4-22.6)	92.9 (76.5-120)	201 (183-261)	2581
Total population	05-06	4.59 (4.04-5.21)	3.70 (3.12-4.42)	20.7 (18.4-22.8)	95.6 (78.0-129)	215 (180-325)	2528
Total population	07-08	4.68 (4.04-5.41)	3.51 (3.06-4.02)	22.5 (16.7-30.5)	125 (94.8-164)	350 (199-523)	2424
Total population	09-10	5.07 (4.38-5.87)	3.78 (3.06-4.61)	23.6 (19.3-29.7)	138 (101-185)	433 (285-547)	2791
Age 6-11 years	99-00	6.00 (4.04-8.91)	7.15 (3.94-16.6)	28.8 (14.3-45.0)	83.3 (45.0-167)	179 (88.2-262)	287
Age 6-11 years	01-02	7.03 (5.05-9.77)	6.49 (4.24-11.6)	29.9 (16.3-54.1)	101 (75.3-199)	305 (134-464)	396
Age 6-11 years	03-04	6.73 (4.55-9.97)	5.97 (4.09-8.28)	27.7 (15.6-42.3)	86.1 (45.2-135)	149 (84.3-189)	341
Age 6-11 years	05-06	7.93 (5.73-11.0)	7.15 (3.90-11.3)	40.9 (27.5-55.9)	164 (85.8-280)	346 (215-497)	351
Age 6-11 years	07-08	9.20 (6.70-12.6)	6.81 (5.05-10.7)	31.1 (20.1-58.9)	164 (100-296)	465 (175-2310)	360
Age 6-11 years	09-10	10.7 (8.43-13.6)	9.58 (5.71-13.9)	43.0 (31.3-63.3)	201 (111-260)	330 (226-478)	370
Age 12-19 years	99-00	4.13 (2.33-7.35)	5.71 (2.82-11.5)	26.0 (14.7-44.4)	71.4 (40.8-122)	122 (75.2-262)	667
Age 12-19 years	01-02	4.57 (3.44-6.07)	3.88 (2.82-5.32)	26.0 (18.0-35.9)	95.0 (61.4-129)	259 (129-331)	744
Age 12-19 years	03-04	4.76 (3.71-6.11)	4.26 (3.13-5.97)	22.8 (14.3-39.2)	86.4 (49.0-149)	185 (101-261)	729
Age 12-19 years	05-06	6.30 (4.89-8.13)	5.69 (3.44-8.40)	28.0 (22.5-37.1)	89.0 (58.5-138)	258 (103-686)	693
Age 12-19 years	07-08	3.64 (2.28-5.83)	2.99 (1.91-5.69)	18.3 (7.73-24.0)	75.3 (21.4-200)	199 (69.4-664)	375
Age 12-19 years	09-10	6.02 (4.74-7.65)	5.71 (3.30-7.53)	23.6 (16.0-36.8)	109 (59.2-189)	287 (132-558)	447
Age 20+ years	99-00	3.82 (2.84-5.13)	3.90 (2.69-5.73)	20.2 (12.9-29.2)	96.5 (61.8-133)	172 (140-252)	1317
Age 20+ years	01-02	3.46 (2.95-4.04)	2.74 (2.03-3.64)	16.8 (13.7-20.3)	78.9 (58.2-124)	281 (143-467)	1654
Age 20+ years	03-04	4.35 (3.96-4.78)	3.75 (3.23-4.35)	18.6 (15.7-22.6)	95.2 (76.5-131)	228 (192-284)	1511
Age 20+ years	05-06	4.10 (3.51-4.79)	3.35 (2.57-4.30)	17.4 (14.0-20.6)	89.3 (64.5-140)	197 (160-332)	1484
Age 20+ years	07-08	4.52 (3.82-5.36)	3.13 (2.55-3.92)	22.7 (16.1-32.4)	130 (89.1-183)	353 (189-641)	1689
Age 20+ years	09-10	4.56 (3.83-5.42)	3.29 (2.42-4.07)	21.2 (16.2-26.8)	139 (95.3-212)	437 (246-634)	1974
Males	99-00	3.95 (2.79-5.58)	4.50 (2.88-6.50)	24.5 (13.8-40.5)	96.5 (62.4-122)	210 (125-265)	1087
Males	01-02	3.10 (2.48-3.86)	2.87 (2.00-3.96)	15.0 (10.4-19.7)	60.7 (41.5-90.2)	154 (96.4-301)	1375
Males	03-04	3.83 (3.10-4.73)	3.33 (2.41-4.35)	15.6 (13.9-18.9)	76.2 (51.1-99.5)	193 (124-255)	1240
Males	05-06	3.97 (3.33-4.72)	3.49 (2.73-4.33)	17.7 (14.1-21.4)	68.3 (55.8-85.8)	165 (140-216)	1252
Males	07-08	3.79 (3.10-4.63)	2.79 (2.33-3.49)	18.2 (12.4-25.7)	86.7 (59.2-153)	264 (139-432)	1198
Males	09-10	4.02 (3.10-5.19)	3.19 (2.13-4.58)	17.3 (12.3-21.7)	86.2 (59.8-137)	317 (140-485)	1376
Females	99-00	4.10 (3.00-5.61)	4.17 (2.91-6.35)	20.4 (14.4-27.2)	86.0 (49.1-145)	155 (100-205)	1184
Females	01-02	4.68 (3.87-5.68)	3.74 (2.77-4.88)	26.8 (18.7-34.0)	111 (70.3-205)	399 (175-739)	1419
Females	03-04	5.45 (4.71-6.30)	4.82 (4.09-5.92)	24.3 (19.6-28.9)	106 (78.5-163)	255 (193-343)	1341
Females	05-06	5.27 (4.56-6.09)	4.00 (3.07-5.49)	24.1 (19.8-31.1)	140 (96.8-166)	325 (197-613)	1276
Females	07-08	5.72 (4.75-6.88)	4.23 (3.33-5.71)	29.0 (20.4-43.2)	164 (105-213)	394 (212-743)	1226
Females	09-10	6.35 (5.34-7.57)	4.42 (3.46-5.79)	34.1 (25.4-43.5)	199 (139-248)	504 (350-761)	1415

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Urinary O-Desmethylangolensin (creatinine corrected) (1999 – 2010)‡

CAS Number 21255-69-6

Metabolite of Daidzein

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	99-00	2.19 (1.49-3.24)	1.88 (1.15-3.10)	16.6 (11.3-25.8)	71.2 (52.3-113)	136 (90.5-251)	721
Mexican Americans	01-02	2.30 (1.48-3.57)	1.45 (.769-3.37)	11.8 (4.91-23.6)	46.7 (31.4-87.8)	108 (54.7-218)	679
Mexican Americans	03-04	2.30 (1.68-3.15)	1.65 (.845-3.06)	13.2 (6.63-21.2)	51.6 (36.9-75.4)	125 (84.1-165)	652
Mexican Americans	05-06	2.75 (1.92-3.93)	1.69 (1.04-2.99)	12.8 (7.27-24.9)	53.0 (33.3-93.2)	135 (72.6-204)	634
Mexican Americans	07-08	3.10 (2.26-4.27)	2.22 (1.42-3.32)	16.0 (8.84-23.8)	82.0 (45.8-145)	215 (98.9-467)	520
Mexican Americans	09-10	3.62 (2.92-4.50)	2.71 (1.82-4.92)	13.5 (10.8-19.6)	76.5 (54.2-128)	226 (113-461)	604
Non-Hispanic blacks	99-00	3.65 (2.90-4.60)	5.22 (3.59-6.75)	23.8 (17.6-32.1)	67.1 (52.1-79.7)	116 (81.9-239)	538
Non-Hispanic blacks	01-02	3.75 (2.76-5.10)	3.57 (2.14-5.48)	22.8 (14.5-30.4)	78.5 (46.5-175)	218 (98.5-339)	706
Non-Hispanic blacks	03-04	3.89 (3.03-4.99)	3.12 (1.96-4.96)	16.9 (11.3-26.7)	80.0 (58.6-104)	159 (120-255)	698
Non-Hispanic blacks	05-06	4.09 (3.13-5.34)	4.22 (2.49-5.71)	20.1 (13.5-24.5)	69.9 (44.8-151)	225 (90.2-369)	662
Non-Hispanic blacks	07-08	5.13 (3.47-7.57)	4.22 (2.84-7.71)	27.0 (15.6-44.5)	133 (81.9-182)	308 (164-485)	562
Non-Hispanic blacks	09-10	4.06 (3.11-5.28)	3.61 (2.41-5.07)	22.4 (12.9-30.2)	95.1 (59.2-142)	208 (133-418)	533
Non-Hispanic whites	99-00	4.42 (3.12-6.27)	4.68 (3.05-7.23)	22.3 (15.3-37.9)	102 (57.6-148)	177 (140-215)	826
Non-Hispanic whites	01-02	4.08 (3.41-4.89)	3.51 (2.45-4.57)	21.2 (16.3-27.4)	96.4 (69.8-126)	300 (153-464)	1222
Non-Hispanic whites	03-04	5.18 (4.70-5.70)	4.58 (3.89-5.39)	21.6 (17.4-27.7)	103 (77.7-149)	225 (185-271)	1070
Non-Hispanic whites	05-06	4.96 (4.33-5.69)	3.97 (3.26-4.67)	21.5 (17.3-26.2)	101 (74.5-142)	227 (183-332)	1039
Non-Hispanic whites	07-08	4.86 (4.00-5.91)	3.85 (3.06-4.57)	22.2 (15.1-32.4)	124 (84.2-180)	355 (175-728)	993
Non-Hispanic whites	09-10	5.55 (4.77-6.47)	3.88 (3.19-4.87)	23.8 (19.2-32.5)	146 (97.6-248)	461 (330-739)	1186

‡Not measured after Survey years 2009-2010

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phytoestrogens_BiomonitoringSummary.html

Polycyclic Aromatic Hydrocarbon Metabolites

Urinary 2-Hydroxyfluorene (2003 – 2010)

CAS Number 2443-58-5

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	304 (262-354)	280 (242-319)	679 (561-815)	1850 (1430-2190)	2670 (2230-3130)	2521
Total population	05-06	316 (297-338)	272 (243-296)	661 (605-743)	2060 (1600-2420)	3150 (2670-3730)	2431
Total population	07-08	303 (271-338)	259 (231-293)	618 (489-817)	1630 (1340-2020)	2510 (2100-2890)	2581
Total population	09-10	240 (222-259)	211 (195-227)	480 (449-530)	1190 (1040-1410)	2200 (1880-2490)	2747
Age 6-11 years	03-04	209 (183-239)	228 (189-259)	341 (295-411)	576 (423-728)	763 (613-827)	338
Age 6-11 years	05-06	201 (184-221)	195 (170-223)	352 (306-402)	497 (436-618)	709 (536-833)	343
Age 6-11 years	07-08	233 (205-264)	239 (194-280)	400 (326-454)	620 (484-714)	851 (695-1000)	382
Age 6-11 years	09-10	172 (153-192)	170 (160-181)	278 (251-320)	458 (356-622)	743 (486-966)	416
Age 12-19 years	03-04	281 (245-321)	292 (259-323)	502 (445-601)	1000 (753-1320)	1480 (1320-1930)	707
Age 12-19 years	05-06	283 (258-311)	272 (247-300)	482 (425-540)	1080 (843-1250)	1750 (1100-2820)	670
Age 12-19 years	07-08	287 (243-339)	255 (217-293)	541 (434-631)	963 (774-1350)	1510 (1050-2120)	395
Age 12-19 years	09-10	231 (196-273)	203 (179-235)	418 (339-535)	784 (645-1230)	1880 (765-2410)	420
Age 20+ years	03-04	323 (272-383)	290 (247-334)	832 (653-1020)	2090 (1680-2460)	2920 (2410-3650)	1476
Age 20+ years	05-06	340 (311-371)	284 (252-317)	813 (705-917)	2410 (1880-2820)	3460 (2820-4160)	1418
Age 20+ years	07-08	314 (276-357)	267 (231-306)	699 (518-1020)	1790 (1470-2220)	2700 (2190-3270)	1804
Age 20+ years	09-10	250 (230-272)	220 (201-238)	537 (476-599)	1370 (1130-1650)	2330 (1990-2700)	1911
Males	03-04	385 (333-446)	338 (300-415)	900 (739-1150)	2120 (1770-2450)	2930 (2490-3390)	1213
Males	05-06	376 (345-410)	332 (302-364)	823 (658-1030)	2160 (1660-2570)	3120 (2570-3560)	1213
Males	07-08	366 (334-402)	306 (280-348)	756 (613-983)	1740 (1430-2130)	2650 (2130-3270)	1280
Males	09-10	275 (250-304)	234 (215-259)	536 (464-635)	1390 (1130-1710)	2350 (1990-2550)	1399
Females	03-04	243 (204-290)	226 (184-269)	490 (405-617)	1400 (907-1930)	2310 (1740-3070)	1308
Females	05-06	268 (234-307)	227 (199-270)	528 (445-638)	1910 (1020-2830)	3180 (2180-4590)	1218
Females	07-08	252 (219-289)	216 (192-236)	505 (387-629)	1470 (1050-1960)	2330 (1770-2840)	1301
Females	09-10	210 (189-232)	189 (170-213)	442 (389-506)	1050 (849-1270)	2090 (1370-2520)	1348

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 5.0, 5.0, 5.0, and 10.0 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxyfluorene (2003 – 2010)

CAS Number 2443-58-5

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	03-04	248 (215-286)	235 (203-293)	502 (412-580)	1100 (771-1330)	1640 (1250-2240)	629
Mexican Americans	05-06	233 (200-271)	216 (180-247)	413 (334-488)	901 (704-1080)	1360 (1060-1950)	615
Mexican Americans	07-08	248 (226-273)	240 (215-261)	418 (355-496)	801 (643-979)	1300 (933-1680)	523
Mexican Americans	09-10	214 (181-254)	197 (156-245)	385 (286-483)	860 (635-1130)	1800 (1070-2350)	566
Non-Hispanic blacks	03-04	432 (360-519)	380 (314-462)	856 (695-1330)	2200 (1830-2650)	2970 (2310-4680)	666
Non-Hispanic blacks	05-06	404 (346-471)	330 (307-377)	805 (626-1090)	2190 (1610-2930)	3160 (2530-4330)	657
Non-Hispanic blacks	07-08	387 (333-450)	325 (281-403)	879 (724-1040)	1940 (1500-2550)	3170 (2290-5120)	590
Non-Hispanic blacks	09-10	371 (317-433)	354 (314-401)	808 (620-1080)	1710 (1330-2280)	2580 (2090-3390)	517
Non-Hispanic whites	03-04	306 (254-369)	274 (230-332)	708 (555-878)	1950 (1540-2390)	2920 (2400-3500)	1035
Non-Hispanic whites	05-06	319 (290-350)	270 (237-315)	705 (626-829)	2180 (1700-2540)	3390 (2670-4250)	972
Non-Hispanic whites	07-08	307 (261-362)	257 (221-308)	629 (452-995)	1720 (1260-2190)	2580 (2070-3020)	1070
Non-Hispanic whites	09-10	228 (206-252)	199 (182-220)	457 (409-506)	1150 (921-1440)	2120 (1650-2550)	1203

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 5.0, 5.0, 5.0, and 10.0 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxyfluorene (creatinine corrected) (2003 – 2010)

CAS Number 2443-58-5

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	286 (256-320)	221 (200-249)	495 (429-629)	1510 (1150-1800)	2070 (1850-2390)	2521
Total population	05-06	308 (288-330)	227 (209-245)	567 (509-658)	1730 (1540-1850)	2450 (2020-2930)	2431
Total population	07-08	304 (272-339)	234 (211-260)	526 (403-711)	1500 (1140-1780)	2150 (1850-2500)	2581
Total population	09-10	250 (237-264)	193 (179-208)	392 (353-434)	1170 (1050-1290)	1840 (1620-1990)	2747
Age 6-11 years	03-04	221 (199-246)	217 (188-238)	305 (270-356)	462 (370-535)	695 (465-807)	338
Age 6-11 years	05-06	224 (207-243)	219 (197-254)	320 (288-365)	451 (384-523)	527 (450-720)	343
Age 6-11 years	07-08	287 (255-324)	262 (240-292)	407 (355-503)	721 (555-849)	864 (757-956)	382
Age 6-11 years	09-10	224 (207-242)	208 (186-232)	324 (296-336)	448 (361-677)	710 (448-1290)	416
Age 12-19 years	03-04	213 (189-240)	189 (172-211)	310 (275-377)	649 (512-778)	937 (762-1320)	707
Age 12-19 years	05-06	214 (201-227)	189 (178-197)	286 (266-320)	607 (516-769)	1190 (803-1430)	670
Age 12-19 years	07-08	223 (200-249)	204 (176-236)	351 (270-419)	592 (504-683)	900 (683-1080)	395
Age 12-19 years	09-10	186 (168-206)	154 (139-171)	251 (214-320)	569 (366-831)	858 (605-1190)	420
Age 20+ years	03-04	310 (274-350)	233 (203-269)	659 (494-835)	1730 (1420-1940)	2310 (1930-2590)	1476
Age 20+ years	05-06	339 (313-367)	241 (216-262)	754 (629-891)	1870 (1750-2110)	2830 (2250-3200)	1418
Age 20+ years	07-08	321 (282-365)	234 (210-269)	633 (438-873)	1650 (1360-2060)	2390 (2090-2690)	1804
Age 20+ years	09-10	265 (249-282)	199 (185-215)	463 (400-511)	1360 (1190-1490)	1970 (1750-2230)	1911
Males	03-04	302 (271-337)	242 (218-272)	635 (494-758)	1510 (1200-1700)	1940 (1700-2310)	1213
Males	05-06	302 (278-328)	233 (212-259)	610 (510-744)	1480 (1240-1680)	1920 (1680-2390)	1213
Males	07-08	308 (283-336)	239 (218-261)	615 (464-764)	1480 (1200-1640)	2120 (1780-2390)	1280
Males	09-10	247 (229-266)	188 (171-214)	417 (350-491)	1190 (955-1420)	1770 (1400-2220)	1399
Females	03-04	271 (235-314)	208 (183-244)	415 (352-521)	1530 (991-1890)	2220 (1730-2590)	1308
Females	05-06	314 (284-347)	217 (198-247)	526 (437-622)	1900 (1680-2240)	2930 (2310-3280)	1218
Females	07-08	300 (257-350)	225 (201-265)	461 (347-683)	1510 (929-2100)	2250 (1630-2770)	1301
Females	09-10	253 (232-276)	197 (178-217)	369 (320-433)	1130 (870-1380)	1900 (1490-2430)	1348

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxyfluorene (creatinine corrected) (2003 – 2010)

CAS Number 2443-58-5

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	03-04	224 (197-255)	198 (178-227)	370 (306-432)	745 (562-1030)	1200 (745-1730)	629
Mexican Americans	05-06	210 (190-232)	179 (155-205)	294 (250-368)	624 (439-834)	1000 (720-1190)	615
Mexican Americans	07-08	244 (216-275)	214 (187-238)	364 (301-438)	718 (582-824)	958 (775-1480)	523
Mexican Americans	09-10	213 (181-250)	171 (150-207)	316 (244-462)	667 (534-852)	1180 (846-1470)	566
Non-Hispanic blacks	03-04	306 (259-360)	245 (207-295)	609 (430-756)	1390 (939-1870)	1880 (1510-2430)	666
Non-Hispanic blacks	05-06	284 (250-322)	222 (202-245)	502 (350-714)	1230 (941-1760)	1880 (1510-2440)	657
Non-Hispanic blacks	07-08	299 (254-351)	237 (198-287)	602 (468-768)	1370 (1050-1910)	2220 (1570-2990)	590
Non-Hispanic blacks	09-10	269 (241-300)	214 (193-244)	501 (383-653)	1220 (1010-1410)	1620 (1280-1950)	517
Non-Hispanic whites	03-04	303 (265-346)	225 (198-259)	561 (450-765)	1620 (1420-1940)	2310 (1940-2540)	1035
Non-Hispanic whites	05-06	335 (307-366)	242 (216-270)	687 (561-806)	1840 (1650-2060)	2800 (2070-3260)	972
Non-Hispanic whites	07-08	319 (274-372)	238 (205-290)	579 (393-841)	1620 (1180-2090)	2340 (1940-2640)	1070
Non-Hispanic whites	09-10	256 (242-271)	196 (178-214)	381 (338-451)	1260 (1090-1490)	1940 (1690-2220)	1203

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyfluorene (2001 – 2010)

CAS Number 6344-67-8

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	134 (115-155)	111 (96.0-126)	253 (207-349)	959 (666-1300)	1620 (1390-1900)	2745
Total population	03-04	126 (108-148)	103 (90.4-118)	302 (231-404)	1090 (934-1270)	1740 (1400-2070)	2502
Total population	05-06	124 (115-134)	99.1 (88.5-110)	304 (268-365)	1060 (830-1210)	1780 (1500-1910)	2398
Total population	07-08	116 (103-132)	92.9 (85.7-100)	258 (203-341)	821 (681-1050)	1380 (1170-1630)	2581
Total population	09-10	95.0 (87.9-103)	78.0 (71.0-84.0)	192 (174-208)	623 (501-741)	1050 (941-1270)	2744
Age 6-11 years	01-02	106 (94.8-119)	106 (91.0-124)	174 (145-200)	287 (235-358)	385 (306-455)	387
Age 6-11 years	03-04	89.2 (77.3-103)	92.3 (79.7-103)	151 (113-172)	238 (184-331)	343 (241-423)	336
Age 6-11 years	05-06	81.7 (73.6-90.7)	80.6 (68.3-98.9)	140 (122-174)	235 (189-272)	287 (242-345)	336
Age 6-11 years	07-08	98.0 (85.8-112)	94.2 (84.3-106)	178 (149-198)	302 (239-332)	458 (247-752)	382
Age 6-11 years	09-10	73.8 (66.7-81.7)	74.0 (65.0-82.0)	113 (103-129)	194 (164-249)	308 (202-453)	416
Age 12-19 years	01-02	129 (103-161)	113 (97.0-137)	222 (177-266)	542 (325-1070)	1210 (680-2130)	733
Age 12-19 years	03-04	116 (100-134)	114 (94.7-133)	214 (181-269)	476 (317-748)	924 (609-1410)	701
Age 12-19 years	05-06	119 (107-133)	112 (94.4-126)	212 (181-229)	588 (436-659)	986 (609-1800)	661
Age 12-19 years	07-08	114 (95.5-136)	93.7 (77.4-114)	218 (168-258)	494 (341-740)	830 (725-1020)	400
Age 12-19 years	09-10	96.0 (79.7-116)	85.0 (65.0-104)	178 (139-215)	394 (257-643)	798 (550-1030)	420
Age 20+ years	01-02	138 (119-161)	111 (94.0-129)	311 (228-429)	1130 (823-1400)	1850 (1470-2080)	1625
Age 20+ years	03-04	134 (112-160)	105 (86.5-125)	408 (300-537)	1240 (1050-1480)	1910 (1620-2290)	1465
Age 20+ years	05-06	131 (118-145)	101 (86.2-117)	394 (308-448)	1220 (968-1510)	1900 (1620-2050)	1401
Age 20+ years	07-08	119 (103-138)	91.4 (83.5-100)	302 (205-449)	992 (745-1200)	1550 (1230-1820)	1799
Age 20+ years	09-10	97.5 (90.1-106)	79.0 (71.0-84.0)	217 (185-253)	711 (542-820)	1230 (978-1490)	1908
Males	01-02	163 (137-194)	134 (115-155)	352 (242-481)	1110 (721-1500)	1850 (1390-2190)	1346
Males	03-04	165 (140-194)	133 (108-162)	458 (313-681)	1270 (1030-1530)	1920 (1580-2120)	1205
Males	05-06	155 (138-174)	127 (118-136)	420 (304-510)	1130 (887-1330)	1810 (1440-2050)	1196
Males	07-08	146 (131-162)	115 (103-132)	330 (262-450)	944 (748-1190)	1530 (1160-1940)	1284
Males	09-10	111 (99.3-124)	87.0 (75.0-102)	214 (183-272)	718 (549-806)	1190 (982-1390)	1397
Females	01-02	111 (95.0-130)	94.0 (83.0-108)	204 (169-250)	796 (498-1040)	1390 (1250-1670)	1399
Females	03-04	98.2 (81.2-119)	80.5 (66.7-101)	195 (163-272)	842 (530-1200)	1590 (1180-1800)	1297
Females	05-06	99.9 (87.0-115)	78.2 (68.3-88.3)	225 (176-278)	961 (558-1390)	1720 (1300-2020)	1202
Females	07-08	93.9 (81.2-109)	77.2 (70.4-83.8)	192 (134-276)	688 (457-1090)	1280 (1030-1590)	1297
Females	09-10	82.0 (74.7-90.0)	69.0 (62.0-77.0)	174 (155-194)	514 (388-677)	958 (757-1370)	1347

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 2.0, 5.0, 5.0,5.0, and 10.0 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyfluorene (2001 – 2010)

CAS Number 6344-67-8

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	108 (87.1-134)	99.0 (81.0-119)	190 (144-255)	476 (302-641)	718 (476-1140)	662
Mexican Americans	03-04	93.4 (79.6-110)	83.4 (67.0-96.9)	190 (150-252)	520 (388-726)	1030 (688-1320)	622
Mexican Americans	05-06	82.5 (71.0-95.8)	71.8 (60.2-83.9)	143 (116-173)	435 (265-716)	763 (565-1020)	596
Mexican Americans	07-08	90.4 (79.6-103)	81.2 (74.5-92.4)	160 (136-192)	363 (259-513)	674 (454-1180)	529
Mexican Americans	09-10	77.8 (67.1-90.1)	65.0 (51.0-80.0)	149 (108-207)	390 (296-470)	750 (464-1020)	564
Non-Hispanic blacks	01-02	203 (169-244)	162 (135-188)	449 (308-830)	1420 (1130-1780)	2350 (1520-3000)	692
Non-Hispanic blacks	03-04	194 (156-242)	156 (124-184)	466 (297-869)	1480 (1170-1810)	2180 (1620-2830)	665
Non-Hispanic blacks	05-06	170 (143-202)	134 (121-149)	345 (246-558)	1300 (929-1760)	1880 (1550-2370)	652
Non-Hispanic blacks	07-08	164 (142-190)	133 (112-157)	393 (303-494)	1290 (963-1420)	1770 (1330-2660)	587
Non-Hispanic blacks	09-10	163 (134-198)	144 (120-167)	389 (255-670)	1100 (804-1360)	1670 (1230-2010)	517
Non-Hispanic whites	01-02	130 (108-157)	108 (93.0-127)	246 (202-352)	948 (621-1320)	1620 (1320-1990)	1207
Non-Hispanic whites	03-04	128 (106-155)	104 (86.2-124)	311 (233-452)	1210 (1010-1410)	1870 (1430-2290)	1025
Non-Hispanic whites	05-06	123 (111-137)	96.8 (85.4-112)	343 (275-420)	1060 (760-1260)	1870 (1390-2050)	966
Non-Hispanic whites	07-08	118 (98.0-141)	91.6 (81.6-103)	274 (195-403)	857 (646-1190)	1370 (1050-1740)	1066
Non-Hispanic whites	09-10	89.5 (80.7-99.4)	73.0 (64.0-84.0)	174 (156-194)	545 (403-732)	973 (806-1280)	1202

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 2.0, 5.0, 5.0,5.0, and 10.0 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyfluorene (creatinine corrected) (2001 – 2010)

CAS Number 6344-67-8

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	125 (108-144)	94.4 (83.3-106)	220 (174-303)	754 (622-873)	1060 (909-1290)	2745
Total population	03-04	119 (106-134)	86.6 (76.8-97.3)	256 (201-337)	856 (668-1060)	1330 (1130-1590)	2502
Total population	05-06	121 (111-131)	84.5 (77.5-93.4)	245 (203-297)	930 (806-1020)	1280 (1150-1400)	2398
Total population	07-08	117 (104-132)	84.6 (76.8-98.5)	226 (177-310)	789 (601-1000)	1230 (1040-1410)	2581
Total population	09-10	99.2 (93.0-106)	76.0 (69.7-84.0)	157 (144-180)	568 (521-662)	988 (914-1070)	2744
Age 6-11 years	01-02	119 (103-137)	110 (96.7-121)	153 (135-197)	265 (206-377)	382 (254-631)	387
Age 6-11 years	03-04	94.6 (84.3-106)	92.4 (83.1-98.5)	130 (115-154)	202 (168-282)	311 (197-435)	336
Age 6-11 years	05-06	90.7 (82.6-99.6)	90.3 (80.1-99.7)	130 (119-142)	210 (167-242)	290 (237-353)	336
Age 6-11 years	07-08	120 (105-138)	108 (92.3-127)	186 (150-215)	330 (231-401)	419 (304-918)	382
Age 6-11 years	09-10	96.3 (89.9-103)	89.5 (82.4-96.5)	130 (120-145)	228 (173-262)	304 (235-430)	416
Age 12-19 years	01-02	99.3 (81.6-121)	81.9 (74.2-92.6)	144 (109-197)	390 (214-700)	711 (372-1380)	733
Age 12-19 years	03-04	88.1 (78.0-99.6)	79.0 (72.5-83.2)	137 (114-170)	319 (225-440)	586 (356-880)	701
Age 12-19 years	05-06	90.1 (84.3-96.3)	73.8 (70.0-81.7)	133 (112-153)	381 (323-426)	618 (437-819)	661
Age 12-19 years	07-08	88.5 (78.9-99.2)	74.8 (65.2-84.6)	141 (118-185)	317 (242-449)	515 (338-656)	400
Age 12-19 years	09-10	77.2 (68.4-87.1)	64.1 (57.0-72.7)	103 (87.0-138)	257 (211-368)	475 (355-600)	420
Age 20+ years	01-02	131 (113-151)	94.4 (81.0-108)	279 (195-367)	862 (727-923)	1210 (1010-1350)	1625
Age 20+ years	03-04	128 (113-146)	88.2 (76.8-104)	364 (242-484)	1020 (828-1240)	1500 (1290-1710)	1465
Age 20+ years	05-06	131 (119-144)	85.9 (77.1-98.5)	334 (251-476)	1020 (931-1180)	1380 (1220-1550)	1401
Age 20+ years	07-08	122 (106-142)	83.9 (76.0-99.9)	276 (186-389)	926 (710-1110)	1320 (1150-1500)	1799
Age 20+ years	09-10	103 (96.3-111)	76.2 (69.6-85.9)	185 (157-213)	710 (600-779)	1070 (966-1120)	1908
Males	01-02	132 (111-156)	100 (88.5-117)	260 (194-361)	745 (560-914)	1130 (862-1380)	1346
Males	03-04	129 (114-147)	95.8 (82.5-111)	338 (226-456)	833 (672-1010)	1220 (980-1510)	1205
Males	05-06	125 (112-139)	92.4 (84.3-103)	272 (215-404)	784 (660-936)	1100 (874-1310)	1196
Males	07-08	123 (111-136)	92.3 (80.8-105)	282 (227-354)	791 (675-969)	1110 (989-1330)	1284
Males	09-10	99.4 (90.3-110)	74.3 (65.3-85.9)	167 (149-199)	616 (494-739)	948 (736-1140)	1397
Females	01-02	119 (104-136)	88.9 (78.6-103)	179 (156-227)	777 (604-888)	1030 (923-1270)	1399
Females	03-04	110 (93.4-129)	81.7 (69.5-91.5)	183 (132-285)	920 (488-1270)	1460 (1130-1750)	1297
Females	05-06	117 (105-130)	77.6 (71.9-90.2)	203 (160-290)	1040 (836-1240)	1400 (1220-1780)	1202
Females	07-08	112 (95.7-131)	82.1 (72.7-96.8)	180 (132-265)	789 (450-1140)	1240 (1050-1500)	1297
Females	09-10	98.9 (90.8-108)	76.4 (69.7-86.8)	149 (134-179)	529 (441-728)	1040 (801-1200)	1347

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyfluorene (creatinine corrected) (2001 – 2010)

CAS Number 6344-67-8

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	101 (84.2-121)	84.0 (74.8-97.2)	159 (124-214)	364 (227-598)	604 (357-1230)	662
Mexican Americans	03-04	84.8 (73.1-98.4)	68.8 (60.0-80.2)	170 (119-213)	353 (319-435)	668 (353-1050)	622
Mexican Americans	05-06	74.0 (66.0-83.1)	59.9 (52.5-69.7)	112 (88.0-136)	282 (217-410)	585 (320-763)	596
Mexican Americans	07-08	88.1 (75.3-103)	72.7 (62.2-84.1)	141 (107-184)	366 (232-536)	568 (397-722)	529
Mexican Americans	09-10	77.3 (67.1-89.1)	61.6 (52.6-72.6)	126 (96.0-160)	344 (252-479)	609 (373-905)	564
Non-Hispanic blacks	01-02	143 (118-173)	110 (90.7-133)	316 (186-525)	849 (622-1230)	1240 (882-1430)	692
Non-Hispanic blacks	03-04	138 (114-167)	106 (91.7-117)	316 (203-475)	948 (554-1310)	1310 (963-1710)	665
Non-Hispanic blacks	05-06	119 (103-138)	87.4 (78.4-97.0)	214 (154-388)	711 (523-1000)	1100 (838-1380)	652
Non-Hispanic blacks	07-08	128 (109-150)	94.1 (82.2-110)	309 (204-433)	829 (715-981)	1310 (981-1640)	587
Non-Hispanic blacks	09-10	118 (102-137)	87.1 (73.8-104)	260 (173-397)	729 (559-860)	958 (784-1190)	517
Non-Hispanic whites	01-02	128 (108-152)	94.7 (83.4-109)	223 (171-323)	816 (642-914)	1150 (910-1410)	1207
Non-Hispanic whites	03-04	127 (110-145)	89.8 (79.5-103)	305 (211-403)	975 (768-1170)	1460 (1270-1700)	1025
Non-Hispanic whites	05-06	130 (117-144)	91.1 (81.0-104)	290 (229-426)	973 (836-1180)	1380 (1130-1570)	966
Non-Hispanic whites	07-08	122 (103-145)	89.3 (76.2-108)	244 (166-377)	895 (579-1110)	1250 (1080-1470)	1066
Non-Hispanic whites	09-10	101 (93.2-109)	76.6 (68.9-88.4)	154 (140-184)	627 (516-739)	1070 (918-1140)	1202

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 9-Hydroxyfluorene (2003 – 2010)

CAS Number 1689-64-1

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	267 (234-305)	269 (233-313)	541 (463-620)	929 (839-1060)	1390 (1130-1600)	2504
Total population	05-06	308 (289-328)	300 (271-325)	609 (563-652)	1270 (1090-1420)	1820 (1560-2110)	2422
Total population	07-08	337 (310-367)	327 (295-367)	677 (582-769)	1300 (1060-1490)	1960 (1670-2420)	2608
Total population	09-10	255 (239-272)	253 (229-273)	514 (464-557)	981 (911-1060)	1510 (1290-1700)	2747
Age 6-11 years	03-04	209 (184-238)	216 (173-240)	331 (267-458)	594 (446-809)	853 (553-1500)	333
Age 6-11 years	05-06	184 (162-209)	190 (153-210)	324 (261-397)	657 (448-783)	823 (671-1220)	342
Age 6-11 years	07-08	242 (208-282)	229 (196-280)	449 (326-580)	791 (565-1040)	1090 (787-1610)	389
Age 6-11 years	09-10	164 (144-186)	150 (132-182)	291 (254-351)	518 (424-727)	809 (522-1220)	416
Age 12-19 years	03-04	253 (216-297)	271 (215-324)	506 (413-560)	894 (773-988)	1210 (929-1510)	698
Age 12-19 years	05-06	266 (245-290)	278 (253-314)	528 (454-574)	842 (738-1020)	1290 (1070-1510)	668
Age 12-19 years	07-08	308 (255-371)	295 (241-374)	583 (459-736)	1050 (829-1290)	1400 (1080-1870)	401
Age 12-19 years	09-10	237 (203-278)	235 (186-303)	475 (398-544)	813 (663-954)	1100 (846-1580)	420
Age 20+ years	03-04	277 (240-320)	279 (237-335)	583 (476-656)	979 (842-1140)	1490 (1140-1770)	1473
Age 20+ years	05-06	335 (309-363)	323 (292-349)	653 (593-729)	1360 (1180-1610)	1950 (1650-2530)	1412
Age 20+ years	07-08	355 (323-390)	352 (311-384)	716 (629-835)	1410 (1170-1670)	2160 (1770-2780)	1818
Age 20+ years	09-10	271 (251-291)	267 (245-296)	546 (496-596)	1060 (960-1130)	1590 (1340-1900)	1911
Males	03-04	330 (291-374)	330 (285-372)	632 (583-709)	1090 (898-1370)	1720 (1360-2250)	1208
Males	05-06	355 (325-387)	334 (296-387)	693 (608-783)	1310 (1150-1620)	2000 (1670-2560)	1208
Males	07-08	401 (365-441)	394 (356-442)	778 (661-897)	1420 (1260-1580)	2120 (1770-2820)	1294
Males	09-10	286 (261-313)	283 (255-317)	555 (492-632)	985 (900-1060)	1580 (1320-1750)	1399
Females	03-04	218 (188-253)	226 (191-253)	439 (357-521)	833 (697-973)	1100 (955-1310)	1296
Females	05-06	269 (242-299)	257 (230-297)	503 (426-580)	1090 (845-1400)	1610 (1400-1920)	1214
Females	07-08	286 (260-313)	271 (246-299)	557 (474-671)	1110 (914-1400)	1830 (1400-2400)	1314
Females	09-10	228 (213-244)	223 (208-244)	464 (432-501)	964 (850-1080)	1470 (1240-1700)	1348

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 5.0, 5.0, 5.0, and 10.0 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 9-Hydroxyfluorene (2003 – 2010)

CAS Number 1689-64-1

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	03-04	229 (200-261)	232 (197-274)	435 (362-492)	773 (561-1010)	1030 (849-1170)	614
Mexican Americans	05-06	232 (204-264)	221 (186-262)	407 (361-435)	738 (596-840)	1030 (788-1470)	614
Mexican Americans	07-08	267 (246-288)	259 (236-285)	476 (430-515)	859 (732-1100)	1470 (1070-1980)	532
Mexican Americans	09-10	214 (187-246)	197 (158-245)	416 (331-495)	854 (723-1040)	1520 (1040-2060)	566
Non-Hispanic blacks	03-04	382 (310-471)	357 (287-478)	717 (549-843)	1260 (1050-1600)	1880 (1540-2330)	661
Non-Hispanic blacks	05-06	416 (360-481)	406 (366-450)	716 (593-943)	1430 (1010-2250)	2310 (1590-3410)	655
Non-Hispanic blacks	07-08	426 (376-482)	423 (356-477)	817 (693-978)	1490 (1200-1950)	2260 (1870-3040)	597
Non-Hispanic blacks	09-10	377 (339-419)	363 (339-421)	745 (626-878)	1240 (1110-1460)	2120 (1430-2680)	517
Non-Hispanic whites	03-04	265 (225-312)	265 (227-324)	558 (452-660)	939 (826-1130)	1450 (1090-1770)	1038
Non-Hispanic whites	05-06	306 (279-335)	296 (257-331)	613 (548-669)	1290 (1150-1450)	1730 (1530-2140)	966
Non-Hispanic whites	07-08	345 (302-394)	338 (286-398)	700 (564-849)	1380 (1030-1690)	2040 (1570-2650)	1080
Non-Hispanic whites	09-10	252 (232-273)	254 (225-274)	485 (448-544)	934 (833-1060)	1480 (1220-1700)	1203

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 5.0, 5.0, 5.0, and 10.0 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 9-Hydroxyfluorene (creatinine corrected) (2003 – 2010)

CAS Number 1689-64-1

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	252 (230-276)	233 (205-266)	412 (371-461)	729 (609-905)	1100 (918-1390)	2504
Total population	05-06	301 (281-322)	270 (252-290)	511 (460-575)	1040 (908-1230)	1510 (1360-1750)	2422
Total population	07-08	339 (309-372)	303 (277-333)	562 (493-645)	1110 (908-1300)	1660 (1430-1960)	2608
Total population	09-10	266 (254-279)	242 (224-262)	442 (417-466)	838 (775-894)	1250 (1160-1360)	2747
Age 6-11 years	03-04	223 (200-247)	208 (176-264)	343 (299-389)	548 (433-689)	866 (533-958)	333
Age 6-11 years	05-06	205 (180-234)	195 (176-209)	309 (272-371)	590 (402-668)	866 (620-1300)	342
Age 6-11 years	07-08	298 (256-346)	280 (249-331)	463 (399-576)	817 (576-1130)	1130 (862-1230)	389
Age 6-11 years	09-10	214 (192-237)	185 (169-203)	331 (275-365)	568 (400-848)	1020 (539-1650)	416
Age 12-19 years	03-04	192 (172-215)	182 (161-200)	323 (286-360)	484 (412-696)	738 (571-1110)	698
Age 12-19 years	05-06	201 (183-220)	194 (173-223)	325 (283-343)	511 (397-666)	848 (521-941)	668
Age 12-19 years	07-08	239 (204-280)	235 (190-283)	381 (312-462)	596 (479-722)	768 (660-1090)	401
Age 12-19 years	09-10	191 (175-207)	181 (162-199)	293 (257-338)	521 (376-604)	691 (534-938)	420
Age 20+ years	03-04	267 (242-294)	243 (219-280)	446 (392-490)	788 (641-994)	1280 (991-1560)	1473
Age 20+ years	05-06	336 (314-358)	304 (284-323)	573 (506-650)	1200 (1000-1360)	1720 (1490-1900)	1412
Age 20+ years	07-08	363 (330-399)	314 (293-351)	618 (533-738)	1200 (1030-1450)	1770 (1570-2040)	1818
Age 20+ years	09-10	287 (272-302)	265 (243-288)	484 (450-514)	909 (832-986)	1340 (1230-1460)	1911
Males	03-04	260 (238-283)	236 (209-269)	429 (382-480)	739 (591-952)	1300 (916-1800)	1208
Males	05-06	286 (266-308)	258 (235-291)	498 (422-576)	993 (858-1180)	1410 (1240-1730)	1208
Males	07-08	338 (308-372)	303 (269-338)	575 (516-626)	1150 (987-1300)	1690 (1420-1940)	1294
Males	09-10	257 (240-275)	228 (206-258)	445 (402-489)	816 (747-932)	1260 (1070-1420)	1399
Females	03-04	244 (217-275)	227 (198-269)	396 (342-467)	717 (569-905)	1020 (905-1280)	1296
Females	05-06	316 (287-348)	278 (253-303)	532 (466-623)	1100 (840-1370)	1610 (1360-1840)	1214
Females	07-08	340 (306-377)	303 (274-335)	555 (451-683)	1030 (852-1330)	1620 (1330-2040)	1314
Females	09-10	275 (260-291)	256 (229-279)	442 (396-507)	849 (732-950)	1230 (1070-1380)	1348

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 9-Hydroxyfluorene (creatinine corrected) (2003 – 2010)

CAS Number 1689-64-1

Metabolite of Fluorene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	03-04	209 (188-232)	195 (181-209)	335 (293-379)	541 (447-722)	793 (569-1440)	614
Mexican Americans	05-06	208 (194-224)	201 (180-220)	304 (270-342)	502 (425-584)	663 (527-919)	614
Mexican Americans	07-08	260 (236-285)	244 (226-259)	388 (348-419)	654 (527-858)	1160 (775-1640)	532
Mexican Americans	09-10	213 (186-243)	186 (161-214)	312 (285-378)	727 (524-1070)	1410 (1030-2360)	566
Non-Hispanic blacks	03-04	271 (225-326)	258 (207-308)	460 (344-562)	777 (630-919)	1040 (856-1300)	661
Non-Hispanic blacks	05-06	293 (258-332)	261 (230-297)	449 (377-554)	851 (635-1080)	1480 (925-2070)	655
Non-Hispanic blacks	07-08	331 (289-379)	293 (257-333)	542 (489-620)	990 (805-1250)	1550 (1160-2470)	597
Non-Hispanic blacks	09-10	273 (256-292)	253 (224-279)	445 (403-489)	793 (626-887)	1170 (887-1540)	517
Non-Hispanic whites	03-04	263 (235-294)	243 (211-285)	438 (386-485)	773 (607-1020)	1300 (967-1710)	1038
Non-Hispanic whites	05-06	323 (296-353)	293 (266-322)	570 (496-650)	1180 (962-1360)	1630 (1370-1840)	966
Non-Hispanic whites	07-08	359 (316-407)	314 (280-366)	605 (497-750)	1170 (935-1420)	1740 (1460-2040)	1080
Non-Hispanic whites	09-10	283 (269-298)	261 (239-279)	458 (427-500)	891 (776-1000)	1280 (1170-1420)	1203

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxyphenanthrene (2001 – 2010)

CAS Number 2433-56-9

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	140 (125-158)	141 (130-154)	266 (229-312)	476 (426-539)	684 (581-763)	2741
Total population	03-04	156 (140-173)	166 (150-179)	287 (263-321)	464 (423-508)	625 (538-745)	2496
Total population	05-06	152 (143-161)	151 (138-163)	275 (257-303)	493 (428-549)	669 (580-852)	2449
Total population	07-08	139 (130-149)	140 (127-154)	252 (228-272)	442 (402-481)	683 (577-760)	2608
Total population	09-10	131 (124-140)	133 (126-141)	235 (222-251)	402 (367-451)	567 (488-659)	2746
Age 6-11 years	01-02	119 (104-137)	121 (98.0-142)	228 (182-249)	357 (265-501)	501 (367-661)	387
Age 6-11 years	03-04	138 (124-154)	131 (111-161)	222 (200-275)	397 (304-500)	615 (384-916)	328
Age 6-11 years	05-06	111 (101-123)	110 (96.9-121)	176 (150-240)	320 (251-375)	381 (329-540)	345
Age 6-11 years	07-08	121 (105-139)	120 (96.5-154)	200 (174-235)	334 (247-401)	405 (278-557)	389
Age 6-11 years	09-10	103 (90.7-116)	105 (89.0-119)	156 (142-172)	261 (226-320)	363 (283-628)	416
Age 12-19 years	01-02	133 (110-162)	131 (110-153)	238 (198-303)	431 (376-546)	579 (439-820)	733
Age 12-19 years	03-04	158 (141-178)	171 (138-193)	300 (262-333)	470 (437-537)	654 (563-745)	692
Age 12-19 years	05-06	144 (132-157)	154 (130-175)	260 (236-286)	425 (383-496)	666 (496-845)	677
Age 12-19 years	07-08	136 (122-152)	144 (128-164)	219 (199-283)	374 (315-415)	503 (392-607)	401
Age 12-19 years	09-10	133 (117-151)	124 (106-142)	244 (212-269)	410 (296-510)	511 (414-742)	420
Age 20+ years	01-02	145 (127-164)	145 (133-164)	274 (237-329)	499 (440-565)	713 (595-819)	1621
Age 20+ years	03-04	157 (141-176)	167 (152-182)	296 (264-337)	469 (430-513)	625 (534-783)	1476
Age 20+ years	05-06	159 (147-172)	156 (141-172)	287 (265-328)	516 (438-615)	744 (580-996)	1427
Age 20+ years	07-08	142 (132-153)	141 (125-158)	258 (241-280)	470 (417-531)	733 (622-856)	1818
Age 20+ years	09-10	135 (126-144)	140 (131-148)	245 (223-265)	412 (377-462)	579 (497-672)	1910
Males	01-02	150 (133-169)	145 (132-164)	284 (235-348)	501 (424-593)	713 (575-845)	1344
Males	03-04	176 (161-194)	182 (167-198)	321 (283-363)	492 (459-536)	662 (541-929)	1196
Males	05-06	169 (156-183)	166 (153-180)	289 (265-334)	519 (438-593)	791 (562-1080)	1222
Males	07-08	153 (140-167)	152 (137-171)	268 (251-292)	448 (406-488)	722 (566-813)	1294
Males	09-10	139 (129-149)	140 (127-153)	244 (222-260)	399 (363-457)	565 (469-664)	1398
Females	01-02	132 (115-152)	137 (121-151)	254 (221-297)	464 (390-520)	654 (538-769)	1397
Females	03-04	138 (122-156)	144 (126-164)	263 (240-294)	430 (404-469)	589 (489-680)	1300
Females	05-06	137 (123-152)	136 (117-153)	260 (234-297)	460 (391-553)	648 (540-809)	1227
Females	07-08	128 (120-136)	128 (117-139)	230 (205-258)	432 (373-500)	663 (527-740)	1314
Females	09-10	125 (116-135)	129 (119-136)	231 (214-246)	405 (332-489)	581 (470-689)	1348

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 3.5, 5.0, 5.0,5.0, and 10.0 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxyphenanthrene (2001 – 2010)

CAS Number 2433-56-9

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	117 (90.8-152)	116 (88.0-147)	214 (157-306)	369 (254-583)	549 (342-847)	664
Mexican Americans	03-04	138 (120-158)	152 (129-175)	246 (213-291)	413 (311-492)	518 (352-896)	611
Mexican Americans	05-06	125 (104-151)	129 (107-151)	223 (174-276)	376 (298-460)	523 (399-617)	621
Mexican Americans	07-08	118 (108-129)	108 (103-119)	194 (172-216)	341 (271-437)	491 (417-738)	532
Mexican Americans	09-10	116 (107-126)	112 (100-126)	195 (168-245)	391 (294-509)	603 (432-825)	565
Non-Hispanic blacks	01-02	150 (127-179)	145 (126-170)	287 (243-327)	493 (423-629)	713 (568-975)	690
Non-Hispanic blacks	03-04	183 (152-219)	178 (148-213)	350 (268-423)	551 (455-645)	797 (588-1050)	661
Non-Hispanic blacks	05-06	162 (148-177)	155 (141-173)	307 (259-349)	517 (408-695)	753 (545-1110)	658
Non-Hispanic blacks	07-08	142 (129-158)	141 (128-163)	264 (234-302)	448 (401-511)	613 (522-722)	597
Non-Hispanic blacks	09-10	148 (130-167)	161 (135-181)	269 (234-312)	410 (346-489)	536 (435-658)	517
Non-Hispanic whites	01-02	144 (125-166)	144 (131-162)	276 (241-330)	489 (436-552)	661 (550-793)	1204
Non-Hispanic whites	03-04	159 (140-180)	167 (151-185)	296 (267-330)	474 (421-534)	641 (516-843)	1036
Non-Hispanic whites	05-06	156 (143-170)	155 (137-173)	279 (251-322)	500 (414-606)	743 (570-1050)	982
Non-Hispanic whites	07-08	146 (133-159)	149 (132-174)	261 (235-292)	453 (405-503)	725 (590-836)	1080
Non-Hispanic whites	09-10	133 (123-144)	136 (128-143)	235 (214-259)	409 (357-462)	570 (470-689)	1203

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 3.5, 5.0, 5.0,5.0, and 10.0 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxyphenanthrene (creatinine corrected) (2001 – 2010)

CAS Number 2433-56-9

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	132 (118-147)	125 (113-141)	210 (191-231)	344 (310-385)	464 (404-539)	2741
Total population	03-04	146 (138-155)	141 (133-150)	222 (205-244)	352 (330-384)	487 (416-546)	2496
Total population	05-06	147 (138-157)	140 (130-148)	229 (211-247)	372 (339-406)	502 (446-600)	2449
Total population	07-08	140 (130-151)	137 (124-151)	221 (207-236)	345 (319-372)	457 (407-522)	2608
Total population	09-10	137 (132-143)	130 (125-136)	206 (194-221)	328 (304-346)	448 (395-489)	2746
Age 6-11 years	01-02	133 (116-153)	126 (110-147)	188 (165-225)	344 (245-437)	467 (364-598)	387
Age 6-11 years	03-04	145 (129-163)	138 (121-155)	205 (169-240)	315 (244-456)	477 (313-803)	328
Age 6-11 years	05-06	124 (114-134)	115 (103-133)	191 (162-210)	275 (230-340)	368 (321-396)	345
Age 6-11 years	07-08	149 (132-169)	139 (127-158)	221 (191-264)	334 (275-410)	424 (332-796)	389
Age 6-11 years	09-10	134 (121-148)	122 (113-133)	184 (161-209)	290 (241-437)	489 (290-845)	416
Age 12-19 years	01-02	103 (87.9-121)	97.3 (81.4-117)	158 (131-192)	240 (198-322)	354 (235-531)	733
Age 12-19 years	03-04	119 (108-130)	115 (101-131)	176 (157-197)	275 (230-331)	345 (269-496)	692
Age 12-19 years	05-06	108 (97.5-119)	108 (95.9-116)	163 (148-180)	268 (199-330)	372 (262-609)	677
Age 12-19 years	07-08	106 (94.9-117)	106 (90.0-116)	158 (147-171)	243 (197-303)	324 (250-407)	401
Age 12-19 years	09-10	107 (99.6-115)	102 (94.4-112)	150 (130-164)	227 (190-273)	316 (228-491)	420
Age 20+ years	01-02	137 (122-153)	132 (117-145)	223 (200-243)	351 (319-395)	476 (421-541)	1621
Age 20+ years	03-04	151 (142-161)	147 (134-157)	237 (212-253)	365 (335-397)	500 (422-580)	1476
Age 20+ years	05-06	158 (147-170)	151 (137-163)	244 (224-265)	397 (362-420)	554 (478-666)	1427
Age 20+ years	07-08	145 (135-157)	142 (127-156)	229 (214-251)	354 (336-383)	495 (420-560)	1818
Age 20+ years	09-10	143 (137-149)	139 (132-144)	221 (203-235)	333 (316-356)	455 (407-500)	1910
Males	01-02	122 (108-137)	116 (104-131)	194 (173-218)	321 (262-395)	455 (348-642)	1344
Males	03-04	138 (131-146)	130 (117-143)	201 (187-227)	335 (301-391)	437 (392-550)	1196
Males	05-06	135 (126-145)	125 (117-132)	208 (187-229)	341 (300-385)	498 (391-634)	1222
Males	07-08	129 (117-141)	126 (112-141)	207 (191-223)	327 (290-344)	410 (354-487)	1294
Males	09-10	125 (117-132)	118 (109-130)	188 (176-206)	288 (266-324)	397 (332-500)	1398
Females	01-02	142 (125-160)	136 (118-156)	226 (199-256)	355 (323-399)	473 (421-541)	1397
Females	03-04	154 (142-168)	150 (138-160)	241 (212-269)	364 (323-425)	505 (418-635)	1300
Females	05-06	160 (149-172)	152 (136-166)	251 (229-275)	398 (367-428)	509 (435-638)	1227
Females	07-08	152 (140-165)	148 (133-162)	231 (213-262)	373 (329-411)	478 (409-577)	1314
Females	09-10	151 (143-159)	142 (133-151)	226 (196-245)	350 (321-387)	468 (395-553)	1348

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxyphenanthrene (creatinine corrected) (2001 – 2010)

CAS Number 2433-56-9

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	110 (88.6-136)	101 (85.5-131)	162 (138-203)	275 (187-452)	400 (268-755)	664
Mexican Americans	03-04	124 (111-140)	122 (107-136)	183 (159-242)	304 (246-392)	392 (318-437)	611
Mexican Americans	05-06	112 (99.2-126)	109 (87.1-129)	170 (145-201)	259 (228-307)	353 (297-414)	621
Mexican Americans	07-08	115 (102-129)	107 (96.7-118)	159 (143-183)	287 (218-344)	424 (324-520)	532
Mexican Americans	09-10	116 (104-129)	104 (93.1-114)	163 (141-203)	312 (225-471)	502 (329-860)	565
Non-Hispanic blacks	01-02	106 (88.7-127)	102 (92.4-111)	172 (141-203)	274 (224-356)	384 (308-598)	690
Non-Hispanic blacks	03-04	129 (112-148)	125 (107-143)	199 (173-239)	337 (279-395)	428 (374-536)	661
Non-Hispanic blacks	05-06	114 (106-121)	107 (98.6-114)	179 (163-189)	301 (229-370)	449 (321-771)	658
Non-Hispanic blacks	07-08	111 (98.8-124)	109 (90.0-126)	181 (153-201)	293 (257-338)	385 (338-446)	597
Non-Hispanic blacks	09-10	107 (102-113)	98.5 (94.1-108)	165 (149-179)	258 (240-283)	328 (283-386)	517
Non-Hispanic whites	01-02	142 (126-161)	137 (119-153)	228 (206-247)	363 (321-406)	476 (411-552)	1204
Non-Hispanic whites	03-04	156 (146-168)	149 (138-158)	239 (214-255)	373 (335-426)	515 (426-649)	1036
Non-Hispanic whites	05-06	164 (152-176)	154 (141-165)	247 (228-268)	398 (366-428)	554 (466-739)	982
Non-Hispanic whites	07-08	152 (139-166)	152 (135-167)	236 (217-258)	354 (330-383)	464 (407-551)	1080
Non-Hispanic whites	09-10	150 (143-157)	143 (135-152)	225 (204-240)	332 (310-365)	451 (378-528)	1203

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxyphenanthrene (2001 – 2010)

CAS Number 605-55-0

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	54.0 (46.0-63.5)	58.0 (50.0-68.0)	117 (102-140)	240 (201-271)	332 (299-377)	2742
Total population	03-04	59.3 (52.5-66.9)	62.2 (55.4-69.7)	117 (105-129)	206 (180-235)	291 (252-336)	2512
Total population	05-06	65.3 (60.9-70.0)	63.3 (58.5-68.6)	126 (111-139)	234 (203-254)	314 (282-383)	2410
Total population	07-08	63.6 (58.8-68.7)	62.9 (58.0-68.7)	117 (104-130)	204 (184-223)	300 (256-367)	2572
Total population	09-10	64.1 (60.3-68.0)	64.0 (58.0-69.0)	114 (108-122)	204 (185-228)	281 (260-310)	2744
Age 6-11 years	01-02	40.5 (34.3-47.7)	46.0 (37.0-57.0)	87.0 (71.0-101)	170 (133-207)	257 (195-320)	387
Age 6-11 years	03-04	45.3 (40.0-51.3)	48.1 (41.9-56.8)	72.7 (63.2-89.4)	135 (104-176)	225 (136-299)	337
Age 6-11 years	05-06	42.1 (38.4-46.1)	40.1 (36.4-47.2)	70.4 (58.1-83.2)	110 (89.2-132)	152 (112-213)	341
Age 6-11 years	07-08	48.1 (41.8-55.4)	46.4 (41.7-54.6)	80.3 (68.2-95.4)	144 (98.8-184)	184 (122-229)	382
Age 6-11 years	09-10	44.6 (39.3-50.7)	44.0 (39.0-51.0)	71.0 (60.0-80.0)	112 (89.0-131)	167 (112-260)	416
Age 12-19 years	01-02	49.5 (37.3-65.7)	52.0 (41.0-68.0)	108 (93.0-122)	210 (145-270)	281 (214-524)	733
Age 12-19 years	03-04	58.0 (50.7-66.2)	62.5 (54.5-71.6)	104 (88.8-132)	198 (166-215)	258 (199-318)	707
Age 12-19 years	05-06	60.4 (55.4-65.8)	62.4 (56.3-67.1)	114 (93.8-133)	175 (156-195)	250 (198-291)	664
Age 12-19 years	07-08	59.4 (52.9-66.7)	60.5 (51.5-67.0)	97.4 (81.2-121)	160 (133-204)	223 (175-264)	398
Age 12-19 years	09-10	60.6 (53.0-69.3)	62.0 (51.0-68.0)	109 (90.0-126)	170 (130-230)	230 (155-443)	420
Age 20+ years	01-02	56.8 (48.1-66.9)	60.0 (52.0-73.0)	126 (104-152)	249 (207-292)	342 (308-398)	1622
Age 20+ years	03-04	61.5 (53.7-70.4)	64.9 (57.2-73.5)	125 (111-138)	216 (187-250)	310 (259-389)	1468
Age 20+ years	05-06	69.6 (63.6-76.2)	67.3 (61.5-75.3)	137 (118-154)	251 (215-280)	348 (298-446)	1405
Age 20+ years	07-08	66.2 (60.8-72.1)	65.9 (60.4-71.2)	123 (109-136)	218 (195-251)	334 (272-412)	1792
Age 20+ years	09-10	67.3 (63.1-71.8)	68.0 (61.0-75.0)	120 (114-127)	218 (199-244)	296 (266-324)	1908
Males	01-02	62.1 (53.3-72.5)	67.0 (58.0-80.0)	136 (109-161)	274 (245-303)	367 (329-414)	1345
Males	03-04	72.3 (64.4-81.3)	71.6 (65.8-83.3)	138 (123-150)	240 (200-279)	337 (279-428)	1211
Males	05-06	76.5 (70.3-83.3)	72.9 (67.4-81.3)	141 (122-156)	254 (219-296)	383 (289-555)	1204
Males	07-08	75.8 (70.3-81.8)	73.5 (67.6-81.4)	136 (126-149)	229 (199-256)	354 (276-408)	1277
Males	09-10	72.1 (66.6-78.1)	72.0 (62.0-79.0)	124 (112-139)	227 (198-253)	310 (271-357)	1397
Females	01-02	47.4 (39.1-57.5)	50.0 (41.0-60.0)	105 (88.0-129)	200 (171-240)	294 (236-357)	1397
Females	03-04	49.0 (42.4-56.6)	52.5 (45.3-58.7)	95.4 (84.1-110)	166 (146-202)	247 (202-291)	1301
Females	05-06	56.0 (50.2-62.5)	54.4 (49.5-61.0)	107 (94.7-125)	206 (173-245)	275 (248-343)	1206
Females	07-08	53.7 (48.9-59.0)	53.0 (48.9-59.2)	97.0 (87.0-111)	173 (146-207)	280 (206-327)	1295
Females	09-10	57.2 (53.2-61.4)	57.0 (52.0-64.0)	108 (98.0-114)	189 (161-214)	253 (214-301)	1347

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 3.2, 5.0, 5.0,5.0, and 10.0 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxyphenanthrene (2001 – 2010)

CAS Number 605-55-0

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	46.8 (32.7-66.8)	51.0 (36.0-73.0)	97.0 (72.0-140)	191 (122-332)	303 (187-652)	665
Mexican Americans	03-04	53.9 (46.7-62.1)	60.1 (50.8-68.6)	104 (89.5-115)	164 (144-187)	200 (187-219)	627
Mexican Americans	05-06	54.6 (45.0-66.3)	56.2 (47.1-67.7)	96.2 (84.4-108)	164 (120-202)	213 (175-294)	612
Mexican Americans	07-08	58.2 (53.9-62.7)	59.3 (50.8-63.0)	98.6 (92.5-113)	167 (141-193)	252 (192-395)	528
Mexican Americans	09-10	57.6 (51.3-64.8)	56.0 (45.0-64.0)	95.0 (80.0-116)	190 (153-234)	303 (228-479)	566
Non-Hispanic blacks	01-02	71.1 (58.0-87.1)	74.0 (66.0-90.0)	152 (124-182)	262 (217-311)	374 (284-560)	690
Non-Hispanic blacks	03-04	81.9 (68.2-98.3)	74.1 (61.0-102)	164 (125-199)	282 (217-375)	390 (289-574)	660
Non-Hispanic blacks	05-06	77.3 (69.0-86.6)	75.3 (65.8-83.5)	141 (114-172)	267 (202-340)	363 (275-546)	641
Non-Hispanic blacks	07-08	72.8 (65.2-81.3)	70.7 (62.6-80.2)	127 (115-149)	251 (206-284)	367 (284-455)	597
Non-Hispanic blacks	09-10	80.1 (71.2-90.0)	86.0 (77.0-98.0)	139 (123-164)	224 (190-265)	295 (252-367)	517
Non-Hispanic whites	01-02	53.1 (43.6-64.6)	57.0 (48.0-68.0)	117 (99.0-144)	242 (199-286)	333 (303-385)	1204
Non-Hispanic whites	03-04	58.1 (49.9-67.6)	60.5 (52.1-71.0)	115 (97.9-133)	209 (172-259)	299 (251-358)	1034
Non-Hispanic whites	05-06	65.2 (59.4-71.5)	63.7 (57.0-70.4)	130 (109-144)	244 (206-261)	343 (282-439)	974
Non-Hispanic whites	07-08	63.3 (56.6-70.8)	64.0 (56.4-71.1)	121 (102-135)	203 (174-234)	298 (238-410)	1050
Non-Hispanic whites	09-10	62.9 (57.5-68.7)	63.0 (55.0-69.0)	112 (101-121)	200 (165-242)	279 (242-310)	1200

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 3.2, 5.0, 5.0,5.0, and 10.0 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxyphenanthrene (creatinine corrected) (2001 – 2010)

CAS Number 605-55-0

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	50.6 (43.3-59.2)	52.5 (46.4-59.6)	91.4 (78.7-108)	164 (138-200)	233 (206-275)	2742
Total population	03-04	55.4 (51.1-60.0)	52.3 (48.8-55.8)	85.8 (79.4-97.0)	150 (128-174)	212 (180-252)	2512
Total population	05-06	63.1 (58.9-67.5)	57.0 (53.3-61.9)	101 (92.8-110)	178 (157-194)	245 (209-295)	2410
Total population	07-08	64.0 (58.9-69.4)	60.3 (55.3-66.5)	98.2 (87.5-108)	163 (151-179)	229 (199-248)	2572
Total population	09-10	66.9 (64.5-69.3)	62.2 (58.9-65.2)	97.7 (94.7-103)	166 (155-176)	228 (212-251)	2744
Age 6-11 years	01-02	45.3 (38.8-52.8)	50.0 (40.0-57.8)	85.9 (69.6-100)	144 (105-217)	234 (138-397)	387
Age 6-11 years	03-04	47.9 (43.6-52.7)	46.6 (41.0-51.4)	66.3 (60.3-72.8)	106 (81.0-125)	183 (108-295)	337
Age 6-11 years	05-06	45.9 (42.0-50.1)	43.6 (38.4-48.7)	65.8 (56.1-85.2)	101 (85.4-110)	116 (101-135)	341
Age 6-11 years	07-08	59.7 (51.2-69.4)	56.5 (49.4-65.2)	85.1 (73.1-107)	134 (105-187)	187 (121-437)	382
Age 6-11 years	09-10	58.2 (52.3-64.9)	54.7 (49.3-60.5)	76.6 (69.6-93.8)	124 (104-145)	170 (134-320)	416
Age 12-19 years	01-02	38.4 (29.6-49.7)	38.5 (30.6-48.7)	64.9 (52.4-84.0)	117 (86.7-167)	173 (128-305)	733
Age 12-19 years	03-04	43.6 (39.3-48.5)	40.8 (37.7-45.0)	70.6 (55.8-84.7)	106 (88.2-123)	127 (115-176)	707
Age 12-19 years	05-06	44.5 (39.9-49.7)	42.7 (38.9-47.1)	66.1 (58.0-73.7)	111 (80.0-129)	146 (115-232)	664
Age 12-19 years	07-08	46.1 (42.0-50.5)	47.0 (39.7-53.0)	69.7 (62.0-78.0)	100 (83.0-113)	127 (105-188)	398
Age 12-19 years	09-10	48.7 (45.1-52.6)	46.5 (43.0-50.8)	67.8 (59.2-73.3)	97.0 (77.3-137)	140 (103-186)	420
Age 20+ years	01-02	53.7 (46.2-62.4)	55.6 (49.4-62.7)	94.6 (84.1-112)	173 (145-201)	241 (209-287)	1622
Age 20+ years	03-04	58.7 (53.6-64.2)	54.8 (50.7-60.9)	91.6 (83.5-105)	164 (139-182)	227 (183-291)	1468
Age 20+ years	05-06	69.1 (64.1-74.6)	63.6 (58.4-67.8)	111 (102-123)	191 (168-216)	267 (232-316)	1405
Age 20+ years	07-08	67.8 (62.4-73.8)	64.1 (57.6-71.6)	105 (95.5-119)	177 (160-194)	239 (211-255)	1792
Age 20+ years	09-10	71.2 (68.4-74.2)	66.2 (61.9-72.5)	107 (101-113)	177 (164-195)	237 (220-258)	1908
Males	01-02	50.4 (43.3-58.5)	52.5 (47.2-59.2)	91.4 (78.6-103)	176 (140-208)	245 (206-349)	1345
Males	03-04	56.6 (52.5-61.0)	52.3 (48.1-57.1)	84.7 (79.2-96.4)	157 (132-180)	227 (184-284)	1211
Males	05-06	61.2 (56.7-65.9)	55.7 (50.0-59.3)	102 (89.3-111)	161 (137-194)	244 (190-310)	1204
Males	07-08	64.0 (59.3-69.1)	59.8 (55.3-64.1)	99.7 (90.5-108)	172 (152-191)	229 (211-243)	1277
Males	09-10	64.7 (61.1-68.6)	60.8 (55.1-66.7)	97.7 (89.1-111)	162 (150-179)	229 (202-251)	1397
Females	01-02	50.9 (42.7-60.7)	52.8 (45.5-61.0)	91.6 (75.0-115)	158 (133-183)	214 (200-245)	1397
Females	03-04	54.3 (48.7-60.5)	52.3 (47.0-57.2)	88.1 (76.4-101)	146 (118-179)	202 (175-246)	1301
Females	05-06	65.0 (60.0-70.3)	60.5 (55.1-65.3)	101 (91.6-113)	184 (165-201)	256 (224-312)	1206
Females	07-08	63.9 (57.8-70.7)	61.5 (54.0-69.3)	95.8 (83.7-115)	159 (140-189)	229 (186-256)	1295
Females	09-10	68.9 (65.8-72.2)	62.9 (59.0-66.9)	97.6 (91.5-106)	168 (150-189)	224 (203-260)	1347

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxyphenanthrene (creatinine corrected) (2001 – 2010)

CAS Number 605-55-0

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	43.7 (31.9-59.8)	44.0 (34.3-58.8)	80.8 (59.8-115)	146 (103-245)	245 (144-394)	665
Mexican Americans	03-04	48.8 (42.5-55.9)	50.1 (42.4-58.8)	79.5 (68.1-86.1)	124 (96.2-149)	155 (127-206)	627
Mexican Americans	05-06	48.7 (43.0-55.2)	46.0 (39.4-56.2)	75.1 (62.9-85.8)	111 (94.5-138)	146 (121-178)	612
Mexican Americans	07-08	56.7 (51.1-62.8)	55.0 (47.7-62.2)	83.7 (76.2-90.4)	133 (107-180)	198 (145-233)	528
Mexican Americans	09-10	57.2 (50.0-65.4)	49.7 (45.0-55.8)	80.0 (65.2-103)	162 (118-212)	282 (195-402)	566
Non-Hispanic blacks	01-02	50.2 (40.5-62.2)	49.7 (44.3-56.0)	87.7 (72.6-103)	174 (127-224)	257 (178-459)	690
Non-Hispanic blacks	03-04	57.7 (49.7-67.1)	53.1 (45.7-63.5)	90.2 (77.6-116)	165 (131-189)	224 (173-357)	660
Non-Hispanic blacks	05-06	54.3 (49.7-59.3)	47.7 (45.4-51.3)	84.8 (71.3-97.8)	150 (116-192)	211 (167-298)	641
Non-Hispanic blacks	07-08	56.6 (50.4-63.6)	51.2 (46.6-55.9)	95.5 (77.7-107)	154 (136-178)	212 (188-232)	597
Non-Hispanic blacks	09-10	58.1 (54.5-61.9)	55.7 (51.4-59.7)	87.6 (80.8-96.5)	150 (135-164)	191 (164-210)	517
Non-Hispanic whites	01-02	52.5 (43.8-62.9)	54.8 (47.7-61.9)	92.7 (80.5-113)	170 (140-204)	233 (202-293)	1204
Non-Hispanic whites	03-04	57.0 (51.6-62.9)	52.7 (48.7-57.0)	88.5 (79.0-102)	159 (126-187)	239 (180-296)	1034
Non-Hispanic whites	05-06	67.9 (62.6-73.7)	60.9 (56.5-66.5)	111 (101-123)	191 (162-224)	274 (231-323)	974
Non-Hispanic whites	07-08	65.9 (59.4-73.3)	62.8 (55.1-72.0)	100 (87.2-119)	166 (147-190)	229 (197-252)	1050
Non-Hispanic whites	09-10	70.7 (67.2-74.3)	65.4 (61.0-72.0)	104 (95.2-112)	166 (154-186)	228 (212-252)	1200

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyphenanthrene (2001 – 2010)

CAS Number 605-87-8

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	105 (92.5-118)	105 (92.0-118)	200 (179-225)	401 (336-480)	649 (542-747)	2741
Total population	03-04	115 (104-128)	118 (107-129)	219 (201-237)	424 (351-487)	647 (509-788)	2426
Total population	05-06	103 (96.1-109)	99.8 (90.3-107)	200 (185-210)	399 (365-429)	593 (463-746)	2448
Total population	07-08	97.6 (91.6-104)	97.8 (90.9-106)	178 (164-195)	319 (283-353)	490 (426-557)	2601
Total population	09-10	71.7 (67.1-76.7)	71.0 (67.0-76.0)	130 (121-140)	248 (225-265)	354 (303-412)	2746
Age 6-11 years	01-02	105 (91.1-122)	109 (82.0-138)	195 (160-231)	298 (245-346)	412 (319-545)	387
Age 6-11 years	03-04	116 (99.9-134)	107 (93.0-135)	205 (170-223)	333 (241-435)	472 (322-881)	325
Age 6-11 years	05-06	89.6 (79.6-101)	84.0 (72.6-103)	154 (123-176)	245 (193-316)	316 (245-569)	345
Age 6-11 years	07-08	100 (85.9-117)	102 (83.4-126)	175 (144-183)	251 (194-328)	348 (239-862)	389
Age 6-11 years	09-10	66.2 (58.1-75.4)	69.0 (60.0-75.0)	110 (98.0-126)	198 (145-229)	285 (198-417)	416
Age 12-19 years	01-02	104 (87.3-125)	107 (90.0-122)	201 (165-231)	329 (255-445)	459 (331-631)	733
Age 12-19 years	03-04	120 (103-141)	127 (107-149)	221 (195-262)	366 (327-424)	564 (391-730)	677
Age 12-19 years	05-06	105 (96.5-113)	104 (97.3-116)	193 (166-217)	323 (275-383)	453 (377-604)	676
Age 12-19 years	07-08	103 (92.9-114)	103 (89.5-116)	173 (146-195)	293 (246-352)	371 (323-436)	401
Age 12-19 years	09-10	77.5 (67.2-89.3)	75.0 (65.0-85.0)	136 (115-168)	237 (184-315)	320 (243-452)	420
Age 20+ years	01-02	105 (91.7-119)	105 (89.0-118)	201 (180-231)	433 (366-515)	683 (597-806)	1621
Age 20+ years	03-04	114 (103-128)	118 (105-130)	221 (203-243)	450 (353-505)	696 (511-885)	1424
Age 20+ years	05-06	104 (95.3-113)	101 (89.6-113)	206 (188-223)	419 (384-466)	657 (481-832)	1427
Age 20+ years	07-08	96.5 (89.3-104)	96.9 (87.3-106)	183 (163-201)	331 (285-393)	535 (432-624)	1811
Age 20+ years	09-10	71.5 (66.8-76.6)	71.0 (67.0-75.0)	131 (121-147)	250 (233-279)	370 (308-435)	1910
Males	01-02	122 (107-138)	117 (106-132)	224 (188-278)	474 (372-597)	734 (597-1010)	1344
Males	03-04	137 (122-154)	135 (119-157)	251 (221-287)	487 (398-579)	754 (606-913)	1167
Males	05-06	125 (114-137)	119 (107-136)	227 (204-261)	427 (395-491)	768 (520-951)	1222
Males	07-08	117 (109-127)	115 (103-130)	209 (191-229)	352 (322-390)	557 (462-674)	1290
Males	09-10	82.6 (76.0-89.7)	79.0 (73.0-85.0)	147 (126-169)	263 (242-302)	412 (344-466)	1399
Females	01-02	90.8 (77.7-106)	93.0 (80.0-108)	184 (155-207)	328 (291-399)	518 (434-649)	1397
Females	03-04	97.7 (86.5-110)	100 (86.6-114)	193 (170-210)	351 (287-445)	531 (447-647)	1259
Females	05-06	84.6 (75.6-94.5)	82.4 (73.1-92.5)	159 (143-176)	363 (285-404)	480 (421-577)	1226
Females	07-08	81.9 (76.8-87.3)	81.7 (74.7-91.0)	148 (134-173)	272 (237-326)	439 (355-501)	1311
Females	09-10	62.7 (57.9-67.8)	64.0 (58.0-69.0)	119 (109-131)	223 (189-253)	311 (255-379)	1347

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 3.6, 5.0, 5.0,5.0, and 10.0 respectively.

+Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyphenanthrene (2001 – 2010)

CAS Number 605-87-8

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	83.5 (64.1-109)	84.0 (64.0-111)	144 (117-198)	259 (193-430)	454 (253-1140)	664
Mexican Americans	03-04	92.7 (81.3-106)	92.8 (84.1-111)	164 (133-204)	317 (236-374)	436 (338-501)	576
Mexican Americans	05-06	77.0 (64.1-92.5)	74.8 (60.0-90.8)	138 (110-162)	260 (191-312)	366 (299-471)	620
Mexican Americans	07-08	79.1 (71.4-87.7)	75.3 (66.4-85.2)	133 (118-154)	250 (176-330)	414 (302-511)	529
Mexican Americans	09-10	56.9 (50.7-63.8)	54.0 (45.0-63.0)	96.0 (79.0-114)	193 (145-244)	317 (240-484)	566
Non-Hispanic blacks	01-02	145 (122-172)	135 (120-163)	281 (228-346)	516 (414-684)	957 (609-1410)	690
Non-Hispanic blacks	03-04	167 (141-198)	160 (136-198)	315 (243-414)	548 (457-688)	870 (590-1220)	668
Non-Hispanic blacks	05-06	138 (120-159)	125 (113-147)	260 (211-329)	466 (365-671)	716 (491-1100)	658
Non-Hispanic blacks	07-08	129 (115-145)	129 (112-148)	237 (205-266)	427 (349-514)	657 (514-839)	596
Non-Hispanic blacks	09-10	103 (89.1-118)	110 (94.0-123)	196 (168-220)	310 (248-422)	456 (368-544)	517
Non-Hispanic whites	01-02	104 (90.8-120)	106 (92.0-120)	199 (177-224)	401 (331-495)	649 (518-747)	1204
Non-Hispanic whites	03-04	114 (100-129)	117 (104-128)	220 (201-235)	443 (333-511)	702 (505-915)	1000
Non-Hispanic whites	05-06	101 (93.6-110)	101 (89.3-112)	200 (181-213)	402 (368-434)	657 (449-829)	982
Non-Hispanic whites	07-08	97.0 (87.7-107)	97.9 (87.3-111)	179 (155-202)	315 (270-355)	468 (371-590)	1077
Non-Hispanic whites	09-10	69.6 (63.3-76.5)	70.0 (65.0-75.0)	121 (110-137)	235 (203-263)	322 (255-410)	1203

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 3.6, 5.0, 5.0,5.0, and 10.0 respectively.

+Not measured after Survey years 2011-2012.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyphenanthrene (creatinine corrected) (2001 – 2010)

CAS Number 605-87-8

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	98.0 (87.4-110)	86.5 (78.8-97.1)	158 (142-174)	299 (252-342)	428 (365-621)	2741
Total population	03-04	108 (101-115)	99.5 (91.9-106)	172 (158-189)	321 (273-363)	497 (406-566)	2426
Total population	05-06	99.5 (93.6-106)	88.1 (83.8-93.5)	164 (151-175)	326 (273-364)	443 (402-525)	2448
Total population	07-08	98.1 (91.3-106)	91.3 (81.8-100)	159 (141-174)	273 (246-301)	380 (333-442)	2601
Total population	09-10	74.9 (71.8-78.1)	68.4 (63.8-73.1)	114 (110-118)	207 (192-224)	281 (257-326)	2746
Age 6-11 years	01-02	118 (103-135)	114 (94.9-131)	173 (150-201)	289 (238-368)	410 (308-544)	387
Age 6-11 years	03-04	124 (110-138)	119 (110-129)	165 (145-202)	283 (231-402)	484 (269-710)	325
Age 6-11 years	05-06	99.6 (89.4-111)	93.5 (85.7-107)	146 (118-165)	232 (171-292)	292 (232-352)	345
Age 6-11 years	07-08	123 (107-142)	120 (105-143)	183 (159-200)	230 (201-382)	382 (222-948)	389
Age 6-11 years	09-10	86.3 (77.7-95.9)	77.9 (69.6-90.6)	129 (110-136)	194 (161-252)	290 (193-484)	416
Age 12-19 years	01-02	81.1 (70.1-93.8)	78.0 (66.7-89.4)	116 (96.5-144)	205 (153-275)	283 (198-511)	733
Age 12-19 years	03-04	90.3 (81.5-100)	84.9 (76.1-93.9)	139 (116-160)	212 (193-231)	295 (225-429)	677
Age 12-19 years	05-06	78.2 (70.9-86.3)	72.5 (66.7-82.1)	111 (98.8-121)	183 (141-262)	291 (211-465)	676
Age 12-19 years	07-08	80.0 (73.6-86.9)	74.4 (67.0-87.5)	117 (110-126)	188 (151-223)	243 (213-284)	401
Age 12-19 years	09-10	62.3 (57.4-67.6)	60.5 (55.7-64.1)	88.8 (78.2-98.0)	123 (105-182)	190 (124-228)	420
Age 20+ years	01-02	98.9 (88.3-111)	85.3 (78.3-96.6)	164 (147-183)	320 (273-356)	488 (379-774)	1621
Age 20+ years	03-04	109 (102-117)	99.1 (91.7-106)	180 (161-198)	343 (282-385)	523 (417-608)	1424
Age 20+ years	05-06	103 (96.3-111)	90.3 (84.4-97.8)	177 (161-200)	350 (319-387)	506 (426-538)	1427
Age 20+ years	07-08	98.8 (91.2-107)	90.3 (80.2-100)	163 (140-184)	290 (262-321)	388 (338-464)	1811
Age 20+ years	09-10	75.8 (72.4-79.3)	69.0 (63.6-73.6)	118 (113-124)	220 (200-239)	297 (260-341)	1910
Males	01-02	98.6 (87.7-111)	87.1 (79.5-98.2)	159 (138-188)	310 (245-368)	505 (356-761)	1344
Males	03-04	107 (98.2-116)	99.2 (87.4-109)	169 (154-184)	305 (261-343)	491 (383-592)	1167
Males	05-06	100 (92.6-109)	89.2 (81.5-97.0)	166 (147-184)	326 (260-365)	430 (364-553)	1222
Males	07-08	98.9 (91.2-107)	91.3 (81.3-101)	166 (146-184)	288 (263-310)	382 (321-449)	1290
Males	09-10	74.1 (69.7-78.8)	66.4 (59.5-73.8)	117 (108-126)	217 (193-234)	296 (245-351)	1399
Females	01-02	97.5 (84.9-112)	86.4 (76.9-100)	158 (139-178)	292 (245-333)	410 (352-583)	1397
Females	03-04	109 (99.6-119)	100 (88.9-110)	176 (155-202)	328 (265-398)	497 (380-594)	1259
Females	05-06	98.7 (91.6-106)	87.3 (80.4-95.1)	160 (144-177)	332 (284-375)	446 (393-518)	1226
Females	07-08	97.4 (89.6-106)	90.9 (79.4-102)	150 (131-181)	262 (223-305)	377 (299-446)	1311
Females	09-10	75.6 (71.6-79.8)	69.4 (64.7-75.0)	113 (107-118)	196 (182-219)	274 (241-331)	1347

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyphenanthrene (creatinine corrected) (2001 – 2010)

CAS Number 605-87-8

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	78.2 (62.4-98.0)	70.8 (56.2-87.4)	130 (92.9-171)	224 (173-321)	333 (224-656)	664
Mexican Americans	03-04	83.8 (75.1-93.6)	79.5 (72.9-87.0)	137 (111-165)	224 (188-274)	305 (247-406)	576
Mexican Americans	05-06	68.8 (61.0-77.7)	61.3 (51.5-73.2)	96.9 (82.9-122)	175 (159-206)	291 (200-387)	620
Mexican Americans	07-08	77.1 (68.5-86.7)	71.6 (63.1-78.8)	113 (99.6-133)	200 (160-227)	275 (230-334)	529
Mexican Americans	09-10	56.5 (49.6-64.3)	48.4 (42.7-57.0)	82.4 (67.4-97.4)	170 (119-252)	265 (201-417)	566
Non-Hispanic blacks	01-02	102 (85.8-122)	91.9 (79.8-108)	160 (133-202)	296 (234-475)	673 (347-1260)	690
Non-Hispanic blacks	03-04	117 (102-135)	106 (89.4-126)	186 (157-217)	346 (264-439)	530 (373-772)	668
Non-Hispanic blacks	05-06	97.0 (86.6-109)	85.7 (77.3-94.1)	141 (125-172)	271 (217-366)	443 (283-623)	658
Non-Hispanic blacks	07-08	101 (88.7-114)	91.3 (80.9-104)	176 (143-208)	297 (238-360)	411 (344-512)	596
Non-Hispanic blacks	09-10	74.3 (67.8-81.5)	69.4 (61.4-78.2)	122 (103-140)	194 (176-230)	264 (223-330)	517
Non-Hispanic whites	01-02	103 (91.5-117)	89.4 (80.2-102)	167 (148-193)	324 (272-368)	447 (365-738)	1204
Non-Hispanic whites	03-04	112 (104-121)	103 (97.2-108)	183 (161-200)	346 (276-402)	544 (417-690)	1000
Non-Hispanic whites	05-06	106 (98.8-114)	93.6 (86.4-102)	178 (160-206)	348 (317-387)	506 (416-551)	982
Non-Hispanic whites	07-08	101 (91.1-112)	96.5 (83.5-107)	163 (137-190)	280 (243-317)	378 (316-447)	1077
Non-Hispanic whites	09-10	78.3 (73.8-83.0)	72.7 (66.0-79.5)	117 (111-124)	214 (189-238)	281 (253-326)	1203

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 4-Hydroxyphenanthrene (2003 – 2006)‡

CAS Number 7657-86-7

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	25.1 (22.6-27.9)	25.9 (22.5-29.6)	53.7 (47.4-59.7)	96.8 (85.0-116)	152 (118-176)	2443
Total population	05-06	29.3 (26.7-32.2)	29.2 (25.1-31.8)	56.9 (50.1-66.1)	108 (93.1-124)	157 (134-176)	2131
Age 6-11 years	03-04	25.2 (22.3-28.4)	26.3 (22.8-30.0)	45.7 (38.6-53.3)	95.5 (61.7-137)	138 (95.1-202)	321
Age 6-11 years	05-06	20.4 (17.7-23.4)	20.2 (17.6-23.8)	35.1 (27.4-41.6)	59.6 (43.3-93.0)	96.1 (62.2-155)	307
Age 12-19 years	03-04	23.7 (20.3-27.6)	25.8 (20.5-31.4)	49.9 (45.2-53.0)	77.4 (67.2-95.1)	123 (94.6-142)	683
Age 12-19 years	05-06	26.6 (23.0-30.8)	27.6 (22.4-31.2)	50.9 (43.5-56.8)	79.4 (71.1-89.9)	108 (89.9-140)	568
Age 20+ years	03-04	25.3 (22.4-28.6)	25.8 (22.4-29.5)	54.8 (48.6-61.9)	101 (87.1-120)	163 (117-197)	1439
Age 20+ years	05-06	31.1 (28.1-34.3)	30.7 (26.4-33.7)	62.9 (52.6-75.1)	119 (97.1-140)	165 (138-188)	1256
Males	03-04	30.0 (26.5-34.0)	29.6 (25.5-35.1)	60.4 (53.4-68.7)	110 (90.6-130)	169 (118-211)	1180
Males	05-06	31.9 (28.6-35.5)	30.7 (25.0-36.8)	60.3 (49.7-72.7)	111 (92.3-134)	153 (119-226)	1064
Females	03-04	21.1 (18.7-23.8)	21.3 (18.3-25.3)	46.5 (41.6-53.3)	88.4 (73.5-103)	136 (106-157)	1263
Females	05-06	27.1 (23.4-31.4)	26.6 (22.7-31.1)	54.0 (41.9-66.9)	107 (82.6-140)	165 (120-189)	1067
Mexican Americans	03-04	23.5 (20.9-26.3)	24.4 (21.4-29.4)	46.1 (40.1-53.0)	80.5 (60.9-94.1)	99.7 (80.2-154)	607
Mexican Americans	05-06	24.5 (20.3-29.6)	24.8 (20.2-31.3)	43.7 (37.2-54.5)	81.2 (62.8-94.4)	112 (82.6-134)	466
Non-Hispanic blacks	03-04	35.4 (29.6-42.3)	37.1 (29.8-46.1)	71.4 (60.3-83.3)	123 (104-145)	167 (133-215)	657
Non-Hispanic blacks	05-06	36.8 (31.8-42.5)	33.6 (29.7-42.0)	66.0 (56.0-80.5)	130 (98.0-168)	190 (133-276)	612
Non-Hispanic whites	03-04	24.4 (21.5-27.7)	25.2 (21.8-29.1)	51.5 (45.1-58.5)	97.9 (77.4-127)	163 (113-202)	1021
Non-Hispanic whites	05-06	28.6 (25.2-32.4)	28.6 (24.5-31.9)	55.5 (47.3-69.3)	108 (90.9-136)	163 (134-188)	890

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 5.0 and 5.0 respectively.

‡Not measured in Survey years 2007-2008 and 2009-2010 because of potential interferences that would affect the quality of the results.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 4-Hydroxyphenanthrene (creatinine corrected) (2003 – 2006)‡

CAS Number 7657-86-7

Metabolite of Phenanthrene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	23.3 (21.7-25.0)	22.7 (20.5-24.9)	42.0 (38.6-44.6)	74.3 (66.3-85.4)	114 (102-130)	2443
Total population	05-06	28.9 (26.6-31.4)	26.9 (24.1-29.4)	48.4 (43.9-53.7)	88.3 (77.5-102)	127 (106-145)	2131
Age 6-11 years	03-04	26.3 (23.7-29.2)	24.8 (21.6-28.6)	43.3 (35.2-48.8)	72.9 (56.3-113)	126 (79.3-173)	321
Age 6-11 years	05-06	22.9 (19.8-26.5)	21.7 (20.0-24.8)	36.2 (27.8-43.7)	50.0 (42.7-79.3)	79.3 (50.0-98.3)	307
Age 12-19 years	03-04	17.7 (15.9-19.8)	16.7 (15.7-18.4)	31.4 (26.0-37.1)	47.9 (40.7-54.1)	61.7 (51.7-86.0)	683
Age 12-19 years	05-06	20.1 (18.2-22.2)	19.0 (16.5-22.9)	30.0 (28.3-33.0)	48.7 (41.0-63.5)	79.4 (53.8-98.2)	568
Age 20+ years	03-04	24.0 (22.0-26.2)	23.3 (21.1-25.4)	43.5 (39.4-48.1)	79.0 (66.8-100)	121 (104-138)	1439
Age 20+ years	05-06	31.4 (29.0-34.1)	29.4 (26.9-32.4)	54.6 (48.0-61.6)	102 (86.4-109)	139 (115-166)	1256
Males	03-04	23.4 (21.6-25.4)	22.7 (20.3-24.9)	40.9 (35.9-45.7)	72.7 (61.5-86.8)	112 (100-126)	1180
Males	05-06	26.1 (23.8-28.7)	24.1 (22.2-28.2)	44.3 (40.0-51.1)	74.3 (61.6-87.7)	102 (87.3-120)	1064
Females	03-04	23.2 (21.2-25.5)	22.8 (19.7-26.0)	42.5 (38.3-46.2)	75.1 (63.4-94.0)	119 (93.1-139)	1263
Females	05-06	31.8 (28.7-35.3)	28.9 (25.8-31.8)	54.2 (46.0-63.2)	103 (85.4-127)	145 (119-174)	1067
Mexican Americans	03-04	21.2 (18.8-23.8)	20.7 (19.1-22.9)	35.9 (29.8-40.7)	59.0 (43.3-87.5)	83.4 (60.9-139)	607
Mexican Americans	05-06	22.5 (20.1-25.3)	21.6 (18.8-27.1)	34.7 (31.4-41.5)	54.5 (48.2-61.6)	81.3 (59.8-86.1)	466
Non-Hispanic blacks	03-04	25.0 (21.6-28.9)	25.3 (23.1-28.8)	42.0 (37.4-51.4)	75.0 (61.6-87.9)	102 (79.2-137)	657
Non-Hispanic blacks	05-06	25.8 (23.0-29.0)	24.5 (22.0-26.8)	39.4 (36.2-44.7)	68.5 (59.8-88.6)	103 (80.0-146)	612
Non-Hispanic whites	03-04	23.7 (21.5-26.2)	22.4 (19.4-25.4)	43.6 (38.8-47.3)	82.2 (68.5-101)	126 (103-143)	1021
Non-Hispanic whites	05-06	30.5 (27.3-34.1)	28.5 (25.0-31.6)	53.0 (45.5-61.5)	102 (83.0-115)	138 (112-174)	890

‡Not measured in Survey years 2007-2008 and 2009-2010 because of potential interferences that would affect the quality of the results.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxypyrene (2003 – 2010)

CAS Number 5315-79-7

Metabolite of Pyrene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	89.2 (79.8-99.7)	91.3 (83.5-98.8)	189 (168-208)	389 (345-459)	569 (493-676)	2515
Total population	05-06	98.3 (91.0-106)	94.0 (85.5-102)	206 (181-227)	440 (373-521)	673 (585-829)	2415
Total population	07-08	118 (108-129)	118 (107-133)	233 (208-263)	439 (392-487)	675 (543-844)	2581
Total population	09-10	119 (110-130)	118 (109-129)	231 (213-251)	451 (401-509)	675 (580-822)	2746
Age 6-11 years	03-04	112 (96.9-130)	119 (99.0-143)	193 (163-229)	351 (233-484)	514 (336-680)	333
Age 6-11 years	05-06	103 (91.3-117)	99.8 (91.7-105)	170 (139-206)	342 (222-413)	469 (353-786)	342
Age 6-11 years	07-08	146 (127-168)	149 (131-171)	231 (203-288)	395 (293-557)	569 (395-1060)	387
Age 6-11 years	09-10	147 (125-174)	143 (127-164)	245 (203-312)	443 (312-681)	756 (383-2410)	415
Age 12-19 years	03-04	119 (103-137)	115 (98.0-145)	244 (213-274)	506 (359-608)	705 (636-788)	705
Age 12-19 years	05-06	118 (104-134)	108 (93.2-132)	218 (179-266)	409 (332-557)	837 (481-992)	667
Age 12-19 years	07-08	149 (130-170)	145 (118-165)	282 (228-343)	452 (399-515)	614 (476-843)	401
Age 12-19 years	09-10	152 (132-174)	156 (130-175)	280 (237-305)	414 (348-543)	642 (452-910)	420
Age 20+ years	03-04	82.8 (73.0-93.8)	83.8 (75.6-92.4)	177 (155-203)	387 (337-437)	553 (483-644)	1477
Age 20+ years	05-06	94.9 (86.3-104)	89.1 (79.8-100)	208 (173-245)	476 (368-563)	677 (563-913)	1406
Age 20+ years	07-08	111 (100-123)	114 (95.7-129)	226 (199-258)	446 (370-506)	719 (525-904)	1793
Age 20+ years	09-10	113 (103-122)	110 (103-119)	222 (199-244)	452 (401-531)	674 (559-837)	1911
Males	03-04	108 (96.0-122)	111 (98.7-121)	227 (197-265)	459 (387-518)	644 (526-811)	1214
Males	05-06	114 (104-125)	108 (98.4-119)	235 (196-279)	465 (386-585)	793 (634-980)	1208
Males	07-08	134 (120-150)	131 (113-155)	260 (229-293)	474 (409-560)	748 (554-956)	1279
Males	09-10	128 (114-143)	128 (114-141)	230 (205-251)	465 (393-555)	713 (559-923)	1398
Females	03-04	74.0 (64.3-85.1)	75.3 (66.3-83.9)	158 (143-173)	334 (258-407)	502 (389-604)	1301
Females	05-06	84.8 (74.5-96.5)	80.0 (69.8-89.9)	173 (148-213)	421 (313-521)	617 (534-677)	1207
Females	07-08	105 (94.7-116)	111 (92.6-123)	213 (194-227)	387 (342-444)	580 (486-769)	1302
Females	09-10	112 (101-125)	109 (98.0-124)	231 (209-260)	425 (390-495)	652 (566-780)	1348

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 5.0, 5.0, 5.0, and 10.0 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Pyrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxypyrene (2003 – 2010)

CAS Number 5315-79-7

Metabolite of Pyrene

Geometric mean and selected percentiles of urine concentrations (in ng/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	03-04	89.4 (78.6-102)	92.4 (79.8-113)	173 (153-191)	331 (281-415)	495 (404-548)	623
Mexican Americans	05-06	95.6 (81.0-113)	92.3 (80.1-112)	179 (149-220)	332 (261-455)	490 (367-756)	611
Mexican Americans	07-08	119 (110-129)	117 (104-132)	196 (170-230)	380 (289-494)	593 (485-755)	531
Mexican Americans	09-10	134 (122-147)	134 (116-154)	245 (198-314)	453 (392-591)	706 (551-975)	566
Non-Hispanic blacks	03-04	128 (105-157)	127 (111-157)	296 (226-356)	552 (399-669)	702 (569-935)	663
Non-Hispanic blacks	05-06	116 (98.5-137)	108 (91.0-124)	230 (185-332)	517 (401-639)	743 (559-1060)	653
Non-Hispanic blacks	07-08	136 (122-153)	142 (122-160)	282 (250-320)	548 (480-610)	752 (617-871)	592
Non-Hispanic blacks	09-10	165 (146-188)	170 (142-201)	321 (280-392)	656 (557-727)	989 (727-1370)	516
Non-Hispanic whites	03-04	84.6 (73.3-97.8)	85.2 (75.2-97.4)	182 (156-213)	386 (336-463)	566 (464-748)	1040
Non-Hispanic whites	05-06	94.9 (85.4-106)	91.3 (80.3-104)	203 (170-235)	399 (351-538)	677 (563-899)	968
Non-Hispanic whites	07-08	116 (102-131)	117 (102-136)	235 (198-287)	436 (364-500)	719 (473-981)	1059
Non-Hispanic whites	09-10	108 (96.3-122)	107 (99.0-118)	209 (176-239)	398 (329-474)	603 (495-739)	1203

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 5.0, 5.0, 5.0, and 10.0 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Pyrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxypyrene (creatinine corrected) (2003 – 2010)

CAS Number 5315-79-7

Metabolite of Pyrene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	83.4 (77.4-90.0)	79.9 (72.6-86.9)	149 (133-167)	279 (236-343)	424 (352-474)	2515
Total population	05-06	95.1 (89.1-102)	85.5 (81.0-91.1)	173 (161-184)	338 (292-371)	492 (427-550)	2415
Total population	07-08	119 (110-129)	113 (103-127)	200 (180-224)	364 (321-411)	527 (467-587)	2581
Total population	09-10	125 (116-134)	117 (109-126)	202 (187-222)	366 (337-401)	530 (485-583)	2746
Age 6-11 years	03-04	119 (102-138)	112 (98.2-137)	185 (156-225)	336 (227-440)	475 (336-566)	333
Age 6-11 years	05-06	115 (102-128)	105 (94.7-116)	181 (145-217)	285 (242-385)	407 (308-517)	342
Age 6-11 years	07-08	180 (156-206)	171 (145-197)	255 (233-316)	457 (329-593)	604 (457-1320)	387
Age 6-11 years	09-10	192 (164-225)	181 (161-203)	283 (232-355)	471 (356-836)	812 (405-2030)	415
Age 12-19 years	03-04	89.4 (77.7-103)	81.5 (74.3-93.0)	146 (123-187)	269 (196-364)	364 (251-611)	705
Age 12-19 years	05-06	88.7 (78.7-99.9)	80.9 (73.8-92.3)	146 (115-176)	250 (199-358)	400 (252-682)	667
Age 12-19 years	07-08	116 (105-127)	112 (98.3-127)	178 (154-202)	301 (245-349)	405 (321-558)	401
Age 12-19 years	09-10	122 (111-133)	121 (108-133)	176 (155-198)	262 (211-337)	371 (280-421)	420
Age 20+ years	03-04	79.1 (73.2-85.4)	73.5 (66.7-82.3)	142 (127-160)	278 (236-331)	424 (349-472)	1477
Age 20+ years	05-06	94.1 (87.1-102)	82.5 (75.8-89.3)	177 (163-194)	352 (294-397)	502 (444-558)	1406
Age 20+ years	07-08	114 (105-125)	106 (95.3-124)	194 (173-217)	364 (317-415)	510 (456-591)	1793
Age 20+ years	09-10	119 (111-128)	109 (104-118)	199 (178-220)	365 (336-407)	530 (481-606)	1911
Males	03-04	84.8 (77.3-93.1)	82.8 (72.7-91.0)	163 (145-175)	290 (241-352)	416 (353-513)	1214
Males	05-06	91.6 (84.3-99.6)	84.6 (76.9-95.5)	169 (152-182)	308 (268-364)	492 (426-589)	1208
Males	07-08	113 (102-125)	109 (94.3-124)	193 (176-214)	379 (308-440)	549 (456-629)	1279
Males	09-10	115 (104-126)	105 (93.9-116)	184 (168-205)	362 (317-419)	546 (452-708)	1398
Females	03-04	82.1 (73.5-91.7)	78.3 (69.2-86.8)	137 (119-169)	274 (215-350)	440 (313-479)	1301
Females	05-06	98.7 (91.7-106)	86.8 (78.5-92.8)	175 (156-195)	345 (295-390)	482 (395-558)	1207
Females	07-08	125 (114-137)	119 (104-135)	203 (179-238)	348 (302-405)	503 (425-619)	1302
Females	09-10	135 (123-148)	126 (115-140)	216 (199-242)	371 (329-421)	526 (473-572)	1348

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Pyrene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxypyrene (creatinine corrected) (2003 – 2010)

CAS Number 5315-79-7

Metabolite of Pyrene

Geometric mean and selected percentiles of urine concentrations (in ng/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	03-04	81.2 (73.9-89.2)	80.9 (70.4-91.7)	146 (122-167)	247 (221-301)	372 (321-460)	623
Mexican Americans	05-06	84.9 (76.4-94.2)	78.4 (67.7-91.2)	132 (118-145)	237 (203-287)	374 (279-482)	611
Mexican Americans	07-08	116 (107-125)	105 (96.5-116)	173 (156-188)	296 (250-367)	501 (395-629)	531
Mexican Americans	09-10	133 (118-150)	119 (105-140)	216 (178-266)	388 (295-527)	643 (464-1180)	566
Non-Hispanic blacks	03-04	90.7 (77.3-106)	92.6 (76.6-106)	171 (140-211)	325 (226-433)	451 (301-680)	663
Non-Hispanic blacks	05-06	81.2 (70.7-93.2)	74.9 (65.6-84.8)	140 (113-173)	295 (206-403)	477 (324-643)	653
Non-Hispanic blacks	07-08	106 (93.1-121)	104 (93.4-123)	201 (162-249)	352 (302-464)	537 (384-662)	592
Non-Hispanic blacks	09-10	120 (109-131)	115 (103-123)	206 (185-226)	390 (323-476)	567 (471-757)	516
Non-Hispanic whites	03-04	83.1 (75.1-91.9)	76.3 (69.0-86.6)	146 (127-174)	285 (238-360)	438 (360-506)	1040
Non-Hispanic whites	05-06	99.3 (91.2-108)	90.6 (82.2-99.5)	188 (169-200)	358 (305-395)	495 (427-555)	968
Non-Hispanic whites	07-08	120 (108-134)	113 (97.7-135)	206 (178-237)	379 (300-438)	510 (438-617)	1059
Non-Hispanic whites	09-10	122 (111-133)	116 (107-126)	197 (174-222)	357 (326-393)	511 (446-569)	1203

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Pyrene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxynaphthalene (1-Naphthol) (2003 – 2010)

CAS Number 90-15-3

Metabolite of Naphthalene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	2.68 (2.36-3.05)	2.26 (1.98-2.65)	7.66 (6.27-9.42)	18.5 (15.5-20.9)	26.1 (23.0-33.6)	2595
Total population	05-06	2.64 (2.39-2.92)	1.94 (1.69-2.24)	8.45 (7.05-9.98)	29.9 (23.2-37.1)	48.1 (41.3-65.6)	2385
Total population	07-08	2.58 (2.19-3.03)	1.98 (1.75-2.28)	6.87 (5.00-8.76)	17.2 (13.0-22.2)	29.2 (22.2-41.1)	2496
Total population	09-10	2.05 (1.88-2.25)	1.74 (1.57-1.91)	5.19 (4.29-6.20)	14.2 (12.1-16.7)	23.9 (20.9-27.6)	2747
Age 6-11 years	03-04	1.54 (1.36-1.75)	1.33 (1.11-1.68)	2.79 (2.18-3.52)	5.78 (4.11-8.20)	10.5 (5.87-17.0)	340
Age 6-11 years	05-06	1.19 (1.01-1.40)	1.03 (.775-1.29)	2.16 (1.70-2.73)	8.10 (3.87-10.7)	11.0 (7.29-44.1)	336
Age 6-11 years	07-08	1.54 (1.28-1.85)	1.50 (1.22-1.68)	3.09 (2.17-3.80)	5.94 (4.16-9.29)	9.36 (4.68-14.3)	370
Age 6-11 years	09-10	1.17 (1.03-1.34)	1.10 (.869-1.27)	2.31 (1.85-2.56)	5.38 (2.93-7.30)	7.77 (5.40-11.4)	416
Age 12-19 years	03-04	1.96 (1.68-2.28)	1.67 (1.50-1.97)	4.19 (3.10-5.40)	10.5 (8.43-14.3)	20.9 (13.5-26.1)	727
Age 12-19 years	05-06	1.71 (1.49-1.96)	1.36 (1.11-1.70)	3.76 (3.11-4.37)	14.1 (9.09-23.5)	25.8 (12.4-46.2)	655
Age 12-19 years	07-08	1.84 (1.49-2.26)	1.51 (1.19-2.01)	4.03 (2.55-5.75)	10.0 (6.70-13.5)	14.8 (12.0-21.3)	386
Age 12-19 years	09-10	1.59 (1.18-2.15)	1.28 (.943-2.12)	3.94 (2.39-5.58)	9.24 (5.98-14.9)	17.0 (11.3-21.5)	420
Age 20+ years	03-04	3.02 (2.58-3.52)	2.65 (2.20-3.20)	9.42 (7.32-11.5)	20.6 (16.5-23.4)	29.4 (23.4-37.4)	1528
Age 20+ years	05-06	3.10 (2.74-3.51)	2.33 (2.03-2.82)	10.5 (8.18-13.3)	34.5 (26.7-43.4)	55.1 (42.2-80.4)	1394
Age 20+ years	07-08	2.88 (2.37-3.49)	2.27 (1.83-2.80)	8.19 (6.01-10.7)	19.6 (15.0-25.5)	33.0 (23.6-54.9)	1740
Age 20+ years	09-10	2.27 (2.05-2.52)	1.91 (1.66-2.14)	6.19 (4.84-7.25)	16.1 (13.2-18.6)	26.3 (21.9-30.7)	1911
Males	03-04	3.17 (2.82-3.56)	2.84 (2.37-3.39)	8.79 (7.13-11.0)	19.6 (16.1-22.2)	25.8 (22.5-30.6)	1243
Males	05-06	2.97 (2.63-3.35)	2.37 (1.98-2.97)	8.76 (7.14-10.7)	28.9 (21.7-33.0)	44.1 (36.0-52.3)	1197
Males	07-08	2.94 (2.58-3.36)	2.37 (2.05-2.93)	7.75 (5.87-9.83)	15.9 (13.8-21.3)	28.2 (21.4-36.8)	1239
Males	09-10	2.30 (2.03-2.61)	1.93 (1.63-2.20)	6.32 (4.32-7.67)	15.3 (12.8-17.8)	23.9 (21.6-27.6)	1399
Females	03-04	2.29 (1.94-2.72)	1.85 (1.50-2.31)	6.38 (4.45-8.81)	17.9 (14.0-21.5)	28.5 (21.5-37.4)	1352
Females	05-06	2.36 (2.01-2.77)	1.59 (1.42-1.82)	7.35 (5.57-10.2)	33.6 (21.6-43.9)	56.8 (41.6-101)	1188
Females	07-08	2.27 (1.85-2.79)	1.58 (1.32-1.97)	5.26 (4.03-7.73)	17.7 (11.9-24.8)	32.0 (21.3-78.9)	1257
Females	09-10	1.84 (1.60-2.12)	1.56 (1.39-1.72)	4.50 (3.65-5.34)	12.6 (10.2-16.6)	24.0 (17.7-31.5)	1348

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.047, 0.048, 0.045, and 0.044 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxynaphthalene (1-Naphthol) (2003 – 2010)

CAS Number 90-15-3

Metabolite of Naphthalene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	03-04	1.95 (1.73-2.19)	1.65 (1.37-2.04)	4.38 (3.52-5.30)	11.6 (9.04-15.5)	20.1 (14.9-22.5)	651
Mexican Americans	05-06	1.54 (1.30-1.83)	1.29 (1.09-1.55)	3.72 (2.68-4.43)	11.8 (8.10-15.6)	22.2 (15.2-34.0)	607
Mexican Americans	07-08	1.61 (1.38-1.89)	1.48 (1.23-1.66)	3.38 (2.58-4.04)	8.75 (6.12-11.9)	16.1 (8.19-29.4)	506
Mexican Americans	09-10	1.71 (1.43-2.04)	1.50 (1.36-1.80)	3.38 (2.55-5.27)	10.7 (6.93-14.3)	17.6 (13.7-23.3)	566
Non-Hispanic blacks	03-04	3.36 (2.80-4.02)	2.65 (2.17-3.46)	7.80 (6.52-10.8)	21.9 (17.0-29.2)	35.4 (27.0-48.9)	677
Non-Hispanic blacks	05-06	3.42 (2.83-4.14)	2.67 (2.20-3.43)	11.9 (9.12-14.6)	29.9 (24.4-41.0)	56.4 (42.8-71.6)	641
Non-Hispanic blacks	07-08	2.88 (2.48-3.35)	2.41 (2.12-2.91)	8.15 (5.31-10.7)	19.3 (13.7-27.1)	31.6 (21.3-42.4)	574
Non-Hispanic blacks	09-10	3.06 (2.58-3.64)	3.04 (2.38-3.49)	9.21 (7.41-10.3)	19.3 (15.7-23.2)	29.6 (24.2-38.8)	517
Non-Hispanic whites	03-04	2.78 (2.40-3.22)	2.29 (1.93-2.81)	8.63 (6.65-10.8)	19.8 (15.9-22.5)	27.1 (23.2-35.1)	1074
Non-Hispanic whites	05-06	2.72 (2.30-3.21)	1.98 (1.56-2.43)	8.66 (6.73-11.3)	32.5 (22.6-42.2)	51.3 (41.0-85.5)	952
Non-Hispanic whites	07-08	2.79 (2.23-3.50)	2.08 (1.74-2.69)	7.52 (4.97-10.4)	18.7 (12.6-26.9)	32.2 (22.5-62.0)	1022
Non-Hispanic whites	09-10	2.00 (1.78-2.26)	1.70 (1.49-1.94)	4.77 (3.97-5.70)	13.2 (10.3-17.7)	23.9 (19.5-30.8)	1203

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.047, 0.048, 0.045, and 0.044 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxynaphthalene (1-Naphthol) (creatinine corrected) (2003 – 2010)

CAS Number 90-15-3

Metabolite of Naphthalene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	2.52 (2.28-2.79)	2.10 (1.87-2.40)	6.56 (5.43-8.18)	15.1 (13.5-17.4)	21.8 (18.2-25.4)	2595
Total population	05-06	2.56 (2.29-2.86)	1.79 (1.57-2.06)	7.57 (5.89-9.40)	24.7 (20.4-31.0)	39.6 (34.1-53.0)	2385
Total population	07-08	2.59 (2.19-3.06)	1.98 (1.67-2.40)	6.25 (4.69-8.22)	16.1 (13.6-18.8)	25.3 (20.9-32.8)	2496
Total population	09-10	2.14 (1.99-2.32)	1.69 (1.59-1.86)	4.68 (4.21-5.52)	13.5 (12.3-14.9)	21.2 (19.0-22.9)	2747
Age 6-11 years	03-04	1.63 (1.43-1.86)	1.36 (1.18-1.74)	2.77 (2.27-3.20)	5.70 (3.99-8.95)	10.2 (5.70-16.4)	340
Age 6-11 years	05-06	1.30 (1.09-1.55)	1.09 (.938-1.33)	2.21 (1.99-2.81)	6.15 (3.33-10.3)	10.3 (6.82-28.0)	336
Age 6-11 years	07-08	1.87 (1.57-2.24)	1.67 (1.35-2.15)	3.31 (2.61-4.65)	7.37 (5.13-8.83)	9.99 (8.06-11.3)	370
Age 6-11 years	09-10	1.53 (1.35-1.73)	1.39 (1.17-1.63)	2.66 (2.36-2.95)	5.58 (4.36-7.62)	9.32 (5.73-17.2)	416
Age 12-19 years	03-04	1.47 (1.26-1.71)	1.20 (1.02-1.39)	2.84 (2.49-4.08)	7.56 (5.47-9.12)	10.8 (9.12-13.4)	727
Age 12-19 years	05-06	1.29 (1.14-1.45)	.995 (.854-1.10)	2.70 (2.27-3.35)	8.76 (5.83-10.8)	12.5 (9.37-19.6)	655
Age 12-19 years	07-08	1.39 (1.18-1.65)	1.13 (.833-1.58)	3.21 (2.02-3.63)	6.95 (4.79-8.41)	9.93 (7.84-11.9)	386
Age 12-19 years	09-10	1.28 (1.03-1.60)	.992 (.735-1.36)	2.54 (1.87-3.77)	7.54 (4.63-9.68)	10.5 (7.54-17.5)	420
Age 20+ years	03-04	2.90 (2.59-3.25)	2.52 (2.12-3.06)	8.21 (6.45-9.81)	16.9 (14.4-19.8)	24.2 (20.0-27.2)	1528
Age 20+ years	05-06	3.08 (2.72-3.50)	2.32 (1.91-2.73)	10.1 (7.67-13.9)	29.8 (23.9-34.1)	46.4 (39.1-57.3)	1394
Age 20+ years	07-08	2.96 (2.43-3.60)	2.36 (1.89-2.78)	7.42 (5.75-10.2)	18.5 (14.9-22.6)	27.9 (22.3-45.0)	1740
Age 20+ years	09-10	2.41 (2.21-2.63)	1.92 (1.71-2.10)	5.83 (4.84-6.84)	15.4 (13.5-16.7)	22.7 (20.2-27.0)	1911
Males	03-04	2.49 (2.25-2.75)	2.14 (1.86-2.59)	6.56 (5.50-8.01)	13.5 (12.3-14.4)	18.3 (16.6-20.7)	1243
Males	05-06	2.38 (2.11-2.68)	1.89 (1.59-2.21)	6.45 (4.94-9.21)	19.2 (16.1-22.4)	31.7 (22.1-38.4)	1197
Males	07-08	2.48 (2.21-2.77)	2.07 (1.74-2.39)	6.17 (5.07-7.52)	13.8 (11.9-16.0)	20.7 (16.7-24.0)	1239
Males	09-10	2.07 (1.82-2.35)	1.67 (1.48-1.94)	5.07 (3.82-6.48)	12.6 (10.4-14.9)	18.6 (15.3-21.9)	1399
Females	03-04	2.56 (2.22-2.95)	2.04 (1.73-2.44)	6.68 (5.00-8.85)	17.5 (13.5-21.7)	24.7 (19.8-30.6)	1352
Females	05-06	2.75 (2.37-3.19)	1.75 (1.47-2.06)	8.05 (6.08-11.8)	31.5 (24.7-39.5)	54.2 (40.8-64.5)	1188
Females	07-08	2.71 (2.13-3.43)	1.94 (1.58-2.50)	6.31 (4.29-9.32)	18.9 (13.8-23.7)	32.8 (22.3-104)	1257
Females	09-10	2.22 (1.95-2.53)	1.71 (1.59-1.89)	4.54 (3.89-5.49)	15.4 (10.8-19.6)	24.7 (18.6-31.1)	1348

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxynaphthalene (1-Naphthol) (creatinine corrected) (2003 – 2010)

CAS Number 90-15-3

Metabolite of Naphthalene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	03-04	1.75 (1.59-1.93)	1.50 (1.26-1.69)	3.24 (2.90-4.25)	8.55 (7.15-12.0)	17.5 (13.5-21.4)	651
Mexican Americans	05-06	1.37 (1.15-1.64)	1.08 (.940-1.38)	2.83 (2.13-3.82)	9.50 (5.95-12.6)	18.8 (12.0-21.6)	607
Mexican Americans	07-08	1.59 (1.29-1.95)	1.29 (1.03-1.57)	3.09 (2.17-5.05)	7.58 (5.43-10.8)	11.8 (7.86-26.1)	506
Mexican Americans	09-10	1.70 (1.46-1.98)	1.41 (1.24-1.61)	3.38 (2.48-4.56)	7.83 (6.02-11.6)	15.7 (10.9-19.3)	566
Non-Hispanic blacks	03-04	2.36 (2.03-2.76)	2.00 (1.59-2.41)	5.90 (4.44-6.81)	13.8 (9.01-18.7)	20.9 (17.1-30.3)	677
Non-Hispanic blacks	05-06	2.40 (1.99-2.89)	1.98 (1.52-2.51)	7.17 (5.28-8.85)	20.6 (15.4-29.2)	39.2 (29.2-54.3)	641
Non-Hispanic blacks	07-08	2.22 (1.87-2.64)	1.87 (1.47-2.42)	6.06 (4.34-7.94)	13.6 (10.6-17.0)	21.3 (14.1-31.8)	574
Non-Hispanic blacks	09-10	2.22 (1.96-2.52)	2.13 (1.64-2.52)	5.89 (4.70-7.22)	13.0 (10.3-14.9)	18.2 (14.5-28.9)	517
Non-Hispanic whites	03-04	2.75 (2.45-3.08)	2.33 (1.94-2.87)	8.03 (6.32-9.26)	16.6 (14.4-18.9)	23.5 (20.3-26.0)	1074
Non-Hispanic whites	05-06	2.84 (2.41-3.36)	1.99 (1.60-2.54)	8.65 (5.95-12.6)	28.2 (20.8-35.0)	43.1 (38.4-59.0)	952
Non-Hispanic whites	07-08	2.90 (2.33-3.61)	2.16 (1.71-2.78)	7.30 (5.00-10.2)	18.4 (14.8-22.3)	27.3 (22.3-50.8)	1022
Non-Hispanic whites	09-10	2.25 (2.05-2.48)	1.74 (1.59-1.92)	4.84 (4.08-5.98)	14.6 (12.8-16.9)	22.5 (19.1-27.1)	1203

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxynaphthalene (2-Naphthol) (2001 – 2010)

CAS Number 135-19-3

Metabolite of Naphthalene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	2.47 (2.11-2.89)	2.28 (1.93-2.67)	5.68 (4.58-6.83)	14.7 (12.8-19.5)	26.0 (22.5-29.7)	2748
Total population	03-04	3.18 (2.76-3.67)	2.96 (2.50-3.50)	7.50 (6.19-9.69)	17.3 (14.5-22.1)	25.8 (22.6-27.7)	2575
Total population	05-06	3.63 (3.36-3.92)	3.44 (3.11-3.80)	8.55 (7.84-9.42)	20.2 (17.0-24.1)	33.1 (28.6-38.2)	2446
Total population	07-08	3.83 (3.37-4.36)	3.66 (3.24-4.12)	8.44 (6.67-10.3)	17.3 (14.8-21.9)	26.7 (23.0-30.8)	2531
Total population	09-10	3.55 (3.23-3.91)	3.49 (3.15-3.85)	7.81 (7.07-8.55)	15.8 (14.0-17.6)	23.8 (21.5-26.9)	2747
Age 6-11 years	01-02	1.69 (1.56-1.84)	1.70 (1.40-1.95)	3.01 (2.58-3.47)	5.41 (3.89-6.70)	7.72 (6.30-9.54)	387
Age 6-11 years	03-04	2.11 (1.80-2.47)	2.14 (1.79-2.59)	3.57 (3.14-4.38)	5.58 (5.05-6.38)	9.71 (5.23-20.0)	339
Age 6-11 years	05-06	2.16 (1.94-2.41)	2.09 (1.95-2.33)	3.96 (3.09-4.46)	5.64 (5.00-9.68)	10.6 (7.21-13.3)	345
Age 6-11 years	07-08	2.70 (2.38-3.06)	2.59 (2.13-2.95)	4.66 (4.05-5.23)	8.73 (5.91-10.7)	11.5 (9.16-14.8)	376
Age 6-11 years	09-10	2.40 (2.04-2.83)	2.49 (2.12-3.02)	4.89 (3.80-6.27)	9.61 (7.65-11.6)	12.8 (10.4-22.2)	416
Age 12-19 years	01-02	2.22 (1.70-2.90)	2.15 (1.74-2.53)	4.39 (3.15-6.11)	11.0 (6.99-20.4)	22.5 (13.9-28.4)	735
Age 12-19 years	03-04	3.04 (2.68-3.46)	2.91 (2.51-3.50)	5.29 (4.67-6.59)	12.4 (8.53-16.8)	17.6 (15.1-25.9)	721
Age 12-19 years	05-06	3.46 (3.04-3.95)	3.30 (2.87-3.78)	6.75 (5.87-7.49)	14.5 (10.3-20.8)	23.9 (14.7-33.1)	677
Age 12-19 years	07-08	4.29 (3.49-5.28)	4.34 (3.73-5.32)	8.74 (6.57-10.8)	17.1 (13.0-22.5)	24.0 (19.6-29.7)	387
Age 12-19 years	09-10	3.93 (3.25-4.75)	3.98 (3.37-5.26)	7.76 (6.63-9.35)	12.8 (10.7-16.0)	19.8 (13.4-22.1)	420
Age 20+ years	01-02	2.62 (2.22-3.10)	2.44 (1.94-2.95)	6.38 (5.11-8.11)	17.6 (14.0-21.1)	28.1 (23.3-33.7)	1626
Age 20+ years	03-04	3.37 (2.86-3.96)	3.18 (2.59-3.96)	8.77 (7.21-11.3)	19.2 (16.0-23.2)	26.6 (23.4-28.8)	1515
Age 20+ years	05-06	3.88 (3.51-4.29)	3.77 (3.25-4.33)	9.58 (8.77-10.6)	23.0 (18.6-28.8)	37.0 (29.2-39.5)	1424
Age 20+ years	07-08	3.91 (3.41-4.50)	3.68 (3.20-4.32)	9.17 (6.82-11.0)	18.5 (15.1-23.6)	28.6 (23.8-33.5)	1768
Age 20+ years	09-10	3.66 (3.27-4.08)	3.54 (3.14-4.00)	8.17 (7.41-9.09)	17.4 (15.0-19.7)	25.6 (22.1-32.1)	1911
Males	01-02	2.75 (2.36-3.22)	2.51 (2.09-2.97)	6.06 (4.82-7.81)	16.9 (11.9-23.0)	28.1 (20.8-35.6)	1349
Males	03-04	3.52 (3.09-4.01)	3.37 (2.91-3.88)	8.52 (6.96-10.5)	18.4 (15.3-22.6)	26.1 (22.2-27.9)	1233
Males	05-06	4.03 (3.65-4.44)	3.85 (3.25-4.34)	9.49 (7.84-11.3)	19.7 (16.7-23.1)	32.9 (25.5-38.2)	1221
Males	07-08	4.25 (3.77-4.78)	4.20 (3.74-4.52)	9.30 (7.35-10.8)	17.5 (14.5-22.7)	26.0 (20.9-32.6)	1256
Males	09-10	3.72 (3.30-4.20)	3.52 (3.14-4.12)	7.43 (6.76-8.41)	15.5 (13.7-18.0)	25.2 (21.0-27.2)	1399
Females	01-02	2.22 (1.86-2.66)	2.06 (1.65-2.48)	5.24 (3.89-6.44)	13.9 (12.3-17.7)	25.3 (19.7-28.3)	1399
Females	03-04	2.89 (2.42-3.45)	2.60 (2.14-3.16)	6.80 (5.14-9.21)	16.6 (12.7-21.3)	23.9 (22.1-27.6)	1342
Females	05-06	3.28 (2.83-3.80)	3.18 (2.64-3.61)	7.83 (6.77-9.00)	21.3 (14.5-29.2)	35.0 (26.7-39.6)	1225
Females	07-08	3.47 (2.99-4.03)	3.18 (2.65-3.74)	7.64 (5.97-10.0)	17.1 (13.6-21.9)	26.7 (21.6-30.8)	1275
Females	09-10	3.40 (3.09-3.74)	3.44 (3.07-3.82)	8.14 (7.12-9.07)	16.3 (13.6-18.6)	23.7 (20.8-30.7)	1348

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 0.002, 0.031, 0.013,0.042, and 0.042 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxynaphthalene (2-Naphthol) (2001 – 2010)

CAS Number 135-19-3

Metabolite of Naphthalene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	2.70 (2.36-3.08)	2.71 (2.35-3.26)	5.14 (4.36-6.15)	9.64 (8.15-10.6)	14.3 (10.4-18.7)	665
Mexican Americans	03-04	3.13 (2.71-3.63)	3.11 (2.57-3.85)	6.74 (5.60-8.28)	14.5 (10.4-15.6)	18.0 (15.5-20.5)	648
Mexican Americans	05-06	4.52 (4.12-4.96)	4.79 (4.13-5.43)	8.96 (7.84-9.81)	17.3 (12.4-23.3)	28.7 (20.0-32.7)	621
Mexican Americans	07-08	4.69 (4.07-5.41)	4.50 (3.93-5.58)	8.60 (6.77-11.3)	16.4 (12.6-20.9)	24.0 (19.1-29.7)	515
Mexican Americans	09-10	4.47 (3.90-5.13)	4.56 (3.72-5.88)	9.63 (8.51-10.7)	16.6 (13.4-19.5)	23.6 (18.7-28.4)	566
Non-Hispanic blacks	01-02	3.97 (3.47-4.54)	3.46 (3.10-4.02)	9.29 (6.82-13.2)	22.8 (16.0-29.1)	33.0 (25.9-38.7)	692
Non-Hispanic blacks	03-04	4.69 (3.81-5.77)	4.23 (3.18-5.54)	10.3 (7.67-13.1)	21.5 (17.4-26.1)	30.7 (23.0-40.6)	673
Non-Hispanic blacks	05-06	4.99 (4.41-5.65)	4.63 (3.93-5.62)	11.6 (9.37-14.3)	22.6 (20.0-26.9)	31.9 (27.6-38.5)	657
Non-Hispanic blacks	07-08	4.90 (4.42-5.44)	4.81 (4.33-5.19)	10.1 (8.05-12.3)	22.1 (17.2-26.3)	28.6 (25.0-36.6)	587
Non-Hispanic blacks	09-10	5.23 (4.45-6.16)	5.42 (4.51-6.80)	11.1 (9.18-13.3)	22.1 (17.9-26.0)	30.9 (26.0-35.1)	517
Non-Hispanic whites	01-02	2.19 (1.76-2.72)	1.91 (1.61-2.42)	4.97 (3.71-6.78)	14.1 (10.7-20.2)	25.9 (20.7-30.0)	1207
Non-Hispanic whites	03-04	3.07 (2.57-3.66)	2.65 (2.19-3.43)	7.61 (5.77-10.3)	18.5 (14.5-23.2)	26.3 (23.2-28.7)	1062
Non-Hispanic whites	05-06	3.25 (2.90-3.64)	2.98 (2.71-3.33)	7.90 (6.69-9.36)	19.3 (15.8-24.7)	34.0 (25.5-38.3)	980
Non-Hispanic whites	07-08	3.60 (2.98-4.35)	3.34 (2.61-4.17)	8.04 (5.73-10.7)	17.1 (11.8-23.8)	26.4 (20.4-35.6)	1044
Non-Hispanic whites	09-10	3.17 (2.79-3.62)	3.12 (2.81-3.51)	6.75 (6.06-7.81)	14.1 (12.3-17.6)	22.3 (19.7-26.5)	1203

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06,07-08, and 09-10 are 0.002, 0.031, 0.013,0.042, and 0.042 respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxynaphthalene (2-Naphthol) (creatinine corrected) (2001 – 2010)

CAS Number 135-19-3

Metabolite of Naphthalene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	2.31 (1.98-2.68)	1.94 (1.67-2.30)	4.73 (3.82-5.86)	11.5 (9.98-13.1)	16.7 (14.1-19.2)	2748
Total population	03-04	2.99 (2.67-3.34)	2.56 (2.20-2.97)	6.34 (5.01-7.87)	14.1 (11.8-16.3)	19.9 (16.0-23.8)	2575
Total population	05-06	3.52 (3.29-3.77)	3.08 (2.67-3.40)	7.24 (6.45-8.27)	17.0 (14.8-18.8)	23.9 (21.9-27.2)	2446
Total population	07-08	3.86 (3.44-4.33)	3.44 (3.04-3.91)	7.08 (6.01-8.63)	15.3 (12.9-18.3)	20.7 (18.8-23.9)	2531
Total population	09-10	3.71 (3.47-3.97)	3.33 (3.08-3.70)	6.69 (6.29-7.15)	13.8 (12.7-15.0)	19.9 (17.8-21.7)	2747
Age 6-11 years	01-02	1.89 (1.74-2.07)	1.83 (1.72-1.94)	3.11 (2.51-3.47)	5.04 (4.38-5.54)	6.49 (5.27-12.4)	387
Age 6-11 years	03-04	2.24 (1.89-2.65)	2.04 (1.66-2.44)	3.54 (2.85-3.91)	5.95 (4.14-8.51)	8.72 (7.56-12.0)	339
Age 6-11 years	05-06	2.40 (2.10-2.75)	2.27 (2.00-2.58)	3.68 (3.15-4.43)	6.10 (4.84-7.04)	7.82 (6.31-13.8)	345
Age 6-11 years	07-08	3.33 (2.98-3.73)	3.35 (2.90-3.71)	5.23 (4.32-6.78)	8.00 (6.79-9.92)	10.5 (8.00-14.5)	376
Age 6-11 years	09-10	3.13 (2.73-3.60)	3.08 (2.54-3.60)	5.01 (4.19-6.23)	9.79 (7.04-12.5)	13.8 (10.9-18.9)	416
Age 12-19 years	01-02	1.72 (1.35-2.19)	1.51 (1.34-1.83)	2.75 (2.08-4.07)	7.18 (4.07-10.9)	11.1 (7.86-17.4)	735
Age 12-19 years	03-04	2.28 (2.06-2.52)	2.03 (1.77-2.35)	3.78 (3.20-4.47)	7.84 (6.13-9.11)	10.5 (9.10-12.5)	721
Age 12-19 years	05-06	2.59 (2.37-2.84)	2.31 (2.03-2.62)	4.58 (3.99-5.02)	8.47 (6.98-10.5)	11.9 (10.1-15.2)	677
Age 12-19 years	07-08	3.30 (2.74-3.96)	3.13 (2.43-4.08)	5.73 (4.88-6.79)	9.85 (7.56-12.0)	12.5 (9.91-18.6)	387
Age 12-19 years	09-10	3.16 (2.79-3.58)	3.00 (2.58-3.67)	5.43 (4.70-6.35)	8.73 (7.59-9.98)	12.5 (9.61-14.2)	420
Age 20+ years	01-02	2.48 (2.13-2.89)	2.08 (1.68-2.60)	5.63 (4.46-6.94)	12.4 (10.9-13.9)	17.7 (15.2-20.6)	1626
Age 20+ years	03-04	3.23 (2.87-3.64)	2.91 (2.36-3.41)	7.54 (6.20-9.10)	15.6 (13.1-17.9)	21.8 (17.2-24.0)	1515
Age 20+ years	05-06	3.87 (3.59-4.17)	3.40 (3.08-3.75)	9.20 (7.93-10.5)	19.0 (17.4-21.3)	27.2 (22.3-29.7)	1424
Age 20+ years	07-08	4.02 (3.55-4.55)	3.47 (3.07-4.04)	7.75 (6.17-9.83)	17.5 (13.9-19.8)	22.7 (20.2-25.5)	1768
Age 20+ years	09-10	3.87 (3.57-4.20)	3.47 (3.18-3.87)	7.26 (6.69-7.99)	14.9 (13.3-16.8)	21.2 (19.2-22.8)	1911
Males	01-02	2.23 (1.90-2.61)	1.86 (1.63-2.10)	4.79 (3.51-6.12)	11.4 (8.95-14.3)	15.8 (13.1-19.2)	1349
Males	03-04	2.77 (2.50-3.06)	2.36 (2.13-2.81)	6.31 (5.08-7.36)	12.8 (11.3-14.6)	16.4 (14.6-18.3)	1233
Males	05-06	3.23 (3.00-3.48)	2.83 (2.53-3.14)	6.75 (5.62-8.10)	13.8 (12.3-16.2)	18.9 (17.4-21.3)	1221
Males	07-08	3.58 (3.24-3.95)	3.13 (2.70-3.57)	6.79 (5.79-8.10)	14.4 (12.2-17.2)	19.6 (18.3-20.9)	1256
Males	09-10	3.34 (3.04-3.67)	2.92 (2.54-3.37)	6.19 (5.44-6.84)	13.2 (11.1-15.4)	18.1 (14.9-21.7)	1399
Females	01-02	2.38 (2.05-2.77)	1.99 (1.66-2.56)	4.73 (3.79-6.00)	11.5 (10.3-12.8)	17.4 (13.7-21.5)	1399
Females	03-04	3.21 (2.76-3.73)	2.68 (2.20-3.26)	6.43 (4.74-8.58)	16.0 (11.5-19.9)	22.5 (18.1-25.0)	1342
Females	05-06	3.83 (3.39-4.33)	3.21 (2.72-3.76)	8.08 (6.43-9.74)	20.8 (17.0-24.7)	29.0 (24.9-34.2)	1225
Females	07-08	4.15 (3.57-4.83)	3.59 (3.19-4.18)	7.40 (5.88-9.63)	16.8 (12.9-20.2)	22.7 (20.0-25.5)	1275
Females	09-10	4.10 (3.80-4.41)	3.89 (3.52-4.16)	7.17 (6.54-8.06)	14.6 (13.0-16.8)	21.7 (19.2-23.9)	1348

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxynaphthalene (2-Naphthol) (creatinine corrected) (2001 – 2010)

CAS Number 135-19-3

Metabolite of Naphthalene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	2.52 (2.23-2.85)	2.35 (2.01-2.95)	4.65 (3.97-5.21)	7.32 (6.05-8.09)	12.1 (7.82-15.3)	665
Mexican Americans	03-04	2.83 (2.44-3.28)	2.57 (2.20-3.23)	5.00 (4.10-5.95)	10.3 (6.79-13.0)	13.3 (11.0-15.5)	648
Mexican Americans	05-06	4.05 (3.77-4.35)	4.03 (3.65-4.36)	7.05 (6.30-8.05)	12.6 (9.53-15.1)	17.4 (13.4-20.6)	621
Mexican Americans	07-08	4.58 (3.97-5.28)	4.38 (3.55-5.02)	7.59 (6.30-9.38)	14.2 (11.6-16.4)	19.1 (16.0-24.7)	515
Mexican Americans	09-10	4.44 (4.02-4.90)	4.30 (3.79-5.03)	7.80 (7.28-8.47)	12.9 (11.1-14.6)	18.8 (13.8-22.8)	566
Non-Hispanic blacks	01-02	2.79 (2.39-3.27)	2.41 (2.04-2.77)	5.98 (4.84-6.98)	11.6 (9.09-15.3)	17.4 (12.2-23.4)	692
Non-Hispanic blacks	03-04	3.31 (2.70-4.04)	3.06 (2.31-3.86)	6.92 (5.12-9.33)	12.8 (10.4-16.5)	18.6 (15.7-22.1)	673
Non-Hispanic blacks	05-06	3.51 (3.16-3.89)	3.10 (2.59-3.53)	6.71 (5.33-8.04)	12.3 (10.3-16.1)	19.7 (16.1-25.0)	657
Non-Hispanic blacks	07-08	3.80 (3.47-4.15)	3.45 (3.08-3.90)	6.73 (5.57-8.41)	13.1 (11.3-14.9)	19.2 (14.8-26.5)	587
Non-Hispanic blacks	09-10	3.80 (3.47-4.15)	3.37 (3.10-3.85)	7.27 (6.54-8.32)	13.4 (10.8-16.8)	18.7 (13.4-23.5)	517
Non-Hispanic whites	01-02	2.16 (1.78-2.62)	1.74 (1.44-2.18)	4.34 (3.32-6.09)	11.9 (9.93-14.3)	16.9 (13.8-20.6)	1207
Non-Hispanic whites	03-04	3.03 (2.65-3.46)	2.46 (2.10-2.98)	7.14 (5.09-8.91)	15.6 (13.3-17.6)	21.9 (17.1-24.1)	1062
Non-Hispanic whites	05-06	3.40 (3.08-3.77)	2.73 (2.39-3.26)	7.45 (6.10-9.65)	17.9 (15.3-20.7)	24.9 (21.3-29.0)	980
Non-Hispanic whites	07-08	3.75 (3.18-4.43)	3.28 (2.60-4.08)	6.91 (5.53-9.51)	16.8 (12.8-19.8)	22.2 (19.4-25.5)	1044
Non-Hispanic whites	09-10	3.57 (3.27-3.90)	3.18 (2.82-3.71)	6.27 (5.67-7.13)	14.8 (13.1-15.8)	20.8 (19.0-22.5)	1203

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Volatile Organic Compounds (VOCs)

Blood 1,1,1-Trichloroethane (Methyl chloroform) (2003 – 2010)

CAS Number 71-55-6

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1345
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3085
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2907
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3333
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	911
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	469
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	570
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1345
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1524
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1565
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1831
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	.014 (<LOD-.021)	650
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	873
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	932
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	660
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1464
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1442
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1644
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	685
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1621
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1465
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1689
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	267
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	762
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	575
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	675
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	289
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	791
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	581
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	591
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	688
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1303
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1291
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1499

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.048, 0.01, 0.01, and 0.01 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OtherHalogenatedSolvents_BiomonitoringSummary.html

Blood 1,1,1,2-Tetrachloroethane (2007 – 2010)

CAS Number 79-34-5

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2750
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3280
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	452
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	551
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1493
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1801
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	805
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	928
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1365
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1617
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1385
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1663
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	556
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	644
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	546
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	583
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1197
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1505

Limit of detection (LOD, see Data Analysis section) for Survey year 07-08 and 09-10 are 0.04 and 0.04, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood 1,1,2,2-Tetrachloroethane (2003 – 2010)

CAS Number 79-34-5

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1235
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3131
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2922
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3371
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	924
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	464
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	579
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1235
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1542
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1575
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1849
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	665
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	883
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	943
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	613
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1484
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1447
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1664
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	622
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1647
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1475
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1707
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	250
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	753
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	554
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	681
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	282
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	823
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	594
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	597
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	606
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1323
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1310
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1527

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.01, 0.01, 0.01, and 0.01 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OtherHalogenatedSolvents_BiomonitoringSummary.html

Blood 1,1,2-Trichloroethane (2003 – 2010)

CAS Number 79-00-5

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1354
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3165
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2701
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3240
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	936
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	436
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	556
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1354
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1556
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1458
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1779
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	673
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	807
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	905
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	664
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1499
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1338
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1600
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	690
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1666
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1363
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1640
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	267
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	777
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	534
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	674
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	297
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	824
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	572
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	577
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	686
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1331
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1183
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1439

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.01, 0.01, 0.01, and 0.01 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OtherHalogenatedSolvents_BiomonitoringSummary.html

Blood 1,2,3-Trichloropropane (2007 – 2010)

CAS Number 96-18-4

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2592
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3260
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	413
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	560
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1398
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1788
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	781
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	912
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1284
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1606
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1308
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1654
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	518
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	660
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	541
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	573
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1133
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1484

Limit of detection (LOD, see Data Analysis section) for Survey year 07-08 and 09-10 are 0.04 and 0.04, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood 1,1-Dichloroethane (2003 – 2010)

CAS Number 75-34-3

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1367
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3193
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2800
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3330
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	941
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	446
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	567
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1367
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1569
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1505
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1833
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	683
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	849
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	930
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	670
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1510
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1380
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1647
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	697
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1683
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1420
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1683
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	267
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	778
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	548
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	680
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	300
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	832
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	577
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	590
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	695
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1347
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1239
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1489

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.01, 0.01, 0.01, and 0.01 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OtherHalogenatedSolvents_BiomonitoringSummary.html

Blood 1,1-Dichloroethene (Vinylidene chloride) (2003 – 2010)

CAS Number 75-34-3

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1367
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3163
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2810
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3133
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	931
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	447
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	540
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1367
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1555
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1503
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1706
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	677
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	860
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	887
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	670
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1502
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1398
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1549
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	697
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1661
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1412
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1584
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	267
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	774
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	525
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	651
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	300
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	823
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	584
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	569
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	695
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1332
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1255
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1374

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.009, 0.009, 0.009, and 0.009 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OtherHalogenatedSolvents_BiomonitoringSummary.html

Blood 1,2-Dibromo-3-chloropropane (DBCP) (2003 – 2010)‡

CAS Number 96-12-8

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1170
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2998
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2837
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3391
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	875
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	469
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	580
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1170
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1485
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1522
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1861
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	638
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	846
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	950
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	568
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1409
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1397
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1673
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	602
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1589
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1440
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1718
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	234
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	752
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	565
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	681
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	239
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	737
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	586
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	602
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	603
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1287
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1231
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1536

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.1, 0.1, 0.1, and 0.1 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result. .

‡Not measured after Survey years 2009-2010.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/DBCP_BiomonitoringSummary.html

Blood 1,2-Dibromoethane (2007 – 2010)

CAS Number 106-93-4

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2577
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3212
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	409
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	551
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1389
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1768
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	779
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	893
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1270
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1582
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1307
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1630
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	471
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	620
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	532
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	579
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1165
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1465

Limit of detection (LOD, see Data Analysis section) for Survey year 07-08 and 09-10 are 0.015 and 0.015, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood 1,2-Dichlorobenzene (o-Dichlorobenzene) (2003 – 2010)

CAS Number 95-50-1

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1327
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3083
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2803
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3074
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	921
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	455
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	513
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1327
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1523
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1510
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1706
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	639
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	838
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	855
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	647
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1457
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1388
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1514
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	680
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1626
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1415
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1560
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	250
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	766
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	544
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	623
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	291
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	801
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	579
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	540
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	682
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1288
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1237
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1391

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.1, 0.1, 0.025, and 0.025 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Chlorobenzenes_BiomonitoringSummary.html

Blood 1,2-Dichloroethane (Ethylene dichloride) (2003 – 2010)

CAS Number 107-06-2

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1346
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3082
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2767
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3358
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	906
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	443
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	574
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1346
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1520
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1484
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1843
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	656
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	840
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	941
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	661
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1452
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1375
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1657
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	685
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1630
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1392
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1701
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	267
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	763
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	533
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	675
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	289
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	795
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	554
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	594
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	689
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1297
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1244
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1521

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.01, 0.01, 0.01, and 0.01 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OtherHalogenatedSolvents_BiomonitoringSummary.html

Blood cis-1,2-Dichloroethene (2003 – 2010)

CAS Number 156-59-2

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1366
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3140
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2897
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3313
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	924
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	463
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	573
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1366
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1539
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1556
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1817
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	677
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	878
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	923
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	669
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1481
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1432
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1636
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	697
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1659
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1465
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1677
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	267
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	757
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	576
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	680
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	300
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	822
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	591
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	592
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	694
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1329
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1283
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1477

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.01, 0.01, 0.01, and 0.01 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OtherHalogenatedSolvents_BiomonitoringSummary.html

Blood trans-1,2-Dichloroethene (2003 – 2010)

CAS Number 156-60-5

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1367
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3193
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2843
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3241
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	941
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	468
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	559
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1367
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1569
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1524
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1782
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	683
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	851
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	900
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	670
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1511
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1415
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1605
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	697
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1682
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1428
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1636
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	267
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	779
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	574
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	678
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	300
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	832
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	580
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	584
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	695
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1346
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1249
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1431

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.01, 0.01, 0.01, and 0.01 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OtherHalogenatedSolvents_BiomonitoringSummary.html

Blood 1,2-Dichloropropane (2003 – 2010)

CAS Number 78-87-5

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1364
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3120
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2840
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3255
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	918
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	469
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	558
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1364
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1536
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1524
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1795
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	666
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	847
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	902
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	667
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1478
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1413
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1604
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	697
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1642
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1427
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1651
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	267
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	755
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	562
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	643
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	300
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	811
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	582
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	591
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	692
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1322
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1245
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1478

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.008, 0.008, 0.01, and 0.01 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OtherHalogenatedSolvents_BiomonitoringSummary.html

Blood 1,3-Dichlorobenzene (m-Dichlorobenzene) (2003 – 2010)

CAS Number 95-50-1

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1334
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3148
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2484
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3294
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	928
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	405
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	570
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1334
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1545
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1345
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1808
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	675
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	734
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	916
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	659
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1491
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1217
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1623
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	675
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1657
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1267
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1671
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	266
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	774
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	483
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	671
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	279
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	809
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	534
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	592
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	686
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1330
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1072
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1465

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.05, 0.05, 0.025, and 0.025 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Chlorobenzenes_BiomonitoringSummary.html

Blood 1,4-Dichlorobenzene (Paradichlorobenzene) (2001 – 2010)

CAS Number 106-46-7

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	.300 (.190-.550)	1.19 (.610-2.90)	4.10 (1.40-7.60)	807
Total population	03-04	*	<LOD	.320 (.250-.400)	1.10 (.710-1.60)	3.30 (1.70-5.10)	1322
Total population	05-06	*	.085 (.085-.085)	.218 (.180-.260)	.917 (.643-1.31)	3.59 (1.80-5.50)	3126
Total population	07-08	*	.054 (.043-.071)	.186 (.138-.262)	.869 (.543-1.35)	2.69 (1.52-7.13)	2330
Total population	09-10	*	.043 (<LOD-.054)	.161 (.117-.213)	.609 (.433-.959)	2.13 (1.06-4.03)	3205
Age 12-19 years	05-06	*	.085 (.085-.085)	.220 (.160-.280)	.960 (.560-2.00)	4.27 (2.37-6.10)	926
Age 12-19 years	07-08	.118 (.089-.155)	.074 (.049-.109)	.244 (.147-.520)	1.11 (.743-2.10)	4.16 (1.18-20.1)	379
Age 12-19 years	09-10	*	.046 (<LOD-.066)	.196 (.125-.271)	.890 (.335-2.28)	2.33 (.884-7.79)	549
Age 20-59 years	01-02	*	<LOD	.300 (.190-.550)	1.19 (.610-2.90)	4.10 (1.40-7.60)	807
Age 20-59 years	03-04	*	<LOD	.320 (.250-.400)	1.10 (.710-1.60)	3.30 (1.70-5.10)	1322
Age 20-59 years	05-06	*	.085 (.085-.085)	.220 (.170-.260)	.910 (.540-1.50)	3.77 (1.50-7.33)	1537
Age 20-59 years	07-08	*	.052 (<LOD-.071)	.184 (.121-.266)	.788 (.464-1.49)	2.67 (1.36-7.58)	1250
Age 20-59 years	09-10	*	.042 (<LOD-.058)	.153 (.103-.227)	.591 (.363-.999)	1.77 (.865-3.80)	1751
Age 60+ years	05-06	*	.085 (.085-.085)	.207 (.158-.313)	.877 (.525-1.80)	3.06 (1.50-4.20)	663
Age 60+ years	07-08	*	.055 (<LOD-.072)	.169 (.120-.280)	.768 (.461-1.16)	2.28 (.936-7.84)	698
Age 60+ years	09-10	*	.041 (<LOD-.051)	.153 (.107-.204)	.663 (.452-1.06)	3.48 (1.46-5.74)	905
Males	01-02	*	<LOD	.270 (.180-.530)	.900 (.570-2.90)	3.60 (1.10-7.20)	390
Males	03-04	*	<LOD	.320 (.250-.380)	.770 (.580-1.20)	1.90 (1.20-4.00)	651
Males	05-06	*	.085 (.085-.085)	.230 (.188-.290)	.950 (.603-1.50)	3.50 (1.50-7.20)	1479
Males	07-08	.102 (.081-.126)	.065 (.052-.080)	.205 (.156-.274)	.833 (.497-1.33)	2.14 (1.05-8.40)	1133
Males	09-10	*	.048 (<LOD-.065)	.176 (.132-.248)	.610 (.470-.971)	2.33 (1.13-3.65)	1574
Females	01-02	*	<LOD	.360 (.190-.620)	1.20 (.620-3.90)	4.10 (1.68-8.30)	417
Females	03-04	*	<LOD	.350 (.220-.450)	1.40 (.810-2.10)	4.10 (2.20-5.90)	671
Females	05-06	*	.085 (.085-.085)	.180 (.140-.240)	.865 (.522-1.70)	3.59 (2.10-5.18)	1647
Females	07-08	*	.048 (<LOD-.065)	.155 (.108-.268)	.894 (.537-1.61)	3.11 (1.68-8.10)	1197
Females	09-10	*	<LOD	.142 (.102-.192)	.593 (.349-.992)	1.95 (.947-5.18)	1631

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.12, 0.12, 0.011, 0.04, and 0.04, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Chlorobenzenes_BiomonitoringSummary.html

Blood 1,4-Dichlorobenzene (Paradichlorobenzene) (2001 – 2010)

CAS Number 106-46-7

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	.331 (.246-.446)	.180 (<LOD-.260)	.790 (.400-1.30)	6.00 (1.30-16.0)	16.0 (6.20-33.0)	217
Mexican Americans	03-04	.381 (.256-.566)	.210 (.140-.400)	.730 (.370-2.90)	6.20 (2.90-9.30)	10.0 (6.30-19.0)	262
Mexican Americans	05-06	.412 (.309-.549)	.210 (.150-.290)	1.20 (.680-2.97)	8.80 (3.80-16.0)	16.0 (8.10-33.0)	772
Mexican Americans	07-08	.251 (.119-.529)	.179 (.059-.420)	.864 (.304-4.30)	7.76 (2.14-17.8)	19.0 (10.5-23.4)	459
Mexican Americans	09-10	*	.058 (<LOD-.156)	.267 (.110-1.58)	3.85 (.417-17.9)	13.6 (2.39-31.0)	647
Non-Hispanic blacks	01-02	.558 (.376-.827)	.360 (.260-.560)	1.80 (.710-3.90)	6.30 (1.40-29.0)	15.0 (3.60-51.0)	136
Non-Hispanic blacks	03-04	.423 (.292-.613)	.340 (.200-.480)	.980 (.550-1.50)	4.10 (1.60-9.20)	11.0 (2.50-19.0)	297
Non-Hispanic blacks	05-06	.381 (.272-.532)	.230 (.160-.330)	.860 (.500-1.70)	5.24 (2.00-11.5)	12.7 (8.41-21.0)	805
Non-Hispanic blacks	07-08	.235 (.181-.303)	.151 (.112-.200)	.688 (.410-1.04)	3.76 (2.14-9.10)	12.7 (6.00-21.3)	502
Non-Hispanic blacks	09-10	.211 (.147-.304)	.148 (.095-.200)	.540 (.349-1.12)	4.60 (1.64-11.5)	14.8 (4.94-23.3)	564
Non-Hispanic whites	01-02	*	<LOD	.200 (<LOD-.380)	.570 (.300-1.20)	1.19 (.570-3.70)	396
Non-Hispanic whites	03-04	*	<LOD	.200 (.160-.260)	.490 (.370-.720)	.940 (.690-2.00)	658
Non-Hispanic whites	05-06	*	.085 (.085-.085)	.134 (.085-.180)	.438 (.260-.670)	1.16 (.520-2.30)	1319
Non-Hispanic whites	07-08	*	.043 (<LOD-.055)	.095 (.081-.137)	.377 (.291-.486)	.898 (.543-1.49)	1015
Non-Hispanic whites	09-10	*	<LOD	.105 (.076-.162)	.363 (.253-.535)	.783 (.593-1.12)	1452

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.12, 0.12, 0.011, 0.04, and 0.04, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Chlorobenzenes_BiomonitoringSummary.html

Blood 1,4-Dioxane (2009 – 2010)

CAS Number 123-91-1

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2474
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	414
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1369
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	691
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1217
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1257
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	429
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	428
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1202

Limit of detection (LOD, see Data Analysis section) for Survey year 09-10 is 0.5.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood 2,5-Dimethylfuran (2003 – 2010)

CAS Number 625-86-5

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	.016 (<LOD-.032)	.100 (.083-.110)	.140 (.120-.180)	1213
Total population	05-06	*	<LOD	<LOD	.100 (.069-.120)	.160 (.130-.180)	3160
Total population	07-08	*	<LOD	<LOD	.087 (.056-.118)	.148 (.129-.168)	2745
Total population	09-10	*	<LOD	<LOD	.101 (.067-.129)	.171 (.138-.206)	3332
Age 12-19 years	05-06	*	<LOD	<LOD	.013 (<LOD-.029)	.049 (.020-.069)	930
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	.028 (<LOD-.077)	449
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	.034 (<LOD-.065)	570
Age 20-59 years	03-04	*	<LOD	.016 (<LOD-.032)	.100 (.083-.110)	.140 (.120-.180)	1213
Age 20-59 years	05-06	*	<LOD	.013 (<LOD-.035)	.120 (.097-.144)	.170 (.140-.210)	1553
Age 20-59 years	07-08	*	<LOD	<LOD	.113 (.079-.146)	.169 (.147-.209)	1471
Age 20-59 years	09-10	*	<LOD	<LOD	.127 (.091-.160)	.197 (.159-.241)	1825
Age 60+ years	05-06	*	<LOD	<LOD	.069 (.027-.100)	.140 (.106-.160)	677
Age 60+ years	07-08	*	<LOD	<LOD	.014 (<LOD-.061)	.086 (.061-.137)	825
Age 60+ years	09-10	*	<LOD	<LOD	.032 (<LOD-.105)	.127 (.097-.179)	937
Males	03-04	*	<LOD	.019 (<LOD-.034)	.094 (.071-.110)	.130 (.110-.190)	598
Males	05-06	*	<LOD	<LOD	.110 (.079-.130)	.160 (.130-.190)	1490
Males	07-08	*	<LOD	<LOD	.101 (.056-.130)	.154 (.133-.187)	1358
Males	09-10	*	<LOD	<LOD	.117 (.079-.149)	.189 (.143-.245)	1640
Females	03-04	*	<LOD	.012 (<LOD-.048)	.110 (.071-.120)	.150 (.120-.210)	615
Females	05-06	*	<LOD	<LOD	.094 (.062-.120)	.158 (.120-.180)	1670
Females	07-08	*	<LOD	<LOD	.081 (.042-.110)	.142 (.101-.176)	1387
Females	09-10	*	<LOD	<LOD	.087 (.050-.109)	.150 (.112-.186)	1692
Mexican Americans	03-04	*	<LOD	<LOD	.012 (<LOD-.020)	.038 (.013-.054)	237
Mexican Americans	05-06	*	<LOD	<LOD	.015 (<LOD-.029)	.033 (.020-.055)	778
Mexican Americans	07-08	*	<LOD	<LOD	.012 (<LOD-.019)	.032 (.019-.048)	557
Mexican Americans	09-10	*	<LOD	<LOD	.020 (<LOD-.037)	.062 (.041-.071)	676
Non-Hispanic blacks	03-04	*	<LOD	.042 (.019-.063)	.110 (.079-.170)	.170 (.099-.220)	258
Non-Hispanic blacks	05-06	*	<LOD	.012 (<LOD-.030)	.085 (.058-.110)	.130 (.095-.180)	825
Non-Hispanic blacks	07-08	*	<LOD	<LOD	.081 (.058-.102)	.148 (.093-.160)	557
Non-Hispanic blacks	09-10	*	<LOD	<LOD	.103 (.061-.123)	.146 (.105-.197)	598
Non-Hispanic whites	03-04	*	<LOD	.021 (<LOD-.043)	.110 (.087-.120)	.150 (.120-.200)	624
Non-Hispanic whites	05-06	*	<LOD	<LOD	.118 (.091-.140)	.170 (.140-.230)	1325
Non-Hispanic whites	07-08	*	<LOD	<LOD	.111 (.077-.142)	.165 (.146-.191)	1215
Non-Hispanic whites	09-10	*	<LOD	<LOD	.122 (.092-.155)	.196 (.156-.240)	1494

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.012, 0.011, 0.011, and 0.011 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/25-Dimethylfuran_BiomonitoringSummary.html

Blood Benzene (2001 – 2010)

CAS Number 71-43-2

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	.030 (<LOD-.050)	.100 (.060-.140)	.190 (.140-.290)	.320 (.190-.480)	837
Total population	03-04	*	.027 (.025-.031)	.064 (.050-.084)	.170 (.150-.190)	.260 (.210-.320)	1345
Total population	05-06	*	.026 (<LOD-.030)	.056 (.047-.072)	.220 (.157-.260)	.310 (.264-.370)	3091
Total population	07-08	*	<LOD	.041 (.028-.062)	.198 (.156-.246)	.294 (.246-.380)	2685
Total population	09-10	*	<LOD	.035 (.026-.049)	.198 (.154-.234)	.307 (.262-.351)	3236
Age 12-19 years	05-06	*	.024 (<LOD-.028)	.039 (.031-.056)	.089 (.066-.110)	.120 (.092-.180)	912
Age 12-19 years	07-08	*	<LOD	<LOD	.053 (.029-.088)	.106 (.056-.159)	426
Age 12-19 years	09-10	*	<LOD	<LOD	.047 (.027-.085)	.112 (.063-.205)	546
Age 20-59 years	01-02	*	.030 (<LOD-.050)	.100 (.060-.140)	.190 (.140-.290)	.320 (.190-.480)	837
Age 20-59 years	03-04	*	.027 (.025-.031)	.064 (.050-.084)	.170 (.150-.190)	.260 (.210-.320)	1345
Age 20-59 years	05-06	*	.028 (.025-.032)	.072 (.053-.100)	.240 (.200-.290)	.340 (.300-.390)	1513
Age 20-59 years	07-08	*	<LOD	.075 (.037-.126)	.243 (.187-.290)	.328 (.280-.416)	1445
Age 20-59 years	09-10	*	<LOD	.054 (.040-.088)	.233 (.180-.288)	.340 (.288-.417)	1776
Age 60+ years	05-06	*	<LOD	.042 (.036-.048)	.180 (.100-.230)	.270 (.200-.340)	666
Age 60+ years	07-08	*	<LOD	<LOD	.120 (.065-.158)	.213 (.150-.279)	814
Age 60+ years	09-10	*	<LOD	<LOD	.108 (.048-.177)	.224 (.135-.328)	914
Males	01-02	*	.030 (<LOD-.050)	.110 (.060-.160)	.230 (.150-.370)	.370 (.210-.510)	403
Males	03-04	.039 (.035-.043)	.030 (.027-.035)	.069 (.053-.084)	.160 (.140-.180)	.240 (.190-.320)	654
Males	05-06	*	.028 (.025-.032)	.066 (.051-.083)	.230 (.165-.280)	.330 (.260-.440)	1459
Males	07-08	*	<LOD	.056 (.036-.095)	.216 (.172-.274)	.303 (.252-.398)	1330
Males	09-10	*	<LOD	.045 (.034-.060)	.225 (.177-.272)	.326 (.273-.421)	1602
Females	01-02	*	.030 (<LOD-.050)	.100 (.060-.130)	.180 (.120-.240)	.250 (.170-.330)	434
Females	03-04	*	.025 (<LOD-.029)	.057 (.040-.090)	.180 (.150-.220)	.290 (.220-.420)	691
Females	05-06	*	.024 (<LOD-.028)	.049 (.040-.067)	.200 (.150-.230)	.290 (.250-.340)	1632
Females	07-08	*	<LOD	.030 (<LOD-.045)	.182 (.109-.240)	.285 (.220-.368)	1355
Females	09-10	*	<LOD	.027 (<LOD-.042)	.166 (.105-.214)	.279 (.215-.331)	1634

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.024, 0.024, 0.024, 0.024, and 0.024, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Benzene_BiomonitoringSummary.html

Blood Benzene (2001 – 2010)

CAS Number 71-43-2

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	*	.030 (<LOD-.070)	.070 (.030-.170)	.140 (.060-.360)	.230 (.130-.370)	227
Mexican Americans	03-04	*	.027 (<LOD-.035)	.041 (.034-.057)	.077 (.058-.110)	.130 (.084-.320)	254
Mexican Americans	05-06	*	<LOD	.036 (.031-.045)	.060 (.048-.086)	.096 (.072-.140)	744
Mexican Americans	07-08	*	<LOD	<LOD	.053 (.038-.076)	.092 (.056-.120)	522
Mexican Americans	09-10	*	<LOD	<LOD	.061 (.041-.086)	.141 (.093-.199)	646
Non-Hispanic blacks	01-02	*	<LOD	.060 (<LOD-.160)	.180 (.090-.300)	.250 (.160-.480)	137
Non-Hispanic blacks	03-04	.043 (.033-.058)	.029 (<LOD-.054)	.092 (.055-.140)	.210 (.140-.290)	.320 (.240-.460)	302
Non-Hispanic blacks	05-06	*	.026 (<LOD-.034)	.077 (.051-.110)	.180 (.150-.221)	.280 (.220-.360)	812
Non-Hispanic blacks	07-08	*	<LOD	.075 (.056-.093)	.180 (.136-.284)	.318 (.240-.512)	556
Non-Hispanic blacks	09-10	*	<LOD	.050 (.028-.081)	.212 (.142-.311)	.365 (.262-.480)	578
Non-Hispanic whites	01-02	*	.030 (<LOD-.060)	.110 (.070-.160)	.210 (.140-.340)	.330 (.190-.510)	411
Non-Hispanic whites	03-04	*	.028 (.025-.033)	.068 (.053-.088)	.180 (.150-.200)	.280 (.210-.330)	687
Non-Hispanic whites	05-06	*	.027 (<LOD-.031)	.069 (.049-.091)	.240 (.190-.280)	.330 (.270-.390)	1309
Non-Hispanic whites	07-08	*	<LOD	.051 (.028-.107)	.226 (.182-.276)	.313 (.276-.388)	1210
Non-Hispanic whites	09-10	*	<LOD	.041 (.031-.055)	.224 (.178-.263)	.326 (.290-.390)	1479

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.024, 0.024, 0.024, 0.024, and 0.024, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Benzene_BiomonitoringSummary.html

Blood Chlorobenzene (Monochlorobenzene) (2003 – 2010)

CAS Number 108-90-7

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1366
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3072
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2749
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3236
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	910
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	434
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	561
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1366
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1495
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1487
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1775
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	667
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	828
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	900
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	669
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1453
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1358
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1591
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	697
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1619
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1391
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1645
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	267
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	740
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	524
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	662
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	300
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	817
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	568
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	585
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	694
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1287
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1227
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1432

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.011, 0.011, 0.011, and 0.011 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Chlorobenzenes_BiomonitoringSummary.html

Blood Dibromomethane (2003 – 2010)

CAS Number 74-95-3

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1355
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3152
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2712
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3243
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	929
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	427
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	562
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1355
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1554
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1461
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1779
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	669
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	824
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	902
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	666
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1494
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1345
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1594
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	689
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1658
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1367
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1649
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	267
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	778
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	510
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	674
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	292
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	816
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	556
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	586
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	693
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1324
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1236
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1433

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.03, 0.03, 0.03, and 0.03 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OtherHalogenatedSolvents_BiomonitoringSummary.html

Blood Dichloromethane (Methylene chloride) (2003 – 2010)

CAS Number 75-09-2

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1165
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2852
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2569
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2878
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	837
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	416
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	489
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1165
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1400
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1369
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1601
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	615
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	784
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	788
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	568
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1338
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1279
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1404
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	597
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1514
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1290
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1474
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	225
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	731
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	521
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	575
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	245
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	729
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	476
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	560
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	607
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1186
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1154
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1278

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.07, 0.25, 0.25, and 0.25 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Blood Ethylbenzene (2001 – 2010)

CAS Number 100-41-4

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	.034 (.029-.039)	.030 (.030-.040)	.050 (.050-.070)	.090 (.070-.120)	.140 (.090-.180)	879
Total population	03-04	.035 (.033-.037)	.032 (.030-.036)	.053 (.048-.057)	.083 (.077-.088)	.110 (.098-.120)	1299
Total population	05-06	.038 (.036-.041)	.035 (.033-.037)	.059 (.052-.067)	.100 (.093-.114)	.140 (.122-.160)	3119
Total population	07-08	*	<LOD	.038 (.031-.047)	.083 (.071-.098)	.122 (.099-.143)	2750
Total population	09-10	*	<LOD	.047 (.038-.059)	.114 (.090-.145)	.175 (.133-.250)	3209
Age 12-19 years	05-06	.032 (.030-.034)	.031 (.029-.033)	.046 (.042-.049)	.070 (.058-.085)	.096 (.075-.120)	909
Age 12-19 years	07-08	*	<LOD	.026 (<LOD-.035)	.051 (.036-.059)	.068 (.057-.090)	448
Age 12-19 years	09-10	*	<LOD	.028 (<LOD-.032)	.055 (.041-.071)	.082 (.065-.117)	550
Age 20-59 years	01-02	.034 (.029-.039)	.030 (.030-.040)	.050 (.050-.070)	.090 (.070-.120)	.140 (.090-.180)	879
Age 20-59 years	03-04	.035 (.033-.037)	.032 (.030-.036)	.053 (.048-.057)	.083 (.077-.088)	.110 (.098-.120)	1299
Age 20-59 years	05-06	.040 (.037-.043)	.037 (.034-.039)	.062 (.054-.073)	.110 (.098-.126)	.150 (.130-.180)	1539
Age 20-59 years	07-08	*	<LOD	.045 (.036-.056)	.094 (.077-.114)	.131 (.112-.160)	1473
Age 20-59 years	09-10	*	<LOD	.058 (.044-.075)	.129 (.104-.166)	.189 (.149-.518)	1767
Age 60+ years	05-06	.037 (.033-.040)	.033 (.030-.036)	.056 (.046-.068)	.098 (.090-.110)	.130 (.110-.160)	671
Age 60+ years	07-08	*	<LOD	.032 (.026-.038)	.062 (.050-.083)	.100 (.074-.123)	829
Age 60+ years	09-10	*	<LOD	.041 (.032-.050)	.086 (.067-.116)	.139 (.108-.186)	892
Males	01-02	.035 (.029-.041)	.030 (<LOD-.040)	.060 (.040-.070)	.100 (.070-.150)	.150 (.090-.220)	419
Males	03-04	.037 (.034-.041)	.036 (.031-.040)	.057 (.051-.065)	.086 (.078-.099)	.110 (.094-.130)	625
Males	05-06	.042 (.039-.044)	.038 (.036-.041)	.067 (.057-.074)	.114 (.099-.131)	.160 (.136-.180)	1474
Males	07-08	*	<LOD	.044 (.037-.056)	.090 (.077-.105)	.128 (.102-.154)	1356
Males	09-10	*	<LOD	.055 (.045-.070)	.127 (.099-.168)	.189 (.156-.342)	1582
Females	01-02	.033 (.028-.038)	.030 (.030-.040)	.050 (.040-.060)	.080 (.060-.120)	.130 (.070-.180)	460
Females	03-04	.032 (.030-.034)	.030 (.027-.033)	.048 (.041-.053)	.081 (.071-.089)	.100 (.091-.120)	674
Females	05-06	.035 (.032-.038)	.032 (.029-.035)	.052 (.047-.061)	.093 (.081-.103)	.120 (.106-.150)	1645
Females	07-08	*	<LOD	.032 (.027-.043)	.074 (.058-.092)	.116 (.089-.134)	1394
Females	09-10	*	<LOD	.040 (.031-.054)	.099 (.076-.122)	.153 (.114-.236)	1627

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.024, 0.024, 0.024, 0.024, and 0.024, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Ethylbenzene_BiomonitoringSummary.html

Blood Ethylbenzene (2001 – 2010)

CAS Number 100-41-4

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	*	.030 (<LOD-.040)	.040 (.040-.060)	.070 (.050-.110)	.120 (.070-.210)	220
Mexican Americans	03-04	.031 (.027-.036)	.029 (<LOD-.035)	.044 (.035-.048)	.064 (.051-.074)	.091 (.066-.170)	253
Mexican Americans	05-06	.032 (.028-.036)	.030 (.026-.036)	.047 (.039-.057)	.072 (.051-.093)	.086 (.073-.120)	752
Mexican Americans	07-08	*	<LOD	.029 (.025-.036)	.050 (.040-.068)	.072 (.059-.100)	557
Mexican Americans	09-10	*	<LOD	.035 (.027-.052)	.070 (.056-.096)	.114 (.078-.247)	626
Non-Hispanic blacks	01-02	.032 (.027-.038)	.030 (<LOD-.040)	.050 (.030-.070)	.080 (.060-.130)	.130 (.070-.240)	159
Non-Hispanic blacks	03-04	.032 (.027-.038)	.030 (<LOD-.037)	.050 (.037-.066)	.079 (.065-.100)	.110 (.084-.130)	281
Non-Hispanic blacks	05-06	.037 (.035-.040)	.034 (.030-.038)	.057 (.052-.064)	.095 (.085-.100)	.120 (.104-.140)	809
Non-Hispanic blacks	07-08	*	<LOD	.048 (.037-.053)	.086 (.066-.105)	.117 (.089-.170)	559
Non-Hispanic blacks	09-10	*	<LOD	.047 (.030-.083)	.137 (.075-.215)	.215 (.097-1.52)	583
Non-Hispanic whites	01-02	.035 (.029-.043)	.030 (<LOD-.040)	.060 (.050-.070)	.090 (.070-.140)	.150 (.090-.190)	432
Non-Hispanic whites	03-04	.036 (.034-.038)	.034 (.030-.038)	.055 (.050-.061)	.087 (.081-.092)	.110 (.098-.130)	669
Non-Hispanic whites	05-06	.039 (.037-.042)	.036 (.033-.038)	.061 (.053-.072)	.110 (.095-.120)	.150 (.125-.180)	1326
Non-Hispanic whites	07-08	*	<LOD	.040 (.031-.053)	.090 (.075-.112)	.128 (.105-.154)	1190
Non-Hispanic whites	09-10	*	<LOD	.054 (.042-.065)	.121 (.099-.151)	.180 (.145-.281)	1465

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.024, 0.024, 0.024, 0.024, and 0.024, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Ethylbenzene_BiomonitoringSummary.html

Blood Furan (2007 – 2010)

CAS Number 110-00-9

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	.042 (<LOD-.065)	.089 (.068-.106)	2758
Total population	09-10	*	<LOD	<LOD	.060 (.044-.078)	.103 (.081-.127)	3167
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	450
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	.034 (<LOD-.065)	544
Age 20-59 years	07-08	*	<LOD	<LOD	.066 (.032-.088)	.099 (.082-.128)	1455
Age 20-59 years	09-10	*	<LOD	<LOD	.075 (.051-.094)	.115 (.087-.150)	1737
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	.052 (<LOD-.084)	853
Age 60+ years	09-10	*	<LOD	<LOD	.032 (<LOD-.063)	.081 (.060-.106)	886
Males	07-08	*	<LOD	<LOD	.051 (<LOD-.074)	.091 (.062-.121)	1367
Males	09-10	*	<LOD	<LOD	.072 (.049-.086)	.115 (.083-.155)	1570
Females	07-08	*	<LOD	<LOD	.038 (<LOD-.063)	.087 (.050-.102)	1391
Females	09-10	*	<LOD	<LOD	.051 (.034-.070)	.091 (.070-.109)	1597
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	540
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	.032 (.026-.047)	658
Non-Hispanic blacks	07-08	*	<LOD	<LOD	.039 (.026-.050)	.083 (.050-.099)	575
Non-Hispanic blacks	09-10	*	<LOD	<LOD	.059 (.033-.106)	.107 (.078-.129)	555
Non-Hispanic whites	07-08	*	<LOD	<LOD	.056 (<LOD-.083)	.098 (.080-.124)	1206
Non-Hispanic whites	09-10	*	<LOD	<LOD	.075 (.057-.090)	.115 (.092-.136)	1403

Limit of detection (LOD, see Data Analysis section) for Survey year 07-08 and 09-10 are 0.025 and 0.025, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Hexachloroethane (2003 – 2010)

CAS Number 67-72-1

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1366
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3155
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2627
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	2652
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	930
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	419
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	458
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1366
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1547
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1417
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1434
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	678
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	791
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	760
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	669
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1495
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1285
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1292
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	697
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1660
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1342
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1360
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	267
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	758
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	506
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	564
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	300
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	830
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	531
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	500
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	694
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1335
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1191
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1097

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.011, 0.011, 0.011, and 0.011 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Hexachloroethane_BiomonitoringSummary.html

Blood Hexane (2009 – 2010)

CAS Number 110-54-3

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3266
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	556
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1790
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	920
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1610
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1656
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	666
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	586
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1457

Limit of detection (LOD, see Data Analysis section) for Survey year 09-10 is 0.122.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Isopropylbenzene (Cumene) (2007 – 2010)

CAS Number 98-82-8

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2752
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3250
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	448
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	561
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1479
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1768
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	825
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	921
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1369
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1591
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1383
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1659
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	518
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	671
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	544
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	576
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1251
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1445

Limit of detection (LOD, see Data Analysis section) for Survey year 07-08 and 09-10 are 0.04 and 0.04, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Blood Methyl-tert-Butyl Ether (MTBE) (2001 – 2008)‡

CAS Number 1634-04-4

Geometric mean and selected percentiles of whole blood concentrations (in pg/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	16.4 (4.77-56.7)	27.7 (7.29-64.9)	73.8 (35.5-127)	132 (64.0-278)	188 (109-339)	672
Total population	03-04	11.0 (5.98-20.1)	10.0 (4.60-25.1)	45.0 (16.0-98.0)	110 (70.0-180)	170 (110-340)	1307
Total population	05-06	6.16 (2.94-12.9)	4.60 (1.80-15.0)	20.0 (5.20-73.0)	75.0 (22.0-140)	110 (49.0-250)	3080
Total population	07-08	*	<LOD	<LOD	3.50 (2.00-7.83)	7.27 (3.40-22.3)	2964
Age 12-19 years	05-06	5.85 (2.61-13.1)	4.20 (1.40-18.0)	18.0 (4.60-75.0)	70.0 (18.0-140)	110 (62.0-180)	911
Age 12-19 years	07-08	*	<LOD	<LOD	3.74 (1.90-8.47)	8.43 (3.10-19.0)	476
Age 20-59 years	01-02	16.4 (4.77-56.7)	27.7 (7.29-64.9)	73.8 (35.5-127)	132 (64.0-278)	188 (109-339)	672
Age 20-59 years	03-04	11.0 (5.98-20.1)	10.0 (4.60-25.1)	45.0 (16.0-98.0)	110 (70.0-180)	170 (110-340)	1307
Age 20-59 years	05-06	6.26 (3.05-12.9)	4.80 (2.00-14.0)	20.0 (5.50-70.0)	71.0 (21.0-150)	110 (46.0-250)	1512
Age 20-59 years	07-08	*	<LOD	<LOD	3.16 (1.90-5.10)	5.10 (2.87-19.0)	1597
Age 60+ years	05-06	6.00 (2.67-13.5)	3.80 (1.60-14.0)	22.0 (4.00-94.0)	86.0 (19.0-180)	120 (55.0-290)	657
Age 60+ years	07-08	*	<LOD	1.80 (<LOD-3.10)	6.00 (2.70-14.5)	14.0 (5.25-28.0)	891
Males	01-02	16.9 (4.96-57.7)	27.9 (6.82-64.6)	75.0 (35.5-131)	132 (54.9-307)	167 (109-417)	334
Males	03-04	12.2 (6.29-23.6)	11.0 (4.80-29.0)	55.0 (18.0-110)	130 (79.0-200)	200 (110-470)	641
Males	05-06	6.24 (3.07-12.7)	4.60 (1.90-15.0)	20.0 (5.90-69.0)	73.0 (25.0-120)	110 (52.0-230)	1462
Males	07-08	*	<LOD	1.40 (<LOD-2.21)	3.40 (1.93-8.40)	7.27 (3.00-26.0)	1481
Females	01-02	16.0 (4.12-61.8)	26.6 (5.93-74.6)	72.7 (32.6-132)	142 (73.5-255)	194 (92.3-336)	338
Females	03-04	9.88 (5.62-17.4)	8.90 (4.30-23.0)	38.0 (14.0-85.0)	94.0 (58.0-160)	140 (90.0-250)	666
Females	05-06	6.08 (2.81-13.1)	4.50 (1.70-14.0)	19.0 (4.90-79.0)	76.0 (20.0-160)	110 (48.0-250)	1618
Females	07-08	*	<LOD	<LOD	3.50 (1.90-8.40)	7.30 (3.60-16.5)	1483
Mexican Americans	01-02	23.3 (4.96-110)	33.4 (2.92-187)	91.3 (26.1-255)	225 (80.6-339)	273 (182-358)	166
Mexican Americans	03-04	11.6 (5.35-25.3)	12.0 (3.80-29.0)	32.0 (14.0-80.0)	80.0 (38.0-190)	160 (74.0-220)	245
Mexican Americans	05-06	7.61 (2.99-19.3)	5.40 (2.00-33.0)	30.0 (4.60-90.0)	67.0 (26.0-190)	100 (45.0-330)	735
Mexican Americans	07-08	*	<LOD	1.71 (<LOD-2.90)	4.10 (2.19-9.60)	8.80 (5.20-11.5)	559
Non-Hispanic blacks	01-02	14.9 (6.11-36.4)	26.4 (3.11-55.6)	52.6 (30.0-86.8)	87.4 (38.6-155)	120 (70.0-155)	119
Non-Hispanic blacks	03-04	9.63 (4.83-19.2)	10.0 (3.50-28.0)	32.8 (11.0-85.0)	77.0 (36.0-160)	140 (61.0-210)	285
Non-Hispanic blacks	05-06	9.14 (3.16-26.5)	5.70 (1.80-50.0)	48.0 (5.00-150)	120 (46.0-280)	180 (88.0-460)	820
Non-Hispanic blacks	07-08	*	<LOD	1.90 (<LOD-3.80)	3.50 (2.40-7.27)	5.80 (3.50-15.3)	587
Non-Hispanic whites	01-02	16.0 (4.13-62.4)	27.9 (4.71-74.6)	72.7 (33.3-132)	132 (59.6-249)	165 (92.8-366)	333
Non-Hispanic whites	03-04	11.5 (5.51-23.8)	11.0 (4.00-33.5)	59.0 (14.0-120)	120 (73.0-230)	180 (110-430)	673
Non-Hispanic whites	05-06	5.55 (2.47-12.5)	4.00 (<LOD-15.0)	16.0 (4.30-75.0)	70.0 (15.0-150)	110 (40.0-250)	1291
Non-Hispanic whites	07-08	*	<LOD	<LOD	3.30 (1.42-12.0)	7.10 (2.59-31.0)	1349

‡Not measured in Survey years 2009-2010.

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, and 07-08 are 0.232, 2.0, 1.4, and 1.4, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/MTBE_BiomonitoringSummary.html

Blood Nitrobenzene (2003 – 2010)

CAS Number 98-95-3

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1066
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3144
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2764
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3200
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	926
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	437
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	539
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1066
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1549
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1499
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1762
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	669
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	828
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	899
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	529
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1491
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1362
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1579
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	537
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1653
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1402
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1621
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	206
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	773
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	525
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	624
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	205
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	816
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	568
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	579
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	564
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1322
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1248
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1461

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08, and 09-10 are 0.3, 0.3, 0.32, and 0.32 respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Nitrobenzene_BiomonitoringSummary.html

Nitromethane (2007 – 2010)

CAS Number 75-52-5

Geometric mean and selected percentiles of whole blood concentrations (in pg/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	07-08	685 (643-729)	668 (618-714)	864 (790-926)	1080 (1020-1160)	1320 (1200-1420)	2766
Total population	09-10	673 (652-694)	657 (635-676)	836 (815-864)	1080 (1020-1140)	1310 (1270-1370)	2950
Age 12-19 years	07-08	590 (554-629)	590 (552-628)	717 (676-798)	883 (819-986)	998 (919-1080)	451
Age 12-19 years	09-10	591 (558-626)	551 (525-600)	719 (673-778)	903 (852-991)	1120 (939-1300)	499
Age 20-59 years	07-08	688 (650-728)	675 (628-719)	866 (798-921)	1050 (1000-1120)	1260 (1120-1360)	1495
Age 20-59 years	09-10	669 (645-694)	657 (633-680)	832 (806-852)	1050 (997-1110)	1270 (1180-1320)	1609
Age 60+ years	07-08	739 (670-816)	692 (600-816)	960 (840-1110)	1340 (1210-1490)	1600 (1390-1950)	820
Age 60+ years	09-10	733 (697-771)	721 (674-765)	920 (864-973)	1300 (1180-1390)	1560 (1400-1810)	842
Males	07-08	679 (639-722)	664 (620-712)	853 (785-912)	1050 (993-1130)	1260 (1130-1420)	1384
Males	09-10	666 (644-688)	651 (629-672)	837 (800-872)	1050 (995-1160)	1300 (1220-1330)	1473
Females	07-08	690 (645-738)	670 (612-721)	871 (786-948)	1100 (1040-1200)	1370 (1260-1480)	1382
Females	09-10	680 (657-703)	664 (639-681)	836 (813-882)	1090 (1030-1180)	1330 (1270-1420)	1477
Mexican Americans	07-08	689 (632-752)	667 (606-736)	845 (759-961)	1080 (982-1160)	1260 (1120-1560)	535
Mexican Americans	09-10	675 (609-748)	647 (602-717)	834 (764-939)	1120 (998-1320)	1420 (1210-1680)	607
Non-Hispanic blacks	07-08	754 (714-796)	720 (673-792)	929 (870-1010)	1220 (1120-1320)	1500 (1340-1640)	545
Non-Hispanic blacks	09-10	728 (683-777)	708 (648-759)	920 (844-991)	1280 (1130-1410)	1720 (1390-1960)	509
Non-Hispanic whites	07-08	666 (619-716)	648 (597-704)	834 (756-919)	1040 (993-1150)	1270 (1160-1420)	1289
Non-Hispanic whites	09-10	655 (636-674)	640 (623-661)	823 (795-838)	1020 (975-1070)	1270 (1180-1300)	1358

Limit of detection (LOD, see Data Analysis section) for Survey year 07-08 and 09-10 are 65.0 and 65.0, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Blood Styrene (2001 – 2010)

CAS Number 100-42-5

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	.080 (.050-.100)	.130 (.090-.200)	.200 (.140-.260)	950
Total population	03-04	*	<LOD	.050 (.044-.061)	.089 (.081-.097)	.120 (.110-.130)	1245
Total population	05-06	*	<LOD	.047 (.042-.056)	.099 (.086-.113)	.135 (.120-.160)	2808
Total population	07-08	*	<LOD	.045 (.036-.056)	.096 (.083-.109)	.130 (.115-.151)	2719
Total population	09-10	*	<LOD	.048 (.032-.080)	.096 (.071-.127)	.132 (.106-.183)	1320
Age 12-19 years	05-06	*	<LOD	.039 (.031-.049)	.058 (.050-.071)	.072 (.059-.089)	827
Age 12-19 years	07-08	*	<LOD	.031 (<LOD-.035)	.047 (.039-.061)	.074 (.049-.085)	448
Age 12-19 years	09-10	*	<LOD	.037 (<LOD-.091)	.063 (.031-.149)	.081 (.047-.149)	237
Age 20-59 years	01-02	*	<LOD	.080 (.050-.100)	.130 (.090-.200)	.200 (.140-.260)	950
Age 20-59 years	03-04	*	<LOD	.050 (.044-.061)	.089 (.081-.097)	.120 (.110-.130)	1245
Age 20-59 years	05-06	*	<LOD	.051 (.044-.065)	.110 (.094-.120)	.150 (.120-.180)	1380
Age 20-59 years	07-08	*	<LOD	.055 (.041-.076)	.109 (.094-.130)	.151 (.130-.172)	1459
Age 20-59 years	09-10	*	<LOD	.052 (.035-.086)	.111 (.080-.131)	.146 (.116-.195)	723
Age 60+ years	05-06	*	<LOD	.041 (.033-.055)	.083 (.072-.110)	.130 (.100-.150)	601
Age 60+ years	07-08	*	<LOD	.034 (.031-.039)	.065 (.055-.079)	.094 (.080-.103)	812
Age 60+ years	09-10	*	<LOD	.043 (<LOD-.071)	.071 (.043-.168)	.103 (.071-.210)	360
Males	01-02	*	<LOD	.080 (.050-.110)	.140 (.100-.230)	.220 (.140-.340)	445
Males	03-04	*	<LOD	.056 (.045-.068)	.089 (.081-.100)	.120 (.095-.150)	608
Males	05-06	*	<LOD	.052 (.043-.067)	.110 (.096-.120)	.142 (.120-.170)	1326
Males	07-08	*	<LOD	.051 (.041-.069)	.102 (.086-.123)	.144 (.117-.169)	1344
Males	09-10	*	.031 (<LOD-.042)	.053 (.038-.086)	.116 (.092-.127)	.152 (.127-.195)	651
Females	01-02	*	<LOD	.070 (.050-.100)	.120 (.090-.180)	.180 (.120-.260)	505
Females	03-04	*	<LOD	.048 (.040-.060)	.090 (.074-.100)	.110 (.097-.140)	637
Females	05-06	*	<LOD	.045 (.038-.052)	.087 (.077-.100)	.129 (.107-.150)	1482
Females	07-08	*	<LOD	.038 (.031-.051)	.087 (.071-.102)	.127 (.104-.149)	1375
Females	09-10	*	<LOD	.043 (<LOD-.071)	.074 (.052-.106)	.110 (.071-.176)	669

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.03, 0.03, 0.03, 0.03, and 0.03, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html

Blood Styrene (2001 – 2010)

CAS Number 100-42-5

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	*	<LOD	.050 (.030-.070)	.090 (.070-.110)	.120 (.090-.470)	225
Mexican Americans	03-04	*	<LOD	<LOD	.049 (.033-.066)	.062 (.048-.100)	241
Mexican Americans	05-06	*	<LOD	.035 (<LOD-.047)	.060 (.042-.092)	.092 (.064-.110)	603
Mexican Americans	07-08	*	<LOD	.030 (<LOD-.035)	.049 (.042-.060)	.067 (.055-.084)	510
Mexican Americans	09-10	*	<LOD	.042 (.033-.051)	.067 (.057-.079)	.083 (.069-.122)	379
Non-Hispanic blacks	01-02	*	.040 (<LOD-.080)	.100 (.040-.180)	.180 (.110-.350)	.300 (.170-1.00)	192
Non-Hispanic blacks	03-04	*	<LOD	.060 (.047-.077)	.100 (.077-.130)	.130 (.110-.160)	264
Non-Hispanic blacks	05-06	*	<LOD	.056 (.047-.064)	.100 (.079-.120)	.145 (.115-.180)	781
Non-Hispanic blacks	07-08	*	<LOD	.047 (.040-.055)	.098 (.077-.112)	.137 (.110-.192)	554
Non-Hispanic blacks	09-10	*	<LOD	.051 (.031-.100)	.113 (.042-.318)	.168 (.054-.493)	204
Non-Hispanic whites	01-02	*	.030 (<LOD-.050)	.080 (.050-.110)	.130 (.090-.210)	.200 (.130-.260)	462
Non-Hispanic whites	03-04	*	<LOD	.056 (.046-.067)	.096 (.083-.110)	.130 (.110-.140)	646
Non-Hispanic whites	05-06	*	<LOD	.049 (.043-.058)	.103 (.087-.120)	.140 (.120-.174)	1217
Non-Hispanic whites	07-08	*	<LOD	.049 (.037-.069)	.104 (.090-.118)	.143 (.127-.158)	1218
Non-Hispanic whites	09-10	*	.030 (<LOD-.049)	.053 (.034-.097)	.108 (.080-.132)	.150 (.116-.205)	507

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.03, 0.03, 0.03, 0.03, and 0.03, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html

Blood Tetrachloroethene (Perchloroethylene) (2001 – 2010)

CAS Number 127-18-4

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	.050 (<LOD-.060)	.100 (.070-.150)	.190 (.130-.260)	978
Total population	03-04	*	<LOD	<LOD	.076 (.060-.097)	.140 (.091-.300)	1317
Total population	05-06	*	<LOD	<LOD	.070 (.056-.088)	.126 (.098-.170)	2940
Total population	07-08	*	<LOD	<LOD	.056 (.049-.061)	.094 (.075-.125)	2735
Total population	09-10	*	<LOD	<LOD	.062 (.051-.076)	.099 (.081-.118)	3302
Age 12-19 years	05-06	*	<LOD	<LOD	.049 (<LOD-.062)	.079 (.057-.106)	865
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	.066 (<LOD-.082)	446
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	.055 (<LOD-.061)	570
Age 20-59 years	01-02	*	<LOD	.050 (<LOD-.060)	.100 (.070-.150)	.190 (.130-.260)	978
Age 20-59 years	03-04	*	<LOD	<LOD	.076 (.060-.097)	.140 (.091-.300)	1317
Age 20-59 years	05-06	*	<LOD	<LOD	.074 (.056-.100)	.130 (.098-.199)	1458
Age 20-59 years	07-08	*	<LOD	<LOD	.056 (.050-.066)	.102 (.076-.158)	1482
Age 20-59 years	09-10	*	<LOD	<LOD	.066 (.055-.078)	.104 (.080-.127)	1811
Age 60+ years	05-06	*	<LOD	<LOD	.071 (.054-.092)	.113 (.092-.190)	617
Age 60+ years	07-08	*	<LOD	<LOD	.057 (<LOD-.070)	.095 (.065-.151)	806
Age 60+ years	09-10	*	<LOD	<LOD	.071 (<LOD-.093)	.116 (.082-.175)	921
Males	01-02	*	<LOD	.050 (<LOD-.060)	.110 (.070-.170)	.210 (.170-.340)	457
Males	03-04	*	<LOD	<LOD	.082 (.060-.140)	.230 (.097-.410)	639
Males	05-06	*	<LOD	<LOD	.085 (.062-.126)	.172 (.113-.300)	1404
Males	07-08	*	<LOD	<LOD	.059 (.053-.071)	.136 (.095-.191)	1351
Males	09-10	*	<LOD	<LOD	.068 (.055-.088)	.113 (.089-.164)	1629
Females	01-02	*	<LOD	.050 (<LOD-.060)	.100 (.070-.140)	.150 (.100-.220)	521
Females	03-04	*	<LOD	<LOD	.069 (.050-.091)	.120 (.085-.180)	678
Females	05-06	*	<LOD	<LOD	.056 (.049-.071)	.090 (.070-.130)	1536
Females	07-08	*	<LOD	<LOD	.050 (<LOD-.059)	.073 (.061-.112)	1384
Females	09-10	*	<LOD	<LOD	.055 (<LOD-.072)	.085 (.072-.104)	1673

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.048, 0.048, 0.048, 0.048, and 0.048, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Blood Tetrachloroethene (Perchloroethylene) (2001 – 2010)

CAS Number 127-18-4

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	*	<LOD	<LOD	.060 (<LOD-.070)	.070 (.060-.230)	226
Mexican Americans	03-04	*	<LOD	<LOD	.049 (<LOD-.097)	.100 (.054-.180)	248
Mexican Americans	05-06	*	<LOD	<LOD	.069 (.056-.074)	.130 (.073-.284)	713
Mexican Americans	07-08	*	<LOD	<LOD	.061 (<LOD-.081)	.112 (.072-.190)	544
Mexican Americans	09-10	*	<LOD	<LOD	.051 (<LOD-.063)	.089 (.056-.142)	669
Non-Hispanic blacks	01-02	*	<LOD	<LOD	.070 (.050-.110)	.110 (.060-.190)	195
Non-Hispanic blacks	03-04	*	<LOD	<LOD	.086 (.050-.220)	.220 (.082-.360)	284
Non-Hispanic blacks	05-06	*	<LOD	<LOD	.074 (.057-.112)	.120 (.069-.280)	776
Non-Hispanic blacks	07-08	*	<LOD	<LOD	.060 (<LOD-.095)	.106 (.074-.149)	549
Non-Hispanic blacks	09-10	*	<LOD	<LOD	.058 (<LOD-.078)	.100 (.061-.128)	590
Non-Hispanic whites	01-02	*	<LOD	.050 (<LOD-.070)	.110 (.090-.170)	.210 (.150-.260)	487
Non-Hispanic whites	03-04	*	<LOD	<LOD	.072 (.060-.091)	.140 (.085-.330)	686
Non-Hispanic whites	05-06	*	<LOD	<LOD	.070 (.053-.090)	.130 (.092-.180)	1229
Non-Hispanic whites	07-08	*	<LOD	<LOD	.053 (<LOD-.059)	.080 (.069-.112)	1219
Non-Hispanic whites	09-10	*	<LOD	<LOD	.063 (.051-.077)	.103 (.077-.130)	1473

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.048, 0.048, 0.048, 0.048, and 0.048, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Blood Tetrachloromethane (Carbon tetrachloride) (2001 – 2010)

CAS Number 56-23-5

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	.010 (<LOD-.010)	.010 (<LOD-.140)	.020 (.010-.050)	742
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1362
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	2979
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2812
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3240
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	882
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	456
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	561
Age 20-59 years	01-02	*	<LOD	.010 (<LOD-.010)	.010 (<LOD-.140)	.020 (.010-.050)	742
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1362
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1476
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1526
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1767
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	621
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	830
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	912
Males	01-02	*	<LOD	.010 (<LOD-.010)	.010 (<LOD-.140)	.010 (.010-.040)	364
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	667
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1419
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1388
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1599
Females	01-02	*	<LOD	.010 (<LOD-.010)	.010 (<LOD-.090)	.040 (.010-.080)	378
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	695
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1560
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1424
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1641

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.01, 0.005, 0.005, 0.005, and 0.005, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OtherHalogenatedSolvents_BiomonitoringSummary.html

Blood Tetrachloromethane (Carbon tetrachloride) (2001 – 2010)

CAS Number 56-23-5

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	*	<LOD	<LOD	.010 (<LOD-.750)	.020 (.010-.050)	193
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	266
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	740
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	555
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	651
Non-Hispanic blacks	01-02	*	<LOD	.010 (<LOD-.010)	.010 (<LOD-.020)	.010 (<LOD-.020)	132
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	299
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	779
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	562
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	576
Non-Hispanic whites	01-02	*	<LOD	.010 (<LOD-.010)	.010 (<LOD-.140)	.030 (.010-.080)	366
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	692
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1237
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1249
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1460

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.01, 0.005, 0.005, 0.005, and 0.005, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/OtherHalogenatedSolvents_BiomonitoringSummary.html

Blood Toluene (2001 – 2010)

CAS Number 108-88-3

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	.156 (.122-.198)	.160 (.120-.220)	.340 (.260-.430)	.670 (.480-.950)	1.06 (.700-1.43)	954
Total population	03-04	.114 (.100-.129)	.096 (.087-.110)	.220 (.180-.260)	.430 (.380-.550)	.680 (.560-.880)	1336
Total population	05-06	.137 (.123-.152)	.120 (.110-.130)	.230 (.200-.262)	.550 (.481-.640)	.814 (.702-.937)	3050
Total population	07-08	.103 (.090-.119)	.083 (.072-.098)	.192 (.148-.256)	.511 (.411-.608)	.735 (.634-.888)	2731
Total population	09-10	.085 (.075-.095)	.065 (.059-.073)	.160 (.129-.205)	.533 (.428-.623)	.830 (.634-1.01)	2185
Age 12-19 years	05-06	.110 (.098-.122)	.100 (.094-.120)	.170 (.150-.180)	.280 (.240-.310)	.400 (.300-.610)	907
Age 12-19 years	07-08	.067 (.057-.080)	.061 (.053-.073)	.100 (.078-.133)	.205 (.141-.287)	.318 (.228-.388)	439
Age 12-19 years	09-10	.052 (.042-.065)	.050 (.037-.066)	.080 (.061-.132)	.175 (.122-.250)	.259 (.178-.440)	374
Age 20-59 years	01-02	.156 (.122-.198)	.160 (.120-.220)	.340 (.260-.430)	.670 (.480-.950)	1.06 (.700-1.43)	954
Age 20-59 years	03-04	.114 (.100-.129)	.096 (.087-.110)	.220 (.180-.260)	.430 (.380-.550)	.680 (.560-.880)	1336
Age 20-59 years	05-06	.147 (.133-.163)	.120 (.110-.137)	.260 (.210-.340)	.594 (.505-.720)	.900 (.730-1.10)	1505
Age 20-59 years	07-08	.115 (.098-.135)	.090 (.076-.110)	.257 (.174-.339)	.589 (.508-.692)	.839 (.702-.976)	1483
Age 20-59 years	09-10	.093 (.081-.106)	.069 (.064-.078)	.201 (.150-.285)	.597 (.485-.737)	.926 (.717-1.06)	1206
Age 60+ years	05-06	.124 (.100-.154)	.114 (.097-.138)	.190 (.167-.230)	.520 (.370-.600)	.720 (.600-.814)	638
Age 60+ years	07-08	.094 (.084-.105)	.078 (.070-.091)	.143 (.126-.173)	.370 (.277-.479)	.610 (.424-.742)	809
Age 60+ years	09-10	.084 (.071-.100)	.067 (.054-.087)	.138 (.101-.232)	.454 (.244-.647)	.784 (.516-1.11)	605
Males	01-02	.165 (.130-.209)	.170 (.120-.230)	.360 (.260-.520)	.780 (.580-1.06)	1.22 (.850-1.43)	450
Males	03-04	.128 (.112-.148)	.110 (.096-.130)	.250 (.190-.310)	.500 (.380-.660)	.730 (.590-1.10)	647
Males	05-06	.152 (.139-.166)	.130 (.120-.140)	.280 (.240-.330)	.640 (.550-.720)	.920 (.790-1.10)	1441
Males	07-08	.118 (.103-.135)	.091 (.078-.113)	.256 (.191-.311)	.563 (.483-.663)	.816 (.689-.928)	1370
Males	09-10	.095 (.083-.108)	.070 (.064-.083)	.205 (.148-.294)	.579 (.466-.750)	.978 (.659-1.13)	1088
Females	01-02	.147 (.114-.190)	.150 (.110-.220)	.320 (.240-.390)	.550 (.400-.740)	.810 (.530-1.63)	504
Females	03-04	.101 (.086-.118)	.085 (.070-.100)	.190 (.150-.230)	.410 (.340-.500)	.580 (.480-.750)	689
Females	05-06	.124 (.107-.144)	.110 (.097-.130)	.190 (.170-.230)	.470 (.380-.550)	.690 (.550-.880)	1609
Females	07-08	.091 (.078-.106)	.074 (.065-.087)	.151 (.119-.209)	.444 (.297-.589)	.679 (.533-.853)	1360
Females	09-10	.076 (.066-.088)	.061 (.051-.070)	.129 (.106-.165)	.437 (.316-.593)	.726 (.555-.937)	1097
Mexican Americans	01-02	.136 (.106-.176)	.140 (.080-.210)	.270 (.210-.340)	.550 (.400-.980)	.990 (.500-1.30)	219
Mexican Americans	03-04	.084 (.074-.096)	.076 (.064-.091)	.120 (.100-.170)	.280 (.170-.410)	.400 (.310-.620)	253
Mexican Americans	05-06	.110 (.097-.125)	.110 (.096-.120)	.160 (.140-.170)	.240 (.220-.290)	.340 (.290-.460)	737
Mexican Americans	07-08	.079 (.068-.093)	.075 (.059-.094)	.117 (.106-.142)	.220 (.169-.292)	.339 (.253-.409)	539
Mexican Americans	09-10	.062 (.052-.073)	.050 (.042-.061)	.100 (.083-.131)	.230 (.181-.323)	.467 (.275-.694)	494
Non-Hispanic blacks	01-02	.137 (.089-.210)	.150 (.070-.200)	.310 (.200-.460)	.690 (.390-1.19)	1.15 (.660-1.69)	194
Non-Hispanic blacks	03-04	.105 (.077-.144)	.095 (.070-.130)	.200 (.130-.330)	.440 (.290-.620)	.620 (.480-.710)	297
Non-Hispanic blacks	05-06	.139 (.120-.161)	.120 (.099-.140)	.230 (.190-.290)	.450 (.370-.550)	.670 (.550-.830)	796
Non-Hispanic blacks	07-08	.108 (.097-.120)	.083 (.076-.097)	.220 (.179-.265)	.463 (.380-.554)	.663 (.486-.899)	567
Non-Hispanic blacks	09-10	.091 (.067-.124)	.066 (.047-.112)	.151 (.110-.251)	.493 (.340-.800)	.896 (.522-1.46)	410
Non-Hispanic whites	01-02	.165 (.125-.217)	.170 (.120-.240)	.350 (.270-.450)	.710 (.450-1.12)	1.14 (.710-1.63)	467
Non-Hispanic whites	03-04	.123 (.110-.139)	.100 (.092-.120)	.240 (.210-.280)	.500 (.400-.590)	.750 (.590-.940)	685
Non-Hispanic whites	05-06	.144 (.125-.166)	.130 (.110-.140)	.260 (.210-.330)	.600 (.510-.710)	.880 (.760-.990)	1291
Non-Hispanic whites	07-08	.110 (.094-.128)	.086 (.073-.102)	.223 (.162-.310)	.582 (.479-.693)	.832 (.706-.974)	1200
Non-Hispanic whites	09-10	.093 (.080-.109)	.070 (.064-.085)	.199 (.143-.275)	.597 (.464-.755)	.927 (.657-1.11)	1006

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.025, 0.025, 0.025, 0.025, and 0.025, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Toluene_BiomonitoringSummary.html

Blood Trichloroethene (Trichloroethylene) (2001 – 2010)

CAS Number 79-01-6

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	<LOD	<LOD	<LOD	922
Total population	03-04	*	<LOD	<LOD	<LOD	<LOD	1228
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3178
Total population	07-08	*	<LOD	<LOD	<LOD	<LOD	2952
Total population	09-10	*	<LOD	<LOD	<LOD	<LOD	3342
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	937
Age 12-19 years	07-08	*	<LOD	<LOD	<LOD	<LOD	473
Age 12-19 years	09-10	*	<LOD	<LOD	<LOD	<LOD	568
Age 20-59 years	01-02	*	<LOD	<LOD	<LOD	<LOD	922
Age 20-59 years	03-04	*	<LOD	<LOD	<LOD	<LOD	1228
Age 20-59 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1562
Age 20-59 years	07-08	*	<LOD	<LOD	<LOD	<LOD	1592
Age 20-59 years	09-10	*	<LOD	<LOD	<LOD	<LOD	1840
Age 60+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	679
Age 60+ years	07-08	*	<LOD	<LOD	<LOD	<LOD	887
Age 60+ years	09-10	*	<LOD	<LOD	<LOD	<LOD	934
Males	01-02	*	<LOD	<LOD	<LOD	<LOD	434
Males	03-04	*	<LOD	<LOD	<LOD	<LOD	604
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1504
Males	07-08	*	<LOD	<LOD	<LOD	<LOD	1466
Males	09-10	*	<LOD	<LOD	<LOD	<LOD	1647
Females	01-02	*	<LOD	<LOD	<LOD	<LOD	488
Females	03-04	*	<LOD	<LOD	<LOD	<LOD	624
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1674
Females	07-08	*	<LOD	<LOD	<LOD	<LOD	1486
Females	09-10	*	<LOD	<LOD	<LOD	<LOD	1695

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.012, 0.012, 0.012, 0.012, and 0.012, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Blood Trichloroethene (Trichloroethylene) (2001 – 2010)

CAS Number 79-01-6

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	*	<LOD	<LOD	<LOD	<LOD	228
Mexican Americans	03-04	*	<LOD	<LOD	<LOD	<LOD	224
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	773
Mexican Americans	07-08	*	<LOD	<LOD	<LOD	<LOD	572
Mexican Americans	09-10	*	<LOD	<LOD	<LOD	<LOD	666
Non-Hispanic blacks	01-02	*	<LOD	<LOD	<LOD	<LOD	191
Non-Hispanic blacks	03-04	*	<LOD	<LOD	<LOD	<LOD	266
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	828
Non-Hispanic blacks	07-08	*	<LOD	<LOD	<LOD	<LOD	583
Non-Hispanic blacks	09-10	*	<LOD	<LOD	<LOD	<LOD	598
Non-Hispanic whites	01-02	*	<LOD	<LOD	<LOD	<LOD	441
Non-Hispanic whites	03-04	*	<LOD	<LOD	<LOD	<LOD	644
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1341
Non-Hispanic whites	07-08	*	<LOD	<LOD	<LOD	<LOD	1329
Non-Hispanic whites	09-10	*	<LOD	<LOD	<LOD	<LOD	1520

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.012, 0.012, 0.012, 0.012, and 0.012, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Blood m-/p-Xylene (2001 – 2010)

CAS Number 108-38-3/106-42-3

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	.156 (.124-.198)	.150 (.110-.200)	.280 (.190-.430)	.500 (.370-.690)	.670 (.500-.890)	962
Total population	03-04	.136 (.123-.150)	.130 (.120-.150)	.200 (.190-.210)	.280 (.260-.300)	.340 (.310-.400)	1346
Total population	05-06	.132 (.122-.143)	.120 (.110-.130)	.190 (.170-.210)	.301 (.270-.330)	.410 (.360-.450)	3133
Total population	07-08	.079 (.069-.090)	.072 (.061-.086)	.130 (.108-.156)	.231 (.200-.281)	.343 (.281-.410)	2823
Total population	09-10	.087 (.072-.104)	.072 (.060-.088)	.151 (.123-.185)	.307 (.246-.376)	.466 (.359-.693)	3138
Age 12-19 years	05-06	.118 (.106-.130)	.120 (.110-.120)	.160 (.150-.170)	.220 (.190-.270)	.330 (.240-.380)	923
Age 12-19 years	07-08	.067 (.059-.076)	.061 (.052-.074)	.099 (.080-.125)	.181 (.138-.205)	.216 (.182-.282)	447
Age 12-19 years	09-10	.066 (.054-.080)	.061 (.047-.073)	.097 (.080-.122)	.169 (.143-.218)	.261 (.202-.324)	529
Age 20-59 years	01-02	.156 (.124-.198)	.150 (.110-.200)	.280 (.190-.430)	.500 (.370-.690)	.670 (.500-.890)	962
Age 20-59 years	03-04	.136 (.123-.150)	.130 (.120-.150)	.200 (.190-.210)	.280 (.260-.300)	.340 (.310-.400)	1346
Age 20-59 years	05-06	.137 (.127-.147)	.130 (.120-.140)	.200 (.180-.220)	.320 (.280-.350)	.430 (.360-.480)	1542
Age 20-59 years	07-08	.083 (.072-.097)	.076 (.065-.089)	.143 (.116-.173)	.256 (.210-.308)	.379 (.290-.468)	1520
Age 20-59 years	09-10	.093 (.076-.114)	.077 (.062-.098)	.171 (.130-.215)	.343 (.264-.431)	.525 (.395-1.02)	1732
Age 60+ years	05-06	.126 (.112-.142)	.120 (.100-.130)	.184 (.150-.220)	.303 (.240-.360)	.400 (.335-.463)	668
Age 60+ years	07-08	.073 (.063-.085)	.068 (.055-.082)	.113 (.097-.134)	.209 (.179-.243)	.308 (.255-.361)	854
Age 60+ years	09-10	.081 (.068-.097)	.069 (.058-.084)	.139 (.107-.170)	.260 (.207-.347)	.399 (.307-.580)	877
Males	01-02	.155 (.121-.200)	.140 (.110-.190)	.280 (.180-.440)	.510 (.350-.700)	.700 (.500-.890)	455
Males	03-04	.149 (.134-.166)	.140 (.130-.170)	.220 (.200-.230)	.290 (.270-.320)	.380 (.300-.490)	654
Males	05-06	.145 (.135-.157)	.130 (.130-.147)	.220 (.190-.240)	.340 (.310-.370)	.460 (.430-.490)	1480
Males	07-08	.088 (.077-.101)	.080 (.068-.095)	.153 (.128-.178)	.260 (.224-.308)	.392 (.305-.470)	1395
Males	09-10	.095 (.079-.115)	.078 (.064-.098)	.175 (.139-.219)	.334 (.273-.430)	.510 (.416-.799)	1546
Females	01-02	.157 (.124-.199)	.150 (.110-.220)	.270 (.190-.410)	.480 (.360-.650)	.650 (.460-.890)	507
Females	03-04	.124 (.112-.138)	.130 (.110-.140)	.180 (.160-.200)	.270 (.240-.300)	.340 (.290-.390)	692
Females	05-06	.120 (.109-.132)	.110 (.100-.123)	.170 (.151-.197)	.260 (.220-.320)	.340 (.300-.420)	1653
Females	07-08	.071 (.061-.083)	.066 (.054-.080)	.110 (.091-.142)	.201 (.169-.253)	.296 (.240-.362)	1426
Females	09-10	.079 (.065-.096)	.067 (.057-.082)	.133 (.106-.162)	.254 (.205-.347)	.414 (.329-.613)	1592
Mexican Americans	01-02	.134 (.097-.184)	.130 (.090-.180)	.240 (.150-.370)	.400 (.290-.540)	.540 (.380-1.10)	223
Mexican Americans	03-04	.132 (.109-.160)	.120 (.110-.150)	.180 (.140-.230)	.250 (.220-.320)	.360 (.260-.490)	257
Mexican Americans	05-06	.108 (.093-.125)	.110 (.098-.120)	.150 (.130-.170)	.220 (.170-.290)	.270 (.220-.370)	755
Mexican Americans	07-08	.075 (.066-.084)	.071 (.061-.085)	.104 (.094-.120)	.181 (.134-.240)	.260 (.210-.410)	548
Mexican Americans	09-10	.075 (.055-.102)	.067 (.049-.092)	.116 (.082-.175)	.206 (.147-.319)	.315 (.214-.829)	645
Non-Hispanic blacks	01-02	.147 (.107-.202)	.140 (.090-.220)	.280 (.160-.460)	.470 (.330-.850)	.590 (.420-1.08)	198
Non-Hispanic blacks	03-04	.117 (.094-.146)	.120 (.099-.140)	.170 (.140-.220)	.270 (.210-.330)	.330 (.260-.450)	297
Non-Hispanic blacks	05-06	.131 (.120-.144)	.120 (.110-.140)	.190 (.170-.210)	.280 (.250-.320)	.350 (.320-.392)	823
Non-Hispanic blacks	07-08	.085 (.070-.103)	.082 (.063-.103)	.138 (.120-.160)	.233 (.180-.294)	.326 (.242-.420)	571
Non-Hispanic blacks	09-10	.086 (.058-.127)	.069 (.050-.109)	.145 (.098-.228)	.327 (.203-.593)	.591 (.234-5.34)	538
Non-Hispanic whites	01-02	.163 (.124-.214)	.160 (.110-.220)	.300 (.190-.480)	.520 (.370-.740)	.700 (.510-.960)	468
Non-Hispanic whites	03-04	.141 (.128-.155)	.140 (.130-.150)	.210 (.190-.220)	.290 (.270-.310)	.350 (.330-.400)	690
Non-Hispanic whites	05-06	.136 (.125-.147)	.130 (.120-.140)	.200 (.180-.220)	.324 (.280-.350)	.430 (.368-.480)	1323
Non-Hispanic whites	07-08	.080 (.069-.094)	.072 (.058-.088)	.138 (.109-.173)	.248 (.209-.300)	.371 (.290-.457)	1265
Non-Hispanic whites	09-10	.092 (.077-.110)	.076 (.060-.096)	.167 (.138-.205)	.339 (.263-.416)	.484 (.392-.634)	1411

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.034, 0.034, 0.034, 0.034, and 0.034, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Blood o-Xylene (2001 – 2010)

CAS Number 95-47-6

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	01-02	*	<LOD	.070 (.050-.080)	.100 (.080-.130)	.130 (.110-.180)	981
Total population	03-04	*	<LOD	.051 (<LOD-.057)	.072 (.066-.079)	.090 (.081-.097)	1365
Total population	05-06	.037 (.034-.040)	.035 (.032-.039)	.053 (.047-.061)	.083 (.072-.094)	.110 (.094-.120)	3153
Total population	07-08	*	<LOD	.039 (.033-.047)	.062 (.051-.076)	.086 (.068-.128)	2835
Total population	09-10	*	<LOD	.043 (.035-.051)	.082 (.064-.105)	.129 (.095-.276)	2944
Age 12-19 years	05-06	.032 (.030-.034)	.031 (.029-.034)	.044 (.040-.049)	.062 (.053-.075)	.088 (.072-.100)	929
Age 12-19 years	07-08	*	<LOD	.033 (.026-.044)	.048 (.039-.080)	.066 (.048-.180)	457
Age 12-19 years	09-10	*	<LOD	.030 (.025-.036)	.054 (.041-.067)	.089 (.059-.122)	523
Age 20-59 years	01-02	*	<LOD	.070 (.050-.080)	.100 (.080-.130)	.130 (.110-.180)	981
Age 20-59 years	03-04	*	<LOD	.051 (<LOD-.057)	.072 (.066-.079)	.090 (.081-.097)	1365
Age 20-59 years	05-06	.038 (.034-.041)	.036 (.032-.039)	.055 (.048-.062)	.083 (.073-.094)	.110 (.093-.120)	1547
Age 20-59 years	07-08	*	.025 (<LOD-.030)	.040 (.034-.048)	.065 (.053-.079)	.086 (.069-.140)	1524
Age 20-59 years	09-10	*	.024 (<LOD-.030)	.046 (.037-.055)	.092 (.072-.119)	.165 (.102-.415)	1600
Age 60+ years	05-06	.038 (.033-.044)	.036 (.032-.042)	.054 (.046-.065)	.092 (.065-.115)	.115 (.094-.150)	677
Age 60+ years	07-08	*	<LOD	.038 (.031-.049)	.061 (.052-.078)	.091 (.068-.118)	854
Age 60+ years	09-10	*	<LOD	.042 (.032-.050)	.074 (.055-.096)	.107 (.076-.228)	821
Males	01-02	*	<LOD	.070 (.050-.090)	.110 (.080-.140)	.150 (.110-.180)	465
Males	03-04	*	<LOD	.057 (.050-.060)	.074 (.068-.084)	.096 (.084-.110)	667
Males	05-06	.040 (.036-.045)	.038 (.033-.041)	.058 (.050-.070)	.092 (.082-.100)	.120 (.100-.140)	1487
Males	07-08	*	.026 (<LOD-.031)	.042 (.037-.048)	.069 (.059-.083)	.098 (.078-.146)	1407
Males	09-10	*	.025 (<LOD-.029)	.047 (.040-.055)	.089 (.072-.112)	.152 (.100-.276)	1452
Females	01-02	*	<LOD	.060 (.050-.080)	.100 (.070-.130)	.120 (.100-.180)	516
Females	03-04	*	<LOD	<LOD	.067 (.059-.076)	.085 (.074-.095)	698
Females	05-06	.034 (.032-.037)	.034 (.031-.036)	.049 (.044-.054)	.072 (.060-.086)	.094 (.078-.110)	1666
Females	07-08	*	<LOD	.036 (.029-.044)	.056 (.046-.070)	.076 (.056-.120)	1428
Females	09-10	*	<LOD	.038 (.030-.047)	.077 (.053-.103)	.118 (.083-.343)	1492

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.049, 0.049, 0.024, 0.024, and 0.024, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Blood o-Xylene (2001 – 2010)

CAS Number 95-47-6

Geometric mean and selected percentiles of whole blood concentrations (in ng/mL) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Mexican Americans	01-02	*	<LOD	.060 (<LOD-.080)	.090 (.080-.110)	.120 (.090-.270)	227
Mexican Americans	03-04	*	<LOD	.052 (<LOD-.067)	.074 (.067-.080)	.100 (.075-.130)	265
Mexican Americans	05-06	.030 (.027-.033)	.029 (.026-.031)	.040 (.036-.045)	.057 (.050-.069)	.079 (.062-.097)	777
Mexican Americans	07-08	*	.025 (<LOD-.028)	.032 (.030-.038)	.060 (.038-.140)	.121 (.052-.210)	561
Mexican Americans	09-10	*	<LOD	.031 (<LOD-.045)	.054 (.037-.092)	.090 (.054-.415)	603
Non-Hispanic blacks	01-02	*	<LOD	.050 (<LOD-.070)	.100 (.080-.110)	.110 (.100-.160)	197
Non-Hispanic blacks	03-04	*	<LOD	<LOD	.065 (.055-.078)	.084 (.068-.100)	301
Non-Hispanic blacks	05-06	.035 (.033-.038)	.034 (.031-.038)	.049 (.045-.054)	.073 (.064-.077)	.088 (.078-.100)	824
Non-Hispanic blacks	07-08	*	.027 (<LOD-.035)	.041 (.032-.054)	.066 (.045-.130)	.100 (.054-.470)	573
Non-Hispanic blacks	09-10	*	<LOD	.043 (.031-.057)	.080 (.050-.207)	.154 (.063-1.70)	548
Non-Hispanic whites	01-02	*	<LOD	.070 (.050-.090)	.110 (.080-.140)	.140 (.110-.180)	483
Non-Hispanic whites	03-04	*	<LOD	.052 (<LOD-.058)	.073 (.066-.082)	.090 (.081-.100)	694
Non-Hispanic whites	05-06	.039 (.035-.043)	.037 (.033-.041)	.056 (.049-.064)	.087 (.074-.100)	.110 (.096-.130)	1319
Non-Hispanic whites	07-08	*	<LOD	.040 (.033-.048)	.063 (.052-.079)	.086 (.069-.117)	1242
Non-Hispanic whites	09-10	*	<LOD	.047 (.041-.054)	.091 (.075-.108)	.144 (.104-.262)	1265

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.049, 0.049, 0.024, 0.024, and 0.024, respectively.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Volatile Organic Compound (VOC) Metabolites

Urinary N-Acetyl-S-(2-carboxyethyl)-L-cysteine (2005 – 2006)

CAS Number 51868-61-2

Metabolite of Acrolein

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	86.5 (80.1-93.4)	92.2 (82.7-103)	178 (164-195)	315 (291-353)	491 (442-516)	3345
Age 12-19 years	05-06	89.8 (75.3-107)	104 (83.1-124)	170 (155-195)	272 (247-319)	368 (319-424)	1031
Age 20+ years	05-06	86.0 (79.6-92.9)	90.4 (80.7-101)	180 (163-196)	328 (293-362)	499 (446-533)	2311
Males	05-06	106 (98.5-113)	113 (102-125)	196 (175-221)	355 (293-437)	516 (446-579)	1589
Females	05-06	71.5 (64.1-79.8)	74.4 (66.2-84.0)	158 (145-172)	286 (258-338)	438 (356-499)	1753
Mexican Americans	05-06	77.0 (68.6-86.5)	83.3 (74.3-95.9)	152 (128-174)	241 (217-267)	315 (257-406)	819
Non-Hispanic blacks	05-06	137 (125-151)	142 (126-162)	264 (227-292)	438 (387-507)	592 (474-695)	898
Non-Hispanic whites	05-06	82.1 (74.7-90.3)	84.1 (74.5-94.0)	172 (154-192)	306 (276-351)	481 (404-529)	1369

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 6.96.

Urinary N-Acetyl-S-(2-carboxyethyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 51868-61-2

Metabolite of Acrolein

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	86.7 (80.8-93.0)	83.4 (76.8-90.4)	145 (133-158)	259 (232-278)	362 (329-389)	3330
Age 12-19 years	05-06	68.8 (61.9-76.6)	68.4 (60.7-74.2)	112 (96.9-128)	171 (144-190)	211 (185-254)	1027
Age 20+ years	05-06	89.9 (83.3-97.1)	86.5 (77.8-94.4)	151 (137-166)	270 (238-311)	385 (352-431)	2303
Males	05-06	86.4 (79.4-94.1)	83.3 (75.4-91.2)	140 (124-156)	238 (206-274)	357 (296-385)	1583
Females	05-06	86.9 (79.5-95.1)	84.5 (75.6-92.5)	151 (136-167)	272 (243-304)	387 (338-437)	1747
Mexican Americans	05-06	69.1 (63.7-75.1)	74.3 (66.8-82.3)	117 (105-128)	170 (151-188)	210 (188-227)	816
Non-Hispanic blacks	05-06	94.6 (86.9-103)	94.9 (86.5-103)	152 (141-167)	259 (227-311)	376 (293-426)	896
Non-Hispanic whites	05-06	88.6 (81.1-96.8)	83.3 (75.6-92.1)	150 (134-171)	267 (232-311)	373 (324-433)	1364

Urinary N-Acetyl-S-(3-hydroxypropyl)-L-cysteine (2005 – 2006)

CAS Number 23127-40-4

Metabolite of Acrolein

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	244 (223-266)	245 (221-271)	516 (463-582)	1160 (1020-1370)	2010 (1660-2290)	3349
Age 12-19 years	05-06	227 (198-262)	234 (202-286)	427 (375-495)	749 (618-883)	1050 (809-1430)	1035
Age 20+ years	05-06	246 (223-271)	247 (221-275)	538 (479-611)	1270 (1100-1440)	2230 (1850-2480)	2313
Males	05-06	308 (285-333)	309 (275-333)	582 (508-685)	1380 (1060-1630)	2210 (1900-2320)	1592
Females	05-06	195 (174-218)	189 (171-212)	439 (385-516)	1050 (809-1270)	1600 (1360-2360)	1756
Mexican Americans	05-06	237 (215-262)	246 (219-276)	473 (437-535)	816 (718-905)	1110 (942-1380)	822
Non-Hispanic blacks	05-06	323 (286-363)	312 (280-336)	654 (549-749)	1330 (1070-1830)	2080 (1700-2320)	902
Non-Hispanic whites	05-06	234 (208-262)	230 (206-259)	509 (445-602)	1270 (1050-1480)	2250 (1820-2590)	1369

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 13.0.

Urinary N-Acetyl-S-(3-hydroxypropyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 23127-40-4

Metabolite of Acrolein

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	244 (224-266)	211 (195-222)	399 (360-483)	1070 (908-1270)	1680 (1500-1910)	3333
Age 12-19 years	05-06	174 (159-190)	160 (146-177)	280 (244-306)	442 (376-540)	658 (500-810)	1028
Age 20+ years	05-06	257 (233-285)	220 (202-231)	449 (378-558)	1240 (1000-1370)	1810 (1600-2140)	2303
Males	05-06	252 (230-276)	217 (205-227)	390 (338-486)	1000 (857-1270)	1600 (1330-2080)	1583
Females	05-06	237 (214-261)	194 (179-222)	417 (359-513)	1150 (992-1270)	1740 (1500-1960)	1748
Mexican Americans	05-06	213 (201-225)	196 (188-212)	346 (315-370)	599 (517-651)	881 (718-909)	816
Non-Hispanic blacks	05-06	222 (199-249)	192 (177-211)	397 (344-435)	879 (732-1020)	1290 (995-1710)	896
Non-Hispanic whites	05-06	252 (224-283)	212 (191-224)	446 (361-565)	1280 (1010-1460)	1990 (1630-2260)	1365

Urinary N-Acetyl-S-(2-carbamoylethyl)-L-cysteine (2005 – 2006)

CAS Number 81690-92-8

Metabolite of Acrylamide

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	56.6 (52.3-61.2)	58.6 (53.9-64.7)	113 (105-123)	209 (182-247)	313 (266-343)	3343
Age 12-19 years	05-06	68.7 (61.5-76.8)	72.0 (63.1-83.1)	126 (108-156)	211 (176-239)	295 (235-334)	1030
Age 20+ years	05-06	54.9 (50.6-59.5)	56.8 (51.8-62.4)	110 (102-120)	208 (179-248)	313 (265-345)	2310
Males	05-06	69.7 (64.9-74.9)	70.1 (65.3-76.0)	133 (117-148)	253 (202-305)	363 (305-413)	1587
Females	05-06	46.3 (42.3-50.7)	48.8 (43.5-53.6)	93.0 (84.5-106)	175 (148-200)	242 (196-314)	1752
Mexican Americans	05-06	59.8 (53.8-66.5)	69.8 (61.7-75.9)	112 (102-130)	178 (164-193)	231 (196-299)	821
Non-Hispanic blacks	05-06	75.8 (67.1-85.6)	80.1 (68.9-91.2)	138 (119-155)	259 (206-331)	366 (292-442)	897
Non-Hispanic whites	05-06	55.4 (50.8-60.5)	56.8 (52.1-61.6)	112 (102-121)	219 (176-260)	314 (260-345)	1368

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 2.2.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html

Urinary N-Acetyl-S-(2-carbamoylethyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 81690-92-8

Metabolite of Acrylamide

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	56.7 (53.4-60.2)	53.2 (50.4-56.2)	92.7 (85.3-100)	162 (151-175)	218 (199-243)	3331
Age 12-19 years	05-06	52.6 (48.7-56.9)	50.7 (47.0-55.6)	80.6 (76.8-87.0)	127 (117-145)	174 (152-227)	1027
Age 20+ years	05-06	57.4 (53.6-61.5)	53.6 (50.4-57.0)	95.0 (87.2-104)	166 (153-177)	221 (199-251)	2303
Males	05-06	57.1 (53.5-61.0)	51.7 (48.8-56.2)	91.3 (81.5-103)	167 (152-183)	232 (199-261)	1583
Females	05-06	56.3 (52.6-60.3)	54.7 (51.6-57.3)	94.6 (87.8-103)	154 (138-173)	210 (192-235)	1748
Mexican Americans	05-06	53.7 (47.7-60.4)	55.4 (49.9-62.6)	84.4 (75.3-91.2)	130 (106-156)	162 (138-194)	816
Non-Hispanic blacks	05-06	52.2 (48.1-56.7)	51.0 (46.1-55.2)	88.1 (76.8-101)	153 (127-176)	202 (177-237)	896
Non-Hispanic whites	05-06	59.8 (55.5-64.3)	55.5 (51.0-60.5)	97.5 (88.1-108)	172 (154-193)	235 (205-261)	1364

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html

Urinary N-Acetyl-S-(2-carbamoyl-2-hydroxyethyl)-L-cysteine (2005 – 2006)

CAS Number 81690-92-8

Metabolite of Acrylamide

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	12.4 (10.9-13.9)	24.8 (23.0-26.5)	42.7 (38.2-48.6)	59.5 (54.4-64.1)	3349
Age 12-19 years	05-06	15.4 (13.7-17.3)	15.1 (12.0-18.1)	27.3 (23.4-31.4)	42.2 (36.6-49.2)	55.9 (45.2-75.7)	1036
Age 20+ years	05-06	*	11.8 (10.7-13.3)	24.6 (22.9-26.0)	42.9 (38.9-49.3)	60.1 (54.4-65.3)	2312
Males	05-06	15.9 (15.1-16.7)	15.2 (13.7-16.6)	28.0 (25.7-32.4)	47.6 (42.5-53.3)	65.3 (56.0-80.9)	1592
Females	05-06	*	10.1 (<LOD-11.8)	21.3 (18.8-23.4)	37.0 (31.8-44.5)	55.4 (44.5-61.2)	1756
Mexican Americans	05-06	*	11.8 (10.3-13.7)	21.8 (18.6-26.5)	40.9 (34.8-45.3)	51.6 (44.2-59.5)	821
Non-Hispanic blacks	05-06	16.8 (15.4-18.3)	16.6 (14.3-19.1)	30.6 (26.7-34.2)	51.3 (43.0-60.1)	67.0 (59.5-77.4)	902
Non-Hispanic whites	05-06	*	12.4 (10.7-14.1)	24.8 (22.8-26.5)	42.5 (37.3-49.3)	57.2 (50.7-66.4)	1370

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 9.4.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html

Urinary N-Acetyl-S-(2-carbamoyl-2-hydroxyethyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 81690-92-8

Metabolite of Acrylamide

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	13.9 (13.3-14.8)	22.3 (21.2-23.8)	33.6 (31.6-35.9)	42.6 (40.0-45.1)	3337
Age 12-19 years	05-06	11.8 (10.9-12.8)	12.1 (11.3-12.7)	17.8 (16.6-19.0)	27.0 (24.5-30.6)	33.1 (30.6-35.7)	1030
Age 20+ years	05-06	*	14.4 (13.6-15.1)	23.4 (21.8-24.6)	35.0 (32.6-37.1)	44.3 (41.2-46.5)	2307
Males	05-06	13.0 (12.3-13.7)	12.9 (12.3-13.6)	20.5 (19.0-22.2)	31.6 (28.5-34.2)	39.1 (36.9-40.7)	1585
Females	05-06	*	15.1 (<LOD-16.2)	24.6 (22.2-26.5)	35.2 (32.9-39.1)	45.8 (42.6-49.7)	1752
Mexican Americans	05-06	*	12.5 (11.5-13.6)	18.9 (17.0-20.9)	26.8 (22.9-31.7)	34.4 (28.5-41.5)	818
Non-Hispanic blacks	05-06	11.6 (11.1-12.0)	11.2 (10.3-12.1)	18.2 (17.1-20.2)	28.5 (26.0-31.5)	37.7 (32.2-42.8)	899
Non-Hispanic whites	05-06	*	14.8 (13.9-15.8)	24.0 (22.2-25.6)	35.0 (32.9-37.9)	44.8 (40.1-48.3)	1365

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html

Urinary N-Acetyl-S-(2-cyanoethyl)-L-cysteine (2005 – 2006)

CAS Number 74514-75-3

Metabolite of Acrylonitrile

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	4.03 (3.37-4.83)	1.92 (1.72-2.09)	13.1 (6.17-31.1)	170 (143-200)	293 (242-349)	3345
Age 12-19 years	05-06	2.93 (2.35-3.64)	1.98 (1.68-2.30)	4.37 (3.26-6.02)	48.1 (17.7-86.6)	139 (81.0-183)	1030
Age 20+ years	05-06	4.24 (3.48-5.17)	1.92 (1.67-2.14)	20.5 (6.97-49.5)	189 (157-223)	316 (255-366)	2312
Males	05-06	5.54 (4.45-6.89)	2.33 (1.97-2.76)	44.6 (12.8-71.4)	196 (160-231)	319 (259-362)	1587
Females	05-06	2.98 (2.49-3.56)	1.53 (1.32-1.78)	5.15 (3.37-9.01)	139 (90.9-176)	268 (192-363)	1754
Mexican Americans	05-06	2.60 (2.24-3.03)	1.68 (1.58-1.79)	3.84 (3.24-4.99)	45.5 (17.1-85.4)	126 (70.6-172)	818
Non-Hispanic blacks	05-06	6.95 (5.55-8.69)	2.87 (2.45-3.78)	48.4 (17.4-79.0)	220 (169-286)	387 (252-481)	900
Non-Hispanic whites	05-06	4.04 (3.18-5.13)	1.78 (1.62-2.01)	19.2 (5.56-49.8)	176 (146-223)	311 (249-355)	1367

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 0.5.

Urinary N-Acetyl-S-(2-cyanoethyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 74514-75-3

Metabolite of Acrylonitrile

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	4.04 (3.38-4.84)	1.61 (1.46-1.82)	10.2 (4.55-34.4)	159 (124-192)	271 (234-290)	3334
Age 12-19 years	05-06	2.24 (1.89-2.66)	1.33 (1.22-1.42)	3.24 (2.29-4.51)	37.4 (13.4-57.2)	86.9 (57.2-119)	1029
Age 20+ years	05-06	4.44 (3.64-5.41)	1.67 (1.50-1.88)	21.2 (5.38-52.1)	182 (147-206)	281 (250-306)	2305
Males	05-06	4.53 (3.61-5.70)	1.59 (1.41-1.84)	35.4 (8.66-63.0)	165 (124-196)	235 (206-281)	1583
Females	05-06	3.62 (3.02-4.34)	1.63 (1.43-1.89)	4.41 (3.26-8.17)	147 (115-188)	284 (242-316)	1751
Mexican Americans	05-06	2.34 (1.96-2.79)	1.42 (1.32-1.49)	3.03 (2.64-3.96)	31.7 (11.7-73.5)	91.0 (44.2-126)	817
Non-Hispanic blacks	05-06	4.79 (3.95-5.81)	1.83 (1.51-2.46)	35.3 (10.2-63.3)	147 (109-183)	217 (183-259)	897
Non-Hispanic whites	05-06	4.36 (3.41-5.56)	1.61 (1.43-1.94)	19.1 (4.11-57.2)	184 (138-225)	287 (259-315)	1365

Urinary N-Acetyl-S-(2-hydroxyethyl)-L-cysteine (2005 – 2006)

CAS Number 15060-26-1

Metabolite of Acrylonitrile, Ethylene oxide, and Vinyl chloride

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	.960 (<LOD-1.61)	3.30 (2.84-3.93)	5.95 (5.16-6.71)	3347
Age 12-19 years	05-06	*	<LOD	1.35 (<LOD-2.24)	3.46 (3.04-4.08)	5.11 (4.03-5.98)	1036
Age 20+ years	05-06	*	<LOD	.888 (<LOD-1.53)	3.23 (2.63-4.11)	6.23 (5.43-7.21)	2311
Males	05-06	*	<LOD	.799 (<LOD-1.69)	3.12 (2.32-3.92)	5.15 (4.08-6.53)	1590
Females	05-06	*	<LOD	1.10 (<LOD-1.65)	3.57 (2.92-4.58)	6.65 (5.24-7.93)	1756
Mexican Americans	05-06	*	<LOD	1.22 (<LOD-1.91)	3.29 (2.59-3.88)	4.64 (3.88-5.68)	822
Non-Hispanic blacks	05-06	*	<LOD	1.35 (<LOD-2.99)	4.47 (3.00-6.03)	6.63 (4.68-11.6)	901
Non-Hispanic whites	05-06	*	<LOD	.815 (<LOD-1.73)	3.23 (2.56-4.09)	6.22 (5.10-7.21)	1369

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 0.791.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary N-Acetyl-S-(2-hydroxyethyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 15060-26-1

Metabolite of Acrylonitrile, Ethylene oxide, and Vinyl chloride

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	1.60 (<LOD-2.03)	3.32 (2.94-4.03)	5.70 (4.44-6.76)	3344
Age 12-19 years	05-06	*	<LOD	1.36 (<LOD-1.74)	2.53 (2.08-3.04)	3.81 (2.78-4.64)	1034
Age 20+ years	05-06	*	<LOD	1.64 (<LOD-2.07)	3.49 (2.94-4.35)	5.98 (4.51-7.52)	2310
Males	05-06	*	<LOD	1.14 (<LOD-1.47)	2.46 (2.10-3.25)	4.11 (3.29-5.97)	1588
Females	05-06	*	<LOD	2.05 (<LOD-2.43)	4.21 (3.49-4.95)	6.20 (5.19-8.73)	1756
Mexican Americans	05-06	*	<LOD	1.47 (<LOD-1.66)	2.66 (2.33-3.09)	4.30 (2.95-5.66)	819
Non-Hispanic blacks	05-06	*	<LOD	1.21 (<LOD-2.13)	2.80 (2.18-3.99)	4.45 (3.10-5.91)	900
Non-Hispanic whites	05-06	*	<LOD	1.69 (<LOD-2.15)	3.62 (2.94-4.57)	6.21 (4.66-7.80)	1369

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary N-Acetyl-S-(phenyl)-L-cysteine (2005 – 2006)

CAS Number 4775-80-8

Metabolite of Benzene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	1.08 (.941-1.22)	1.61 (1.36-1.98)	3347
Age 12-19 years	05-06	*	<LOD	<LOD	1.09 (.884-1.29)	1.52 (1.29-1.72)	1035
Age 20+ years	05-06	*	<LOD	<LOD	1.08 (.941-1.24)	1.64 (1.37-2.27)	2312
Males	05-06	*	<LOD	<LOD	1.08 (.946-1.29)	1.64 (1.36-1.98)	1590
Females	05-06	*	<LOD	<LOD	1.08 (.875-1.28)	1.60 (1.23-2.47)	1756
Mexican Americans	05-06	*	<LOD	<LOD	1.07 (.823-1.53)	1.64 (1.07-2.31)	821
Non-Hispanic blacks	05-06	*	<LOD	<LOD	.945 (.717-1.15)	1.38 (1.15-1.58)	902
Non-Hispanic whites	05-06	*	<LOD	<LOD	1.10 (.982-1.31)	1.72 (1.36-2.45)	1370

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 0.6.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Benzene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Benzene_FactSheet.html

Urinary N-Acetyl-S-(phenyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 4775-80-8

Metabolite of Benzene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	1.55 (1.39-1.66)	2.02 (1.84-2.17)	3346
Age 12-19 years	05-06	*	<LOD	<LOD	1.06 (.840-1.33)	1.36 (1.16-1.77)	1034
Age 20+ years	05-06	*	<LOD	<LOD	1.60 (1.47-1.70)	2.12 (1.93-2.23)	2311
Males	05-06	*	<LOD	<LOD	1.15 (1.07-1.29)	1.59 (1.47-1.77)	1590
Females	05-06	*	<LOD	<LOD	1.81 (1.63-1.93)	2.36 (2.02-2.74)	1756
Mexican Americans	05-06	*	<LOD	<LOD	1.21 (1.09-1.35)	1.64 (1.41-1.82)	819
Non-Hispanic blacks	05-06	*	<LOD	<LOD	.831 (.720-.925)	1.25 (.914-1.57)	901
Non-Hispanic whites	05-06	*	<LOD	<LOD	1.63 (1.50-1.77)	2.12 (1.93-2.23)	1370

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Benzene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Benzene_FactSheet.html

Urinary N-Acetyl-S-(n-propyl)-L-cysteine (2005 – 2006)

CAS Number 4775-80-8

Metabolite of 1-Bromopropane

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	3.70 (3.40-4.02)	2.96 (2.62-3.41)	9.49 (8.61-10.6)	26.7 (22.1-33.3)	52.0 (42.7-62.5)	3346
Age 12-19 years	05-06	3.57 (3.08-4.13)	2.89 (2.39-3.67)	9.29 (7.21-11.0)	24.5 (18.2-29.7)	46.1 (30.4-62.6)	1033
Age 20+ years	05-06	3.72 (3.42-4.04)	2.97 (2.62-3.45)	9.58 (8.61-10.8)	27.3 (22.0-34.6)	52.6 (42.8-62.5)	2310
Males	05-06	4.03 (3.63-4.47)	3.50 (2.97-4.06)	10.3 (8.76-11.9)	28.6 (21.7-35.0)	52.0 (42.0-62.5)	1589
Females	05-06	3.40 (3.02-3.84)	2.57 (2.13-3.05)	8.98 (7.50-10.6)	26.0 (18.0-38.4)	49.3 (38.6-65.7)	1754
Mexican Americans	05-06	5.63 (4.65-6.80)	5.61 (4.30-6.48)	17.0 (13.0-20.7)	44.8 (33.3-54.9)	77.2 (54.9-89.6)	819
Non-Hispanic blacks	05-06	4.20 (3.57-4.95)	3.78 (2.89-5.26)	10.1 (8.96-12.4)	27.9 (19.8-37.9)	51.1 (37.9-77.7)	899
Non-Hispanic whites	05-06	3.30 (3.05-3.58)	2.48 (2.17-2.87)	8.42 (7.50-9.45)	22.9 (18.6-29.5)	45.5 (33.3-56.9)	1367

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 1.2.

Urinary N-Acetyl-S-(n-propyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 4775-80-8

Metabolite of 1-Bromopropane

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	3.70 (3.40-4.03)	3.30 (2.89-3.71)	9.15 (7.73-10.1)	22.8 (18.3-28.7)	42.4 (34.7-53.1)	3333
Age 12-19 years	05-06	2.73 (2.36-3.17)	2.29 (1.89-2.71)	6.15 (5.29-7.08)	17.8 (13.6-21.2)	33.1 (22.0-42.6)	1028
Age 20+ years	05-06	3.89 (3.57-4.24)	3.46 (3.00-3.95)	9.50 (8.10-10.7)	24.2 (18.5-30.0)	43.9 (36.3-56.4)	2305
Males	05-06	3.30 (2.98-3.66)	2.93 (2.56-3.48)	7.50 (6.63-9.68)	19.4 (16.7-25.8)	34.7 (29.8-44.9)	1583
Females	05-06	4.14 (3.63-4.72)	3.67 (3.10-4.42)	9.70 (8.10-11.6)	25.7 (18.3-38.6)	48.0 (37.0-63.3)	1749
Mexican Americans	05-06	5.05 (4.31-5.91)	4.54 (3.39-6.56)	14.8 (11.7-17.5)	36.4 (25.7-50.4)	59.4 (41.8-80.0)	816
Non-Hispanic blacks	05-06	2.89 (2.44-3.44)	2.58 (2.05-3.47)	7.39 (5.66-8.81)	18.9 (14.4-22.1)	30.4 (25.1-39.2)	896
Non-Hispanic whites	05-06	3.56 (3.29-3.85)	3.15 (2.70-3.51)	7.99 (7.12-9.32)	20.2 (17.6-27.2)	42.0 (32.2-52.6)	1365

Urinary N-Acetyl-S-(3,4-dihydroxybutyl)-L-cysteine (2005 – 2006)

CAS Number 144889-50-9

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	264 (240-289)	303 (281-325)	497 (456-532)	733 (672-807)	916 (824-1030)	3346
Age 12-19 years	05-06	330 (294-370)	361 (318-397)	555 (501-610)	802 (749-858)	988 (868-1150)	1035
Age 20+ years	05-06	255 (231-281)	295 (269-320)	482 (443-526)	717 (656-801)	910 (801-1050)	2310
Males	05-06	310 (280-343)	354 (322-381)	544 (494-612)	807 (717-884)	1010 (854-1130)	1591
Females	05-06	226 (205-249)	254 (233-281)	434 (409-461)	657 (602-703)	841 (716-968)	1755
Mexican Americans	05-06	278 (250-308)	311 (285-341)	470 (422-537)	682 (589-756)	810 (735-887)	820
Non-Hispanic blacks	05-06	327 (288-370)	367 (330-392)	544 (503-584)	786 (697-884)	998 (811-1240)	899
Non-Hispanic whites	05-06	255 (227-286)	294 (268-323)	497 (451-539)	733 (657-827)	915 (801-1070)	1368

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 5.25.

Urinary N-Acetyl-S-(3,4-dihydroxybutyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 144889-50-9

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	264 (241-289)	274 (256-294)	363 (339-388)	482 (439-523)	575 (533-634)	3334
Age 12-19 years	05-06	253 (236-271)	252 (238-270)	329 (303-357)	425 (390-468)	515 (463-571)	1028
Age 20+ years	05-06	266 (241-293)	278 (260-301)	368 (346-392)	493 (443-535)	585 (537-666)	2305
Males	05-06	254 (230-280)	264 (241-291)	354 (327-378)	443 (408-508)	540 (483-634)	1585
Females	05-06	275 (251-300)	282 (266-300)	375 (347-406)	506 (463-544)	594 (562-645)	1748
Mexican Americans	05-06	249 (234-265)	253 (234-269)	330 (314-340)	417 (402-438)	515 (463-543)	816
Non-Hispanic blacks	05-06	225 (198-256)	227 (206-253)	317 (289-340)	436 (377-498)	539 (452-652)	897
Non-Hispanic whites	05-06	275 (249-304)	287 (264-315)	377 (354-403)	506 (454-543)	586 (540-677)	1364

Urinary N-Acetyl-S-(1-hydroxymethyl-2-propenyl)-L-cysteine (2005 – 2006)

CAS Number 144889-50-9

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3349
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1036
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	2313
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1592
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1757
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	822
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	902
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1371

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 0.7.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary N-Acetyl-S-(1-hydroxymethyl-2-propenyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 144889-50-9

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3349
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1036
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	2312
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1592
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1757
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	822
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	901
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1371

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary N-Acetyl-S-(2-hydroxy-3-butenyl)-L-cysteine (2005 – 2006)

CAS Number 159092-64-5

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	1.60 (1.10-2.24)	3.21 (2.73-3.85)	3349
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	1.22 (<LOD-1.91)	1035
Age 20+ years	05-06	*	<LOD	<LOD	1.78 (1.33-2.39)	3.56 (2.97-4.10)	2313
Males	05-06	*	<LOD	<LOD	1.80 (1.49-2.44)	3.37 (2.64-4.06)	1592
Females	05-06	*	<LOD	<LOD	1.18 (<LOD-1.86)	3.14 (2.52-3.65)	1756
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	1.06 (<LOD-2.05)	821
Non-Hispanic blacks	05-06	*	<LOD	<LOD	1.34 (.851-1.75)	2.90 (1.74-4.42)	902
Non-Hispanic whites	05-06	*	<LOD	<LOD	1.86 (1.33-2.70)	3.67 (2.99-4.24)	1370

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 0.7.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary N-Acetyl-S-(2-hydroxy-3-butenyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 159092-64-5

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	2.27 (2.02-2.61)	3.54 (3.05-3.85)	3347
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	1.60 (<LOD-2.25)	1035
Age 20+ years	05-06	*	<LOD	<LOD	2.48 (2.19-2.77)	3.76 (3.26-4.09)	2311
Males	05-06	*	<LOD	<LOD	1.94 (1.55-2.25)	2.91 (2.32-3.80)	1592
Females	05-06	*	<LOD	<LOD	2.61 (<LOD-2.98)	3.81 (3.30-4.13)	1755
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	1.79 (<LOD-2.15)	821
Non-Hispanic blacks	05-06	*	<LOD	<LOD	1.17 (.990-1.50)	2.24 (1.71-2.83)	901
Non-Hispanic whites	05-06	*	<LOD	<LOD	2.61 (2.25-2.91)	3.81 (3.26-4.40)	1370

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary N-Acetyl-S-(4-hydroxy-2-butenyl)-L-cysteine (2005 – 2006)

CAS Number 159092-65-6

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	6.22 (5.55-6.98)	5.78 (5.24-6.55)	14.3 (11.7-16.2)	40.4 (33.1-48.4)	69.3 (59.1-77.6)	3347
Age 12-19 years	05-06	6.15 (5.09-7.44)	6.34 (5.01-7.92)	11.4 (10.4-13.3)	21.9 (18.6-26.0)	39.9 (25.5-57.8)	1029
Age 20+ years	05-06	6.24 (5.53-7.04)	5.66 (5.17-6.39)	14.9 (11.6-18.2)	43.6 (35.2-53.3)	71.8 (62.0-80.1)	2312
Males	05-06	7.72 (6.92-8.61)	7.28 (6.38-8.19)	15.9 (13.4-19.8)	46.1 (35.2-59.1)	70.7 (61.1-79.2)	1587
Females	05-06	5.07 (4.42-5.81)	4.65 (4.20-5.21)	11.4 (8.91-14.5)	34.2 (26.0-43.2)	66.2 (48.1-84.0)	1750
Mexican Americans	05-06	5.80 (5.29-6.37)	5.58 (4.96-6.27)	11.2 (9.76-12.9)	21.1 (18.6-25.3)	32.9 (25.3-39.9)	820
Non-Hispanic blacks	05-06	8.37 (7.28-9.62)	6.97 (6.13-8.27)	17.1 (14.2-22.2)	52.5 (35.2-66.1)	76.1 (59.5-89.3)	899
Non-Hispanic whites	05-06	6.10 (5.24-7.09)	5.66 (4.88-6.84)	14.9 (11.2-18.6)	43.3 (32.8-56.0)	71.8 (59.4-80.2)	1369

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 0.6.

Urinary N-Acetyl-S-(4-hydroxy-2-butenyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 159092-65-6

Metabolite of 1,3-Butadiene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	6.24 (5.62-6.92)	5.07 (4.61-5.58)	10.6 (9.15-12.8)	34.1 (28.0-42.8)	59.0 (50.4-66.6)	3330
Age 12-19 years	05-06	4.71 (4.13-5.37)	4.12 (3.59-4.99)	7.40 (6.43-8.81)	13.8 (11.3-17.2)	21.1 (14.7-29.6)	1027
Age 20+ years	05-06	6.52 (5.82-7.30)	5.21 (4.75-5.71)	11.5 (9.42-15.0)	38.0 (30.0-48.4)	61.5 (51.6-71.2)	2303
Males	05-06	6.32 (5.62-7.11)	5.09 (4.56-5.65)	11.1 (9.06-15.4)	33.0 (26.6-42.5)	51.0 (45.3-59.9)	1583
Females	05-06	6.16 (5.51-6.89)	5.04 (4.53-5.68)	10.1 (8.91-12.0)	36.4 (28.1-46.6)	66.0 (54.3-71.5)	1747
Mexican Americans	05-06	5.21 (4.80-5.65)	4.61 (4.36-4.93)	8.31 (7.69-9.33)	14.7 (12.9-16.9)	19.9 (16.6-30.1)	816
Non-Hispanic blacks	05-06	5.77 (5.06-6.57)	4.82 (4.17-5.40)	11.3 (9.34-14.2)	29.1 (23.2-35.6)	45.1 (34.1-59.9)	896
Non-Hispanic whites	05-06	6.58 (5.71-7.58)	5.27 (4.67-5.90)	11.4 (9.15-16.0)	38.2 (28.5-50.4)	65.1 (51.0-72.9)	1364

Urinary 2-Thioxothiazolidine-4-carboxylic acid (2005 – 2006)

CAS Number 20933-67-9

Metabolite of Carbon disulfide

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	19.3 (17.3-22.0)	52.8 (43.5-65.0)	103 (84.2-126)	3348
Age 12-19 years	05-06	*	<LOD	16.4 (13.6-20.5)	50.2 (34.1-68.8)	111 (65.6-143)	1035
Age 20+ years	05-06	*	<LOD	20.0 (18.1-22.6)	53.0 (43.5-65.3)	102 (84.2-126)	2312
Males	05-06	*	<LOD	23.0 (18.8-27.4)	58.9 (46.0-72.9)	127 (96.8-162)	1590
Females	05-06	*	<LOD	16.6 (13.6-19.7)	45.7 (37.6-59.6)	85.1 (68.8-108)	1757
Mexican Americans	05-06	*	<LOD	16.9 (12.2-22.0)	50.6 (29.1-65.2)	73.7 (54.0-114)	821
Non-Hispanic blacks	05-06	*	12.7 (<LOD-14.7)	33.7 (27.9-36.7)	77.4 (66.4-99.0)	146 (99.0-264)	902
Non-Hispanic whites	05-06	*	<LOD	17.7 (14.6-20.4)	46.2 (37.6-60.7)	96.8 (69.4-124)	1370

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 11.2.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 2-Thioxothiazolidine-4-carboxylic acid (creatinine corrected) (2005 – 2006)

CAS Number 20933-67-9

Metabolite of Carbon disulfide

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	23.3 (21.4-26.3)	49.5 (45.0-56.6)	92.8 (73.1-115)	3347
Age 12-19 years	05-06	*	<LOD	15.8 (14.1-18.9)	35.3 (28.8-49.4)	66.8 (49.5-104)	1034
Age 20+ years	05-06	*	<LOD	24.8 (22.0-28.1)	52.2 (46.0-60.1)	93.0 (75.8-117)	2312
Males	05-06	*	<LOD	20.8 (17.5-24.0)	45.0 (36.7-56.4)	89.5 (60.9-116)	1590
Females	05-06	*	<LOD	26.4 (22.7-30.5)	54.9 (46.6-62.1)	92.8 (72.0-136)	1756
Mexican Americans	05-06	*	<LOD	20.1 (16.9-23.5)	41.1 (34.4-52.8)	69.9 (52.8-83.8)	820
Non-Hispanic blacks	05-06	*	10.2 (<LOD-11.3)	21.6 (18.8-27.3)	55.7 (41.4-76.9)	102 (71.5-147)	901
Non-Hispanic whites	05-06	*	<LOD	24.0 (21.4-26.9)	48.2 (42.6-57.5)	88.5 (73.1-104)	1370

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary N-Acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine (2005 – 2006)

CAS Number 33164-70-4

Metabolite of Crotonaldehyde

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	425 (386-467)	406 (376-433)	800 (707-967)	2210 (1760-2530)	3560 (3230-3760)	3347
Age 12-19 years	05-06	381 (336-433)	394 (349-434)	637 (581-688)	1020 (795-1200)	1650 (1110-2460)	1032
Age 20+ years	05-06	432 (389-480)	410 (368-444)	848 (734-1040)	2370 (1950-2930)	3660 (3480-4120)	2310
Males	05-06	505 (453-562)	476 (433-537)	947 (760-1110)	2450 (1980-3000)	3630 (3360-4120)	1590
Females	05-06	360 (328-395)	340 (325-355)	701 (625-800)	1790 (1600-2210)	3230 (2570-3900)	1755
Mexican Americans	05-06	382 (342-427)	391 (348-423)	650 (553-756)	1230 (1010-1550)	1970 (1710-2240)	820
Non-Hispanic blacks	05-06	516 (452-589)	444 (406-493)	920 (722-1280)	2490 (1950-3040)	3660 (3140-4220)	901
Non-Hispanic whites	05-06	424 (372-483)	404 (356-448)	838 (708-1050)	2360 (1740-3010)	3660 (3290-4450)	1369

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 2.0.

Urinary N-Acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 33164-70-4

Metabolite of Crotonaldehyde

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	426 (383-473)	328 (304-351)	651 (552-780)	2020 (1530-2540)	3390 (2870-3820)	3332
Age 12-19 years	05-06	292 (269-317)	259 (240-281)	384 (336-412)	654 (526-795)	887 (701-1390)	1027
Age 20+ years	05-06	452 (402-508)	344 (314-377)	717 (613-934)	2190 (1820-2800)	3630 (3160-4090)	2304
Males	05-06	413 (366-467)	318 (291-355)	653 (525-844)	1940 (1350-2490)	3040 (2440-3660)	1583
Females	05-06	438 (396-485)	335 (313-366)	641 (552-774)	2140 (1610-2650)	3680 (3290-4110)	1748
Mexican Americans	05-06	343 (316-373)	299 (287-315)	446 (398-527)	887 (701-1140)	1390 (1080-1910)	816
Non-Hispanic blacks	05-06	355 (312-405)	279 (250-311)	565 (445-804)	1560 (1300-1860)	2360 (1880-3090)	897
Non-Hispanic whites	05-06	458 (399-524)	344 (309-393)	707 (598-1020)	2350 (1820-3040)	3680 (3330-4120)	1365

Urinary 2-Aminothiazoline-4-carboxylic acid (2005 – 2006)

CAS Number 40283-41-8

Metabolite of Cyanide

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	66.0 (55.8-78.1)	88.1 (73.0-105)	212 (197-226)	379 (336-406)	497 (459-546)	3349
Age 12-19 years	05-06	74.7 (61.3-91.0)	120 (93.3-146)	257 (221-290)	436 (399-504)	590 (497-684)	1034
Age 20+ years	05-06	64.8 (54.4-77.0)	84.7 (68.6-103)	204 (188-220)	365 (326-398)	481 (450-533)	2313
Males	05-06	*	55.5 (25.3-80.2)	159 (143-174)	293 (270-325)	426 (381-456)	1590
Females	05-06	91.3 (78.2-107)	125 (106-143)	266 (233-288)	429 (387-465)	547 (490-628)	1756
Mexican Americans	05-06	90.4 (79.5-103)	131 (119-152)	275 (248-299)	480 (426-560)	667 (574-753)	820
Non-Hispanic blacks	05-06	73.9 (57.2-95.5)	117 (87.4-148)	274 (234-311)	458 (383-548)	603 (557-694)	900
Non-Hispanic whites	05-06	61.6 (51.0-74.4)	80.2 (62.7-102)	188 (173-207)	340 (303-389)	456 (404-497)	1371

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 15.0.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary 2-Aminothiazoline-4-carboxylic acid (creatinine corrected) (2005 – 2006)

CAS Number 40283-41-8

Metabolite of Cyanide

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	66.2 (54.9-79.8)	94.1 (81.5-106)	211 (191-231)	353 (332-374)	469 (424-497)	3340
Age 12-19 years	05-06	57.2 (45.1-72.6)	96.1 (73.8-114)	194 (167-223)	318 (267-362)	398 (362-450)	1029
Age 20+ years	05-06	67.7 (56.1-81.8)	94.0 (80.4-107)	216 (194-234)	354 (334-385)	474 (429-501)	2307
Males	05-06	*	49.2 (35.8-65.7)	114 (107-121)	241 (208-268)	344 (320-395)	1586
Females	05-06	111 (92.5-133)	153 (135-181)	263 (244-294)	403 (375-442)	528 (485-574)	1753
Mexican Americans	05-06	81.1 (70.4-93.4)	122 (103-145)	234 (219-249)	383 (353-434)	521 (468-581)	817
Non-Hispanic blacks	05-06	50.9 (39.5-65.7)	84.4 (67.7-101)	178 (158-196)	322 (283-355)	418 (366-481)	899
Non-Hispanic whites	05-06	66.4 (54.2-81.4)	91.2 (73.5-107)	210 (185-235)	353 (321-385)	465 (417-501)	1368

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary N-Acetyl-S-(N-methylcarbamoyl)-L-cysteine (2005 – 2006)

CAS Number 103974-29-4

Metabolite of N,N-Dimethylformamide

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	137 (125-149)	139 (124-157)	302 (265-333)	600 (555-666)	883 (773-1030)	3344
Age 12-19 years	05-06	95.8 (84.4-109)	98.8 (85.2-114)	179 (156-216)	323 (276-395)	490 (400-636)	1030
Age 20+ years	05-06	144 (131-159)	150 (131-169)	327 (290-362)	643 (577-699)	941 (837-1070)	2310
Males	05-06	158 (143-176)	162 (139-185)	344 (315-383)	625 (566-686)	877 (754-1000)	1588
Females	05-06	118 (107-131)	118 (103-139)	257 (230-289)	577 (490-679)	903 (707-1220)	1753
Mexican Americans	05-06	104 (95.4-113)	109 (96.4-123)	205 (177-234)	379 (306-509)	578 (489-735)	818
Non-Hispanic blacks	05-06	139 (124-157)	131 (118-149)	293 (233-367)	628 (447-808)	871 (743-1030)	899
Non-Hispanic whites	05-06	144 (128-163)	151 (131-174)	327 (280-383)	653 (562-718)	983 (774-1120)	1365

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 6.26.

Urinary N-Acetyl-S-(N-methylcarbamoyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 103974-29-4

Metabolite of N,N-Dimethylformamide

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	137 (125-150)	135 (122-148)	252 (225-284)	534 (469-572)	780 (654-932)	3332
Age 12-19 years	05-06	73.4 (68.7-78.4)	69.5 (64.2-75.8)	114 (103-128)	218 (183-252)	314 (232-405)	1027
Age 20+ years	05-06	151 (136-168)	151 (135-167)	279 (246-317)	565 (514-600)	844 (700-989)	2304
Males	05-06	130 (116-146)	128 (114-144)	237 (212-274)	458 (403-537)	596 (562-716)	1584
Females	05-06	144 (131-158)	144 (125-158)	270 (238-300)	584 (533-653)	960 (803-1050)	1748
Mexican Americans	05-06	93.1 (86.2-101)	92.1 (82.6-101)	155 (138-174)	254 (217-297)	373 (282-565)	816
Non-Hispanic blacks	05-06	96.0 (88.4-104)	90.6 (81.8-99.6)	182 (159-207)	359 (280-417)	538 (407-596)	896
Non-Hispanic whites	05-06	156 (138-176)	156 (136-178)	294 (249-357)	579 (516-654)	880 (716-1040)	1365

Urinary Phenylglyoxylic acid (2005 – 2006)

CAS Number 611-73-4

Metabolite of Ethylbenzene and Styrene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	98.8 (88.8-110)	144 (129-160)	305 (272-328)	483 (458-518)	664 (602-700)	3346
Age 12-19 years	05-06	109 (91.2-131)	157 (125-200)	318 (288-352)	474 (432-548)	602 (499-713)	1029
Age 20+ years	05-06	97.3 (87.3-108)	140 (125-158)	299 (267-325)	484 (457-518)	670 (604-722)	2312
Males	05-06	115 (101-131)	173 (156-191)	329 (300-358)	523 (480-593)	699 (666-761)	1588
Females	05-06	85.8 (75.3-97.7)	118 (102-138)	263 (240-300)	452 (396-491)	590 (507-660)	1755
Mexican Americans	05-06	107 (84.2-137)	150 (107-196)	299 (260-333)	448 (402-538)	593 (534-672)	820
Non-Hispanic blacks	05-06	122 (97.5-152)	178 (145-212)	334 (316-362)	523 (476-577)	660 (577-715)	899
Non-Hispanic whites	05-06	93.5 (84.2-104)	135 (118-152)	297 (268-321)	482 (453-518)	689 (606-742)	1370

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 12.0.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Ethylbenzene_BiomonitoringSummary.html
Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary Phenylglyoxylic acid (creatinine corrected) (2005 – 2006)

CAS Number 611-73-4

Metabolite of Ethylbenzene and Styrene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	99.1 (89.5-110)	136 (126-149)	220 (208-238)	328 (308-362)	434 (414-467)	3334
Age 12-19 years	05-06	83.6 (71.9-97.2)	122 (107-137)	198 (180-208)	274 (249-321)	335 (308-403)	1027
Age 20+ years	05-06	102 (91.7-113)	139 (128-152)	226 (213-243)	336 (309-382)	451 (423-499)	2305
Males	05-06	93.9 (83.2-106)	133 (120-148)	212 (203-220)	314 (296-334)	429 (399-445)	1585
Females	05-06	104 (93.1-117)	140 (126-156)	235 (215-253)	345 (314-379)	451 (423-498)	1749
Mexican Americans	05-06	96.3 (78.5-118)	131 (103-164)	210 (187-236)	291 (252-376)	382 (304-451)	816
Non-Hispanic blacks	05-06	83.9 (68.2-103)	129 (113-139)	189 (167-214)	285 (255-328)	372 (328-433)	896
Non-Hispanic whites	05-06	101 (91.4-111)	138 (127-155)	229 (213-247)	352 (314-402)	464 (429-509)	1365

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Ethylbenzene_BiomonitoringSummary.html
Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary N-Acetyl-S-(2-hydroxypropyl)-L-cysteine (2005 – 2006)

CAS Number 923-43-3

Metabolite of Propylene oxide

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	36.7 (34.5-39.0)	37.7 (35.3-40.4)	73.4 (68.8-79.4)	149 (127-177)	233 (204-274)	3349
Age 12-19 years	05-06	38.6 (34.5-43.3)	39.8 (36.0-44.8)	71.4 (62.3-78.7)	122 (94.0-163)	179 (122-348)	1033
Age 20+ years	05-06	36.4 (34.0-38.9)	37.5 (34.8-40.1)	74.7 (68.1-80.7)	153 (131-183)	239 (214-274)	2313
Males	05-06	43.0 (39.8-46.6)	43.6 (38.4-48.2)	80.0 (73.4-90.7)	166 (134-204)	253 (204-343)	1591
Females	05-06	31.5 (28.8-34.4)	32.5 (30.0-36.2)	64.8 (59.1-72.1)	134 (118-161)	220 (185-252)	1755
Mexican Americans	05-06	36.2 (32.4-40.5)	38.3 (34.4-44.0)	70.8 (60.3-80.7)	136 (114-154)	198 (150-259)	820
Non-Hispanic blacks	05-06	46.6 (42.4-51.1)	48.0 (43.7-52.0)	86.0 (72.1-106)	160 (134-196)	219 (196-287)	901
Non-Hispanic whites	05-06	35.8 (32.7-39.2)	36.3 (33.0-39.5)	73.4 (66.0-80.7)	150 (120-185)	247 (204-294)	1370

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 5.3.

Urinary N-Acetyl-S-(2-hydroxypropyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 923-43-3

Metabolite of Propylene oxide

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	36.8 (34.1-39.7)	33.4 (30.6-37.2)	62.0 (57.6-68.8)	131 (119-144)	183 (166-196)	3333
Age 12-19 years	05-06	29.6 (27.9-31.4)	28.5 (26.6-30.6)	45.1 (42.2-48.0)	81.2 (69.8-93.0)	124 (88.6-159)	1027
Age 20+ years	05-06	38.1 (35.1-41.3)	34.3 (32.0-38.4)	65.9 (59.5-73.4)	138 (123-151)	188 (169-220)	2306
Males	05-06	35.3 (32.3-38.4)	32.2 (30.2-35.2)	59.4 (52.6-67.8)	117 (93.5-144)	169 (139-212)	1583
Females	05-06	38.3 (34.1-43.1)	34.4 (30.3-39.9)	67.9 (59.8-77.6)	142 (123-158)	195 (170-229)	1750
Mexican Americans	05-06	32.5 (29.4-35.9)	32.5 (29.6-34.3)	51.9 (47.6-57.8)	92.6 (78.5-103)	130 (105-165)	816
Non-Hispanic blacks	05-06	32.1 (30.1-34.2)	30.3 (28.5-32.6)	53.2 (44.6-60.2)	100 (81.5-125)	141 (124-163)	897
Non-Hispanic whites	05-06	38.6 (34.6-43.1)	34.6 (30.4-40.8)	67.8 (60.4-77.6)	145 (125-161)	196 (173-235)	1365

Urinary N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine (2005 – 2006)

CAS Number 923-43-3

Metabolite of Styrene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	<LOD	1.87 (1.59-2.22)	3349
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	1.51 (<LOD-3.00)	1036
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	1.87 (1.57-2.32)	2313
Males	05-06	*	<LOD	<LOD	<LOD	1.95 (1.57-2.48)	1592
Females	05-06	*	<LOD	<LOD	<LOD	1.73 (<LOD-2.91)	1757
Mexican Americans	05-06	*	<LOD	<LOD	1.16 (<LOD-1.66)	2.44 (1.61-4.51)	822
Non-Hispanic blacks	05-06	*	<LOD	<LOD	1.21 (<LOD-1.73)	3.03 (1.78-4.36)	902
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	1.49 (<LOD-2.15)	1371

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 0.7.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 923-43-3

Metabolite of Styrene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	<LOD	2.66 (2.25-3.09)	3349
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	1.65 (<LOD-2.25)	1036
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	2.73 (2.41-3.09)	2312
Males	05-06	*	<LOD	<LOD	<LOD	2.06 (1.77-2.61)	1592
Females	05-06	*	<LOD	<LOD	<LOD	2.91 (<LOD-3.81)	1757
Mexican Americans	05-06	*	<LOD	<LOD	1.65 (<LOD-2.06)	2.36 (1.68-4.13)	821
Non-Hispanic blacks	05-06	*	<LOD	<LOD	1.37 (<LOD-1.63)	2.25 (1.71-2.87)	901
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	2.66 (<LOD-3.09)	1371

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary Mandelic acid (2005 – 2006)

CAS Number 90-64-2, 611-71-2 (R), 17199-29-0 (S)

Metabolite of Styrene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	139 (132-147)	146 (139-152)	248 (232-261)	409 (385-442)	584 (511-661)	3347
Age 12-19 years	05-06	139 (126-154)	151 (136-165)	224 (210-247)	322 (291-357)	394 (349-495)	1034
Age 20+ years	05-06	139 (132-148)	146 (137-152)	254 (234-269)	424 (393-450)	607 (537-680)	2311
Males	05-06	164 (154-174)	167 (155-183)	287 (259-305)	446 (409-511)	643 (534-767)	1591
Females	05-06	119 (112-127)	124 (116-132)	220 (204-234)	359 (327-389)	526 (415-614)	1754
Mexican Americans	05-06	141 (130-154)	156 (145-171)	246 (220-271)	374 (327-409)	459 (393-632)	821
Non-Hispanic blacks	05-06	172 (155-190)	177 (155-197)	291 (251-338)	480 (402-556)	643 (505-777)	899
Non-Hispanic whites	05-06	135 (126-144)	139 (132-148)	242 (223-263)	410 (380-445)	576 (511-661)	1371

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 12.0.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html

Factsheet: https://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary Mandelic acid (creatinine corrected) (2005 – 2006)

CAS Number 90-64-2, 611-71-2 (R), 17199-29-0 (S)

Metabolite of Styrene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	140 (135-145)	135 (130-139)	200 (191-210)	325 (296-353)	459 (417-497)	3332
Age 12-19 years	05-06	107 (103-111)	105 (102-108)	143 (138-151)	202 (181-228)	257 (225-289)	1028
Age 20+ years	05-06	146 (140-152)	140 (135-145)	212 (200-220)	343 (318-380)	476 (431-527)	2303
Males	05-06	134 (128-141)	127 (123-133)	199 (181-213)	316 (277-380)	467 (383-576)	1584
Females	05-06	145 (140-151)	141 (136-145)	202 (188-216)	329 (312-347)	454 (418-478)	1748
Mexican Americans	05-06	127 (120-135)	126 (122-132)	184 (162-205)	262 (233-314)	404 (285-493)	816
Non-Hispanic blacks	05-06	118 (110-128)	117 (108-124)	178 (167-194)	282 (234-338)	377 (309-467)	896
Non-Hispanic whites	05-06	145 (138-153)	138 (132-146)	208 (190-223)	335 (308-390)	476 (426-540)	1364

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html
Factsheet: https://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary N-Acetyl-S-(trichlorovinyl)-L-cysteine (2005 – 2006)

CAS Number 111348-61-9

Metabolite of Tetrachloroethene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3349
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1036
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	2313
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1592
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1757
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	822
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	902
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1371

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 3.0.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(trichlorovinyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 111348-61-9

Metabolite of Tetrachloroethene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3349
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1036
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	2312
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1592
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1757
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	822
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	901
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1371

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(benzyl)-L-cysteine (2005 – 2006)

CAS Number 19542-77-9

Metabolite of Toluene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	6.80 (6.43-7.20)	6.81 (6.14-7.39)	12.8 (11.8-13.8)	24.0 (22.5-26.4)	39.8 (36.6-42.0)	3347
Age 12-19 years	05-06	7.54 (6.60-8.62)	7.70 (6.87-8.94)	13.5 (11.8-15.3)	23.9 (19.7-30.8)	38.9 (28.3-50.0)	1032
Age 20+ years	05-06	6.69 (6.34-7.06)	6.67 (5.95-7.30)	12.6 (11.5-13.7)	24.0 (22.6-26.3)	40.1 (35.5-43.0)	2309
Males	05-06	7.10 (6.63-7.61)	6.93 (6.16-7.59)	12.7 (11.5-14.0)	23.8 (21.5-26.9)	38.7 (31.1-43.0)	1589
Females	05-06	6.53 (6.02-7.08)	6.66 (5.83-7.33)	12.8 (11.7-13.8)	24.3 (21.2-27.8)	41.3 (34.0-47.7)	1753
Mexican Americans	05-06	7.59 (6.72-8.57)	7.69 (6.61-8.53)	13.9 (12.1-15.9)	23.8 (21.0-29.3)	38.7 (29.9-50.7)	820
Non-Hispanic blacks	05-06	11.3 (10.2-12.6)	11.4 (10.2-12.8)	22.7 (19.9-24.1)	41.8 (36.7-48.1)	64.6 (50.9-76.4)	899
Non-Hispanic whites	05-06	6.15 (5.79-6.53)	6.05 (5.55-6.71)	11.4 (10.7-12.3)	20.0 (18.3-22.9)	34.0 (28.2-39.8)	1369

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 0.5.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Toluene_BiomonitoringSummary.html

Urinary N-Acetyl-S-(benzyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 19542-77-9

Metabolite of Toluene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	6.82 (6.56-7.08)	6.20 (5.90-6.64)	10.5 (9.92-11.2)	19.3 (17.5-21.0)	32.3 (28.9-35.9)	3331
Age 12-19 years	05-06	5.78 (5.43-6.16)	5.46 (5.03-5.91)	9.02 (8.25-10.0)	14.9 (12.7-17.3)	20.6 (16.6-29.9)	1027
Age 20+ years	05-06	7.00 (6.70-7.31)	6.39 (5.96-6.89)	10.7 (10.3-11.4)	19.7 (18.3-22.1)	33.7 (29.3-38.4)	2303
Males	05-06	5.81 (5.50-6.15)	5.39 (5.14-5.75)	8.85 (8.29-9.65)	15.3 (13.7-16.5)	22.1 (19.4-27.6)	1583
Females	05-06	7.94 (7.52-8.38)	7.39 (6.81-7.90)	12.4 (11.4-13.8)	23.7 (21.3-26.5)	38.6 (33.6-45.9)	1747
Mexican Americans	05-06	6.81 (6.23-7.44)	6.48 (5.88-7.00)	10.6 (9.58-11.6)	17.0 (15.8-20.8)	28.9 (19.7-36.0)	816
Non-Hispanic blacks	05-06	7.81 (6.98-8.74)	7.81 (6.82-8.70)	13.4 (12.1-14.8)	25.3 (21.0-28.5)	36.9 (28.9-51.7)	896
Non-Hispanic whites	05-06	6.63 (6.37-6.91)	6.02 (5.67-6.57)	10.1 (9.33-10.8)	17.8 (15.8-20.1)	28.7 (23.3-36.2)	1364

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Toluene_BiomonitoringSummary.html

Urinary N-Acetyl-S-(1,2-dichlorovinyl)-L-cysteine (2005 – 2006)

CAS Number 2148-31-4

Metabolite of Trichloroethene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3349
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1036
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	2313
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1592
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1757
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	822
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	902
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1371

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 12.6.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(1,2-dichlorovinyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 2148-31-4

Metabolite of Trichloroethene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3349
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1036
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	2312
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1592
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1757
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	822
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	901
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1371

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(2,2-dichlorovinyl)-L-cysteine (2005 – 2006)

CAS Number 126543-43-9

Metabolite of Trichloroethene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3349
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1036
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	2313
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1592
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1757
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	822
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	902
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1371

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 4.7.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(2,2-dichlorovinyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 126543-43-9

Metabolite of Trichloroethene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3349
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1036
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	2312
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1592
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1757
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	822
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	901
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1371

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(dimethylphenyl)-L-cysteine (2005 – 2006)

CAS Number 126543-43-9

Metabolite of Xylene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3349
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1036
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	2313
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1592
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1757
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	822
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	902
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1371

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 0.5.

<LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary N-Acetyl-S-(dimethylphenyl)-L-cysteine (creatinine corrected) (2005 – 2006)

CAS Number 126543-43-9

Metabolite of Xylene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	*	<LOD	<LOD	<LOD	<LOD	3349
Age 12-19 years	05-06	*	<LOD	<LOD	<LOD	<LOD	1036
Age 20+ years	05-06	*	<LOD	<LOD	<LOD	<LOD	2312
Males	05-06	*	<LOD	<LOD	<LOD	<LOD	1592
Females	05-06	*	<LOD	<LOD	<LOD	<LOD	1757
Mexican Americans	05-06	*	<LOD	<LOD	<LOD	<LOD	822
Non-Hispanic blacks	05-06	*	<LOD	<LOD	<LOD	<LOD	901
Non-Hispanic whites	05-06	*	<LOD	<LOD	<LOD	<LOD	1371

<LOD means less than the limit of detection for the urine levels not corrected for creatinine.

* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary 2-Methylhippuric acid (2005 – 2006)

CAS Number 42013-20-7

Metabolite of Xylene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	34.6 (31.8-37.7)	32.3 (28.3-36.7)	81.5 (70.1-91.0)	170 (155-181)	258 (221-284)	3346
Age 12-19 years	05-06	38.1 (33.7-43.1)	35.1 (30.1-41.4)	85.6 (72.5-93.0)	183 (167-206)	277 (217-312)	1031
Age 20+ years	05-06	34.1 (31.1-37.5)	31.8 (27.9-36.2)	81.1 (68.0-92.0)	165 (148-179)	252 (217-284)	2312
Males	05-06	41.0 (37.5-44.8)	39.9 (35.3-44.4)	92.9 (84.6-99.8)	187 (169-207)	276 (234-306)	1588
Females	05-06	29.5 (26.6-32.6)	26.9 (23.7-30.0)	66.7 (56.1-80.9)	156 (126-172)	235 (181-275)	1755
Mexican Americans	05-06	32.3 (28.4-36.8)	30.2 (27.0-35.0)	67.3 (54.1-85.2)	152 (102-238)	258 (162-336)	819
Non-Hispanic blacks	05-06	36.0 (31.9-40.7)	33.3 (28.3-40.4)	82.1 (69.0-96.1)	172 (140-193)	257 (210-280)	901
Non-Hispanic whites	05-06	35.6 (32.4-39.1)	33.9 (28.7-38.2)	84.5 (73.0-92.9)	173 (158-196)	269 (226-293)	1368

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 5.0.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary 2-Methylhippuric acid (creatinine corrected) (2005 – 2006)

CAS Number 42013-20-7

Metabolite of Xylene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	34.7 (31.8-37.9)	32.4 (29.8-35.5)	74.9 (65.3-83.6)	145 (129-163)	204 (184-227)	3332
Age 12-19 years	05-06	29.2 (26.1-32.7)	27.6 (23.0-33.3)	64.7 (56.3-74.2)	140 (118-156)	185 (160-210)	1027
Age 20+ years	05-06	35.7 (32.4-39.3)	33.0 (30.0-36.4)	77.3 (65.3-85.3)	147 (129-168)	210 (184-230)	2305
Males	05-06	33.6 (30.2-37.3)	32.4 (29.8-35.6)	70.2 (65.3-77.9)	133 (120-156)	193 (175-215)	1584
Females	05-06	35.9 (32.4-39.7)	32.4 (28.5-36.9)	79.0 (64.1-90.5)	152 (132-183)	220 (184-259)	1748
Mexican Americans	05-06	29.0 (26.2-32.0)	27.7 (24.1-29.5)	53.0 (47.0-57.8)	117 (77.6-154)	166 (123-210)	816
Non-Hispanic blacks	05-06	24.8 (22.8-27.0)	22.5 (20.6-25.8)	51.2 (44.5-59.2)	99.4 (83.1-113)	136 (119-153)	896
Non-Hispanic whites	05-06	38.4 (34.9-42.2)	36.5 (32.9-41.7)	83.0 (73.9-95.5)	157 (140-180)	217 (193-236)	1365

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary 3- & 4-Methylhippuric acid (2005 – 2006)

CAS Number 27115-49-7, 27115-50-0

Metabolite of Xylene

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	256 (240-274)	248 (223-270)	573 (505-654)	1220 (1140-1320)	1840 (1740-1930)	3346
Age 12-19 years	05-06	288 (261-317)	272 (239-301)	516 (453-645)	1190 (997-1370)	1810 (1460-2220)	1033
Age 20+ years	05-06	252 (235-270)	241 (215-267)	581 (508-675)	1230 (1120-1380)	1840 (1730-1910)	2312
Males	05-06	307 (288-328)	281 (260-324)	685 (591-765)	1380 (1280-1560)	1900 (1810-2030)	1589
Females	05-06	216 (198-234)	204 (179-233)	467 (400-554)	1070 (971-1160)	1780 (1500-1900)	1756
Mexican Americans	05-06	219 (198-242)	214 (195-234)	442 (355-514)	887 (612-1240)	1300 (1010-1640)	819
Non-Hispanic blacks	05-06	284 (252-322)	260 (228-307)	651 (539-782)	1220 (1080-1410)	1660 (1410-1900)	901
Non-Hispanic whites	05-06	264 (245-284)	258 (226-281)	595 (524-696)	1320 (1160-1510)	1900 (1790-2080)	1369

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 is 8.0.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary 3- & 4-Methylhippuric acid (creatinine corrected) (2005 – 2006)

CAS Number 27115-49-7, 27115-50-0

Metabolite of Xylene

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

Demographic Categories	Survey (years)	Geometric mean (95% CI)	50th Percentile (95% CI)	75th Percentile (95% CI)	90th Percentile (95% CI)	95th Percentile (95% CI)	Sample Size
Total population	05-06	257 (240-276)	219 (204-242)	521 (468-576)	1040 (908-1140)	1440 (1260-1570)	3331
Age 12-19 years	05-06	220 (203-239)	195 (174-223)	405 (350-458)	859 (701-922)	1120 (958-1330)	1028
Age 20+ years	05-06	263 (244-284)	225 (206-248)	534 (479-607)	1070 (930-1180)	1480 (1290-1680)	2303
Males	05-06	252 (233-272)	222 (199-254)	512 (451-565)	965 (864-1090)	1330 (1150-1520)	1583
Females	05-06	262 (240-287)	217 (203-237)	525 (437-650)	1080 (933-1250)	1500 (1240-1760)	1747
Mexican Americans	05-06	196 (184-210)	180 (168-189)	325 (290-353)	636 (528-749)	918 (664-1230)	816
Non-Hispanic blacks	05-06	196 (177-217)	168 (154-187)	399 (326-456)	744 (616-839)	1010 (862-1160)	896
Non-Hispanic whites	05-06	285 (264-307)	250 (221-272)	594 (515-672)	1120 (984-1240)	1520 (1310-2010)	1364

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Appendices

Appendix A. Procedure to Estimate Percentiles

Includes procedures for percentiles whose estimate falls on a value that is repeated multiple times in the dataset

A common practice to calculate confidence intervals from survey data is to use large-sample normal approximations. Ninety-five percent confidence intervals on point estimates of percentiles are often computed by adding and subtracting from the point estimate a quantity equal to twice its standard error. This normal approximation method may not be adequate, however, when estimating the proportion of subjects above or below a selected value, especially when the proportion is near 0.0 or 1.0 or when the effective sample size is small. In addition, confidence intervals on proportions deviating from 0.5 are not theoretically expected to be symmetric around the point estimate. Further, adding and subtracting a multiple of the standard error to an estimate near 0.0 or 1.0 can lead to impossible confidence limits (i.e., proportion estimates below 0.0 or above 1.0). The approach used for the *Report* data tables (and for previous *Reports*) produces asymmetric confidence intervals consistent with skewed (non-normal) biologic data distributions.

The method we use to estimate percentiles and their confidence limits for the *Report* data tables and for previous reports is adapted from a method proposed by Woodruff (1952) for percentile estimation and a method described by Korn and Graubard (1998) for estimating confidence intervals for proportions. This method involves first obtaining an empirical point estimate of the desired percentile by creating a rank ordered listing of the sampled observations along with their sampling weights. From this listing and the sampling weights, it is possible to determine an empirical percentile estimate for the target population. After this point estimate of the percentile has been obtained, the fraction of results below the estimate is calculated. The fraction below the point estimate should be very close to the proportion corresponding to the desired percentile, but can deviate from this proportion depending on the frequency of non-unique sampled observations in the vicinity of the empirical percentile estimate and depending on the sampling weight associated with the sampled observation.

For example, when measuring some compounds as part of NHANES there may be multiple results below a common limit of detection (LOD) or multiple results with identical measured values due to the reporting limitations of the instrument. This phenomenon coupled with the sampling weight assigned to each measured result can lead to difficulties in accurately estimating some percentiles and their corresponding confidence limits because an exact percentile may fall within a large group of results with identical measured values. We circumvented this potential problem for the *Report* data tables by adding a unique, negligibly small number to each measured result. This small number was later subtracted from the percentile estimate without affecting the percentile estimate and without altering any of the original measured results.

By adding a unique, negligibly small number to each sampled observation, it was possible to associate a single sampled observation with the percentile estimate and thus to minimize the difference between the fraction below the point estimate and the proportion corresponding to the desired percentile. However, due to sample weighting, it is still possible to obtain a different point estimate (which will only differ by the difference between numerically adjacent analyte values) depending on how the data are sorted before adding the unique number to each result. We circumvented this potential problem by replacing actual sample weights with an average sample weight where the average is computed across subjects in the same

demographic domain who have identical measured results. We computed standard error estimates in a separate step using the original (unaltered) data. Clopper-Pearson 95% confidence intervals around the estimated proportion are obtained using the method described by Korn and Graubard (1998).

We describe below how SAS Proc Univariate and SUDAAN can be used to carry out this method of percentile and confidence interval estimation. SAS code for calculating these confidence intervals can be downloaded from https://www.cdc.gov/exposurereport/. In the narrative that follows, the term 'demographic domain' refers to a demographic group of interest, for example non-Hispanic blacks. The term 'set of subsample weights' refers to the sampling weights that correspond to the variable for which percentiles will be estimated, for example the set of subsample weights associated with total blood mercury measurements. The term 'analyte' refers to the biological or chemical compound measured in a group of subjects and for which percentiles are to be estimated.

Procedure to calculate percentile estimates and their confidence intervals

Step 1: Obtain a percentile estimate using the original (unaltered data):

Create a separate file with original data (ORIG_DATA). Use SAS (SAS Institute Inc. 1999) Proc Univariate (with default percentile definition equivalent to option PCTLDEF = 5 and with the Freq option variable equal to the original subsample sampling weight) to obtain a point estimate of the percentile (PTLE_ORIG) of an analyte's original results for the demographic domain of interest, for example, the 95th percentile of total blood mercury results for adults aged 20+ years.

Step 2: Obtain a percentile estimate using the altered data:

Create a separate file for use with altered data (ALTR_DATA). Sort the data by analyte measured value separately for each demographic domain and set of subsample weights. Use SAS Proc Means to compute the average sampling weight (WT_{AVE}) for each unique measured result. For each unique measured result, use a counter from 1 to the total number of subjects with identical values to create a unique integer to associate with each measured observation. Each of these numbers should then be divided by 1,000,000,000 and added to the corresponding measured observation. This will result in each measured observation having an additional fractional amount beyond the fourth decimal as long as there are less than 10,000 subjects with the same measured result. Use SAS Proc Univariate (again with default percentile definition equivalent to option PCTLDEF = 5 but now with the Freq option variable equal to WT_{AVE}) to obtain a point estimate of the percentile (PTLE_ALTR) of an analyte's altered results for the demographic domain of interest.

Step 3: Sort the data in the ORIG_DATA file by the stratum (sdmvstra) and primary sampling unit (sdmvpsu) variables. Use SUDAAN (SUDAAN User's Manual, 2001) Proc Descript with Taylor Linearization DESIGN = WR (i.e., sampling with replacement), with proper NEST statement, and with the original subsample sampling weight variable to estimate the proportion (P_ORIG) of subjects with results below the percentile estimate (PTLE_ORIG) obtained in Step 1 and discard P_ORIG but retain the standard error (SEMEAN_ORIG) associated with PTLE_ORIG.

Step 4: Sort the data in the ALTR_DATA file by the stratum (sdmvstra) and primary sampling unit (sdmvpsu) variables. Use SUDAAN (SUDAAN User's Manual, 2001) Proc Descript with Taylor Linearization DESIGN = WR (i.e., sampling with replacement), with proper NEST statement, and with the average sampling weight variable (WT_AVE) to estimate the proportion (P_ALTR) of

subjects with results below the percentile estimate (PTLE_ALTR) obtained in Step 2 and keep P_ALTR but discard the standard error (SEMEAN_ALTR) associated with PTLE_ALTR. Compute the degrees-of-freedom adjusted effective sample size:

(1) $n_{df} = ((t_{num}/t_{denom})^2)P_ALTR(1 - P_ALTR)/(SEMEAN_ORIG^2)$

where t_{num} and t_{denom} are 0.975 critical values of the Student's t distribution with degrees of freedom equal to the actual sample size minus 1 and the number of primary sampling units (PSUs) minus the number of strata, respectively. Note: the degrees of freedom for t_{denom} can vary with the demographic domain of interest (e.g., males).

Step 5: After obtaining an estimate of P_ALTR (i.e., the proportion obtained in Step 4), compute the Clopper-Pearson 95% confidence interval ($P_L(x,n_{df})$, $P_U(x,n_{df})$) as follows:

(2) $P_L(x,n_{df}) = v_1F_{v1,v2}\,(0.025)/(v_2 + v_1F_{v1,v2}(0.025))$

&

$P_U(x,n_{df}) = v_3F_{v3,v4}\,(0.975)/(v_4 + v_3F_{v3,v4}(0.975))$

where x is equal to P_ALTR times n_{df}, $v_1 = 2x$, $v_2 = 2(n_{df} - x + 1)$, $v_3 = 2(x + 1)$, $v_4 = 2(n_{df} - x)$, and $F_{d1,d2}(\beta)$ is the β quantile of an F distribution with d_1 and d_2 degrees of freedom. (Note: If n_{df} is greater than the actual sample size or if P_ALTR is equal to zero, then the actual sample size should be used in place of n_{df}.) This step will produce a lower and an upper limit for the estimated proportion obtained in Step 4.

Step 6: Use SAS Proc Univariate (again with default percentile definition equivalent to option PCTLDEF = 5 and with the Freq option variable equal to WT_{AVE}) to determine the analyte values that correspond to the desired percentile (proportion) and to the lower and upper proportion limits obtained in Step 5. Round these results to 2 or 3 decimals depending on the significant figures associated with the original measured values.

Example:

To estimate the 95th percentile of total blood mercury in adults 20+ years of age in the 2013-2014 survey, create two separate files: name one ORIG_DATA and the other ALTR_DATA. For the ORIG_DATA file use SAS Proc Univariate with the Freq option and the subsample sampling weight (or in this case the full sample sampling weight because total blood mercury is the analyte of interest) to get a weighted point estimate of the analyte value that corresponds to the 95th percentile (PTLE_ORIG). For this example, the value is 4.88 µg/L.

Sort the results in the ALTR_DATA file by analyte measured value. Use SAS Proc Means to compute the average sampling weight (WT_{AVE}) for each unique analyte measured value. For each unique measured result, use a counter from 1 to the total number of subjects with identical values to create a unique integer to associate with each measured observation. Divide each counter value by 1,000,000,000 and add this amount to the corresponding measured observation. For this altered data file (ALTR_DATA) use SAS Proc Univariate with the Freq option and WT_AVE to get a weighted point estimate of the analyte value that corresponds to the 95th percentile (PTLE_ALTR). For this example, the value is also 4.88 µg/L.

For the ORIG_DATA file use SUDAAN to estimate the weighted proportion (P_ORIG) of subjects with results below the value of PTLE_ORIG (which can differ from 0.95 depending on the number of results with identical values; for this example the proportion is 0.9491) and the

standard error (SEMEAN_ORIG) associated with P_ORIG (for this example SEMEAN_ORIG = 0.0044).

For the ALTR_DATA file use SUDAAN to estimate the weighted proportion of subjects (P_ALTR) with results below the value of PTLE_ALTR (which should also be very close to 0.95 regardless of the number of original results with identical values; for this example the proportion is also 0.9491). Then obtain a confidence interval on P_ALTR by computing the weighted Clopper-Pearson 95% confidence limits (equation 2 above) using the degrees-of-freedom adjusted effective sample size as described in equation 1 above. For this example, the effective sample size is 2113.64 resulting in lower and upper confidence limits of 0.93885 and 0.95808, respectively. Then use SAS Proc Univariate (with the Freq option variable equal to WT_{AVE}) to determine the analyte values corresponding to the weighted 93.9^{th} and 95.8^{th} percentiles. These point estimates are the lower and upper confidence limits on the 95th percentile estimate. Round the 95^{th} percentile estimate and its confidence limits to 2 or 3 decimals depending on the significant figures associated with the original measured values. For this example, the rounded point estimate is 4.88 µg/L with lower and upper confidence limits of 4.36 and 5.21 µg/L, respectively.

Appendix C. Limit of Detection Table

Volume One: NHANES 1999-2010

The analytical limit of detection (LOD) for each of the different chemical measurements is presented in the table below. The LOD is the concentration at which the measurement has a 95% probability of being greater than zero (Taylor, 1987). As analytical methods improve, LODs will often change. For this reason, LOD values are reported by survey periods (e.g., 1999-2000, 2001-2002, etc.).

Adducts of Hemoglobin

Chemical, in packed rbcs, pmol/g hemoglobin	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Acrylamide	--	--	3.0	0.11	--	--
Glycidamide	--	--	4.0	0.66	--	--

Tobacco Alkaloids and Metabolites

Chemical, matrix, units	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Cotinine in serum, ng/mL	0.05	0.05	0.015	0.015	0.015	0.015
NNAL in urine, pg/mL	--	--	--	--	0.6	0.6

Disinfection By-Products

Chemical, in blood, pg/mL	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Bromodichloromethane	--	0.233	0.62	0.62	0.62	0.62
Dibromochloromethane	--	0.271	0.62	0.62	0.62	0.62
Tribromomethane (Bromoform)	--	0.596	1.5	1.0	1.0	1.0
Trichloromethane (Chloroform)	--	2.37	2.11	2.1	2.1	2.1

Personal Care and Consumer Product Chemicals and Metabolites

Chemical, in urine, µg/L	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Benzophenone-3	--	--	0.3	0.4	0.4	0.4
Bisphenol A	--	--	0.4	0.4	0.4	0.4
4-tert-Octylphenol	--	--	--	0.2	0.2	0.2
Triclosan	--	--	2.3	2.3	2.3	2.3
Butyl paraben	--	--	--	0.2	0.2	0.2
Ethyl paraben	--	--	--	1.0	1.0	1.0
Methyl paraben	--	--	--	1.0	1.0	1.0
n-Propyl paraben	--	--	--	0.2	0.2	0.2
2,4-Dichlorophenol	--	--	0.17	0.2	0.2	0.2
2,5-Dichlorophenol	--	--	0.12	0.2	0.2	0.2

Fungicides and Metabolites

Chemical, in urine, ng/mL	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
ortho-Phenylphenol	--	--	0.1	0.1	0.1	0.2
Ethylene thiourea	--	--	0.1	0.24	0.21	--
Pentachlorophenol	--	--	0.5	--	--	--
Propylene thiourea	--	--	0.1	0.37	0.36	--

Herbicides and Metabolites

Chemical, in urine, µg/L	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Atrazine	--	--	--	--	0.5	--
Atrazine mercapturate	--	--	--	--	0.5	--
Desethyl atrazine	--	--	--	--	0.25	--
Desisopropyl atrazine	--	--	--	--	0.25	--
Desisopropyl atrazine mercapturate	--	--	--	--	0.1	--
Diaminochloroatrazine	--	--	--	--	0.5	--
2,4-Dichlorophenoxyacetic acid	0.952	0.2	0.1	--	0.4	0.15
2,4,5-Trichlorophenoxyacetic acid	1.2	0.1	0.1	--	0.1	0.1

Sulfonyl Urea Herbicides

Chemical, in urine, µg/L	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Bensulfuron-methyl	--	--	0.05	0.05	0.05	--
Chlorsulfuron	--	--	0.06	0.06	0.06	--
Ethametsulfuron-methyl	--	--	0.1	0.1	0.1	--
Foramsulfuron	--	--	0.05	0.05	0.05	--
Halosulfuron	--	--	0.1	0.1	0.1	--
Mesosulfuron-methyl	--	--	0.06	0.06	0.06	--
Metsulfuron-methyl	--	--	0.05	0.05	0.05	--
Nicosulfuron	--	--	0.1	0.1	0.1	--
Oxasulfuron	--	--	0.06	0.06	0.06	--
Primisulfuron-methyl	--	--	0.07	0.07	0.07	--
Prosulfuron	--	--	0.05	0.05	0.05	--
Rimsulfuron	--	--	0.05	0.05	0.05	--
Sulfometuron-methyl	--	--	0.05	0.05	0.05	--
Sulfosulfuron	--	--	0.1	0.1	0.1	--
Thifensulfuron-methyl	--	--	0.08	0.08	0.08	--
Triasulfuron	--	--	0.07	0.07	0.07	--
Triflusulfuron-methyl	--	--	0.05	0.05	0.05	--

Insect Repellent and Metabolites

Chemical, in urine, µg/L	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
N,N-Diethyl-meta-toluamide (DEET)	--	--	--	--	0.083	0.083
3-(Diethylcarbamoyl) benzoic acid (DCBA)	--	--	--	--	0.93	0.475
N,N-Diethyl-3-(hydroxymethyl) benzamide (DHMB)	--	--	--	--	0.089	0.089

Carbamate Pesticide Metabolites

Chemical, in urine, µg/L	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Carbofuranphenol	0.4	0.4	0.4	--	--	--
2-isopropoxyphenol	1.1	0.4	0.4	--	--	--

Organophosphorus Insecticides: Specific Metabolites

Chemical, in urine, µg/L	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Acephate	--	--	0.1	0.25	0.27	--
Dimethoate	--	--	0.1	0.25	0.1	--
Methamidophos	--	--	0.1	0.37	0.41	--
Omethoate	--	--	0.1	0.14	0.1	--
Malathion dicarboxylic acid	2.64	--	--	--	0.5	0.5
2-Isopropyl-4-methyl-pyrimidinol	7.2	0.7	--	--	0.1	0.1
para-Nitrophenol	0.8	0.1	--	--	0.1	0.1
3,5,6-Trichloro-2-pyridinol	0.4	0.4	--	--	0.1	0.1

Organophosphorus Insecticides: Dialkyl Phosphate Metabolites

Chemical, in urine, µg/L	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Diethylphosphate (DEP)	0.2	0.2	0.1	0.37	0.37	--
Dimethylphosphate (DMP)	0.58	0.5	0.5	0.47	0.47	--
Diethylthiophosphate (DETP)	0.09	0.1	0.2	0.56	0.56	--
Dimethylthiophosphate (DMTP)	0.18	0.4	0.5	0.55	0.55	--
Diethyldithiophosphate (DEDTP)	0.05	0.1	0.1	0.39	0.39	--
Dimethyldithiophosphate (DMDTP)	0.08	0.1	0.1	0.51	0.51	--

Pyrethroid Insecticide Metabolites

Chemical, in urine, µg/L	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
trans-3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid	0.4	0.4	--	--	0.6	0.6
cis-3-(2,2-Dibromovinyl)-2,2-dimethylcyclopropane carboxylic acid	0.1	0.1	--	--	0.5	0.5
4-Fluoro-3-phenoxy-benzoic acid	0.2	0.2	--	--	0.1	0.1
3-Phenoxybenzoic acid	0.1	0.1	--	--	0.1	0.1

Organochlorine Pesticide Metabolites: Urine

Chemical, in urine, µg/L	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
2,4,5-Trichlorophenol	--	--	0.1	0.1	0.1	0.1
2,4,6-Trichlorophenol	--	--	0.5	0.5	0.5	0.5

Organochlorine Pesticides and Metabolites (Lipid Adjusted)

Chemical, in serum, ng/g lipid	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Aldrin	--	5.94	7.8	--	--	--
Dieldrin	--	10.5	7.8	--	--	--
Endrin	--	5.09	7.8	--	--	--
Heptachlor epoxide	14.6	10.5	7.8	--	--	--
Oxychlordane	14.5	10.5	7.8	--	--	--
trans-Nonachlor	14.5	10.5	7.8	--	--	--
p,p'-DDT	20.7	17.4	7.8	--	--	--
p,p'-DDE	18.6	8.3	7.8	--	--	--
o,p'-DDT	20.7	17.4	7.8	--	--	--
Hexachlorobenzene	118.0	31.4	7.8	--	--	--
beta-Hexachlorocyclohexane	9.36	6.76	7.8	--	--	--
gamma-Hexachlorocyclohexane	14.5	10.5	7.8	--	--	--
Mirex	14.6	10.5	7.8	--	--	--

Polybrominated Diphenyl Ethers and PBB 153 (Lipid Adjusted)

Chemical, in serum, ng/g lipid	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
2,2',4'-Tribromodiphenyl ether (BDE 17)	--	--	1.0	--	--	--
2,4,4'-Tribromodiphenyl ether (BDE 28)	--	--	0.8	--	--	--
2,2',4,4'-Tetrabromodiphenyl ether (BDE 47)	--	--	4.2	--	--	--
2,3',4,4'-Tetrabromodiphenyl ether (BDE 66)	--	--	1.0	--	--	--
2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85)	--	--	2.4	--	--	--
2,2',4,4',5-Pentabromodiphenyl ether (BDE 99)	--	--	5.0	--	--	--
2,2',4,4',6-Pentabromodiphenyl ether (BDE 100)	--	--	1.4	--	--	--
2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153)	--	--	2.2	--	--	--
2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154)	--	--	0.8	--	--	--
2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183)	--	--	1.7	--	--	--
2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153)	--	--	0.8	--	--	--

Polychlorinated Dibenzo-p-dioxins (Lipid Adjusted)

Chemical, in serum, pg/g lipid	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	55.9	10.3	13.0	--	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	--	9.0	11.9	--	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	20.1	9.1	12.3	--	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	20.3	9.3	12.3	--	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	329.0	319.0	218.0	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	14.2	6.0	4.5	--	--	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	12.1	5.8	3.8	--	--	--

Polychlorinated Dibenzofurans (Lipid Adjusted)

Chemical, in serum, pg/g lipid	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	13.5	7.0	8.6	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	--	7.0	8.6	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	12.7	6.5	7.4	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	12.6	6.1	7.9	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	12.7	6.0	8.3	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	12.9	5.8	8.2	--	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	35.6	21.0	12.0	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	13.2	5.8	7.1	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	12.7	5.5	6.8	--	--	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	11.9	5.2	6.0	--	--	--

Dioxin-like Polychlorinated Biphenyls: Coplanar PCBs (Lipid Adjusted)

Chemical, in serum, pg/g lipid	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	68.4	26.8	13.1	--	--	--
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	23.2	10.8	13.9	--	--	--
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	27.0	11.0	15.9	--	--	--

Dioxin-like Polychlorinated Biphenyls: mono-ortho-substituted PCBs (Lipid Adjusted)

Chemical, in serum, ng/g lipid	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
2,3,3',4,4'-Pentachlorobiphenyl (PCB 105)	12.4	10.5	0.4	--	--	--
2,3',4,4',5-Pentachlorobiphenyl (PCB 118)	12.5	10.5	0.6	--	--	--
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	12.5	10.5	0.4	--	--	--
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	12.5	10.5	0.4	--	--	--
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	12.4	10.5	0.4	--	--	--
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	--	10.5	0.4	--	--	--

Polychlorinated Biphenyls: Non-Dioxin-Like (Lipid Adjusted)

Chemical, in serum, ng/g lipid	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
2,4,4'-Trichlorobiphenyl (PCB 28)	32.4	--	1.7	--	--	--
2,2'3,5'-Tetrachloro biphenyl (PCB 44)	--	--	0.4	--	--	--
2,2',4,5'-Tetrachloro biphenyl (PCB 49)	--	--	0.4	--	--	--
2,2',5,5'-Tetrachlorobiphenyl (PCB 52)	12.5	12.4	0.8	--	--	--
2,3',4,4'-Tetrachlorobiphenyl (PCB 66)	12.4	12.4	0.8	--	--	--
2,4,4',5-Tetrachlorobiphenyl (PCB 74)	12.4	10.5	0.8	--	--	--
2,2',3,4,5'-Pentachlorobiphenyl (PCB 87)	--	10.5	0.4	--	--	--
2,2',4,4',5-Pentachlorobiphenyl (PCB 99)	12.5	10.5	0.6	--	--	--
2,2',4,5,5'-Pentachlorobiphenyl (PCB 101)	25.7	10.5	0.6	--	--	--
2,3,3',4',6-Pentachlorobiphenyl (PCB 110)	--	10.5	0.8	--	--	--
2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128)	12.4	10.5	0.4	--	--	--
2,2',3,4,4',5' & 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158)	41.1	10.5	0.4	--	--	--
2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146)	12.4	10.5	0.4	--	--	--
2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149)	10.5	--	0.4	--	--	--
2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151)	--	10.5	0.4	--	--	--

Chemical, in serum, ng/g lipid	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153)	55.6	10.5	1.1	--	--	--
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	17.2	10.5	0.4	--	--	--
2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172)	12.5	10.5	0.4	--	--	--
2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177)	12.5	10.5	0.4	--	--	--
2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178)	12.4	10.5	0.4	--	--	--
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	28.2	10.5	0.4	--	--	--
2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183)	12.4	10.5	0.4	--	--	--
2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187)	12.4	10.5	0.4	--	--	--
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194)	--	10.5	0.4	--	--	--
2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195)	--	28.1	0.7	--	--	--
2,2',3,3',4,4',5,6' & 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203)	--	10.5	0.4	--	--	--
2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199)	--	10.5	0.4	--	--	--
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206)	--	28.1	0.7	--	--	--
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209)	--	--	0.7	--	--	--

Metals and Metalloids

Chemical, matrix, units	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Antimony in urine, µg/L	0.04	0.04	0.07	0.032	0.032	0.032
Arsenic, Total in urine, µg/L	--	--	0.74	0.74	0.74	0.74
Arsenic (V) Acid in urine, µg As/L	--	--	1.0	1.0	1.0	1.0
Arsenobetaine in urine, µg As/L	--	--	0.4	0.4	0.4	0.4
Arsenocholine in urine, µg As/L	--	--	0.6	0.6	0.6	0.6
Arsenous (III) Acid in urine, µg As/L	--	--	1.2	1.2	1.2	1.2
Dimethylarsinic Acid in urine, µg As/L	--	--	1.7	1.7	1.7	1.7
Monomethylarsonic Acid in urine, µg As/L	--	--	0.9	0.9	0.9	0.9
Trimethylarsine oxide in urine, µg As/L	--	--	1.0	1.0	1.0	1.0
Barium in urine, µg/L	0.12	0.12	0.31	0.12	0.12	0.12
Beryllium in urine, µg/L	0.13	0.13	0.13	0.072	0.072	0.072
Cadmium in blood, µg/L	0.3	0.3	0.14	0.2	0.2	0.2
Cadmium in urine, µg/L	0.06	0.06	0.06	0.042	0.042	0.042
Cesium in urine, µg/L	0.14	0.14	0.2	0.066	0.066	0.066
Cobalt in urine, µg/L	0.07	0.07	0.08	0.041	0.041	0.041
Lead in blood, µg/dL	0.3	0.3	0.28	0.25	0.25	0.25
Lead in urine, µg/L	0.1	0.1	0.33	0.1	0.1	0.1
Mercury, Total in blood, µg/L	--	--	0.2	0.33	0.33	0.33
Mercury, Inorganic in blood, µg/L	--	--	0.42	0.4	0.35	0.35
Mercury in urine, µg/L	--	--	0.14	0.11	0.08	0.08
Molybdenum in urine, µg/L	0.8	0.8	1.5	0.92	0.92	0.92
Platinum in urine, µg/L	0.04	0.04	0.07	0.009	0.009	0.009
Thallium in urine, µg/L	0.02	0.02	0.02	0.015	0.015	0.015
Tungsten in urine, µg/L	0.04	0.04	0.04	0.021	0.021	0.021
Uranium in urine, µg/L	0.004	0.004	0.005	0.002	0.002	0.002

Perchlorate and Other Anions

Chemical, in urine, units	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Nitrate, mg/L	--	0.7	--	0.7	0.7	0.7
Perchlorate, µg/L	--	0.05	0.05	0.05	0.05	0.05
Thiocyanate, mg/L	--	0.02	--	0.02	0.02	0.02

Perfluoroalkyl and Polyfluoroalkyl Substances: Surfactants

Chemical, in serum, µg/L	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Perfluorobutane sulfonic acid (PFBS)	--	--	0.4	0.1	0.1	0.1
Perfluorodecanoic acid (PFDA)	0.2	--	0.3	0.2	0.2	0.1
Perfluorododecanoic acid (PFDoA)	0.2	--	1.0	0.2	0.2	0.1
Perfluoroheptanoic acid (PFHpA)	0.4	--	0.3	0.4	0.4	0.1
Perfluorohexane sulfonic acid (PFHxS)	0.1	--	0.3	0.1	0.1	0.1
Perfluorononanoic acid (PFNA)	0.1	--	0.1	0.1	0.082	0.082
Perfluorooctanoic acid (PFOA)	0.1	--	0.2	0.1	0.1	0.1
Perfluorooctane sulfonic acid (PFOS)	0.2	--	0.4	0.2	0.2	0.2
Perfluorooctane sulfonamide (PFOSA or FOSA)	0.05	--	0.1	0.1	0.1	0.1
2-(N-Ethyl-perfluorooctane sulfonamido) acetic acid (EtFOSAA)	0.2	--	0.4	0.2	0.2	0.1
2-(N-Methyl-perfluorooctane sulfonamido) acetic acid (MeFOSAA)	0.174	--	0.523	0.174	0.174	0.087
Perfluoroundecanoic acid (PFUnDA)	0.2	--	0.3	0.2	0.2	0.1

Phthalate and Phthalate Alternatives Metabolites

Chemical, in urine, µg/L	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Mono-benzyl phthalate (MBzP)	0.576	0.216	0.072	0.216	0.216	0.216
Mono-n-butyl phthalate (MnBP)	0.9	1.1	0.4	0.6	0.6	0.4
Mono-isobutyl phthalate (MiBP)	--	1.0	0.3	0.3	0.3	0.2
Mono-cyclohexyl phthalate (MCHP)	1.81	0.603	0.402	0.603	0.603	0.402
Mono-ethyl phthalate (MEP)	0.792	0.594	0.264	0.528	0.462	0.396
Mono-2-ethylhexyl phthalate (MEHP)	1.2	1.0	0.9	1.2	1.1	0.5
Mono-(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP)	--	1.0	0.3	0.7	0.7	0.2
Mono-(2-ethyl-5-oxohexyl) phthalate (MEOHP)	--	1.1	0.5	0.7	0.6	0.2
Mono-(2-ethyl-5-carboxypentyl) phthalate (MECPP)	--	--	0.3	0.6	0.5	0.2
Mono-(carboxynonyl) phthalate (MCNP)	--	--	--	0.6	0.5	0.2
Mono-isononyl phthalate (MiNP)	1.23	1.23	1.54	1.23	1.23	0.77
Mono-(carboxyoctyl) phthalate (MCOP)	--	--	--	0.7	0.7	0.2
Mono-methyl phthalate (MMP)	--	0.2	1.0	1.1	1.1	0.5
Mono-(3-carboxypropyl) phthalate (MCPP)	--	0.4	0.2	0.2	0.2	0.2
Mono-n-octyl phthalate (MOP)	1.51	1.68	1.68	1.85	1.85	0.84

Phytoestrogens and Metabolites

Chemical, in urine, µg/L	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Daidzein	0.5	1.6	0.3	0.4	0.4	0.4
Enterodiol	0.8	1.5	0.3	0.04	0.04	0.04
Enterolactone	0.6	1.9	0.3	0.1	0.1	0.1
Equol	3.0	3.3	0.3	0.06	0.06	0.60
Genistein	0.3	0.8	0.3	1.0	0.2	0.2
O-Desmethylangolensin	0.2	0.4	0.2	0.2	0.2	0.2

Polycyclic Aromatic Hydrocarbon Metabolites

Chemical, in urine, units	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
2-Hydroxyfluorene, ng/L	--	--	5.0	5.0	5.0	10.0
3-Hydroxyfluorene, ng/L	--	2.0	5.0	5.0	5.0	10.0
9-Hydroxyfluorene, ng/L	--	--	5.0	5.0	5.0	10.0
1-Hydroxyphenanthrene, ng/L	--	3.5	5.0	5.0	5.0	10.0
2-Hydroxyphenanthrene, ng/L	--	3.2	5.0	5.0	5.0	10.0
3-Hydroxyphenanthrene, ng/L	--	3.6	5.0	5.0	5.0	10.0
4-Hydroxyphenanthrene, ng/L	--	--	5.0	5.0	--	--
1-Hydroxypyrene, ng/L	--	--	5.0	5.0	5.0	10.0
1-Hydroxynaphthalene (1-Naphthol), µg/L	--	--	0.047	0.048	0.045	0.044
2-Hydroxynaphthalene (2-Naphthol), µg/L	--	0.002	0.031	0.013	0.042	0.042

Volatile Organic Compounds (VOCs)

Chemical, in whole blood, ng/mL except as noted	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
1,1,1-Trichloroethane (Methyl chloroform)	--	--	0.048	0.01	0.01	0.01
1,1,1,2-Tetrachloroethane	--	--	--	--	0.04	0.04
1,1,2,2-Tetrachloroethane	--	--	0.01	0.01	0.01	0.01
1,1,2-Trichloroethane	--	--	0.01	0.01	0.01	0.01
1,2,3-Trichloropropane	--	--	--	--	0.04	0.04
1,1-Dichloroethane	--	--	0.01	0.01	0.01	0.01
1,1-Dichloroethene (Vinylidene chloride; 1,1-Dichloroethylene)	--	--	0.009	0.009	0.009	0.009
1,2-Dibromo-3-chloropropane (DBCP)	--	--	0.1	0.1	0.1	0.1
1,2-Dibromoethane	--	--	--	--	0.015	0.015
1,2-Dichlorobenzene (o-Dichlorobenzene)	--	--	0.1	0.1	0.025	0.025
1,2-Dichloroethane (Ethylene dichloride)	--	--	0.01	0.01	0.01	0.01
cis-1,2-Dichloroethene (cis-1,2-Dichloroethylene)	--	--	0.01	0.01	0.01	0.01
trans-1,2-Dichloroethene	--	--	0.01	0.01	0.01	0.01
1,2-Dichloropropane	--	--	0.008	0.008	0.01	0.01
1,3-Dichlorobenzene	--	--	0.05	0.05	0.025	0.025
1,4-Dichlorobenzene (Paradichlorobenzene)	--	0.12	0.12	0.011	0.04	0.04
1,4-Dioxane	--	--	--	--	--	0.5
2,5-Dimethylfuran	--	--	0.012	0.011	0.011	0.011
Benzene	--	0.024	0.024	0.024	0.024	0.024
Chlorobenzene	--	--	0.011	0.011	0.011	0.011
Dibromomethane	--	--	0.03	0.03	0.03	0.03
Dichloromethane (Methylene chloride)	--	--	0.07	0.25	0.25	0.25
Ethylbenzene	--	0.024	0.024	0.024	0.024	0.024

Chemical, in whole blood, ng/mL except as noted	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Furan	--	--	--	--	0.025	0.025
Hexachloroethane	--	--	0.011	0.011	0.011	0.011
Hexane	--	--	--	--	--	0.122
Isopropylbenzene (Cumene)	--	--	--	--	0.040	0.040
Methyl-tert-butyl ether (MTBE), pg/mL	--	0.232	2.0	1.4	1.4	--
Nitrobenzene	--	--	0.3	0.3	0.32	0.32
Nitromethane, pg/mL	--	--	--	--	65.0	65.0
Styrene	--	0.03	0.03	0.03	0.03	0.03
Tetrachloroethene (Perchloroethylene)	--	0.048	0.048	0.048	0.048	0.048
Tetrachloromethane (Carbon tetrachloride)	--	0.010	0.005	0.005	0.005	0.005
Toluene	--	0.025	0.025	0.025	0.025	0.025
Trichloroethene (Trichloroethylene)	--	0.012	0.012	0.012	0.012	0.012
m-/p-Xylene	--	0.034	0.034	0.034	0.034	0.034
o-Xylene	--	0.049	0.049	0.024	0.024	0.024

Volatile Organic Compound (VOC) Metabolites

Chemical, in urine, µg/L	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
N-Acetyl-S-(2-carboxyethyl)-L-cysteine	--	--	--	6.96	--	--
N-Acetyl-S-(3-hydroxypropyl)-L-cysteine	--	--	--	13.0	--	--
N-Acetyl-S-(2-carbamoylethyl)-L-cysteine	--	--	--	2.2	--	--
N-Acetyl-S-(2-carbamoyl-2-hydroxyethyl)-L-cysteine	--	--	--	9.4	--	--
N-Acetyl-S-(2-cyanoethyl)-L-cysteine	--	--	--	0.5	--	--
N-Acetyl-S-(2-hydroxyethyl)-L-cysteine	--	--	--	0.791	--	--
N-Acetyl-S-(phenyl)-L-cysteine	--	--	--	0.6	--	--
N-Acetyl-S-(n-propyl)-L-cysteine	--	--	--	1.2	--	--
N-Acetyl-S-(3,4-dihydroxybutyl)-L-cysteine	--	--	--	5.25	--	--
N-Acetyl-S-(1-hydroxymethyl-2-propenyl)-L-cysteine	--	--	--	0.7	--	--
N-Acetyl-S-(2-hydroxy-3-butenyl)-L-cysteine	--	--	--	0.7	--	--
N-Acetyl-S-(4-hydroxy-2-butenyl)-L-cysteine	--	--	--	0.6	--	--
2-Thioxothiazolidine-4 carboxylic acid	--	--	--	11.2	--	--
N-Acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine	--	--	--	2.0	--	--
2-Aminothiazoline-4-carboxylic acid	--	--	--	15.0	--	--
N-Acetyl-S-(N-methylcarbamoyl)-L-cysteine	--	--	--	6.26	--	--
Phenylglyoxylic acid	--	--	--	12.0	--	--
N-Acetyl-S-(2-hydroxypropyl)-L-cysteine	--	--	--	5.3	--	--
N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine	--	--	--	0.7	--	--
Mandelic acid	--	--	--	12.0	--	--
N-Acetyl-S-(trichlorovinyl)-L-cysteine	--	--	--	3.0	--	--
N-Acetyl-S-(benzyl)-L-cysteine	--	--	--	0.5	--	--
N-Acetyl-S-(1,2-dichlorovinyl)-L-cysteine	--	--	--	12.6	--	--
N-Acetyl-S-(2,2-dichlorovinyl)-L-cysteine	--	--	--	4.7	--	--
N-Acetyl-S-(dimethylphenyl)-L-cysteine	--	--	--	0.5	--	--
2-Methylhippuric acid	--	--	--	5.0	--	--
3- & 4-Methylhippuric acid	--	--	--	8.0	--	--

Appendix D. References for Biomonitoring Analytical Methods

Adducts of Hemoglobin

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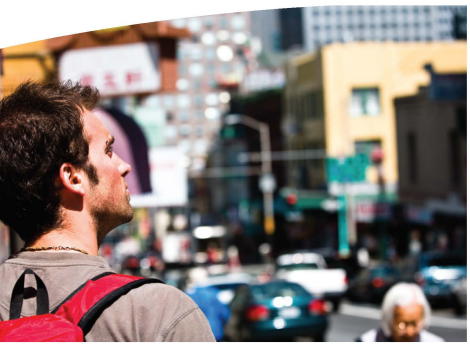
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