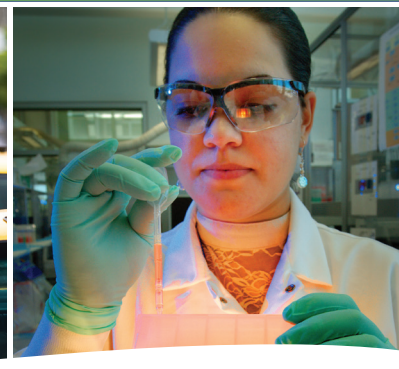


Fourth National Report on Human Exposure to Environmental Chemicals

Updated Tables, March 2021

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



**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'-Nitrososornicotine (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
 - Dicycyl 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-dioxo-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-methylheptanoic acid, perfluoro-5-methylheptanoic acid, perfluoro-6-methylheptanoic 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 (OCSP)

<https://www.epa.gov/aboutepa/about-office-chemical-safety-and-pollution-prevention-ocsp>

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/impr.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/>

Organochlorine Pesticides and Metabolites

Serum Oxychlordanes (lipid adjusted) (2005 - 2010)†

CAS Number 27304-13-8

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	4.80	1.1	9
Non-Hispanic Whites	Male	12-19	07-08	3.52	0.48	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	6.50	1.06	12
Non-Hispanic Whites	Male	20-39	07-08	6.93	0.73	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	14.9	1.4	12
Non-Hispanic Whites	Male	40-59	07-08	12.1	0.5	16
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	25.4	2.5	15
Non-Hispanic Whites	Male	60+	07-08	26.1	1.4	23
Non-Hispanic Whites	Male	60+	09-10	22.7	1.5	20
Non-Hispanic Whites	Female	12-19	05-06	2.98	0.3	10
Non-Hispanic Whites	Female	12-19	07-08	3.66	0.69	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	5.64	0.56	16
Non-Hispanic Whites	Female	20-39	07-08	5.79	0.49	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	13.7	1	13
Non-Hispanic Whites	Female	40-59	07-08	11.8	0.7	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	28.9	2.6	17
Non-Hispanic Whites	Female	60+	07-08	31.8	2.2	21
Non-Hispanic Whites	Female	60+	09-10	28.1	2	22
Non-Hispanic Blacks	Male	12-19	05-06	4.08	0.49	13
Non-Hispanic Blacks	Male	12-19	07-08	2.80	0.69	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	5
Non-Hispanic Blacks	Male	20-39	05-06	4.53	0.9	6
Non-Hispanic Blacks	Male	20-39	07-08	5.72	0.25	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	12.0	1	5
Non-Hispanic Blacks	Male	40-59	07-08	12.1	1	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	6
Non-Hispanic Blacks	Male	60+	05-06	32.7	5.3	5
Non-Hispanic Blacks	Male	60+	07-08	26.6	2.3	8
Non-Hispanic Blacks	Male	60+	09-10	25.3	3.4	9
Non-Hispanic Blacks	Female	12-19	05-06	2.92	0.31	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	5.56	0.68	7
Non-Hispanic Blacks	Female	20-39	07-08	4.45	0.74	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	14.5	0.8	7
Non-Hispanic Blacks	Female	40-59	07-08	14.3	0.9	8
Non-Hispanic Blacks	Female	40-59	09-10	*	*	6
Non-Hispanic Blacks	Female	60+	05-06	52.9	11.7	5
Non-Hispanic Blacks	Female	60+	07-08	38.1	1.5	7
Non-Hispanic Blacks	Female	60+	09-10	40.3	3.6	7
Mexican Americans	Male	12-19	05-06	2.54	0.33	11

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	07-08	2.76	0.41	6
Mexican Americans	Male	12-19	09-10	*	*	7
Mexican Americans	Male	20-39	05-06	5.84	1.22	9
Mexican Americans	Male	20-39	07-08	4.93	0.36	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	11.0	1.4	4
Mexican Americans	Male	40-59	07-08	12.0	0.7	6
Mexican Americans	Male	40-59	09-10	*	*	8
Mexican Americans	Male	60+	05-06	18.6	2.4	4
Mexican Americans	Male	60+	07-08	21.9	2	5
Mexican Americans	Male	60+	09-10	30.5	3.6	5
Mexican Americans	Female	12-19	05-06	2.39	0.25	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	4.39	0.5	9
Mexican Americans	Female	20-39	07-08	4.17	0.52	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	13.7	1.8	6
Mexican Americans	Female	40-59	07-08	13.4	2	6
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	27.4	3.8	3
Mexican Americans	Female	60+	07-08	28.2	3.8	5
Mexican Americans	Female	60+	09-10	32.0	5.8	6
All Hispanics	Male	12-19	09-10	*	*	10
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	13
All Hispanics	Male	60+	09-10	26.4	3	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	28.2	3.7	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.2, 1.41, and 20.0, 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/ChlordaneHeptachlor_BiomonitoringSummary.html

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

Serum Oxychlordanes (lipid adjusted) (2011 - 2016)†

CAS Number 27304-13-8

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	2.44	0.25	6
Non-Hispanic Whites	Male	12-19	13-14	2.23	0.17	8
Non-Hispanic Whites	Male	12-19	15-16	3.17	0.47	7
Non-Hispanic Whites	Male	20-39	11-12	4.27	0.24	12
Non-Hispanic Whites	Male	20-39	13-14	3.64	0.27	14
Non-Hispanic Whites	Male	20-39	15-16	4.12	0.56	10
Non-Hispanic Whites	Male	40-59	11-12	10.8	0.5	12
Non-Hispanic Whites	Male	40-59	13-14	9.98	0.67	14
Non-Hispanic Whites	Male	40-59	15-16	8.68	0.43	10
Non-Hispanic Whites	Male	60+	11-12	24.3	3	12
Non-Hispanic Whites	Male	60+	13-14	23.1	1.2	17
Non-Hispanic Whites	Male	60+	15-16	17.2	1.2	14
Non-Hispanic Whites	Female	12-19	11-12	2.75	0.49	5
Non-Hispanic Whites	Female	12-19	13-14	2.42	0.2	6
Non-Hispanic Whites	Female	12-19	15-16	1.75	0.37	5
Non-Hispanic Whites	Female	20-39	11-12	3.82	0.39	13
Non-Hispanic Whites	Female	20-39	13-14	4.40	0.37	15
Non-Hispanic Whites	Female	20-39	15-16	3.03	0.27	11
Non-Hispanic Whites	Female	40-59	11-12	12.7	1.1	11
Non-Hispanic Whites	Female	40-59	13-14	10.8	0.7	16
Non-Hispanic Whites	Female	40-59	15-16	7.69	0.55	9
Non-Hispanic Whites	Female	60+	11-12	28.9	3.8	14
Non-Hispanic Whites	Female	60+	13-14	28.6	2.4	20
Non-Hispanic Whites	Female	60+	15-16	23.0	2.4	13
Non-Hispanic Blacks	Male	12-19	11-12	2.84	0.56	7
Non-Hispanic Blacks	Male	12-19	13-14	2.59	0.13	6
Non-Hispanic Blacks	Male	12-19	15-16	2.09	0.32	4
Non-Hispanic Blacks	Male	20-39	11-12	4.43	0.48	9
Non-Hispanic Blacks	Male	20-39	13-14	3.83	0.44	7
Non-Hispanic Blacks	Male	20-39	15-16	3.41	0.23	7
Non-Hispanic Blacks	Male	40-59	11-12	8.62	0.63	7
Non-Hispanic Blacks	Male	40-59	13-14	10.8	1.3	7
Non-Hispanic Blacks	Male	40-59	15-16	8.33	0.74	7
Non-Hispanic Blacks	Male	60+	11-12	21.5	1.4	9
Non-Hispanic Blacks	Male	60+	13-14	24.3	3.5	9
Non-Hispanic Blacks	Male	60+	15-16	16.2	1.6	7
Non-Hispanic Blacks	Female	12-19	11-12	1.87	0.26	6
Non-Hispanic Blacks	Female	12-19	13-14	2.32	0.22	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	3.71	0.52	8
Non-Hispanic Blacks	Female	20-39	13-14	3.04	0.32	8
Non-Hispanic Blacks	Female	20-39	15-16	2.89	0.14	9
Non-Hispanic Blacks	Female	40-59	11-12	12.2	1.1	8
Non-Hispanic Blacks	Female	40-59	13-14	13.7	1.4	8
Non-Hispanic Blacks	Female	40-59	15-16	9.08	0.59	12
Non-Hispanic Blacks	Female	60+	11-12	29.7	2.6	8
Non-Hispanic Blacks	Female	60+	13-14	39.0	4.8	8
Non-Hispanic Blacks	Female	60+	15-16	23.6	2.3	7
Mexican Americans	Male	12-19	11-12	2.17	0.3	5

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	13-14	1.62	0.3	7
Mexican Americans	Male	12-19	15-16	1.70	0.18	6
Mexican Americans	Male	20-39	11-12	4.15	0.25	4
Mexican Americans	Male	20-39	13-14	3.15	0.36	5
Mexican Americans	Male	20-39	15-16	3.23	0.71	7
Mexican Americans	Male	40-59	11-12	11.2	1.8	4
Mexican Americans	Male	40-59	13-14	7.65	0.96	5
Mexican Americans	Male	40-59	15-16	6.41	0.87	4
Mexican Americans	Male	60+	11-12	15.9	3	2
Mexican Americans	Male	60+	13-14	17.7	2.7	4
Mexican Americans	Male	60+	15-16	17.1	2.3	5
Mexican Americans	Female	12-19	11-12	1.76	0.4	4
Mexican Americans	Female	12-19	13-14	1.83	0.19	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	3.04	0.45	4
Mexican Americans	Female	20-39	13-14	3.65	0.51	5
Mexican Americans	Female	20-39	15-16	2.17	0.21	6
Mexican Americans	Female	40-59	11-12	10.8	0.5	3
Mexican Americans	Female	40-59	13-14	7.84	1.62	6
Mexican Americans	Female	40-59	15-16	7.20	0.75	8
Mexican Americans	Female	60+	11-12	27.4	3.4	3
Mexican Americans	Female	60+	13-14	24.7	1.1	5
Mexican Americans	Female	60+	15-16	23.0	1.8	7
All Hispanics	Male	12-19	11-12	1.99	0.27	7
All Hispanics	Male	12-19	13-14	1.83	0.25	10
All Hispanics	Male	12-19	15-16	1.51	0.16	9
All Hispanics	Male	20-39	11-12	3.31	0.38	8
All Hispanics	Male	20-39	13-14	3.27	0.24	8
All Hispanics	Male	20-39	15-16	2.96	0.48	11
All Hispanics	Male	40-59	11-12	8.58	1.49	7
All Hispanics	Male	40-59	13-14	7.23	0.66	9
All Hispanics	Male	40-59	15-16	5.48	0.93	9
All Hispanics	Male	60+	11-12	13.2	2	6
All Hispanics	Male	60+	13-14	16.5	2.4	7
All Hispanics	Male	60+	15-16	18.5	2.7	9
All Hispanics	Female	12-19	11-12	1.70	0.26	7
All Hispanics	Female	12-19	13-14	1.90	0.22	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	2.57	0.31	8
All Hispanics	Female	20-39	13-14	3.14	0.34	9
All Hispanics	Female	20-39	15-16	1.97	0.14	11
All Hispanics	Female	40-59	11-12	8.43	0.97	7
All Hispanics	Female	40-59	13-14	8.15	0.99	10
All Hispanics	Female	40-59	15-16	7.10	0.81	13
All Hispanics	Female	60+	11-12	24.3	2.9	7
All Hispanics	Female	60+	13-14	22.7	1.4	9
All Hispanics	Female	60+	15-16	20.6	1.6	13
Asians	Male	12-19	11-12	1.73	0.02	3
Asians	Male	12-19	13-14	2.01	0.35	3
Asians	Male	12-19	15-16	1.82	0.09	3
Asians	Male	20-39	11-12	3.94	0.38	6
Asians	Male	20-39	13-14	3.10	0.38	4
Asians	Male	20-39	15-16	2.00	0.29	5
Asians	Male	40-59	11-12	7.01	0.66	6
Asians	Male	40-59	13-14	6.73	1.31	4
Asians	Male	40-59	15-16	6.28	1.06	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	11-12	11.3	1.5	4
Asians	Male	60+	13-14	13.3	2.4	3
Asians	Male	60+	15-16	10.2	2.1	3
Asians	Female	12-19	11-12	1.49	0.16	4
Asians	Female	12-19	13-14	2.28	0.35	3
Asians	Female	12-19	15-16	1.52	0.07	3
Asians	Female	20-39	11-12	3.61	0.76	6
Asians	Female	20-39	13-14	3.31	0.35	5
Asians	Female	20-39	15-16	1.57	0.08	4
Asians	Female	40-59	11-12	6.87	1.14	6
Asians	Female	40-59	13-14	7.09	0.76	7
Asians	Female	40-59	15-16	6.94	0.88	5
Asians	Female	60+	11-12	25.8 **	8.4	3
Asians	Female	60+	13-14	18.2	3.8	3
Asians	Female	60+	15-16	13.5	3.7	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 1.3, 1.3, and 1.3, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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

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

Serum Oxychlordane (whole weight) (2005 - 2010)†

CAS Number 27304-13-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.026	0.006	9
Non-Hispanic Whites	12-19	Male	07-08	.018	0.002	6
Non-Hispanic Whites	12-19	Male	09-10	*	*	10
Non-Hispanic Whites	20-39	Male	05-06	.049	0.01	12
Non-Hispanic Whites	20-39	Male	07-08	.047	0.006	15
Non-Hispanic Whites	20-39	Male	09-10	*	*	17
Non-Hispanic Whites	40-59	Male	05-06	.113	0.013	12
Non-Hispanic Whites	40-59	Male	07-08	.089	0.005	16
Non-Hispanic Whites	40-59	Male	09-10	*	*	17
Non-Hispanic Whites	60+	Male	05-06	.171	0.015	15
Non-Hispanic Whites	60+	Male	07-08	.167	0.009	23
Non-Hispanic Whites	60+	Male	09-10	.137	0.008	20
Non-Hispanic Whites	12-19	Female	05-06	.016	0.002	10
Non-Hispanic Whites	12-19	Female	07-08	.017	0.003	7
Non-Hispanic Whites	12-19	Female	09-10	*	*	8
Non-Hispanic Whites	20-39	Female	05-06	.037	0.004	16
Non-Hispanic Whites	20-39	Female	07-08	.035	0.003	13
Non-Hispanic Whites	20-39	Female	09-10	*	*	19
Non-Hispanic Whites	40-59	Female	05-06	.101	0.01	13
Non-Hispanic Whites	40-59	Female	07-08	.079	0.006	17
Non-Hispanic Whites	40-59	Female	09-10	*	*	17
Non-Hispanic Whites	60+	Female	05-06	.210	0.017	17
Non-Hispanic Whites	60+	Female	07-08	.214	0.016	21
Non-Hispanic Whites	60+	Female	09-10	.170	0.011	22
Non-Hispanic Blacks	12-19	Male	05-06	.020	0.002	13
Non-Hispanic Blacks	12-19	Male	07-08	.013	0.003	6
Non-Hispanic Blacks	12-19	Male	09-10	*	*	5
Non-Hispanic Blacks	20-39	Male	05-06	.027	0.005	6
Non-Hispanic Blacks	20-39	Male	07-08	.032	0.001	6
Non-Hispanic Blacks	20-39	Male	09-10	*	*	7
Non-Hispanic Blacks	40-59	Male	05-06	.076	0.006	5
Non-Hispanic Blacks	40-59	Male	07-08	.077	0.006	6
Non-Hispanic Blacks	40-59	Male	09-10	*	*	6
Non-Hispanic Blacks	60+	Male	05-06	.193	0.028	5
Non-Hispanic Blacks	60+	Male	07-08	.162	0.016	8
Non-Hispanic Blacks	60+	Male	09-10	.135	0.018	9
Non-Hispanic Blacks	12-19	Female	05-06	.014	0.001	14
Non-Hispanic Blacks	12-19	Female	07-08	*	*	5
Non-Hispanic Blacks	12-19	Female	09-10	*	*	6
Non-Hispanic Blacks	20-39	Female	05-06	.032	0.004	7
Non-Hispanic Blacks	20-39	Female	07-08	.022	0.004	8
Non-Hispanic Blacks	20-39	Female	09-10	*	*	7
Non-Hispanic Blacks	40-59	Female	05-06	.093	0.006	7
Non-Hispanic Blacks	40-59	Female	07-08	.086	0.007	8
Non-Hispanic Blacks	40-59	Female	09-10	*	*	6
Non-Hispanic Blacks	60+	Female	05-06	.347	0.067	5
Non-Hispanic Blacks	60+	Female	07-08	.229	0.011	7
Non-Hispanic Blacks	60+	Female	09-10	.229	0.016	7
Mexican Americans	12-19	Male	05-06	.014	0.002	11
Mexican Americans	12-19	Male	07-08	.014	0.002	6
Mexican Americans	12-19	Male	09-10	*	*	7

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.041	0.007	9
Mexican Americans	20-39	Male	07-08	.034	0.003	9
Mexican Americans	20-39	Male	09-10	*	*	8
Mexican Americans	40-59	Male	05-06	.089	0.014	4
Mexican Americans	40-59	Male	07-08	.087	0.008	6
Mexican Americans	40-59	Male	09-10	*	*	8
Mexican Americans	60+	Male	05-06	.137	0.025	4
Mexican Americans	60+	Male	07-08	.156	0.01	5
Mexican Americans	60+	Male	09-10	.188	0.022	5
Mexican Americans	12-19	Female	05-06	.013	0.001	16
Mexican Americans	12-19	Female	07-08	*	*	5
Mexican Americans	12-19	Female	09-10	*	*	7
Mexican Americans	20-39	Female	05-06	.029	0.003	9
Mexican Americans	20-39	Female	07-08	.024	0.003	8
Mexican Americans	20-39	Female	09-10	*	*	10
Mexican Americans	40-59	Female	05-06	.100	0.011	6
Mexican Americans	40-59	Female	07-08	.090	0.013	6
Mexican Americans	40-59	Female	09-10	*	*	9
Mexican Americans	60+	Female	05-06	.208	0.035	3
Mexican Americans	60+	Female	07-08	.193	0.027	5
Mexican Americans	60+	Female	09-10	.176	0.03	6
All Hispanics	12-19	Male	09-10	*	*	10
All Hispanics	20-39	Male	09-10	*	*	13
All Hispanics	40-59	Male	09-10	*	*	13
All Hispanics	60+	Male	09-10	.166	0.018	8
All Hispanics	12-19	Female	09-10	*	*	10
All Hispanics	20-39	Female	09-10	*	*	14
All Hispanics	40-59	Female	09-10	*	*	14
All Hispanics	60+	Female	09-10	.165	0.019	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

* 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 Oxychlordan (whole weight) (2011 - 2016)†

CAS Number 27304-13-8

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.012	0.001	6
Non-Hispanic Whites	Male	12-19	13-14	.010	0.001	8
Non-Hispanic Whites	Male	12-19	15-16	.015	0.002	7
Non-Hispanic Whites	Male	20-39	11-12	.025	0.002	12
Non-Hispanic Whites	Male	20-39	13-14	.020	0.001	14
Non-Hispanic Whites	Male	20-39	15-16	.026	0.004	10
Non-Hispanic Whites	Male	40-59	11-12	.072	0.004	12
Non-Hispanic Whites	Male	40-59	13-14	.059	0.005	14
Non-Hispanic Whites	Male	40-59	15-16	.058	0.003	10
Non-Hispanic Whites	Male	60+	11-12	.134	0.016	12
Non-Hispanic Whites	Male	60+	13-14	.124	0.007	17
Non-Hispanic Whites	Male	60+	15-16	.093	0.006	14
Non-Hispanic Whites	Female	12-19	11-12	.015	0.002	5
Non-Hispanic Whites	Female	12-19	13-14	.012	0.001	6
Non-Hispanic Whites	Female	12-19	15-16	.008	0.002	5
Non-Hispanic Whites	Female	20-39	11-12	.021	0.002	13
Non-Hispanic Whites	Female	20-39	13-14	.023	0.002	15
Non-Hispanic Whites	Female	20-39	15-16	.016	0.002	11
Non-Hispanic Whites	Female	40-59	11-12	.081	0.008	11
Non-Hispanic Whites	Female	40-59	13-14	.064	0.005	16
Non-Hispanic Whites	Female	40-59	15-16	.049	0.004	9
Non-Hispanic Whites	Female	60+	11-12	.177	0.023	14
Non-Hispanic Whites	Female	60+	13-14	.170	0.015	20
Non-Hispanic Whites	Female	60+	15-16	.142	0.014	13
Non-Hispanic Blacks	Male	12-19	11-12	.013	0.002	7
Non-Hispanic Blacks	Male	12-19	13-14	.011	0	6
Non-Hispanic Blacks	Male	12-19	15-16	.009	0.001	4
Non-Hispanic Blacks	Male	20-39	11-12	.023	0.003	9
Non-Hispanic Blacks	Male	20-39	13-14	.019	0.002	7
Non-Hispanic Blacks	Male	20-39	15-16	.018	0.001	7
Non-Hispanic Blacks	Male	40-59	11-12	.048	0.004	7
Non-Hispanic Blacks	Male	40-59	13-14	.060	0.007	7
Non-Hispanic Blacks	Male	40-59	15-16	.053	0.005	7
Non-Hispanic Blacks	Male	60+	11-12	.117	0.009	9
Non-Hispanic Blacks	Male	60+	13-14	.126	0.019	9
Non-Hispanic Blacks	Male	60+	15-16	.087	0.008	7
Non-Hispanic Blacks	Female	12-19	11-12	.008	0.001	6
Non-Hispanic Blacks	Female	12-19	13-14	.010	0.001	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.020	0.003	8
Non-Hispanic Blacks	Female	20-39	13-14	.015	0.002	8
Non-Hispanic Blacks	Female	20-39	15-16	.014	0.001	9
Non-Hispanic Blacks	Female	40-59	11-12	.074	0.008	8
Non-Hispanic Blacks	Female	40-59	13-14	.072	0.008	8
Non-Hispanic Blacks	Female	40-59	15-16	.053	0.005	12
Non-Hispanic Blacks	Female	60+	11-12	.166	0.014	8
Non-Hispanic Blacks	Female	60+	13-14	.208	0.022	8
Non-Hispanic Blacks	Female	60+	15-16	.138	0.014	7
Mexican Americans	Male	12-19	11-12	.011	0.001	5

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	13-14	.007	0.001	7
Mexican Americans	Male	12-19	15-16	.009	0.001	6
Mexican Americans	Male	20-39	11-12	.026	0.002	4
Mexican Americans	Male	20-39	13-14	.019	0.002	5
Mexican Americans	Male	20-39	15-16	.025 **	0.009	7
Mexican Americans	Male	40-59	11-12	.085	0.009	4
Mexican Americans	Male	40-59	13-14	.047	0.006	5
Mexican Americans	Male	40-59	15-16	.042	0.005	4
Mexican Americans	Male	60+	11-12	.094	0.016	2
Mexican Americans	Male	60+	13-14	.094	0.012	4
Mexican Americans	Male	60+	15-16	.098	0.013	5
Mexican Americans	Female	12-19	11-12	.009	0.002	4
Mexican Americans	Female	12-19	13-14	.009	0.001	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.017	0.002	4
Mexican Americans	Female	20-39	13-14	.019	0.003	5
Mexican Americans	Female	20-39	15-16	.012	0.001	6
Mexican Americans	Female	40-59	11-12	.064	0.004	3
Mexican Americans	Female	40-59	13-14	.046	0.009	6
Mexican Americans	Female	40-59	15-16	.046	0.005	8
Mexican Americans	Female	60+	11-12	.170	0.026	3
Mexican Americans	Female	60+	13-14	.144	0.007	5
Mexican Americans	Female	60+	15-16	.145	0.012	7
All Hispanics	Male	12-19	11-12	9.63	1.24	7
All Hispanics	Male	12-19	13-14	8.66	1.06	10
All Hispanics	Male	12-19	15-16	7.68	0.73	9
All Hispanics	Male	20-39	11-12	20.5	2.6	8
All Hispanics	Male	20-39	13-14	19.4	1.1	8
All Hispanics	Male	20-39	15-16	20.9	5.6	11
All Hispanics	Male	40-59	11-12	63.6	10.3	7
All Hispanics	Male	40-59	13-14	43.8	3.9	9
All Hispanics	Male	40-59	15-16	35.3	5.8	9
All Hispanics	Male	60+	11-12	78.5	13.1	6
All Hispanics	Male	60+	13-14	88.3	11.3	7
All Hispanics	Male	60+	15-16	111	19	9
All Hispanics	Female	12-19	11-12	8.33	1.25	7
All Hispanics	Female	12-19	13-14	8.79	0.94	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	14.1	1.6	8
All Hispanics	Female	20-39	13-14	17.1	1.7	9
All Hispanics	Female	20-39	15-16	10.7	0.8	11
All Hispanics	Female	40-59	11-12	52.7	6.1	7
All Hispanics	Female	40-59	13-14	47.4	5.6	10
All Hispanics	Female	40-59	15-16	45.9	5.9	13
All Hispanics	Female	60+	11-12	149	17	7
All Hispanics	Female	60+	13-14	134	7	9
All Hispanics	Female	60+	15-16	127	10	13
Asians	Male	12-19	11-12	.009	0	3
Asians	Male	12-19	13-14	.009	0.001	3
Asians	Male	12-19	15-16	.008	0	3
Asians	Male	20-39	11-12	.022	0.002	6
Asians	Male	20-39	13-14	.018	0.003	4
Asians	Male	20-39	15-16	.013	0.002	5
Asians	Male	40-59	11-12	.043	0.005	6
Asians	Male	40-59	13-14	.038	0.006	4
Asians	Male	40-59	15-16	.041	0.008	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	11-12	.061	0.007	4
Asians	Male	60+	13-14	.079	0.008	3
Asians	Male	60+	15-16	.056	0.009	3
Asians	Female	12-19	11-12	.007	0.001	4
Asians	Female	12-19	13-14	.011	0.001	3
Asians	Female	12-19	15-16	.008	0	3
Asians	Female	20-39	11-12	.020	0.004	6
Asians	Female	20-39	13-14	.017	0.002	5
Asians	Female	20-39	15-16	.009	0.001	4
Asians	Female	40-59	11-12	.042	0.008	6
Asians	Female	40-59	13-14	.041	0.004	7
Asians	Female	40-59	15-16	.042	0.006	5
Asians	Female	60+	11-12	.149 **	0.051	3
Asians	Female	60+	13-14	.106	0.014	3
Asians	Female	60+	15-16	.083	0.024	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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

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

Serum trans-Nonachlor (lipid adjusted) (2005 - 2010)†

CAS Number 39765-80-5

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	9.03 **	2.84	9
Non-Hispanic Whites	Male	12-19	07-08	6.06	0.99	6
Non-Hispanic Whites	Male	12-19	09-10	6.17	1.19	10
Non-Hispanic Whites	Male	20-39	05-06	11.3	2	12
Non-Hispanic Whites	Male	20-39	07-08	11.1	1.4	15
Non-Hispanic Whites	Male	20-39	09-10	9.29	0.66	17
Non-Hispanic Whites	Male	40-59	05-06	26.9	3.9	12
Non-Hispanic Whites	Male	40-59	07-08	21.5	1.1	16
Non-Hispanic Whites	Male	40-59	09-10	17.9	1.3	17
Non-Hispanic Whites	Male	60+	05-06	49.4	7.9	15
Non-Hispanic Whites	Male	60+	07-08	50.6	4.1	23
Non-Hispanic Whites	Male	60+	09-10	36.4	3.5	21
Non-Hispanic Whites	Female	12-19	05-06	4.94	0.52	10
Non-Hispanic Whites	Female	12-19	07-08	6.70	0.82	7
Non-Hispanic Whites	Female	12-19	09-10	3.65	0.19	8
Non-Hispanic Whites	Female	20-39	05-06	9.70	1.44	16
Non-Hispanic Whites	Female	20-39	07-08	8.95	0.93	13
Non-Hispanic Whites	Female	20-39	09-10	6.25	0.49	19
Non-Hispanic Whites	Female	40-59	05-06	21.8	2.3	13
Non-Hispanic Whites	Female	40-59	07-08	16.4	1.4	17
Non-Hispanic Whites	Female	40-59	09-10	17.7	1.5	17
Non-Hispanic Whites	Female	60+	05-06	50.2	6.1	17
Non-Hispanic Whites	Female	60+	07-08	51.7	6	21
Non-Hispanic Whites	Female	60+	09-10	42.9	4	22
Non-Hispanic Blacks	Male	12-19	05-06	6.50	0.67	13
Non-Hispanic Blacks	Male	12-19	07-08	4.71	0.6	6
Non-Hispanic Blacks	Male	12-19	09-10	4.25	0.86	6
Non-Hispanic Blacks	Male	20-39	05-06	8.24	0.86	6
Non-Hispanic Blacks	Male	20-39	07-08	8.87	0.89	6
Non-Hispanic Blacks	Male	20-39	09-10	7.63	1.69	5
Non-Hispanic Blacks	Male	40-59	05-06	22.0	2.6	5
Non-Hispanic Blacks	Male	40-59	07-08	21.7	2	6
Non-Hispanic Blacks	Male	40-59	09-10	22.5	2.3	7
Non-Hispanic Blacks	Male	60+	05-06	66.4	13.2	5
Non-Hispanic Blacks	Male	60+	07-08	54.4	4.6	8
Non-Hispanic Blacks	Male	60+	09-10	51.4	7.4	9
Non-Hispanic Blacks	Female	12-19	05-06	4.44	0.54	14
Non-Hispanic Blacks	Female	12-19	07-08	3.39 **	1.06	5
Non-Hispanic Blacks	Female	12-19	09-10	3.27	0.35	6
Non-Hispanic Blacks	Female	20-39	05-06	9.32	1.22	7
Non-Hispanic Blacks	Female	20-39	07-08	6.42	0.56	8
Non-Hispanic Blacks	Female	20-39	09-10	6.82	0.47	7
Non-Hispanic Blacks	Female	40-59	05-06	24.1	1.5	7
Non-Hispanic Blacks	Female	40-59	07-08	20.4	1.6	8
Non-Hispanic Blacks	Female	40-59	09-10	21.7	2.9	7
Non-Hispanic Blacks	Female	60+	05-06	89.0	15.4	5
Non-Hispanic Blacks	Female	60+	07-08	68.0	3.6	7
Non-Hispanic Blacks	Female	60+	09-10	64.2	5	7
Mexican Americans	Male	12-19	05-06	3.71	0.49	11

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	07-08	3.91	0.74	6
Mexican Americans	Male	12-19	09-10	3.71	0.35	8
Mexican Americans	Male	20-39	05-06	7.58	0.75	9
Mexican Americans	Male	20-39	07-08	8.43	0.91	9
Mexican Americans	Male	20-39	09-10	6.37	1.01	8
Mexican Americans	Male	40-59	05-06	18.8	2.4	4
Mexican Americans	Male	40-59	07-08	24.5	2.7	6
Mexican Americans	Male	40-59	09-10	18.8	1.5	8
Mexican Americans	Male	60+	05-06	30.7	6.3	4
Mexican Americans	Male	60+	07-08	40.3	4	5
Mexican Americans	Male	60+	09-10	62.9	10.5	5
Mexican Americans	Female	12-19	05-06	3.53	0.23	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	6.40	0.75	9
Mexican Americans	Female	20-39	07-08	7.55	0.84	8
Mexican Americans	Female	20-39	09-10	6.06	0.68	10
Mexican Americans	Female	40-59	05-06	18.5	1.7	6
Mexican Americans	Female	40-59	07-08	22.6	4	6
Mexican Americans	Female	40-59	09-10	20.1	2.1	9
Mexican Americans	Female	60+	05-06	46.4	9.8	3
Mexican Americans	Female	60+	07-08	46.9	7.1	5
Mexican Americans	Female	60+	09-10	58.3	10	6
All Hispanics	Male	12-19	09-10	3.48	0.29	11
All Hispanics	Male	20-39	09-10	7.49	1	13
All Hispanics	Male	40-59	09-10	17.2	1.3	13
All Hispanics	Male	60+	09-10	52.2	8.4	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	6.08	0.61	14
All Hispanics	Female	40-59	09-10	17.6	1.9	14
All Hispanics	Female	60+	09-10	51.3	6.9	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.64, 1.41, and 3.1, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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

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

Serum trans-Nonachlor (lipid adjusted) (2011 - 2016)†

CAS Number 39765-80-5

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	3.86	0.51	6
Non-Hispanic Whites	Male	12-19	13-14	3.21	0.37	8
Non-Hispanic Whites	Male	12-19	15-16	6.06	1.25	7
Non-Hispanic Whites	Male	20-39	11-12	7.47	0.62	12
Non-Hispanic Whites	Male	20-39	13-14	6.34	0.49	14
Non-Hispanic Whites	Male	20-39	15-16	8.52	1.89	10
Non-Hispanic Whites	Male	40-59	11-12	18.7	1	12
Non-Hispanic Whites	Male	40-59	13-14	16.9	1.3	14
Non-Hispanic Whites	Male	40-59	15-16	17.6	1	10
Non-Hispanic Whites	Male	60+	11-12	52.7	8.2	12
Non-Hispanic Whites	Male	60+	13-14	42.1	3.2	17
Non-Hispanic Whites	Male	60+	15-16	27.5	2.5	14
Non-Hispanic Whites	Female	12-19	11-12	4.84	1.04	5
Non-Hispanic Whites	Female	12-19	13-14	3.55	0.41	6
Non-Hispanic Whites	Female	12-19	15-16	3.07	0.66	5
Non-Hispanic Whites	Female	20-39	11-12	6.85	0.82	13
Non-Hispanic Whites	Female	20-39	13-14	7.62	0.86	15
Non-Hispanic Whites	Female	20-39	15-16	4.93	0.56	11
Non-Hispanic Whites	Female	40-59	11-12	21.5	3.1	11
Non-Hispanic Whites	Female	40-59	13-14	17.3	1.9	16
Non-Hispanic Whites	Female	40-59	15-16	12.0	1.3	9
Non-Hispanic Whites	Female	60+	11-12	47.5	8.1	14
Non-Hispanic Whites	Female	60+	13-14	45.5	4.9	20
Non-Hispanic Whites	Female	60+	15-16	35.9	5	13
Non-Hispanic Blacks	Male	12-19	11-12	4.57	0.98	7
Non-Hispanic Blacks	Male	12-19	13-14	4.11	0.54	6
Non-Hispanic Blacks	Male	12-19	15-16	3.36	0.59	5
Non-Hispanic Blacks	Male	20-39	11-12	8.42	0.82	9
Non-Hispanic Blacks	Male	20-39	13-14	6.07	0.83	7
Non-Hispanic Blacks	Male	20-39	15-16	4.83	0.27	7
Non-Hispanic Blacks	Male	40-59	11-12	16.2	1.7	7
Non-Hispanic Blacks	Male	40-59	13-14	19.6	3.3	7
Non-Hispanic Blacks	Male	40-59	15-16	17.2	2.3	7
Non-Hispanic Blacks	Male	60+	11-12	43.2	2.9	9
Non-Hispanic Blacks	Male	60+	13-14	41.6	3.9	9
Non-Hispanic Blacks	Male	60+	15-16	32.6	3.5	7
Non-Hispanic Blacks	Female	12-19	11-12	3.28	0.59	6
Non-Hispanic Blacks	Female	12-19	13-14	3.80	0.55	6
Non-Hispanic Blacks	Female	12-19	15-16	1.96	0.22	4
Non-Hispanic Blacks	Female	20-39	11-12	5.76	0.81	8
Non-Hispanic Blacks	Female	20-39	13-14	4.60	0.41	8
Non-Hispanic Blacks	Female	20-39	15-16	4.75	0.34	9
Non-Hispanic Blacks	Female	40-59	11-12	20.9	2.5	8
Non-Hispanic Blacks	Female	40-59	13-14	20.9	2	8
Non-Hispanic Blacks	Female	40-59	15-16	15.2	1.2	12
Non-Hispanic Blacks	Female	60+	11-12	50.8	5.8	8
Non-Hispanic Blacks	Female	60+	13-14	61.6	8.6	8
Non-Hispanic Blacks	Female	60+	15-16	40.4	4.7	7
Mexican Americans	Male	12-19	11-12	3.58	0.3	5

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	13-14	2.59	0.33	7
Mexican Americans	Male	12-19	15-16	2.53	0.27	6
Mexican Americans	Male	20-39	11-12	7.23	0.84	4
Mexican Americans	Male	20-39	13-14	5.03	0.77	5
Mexican Americans	Male	20-39	15-16	5.29	1.27	7
Mexican Americans	Male	40-59	11-12	21.8	2.6	4
Mexican Americans	Male	40-59	13-14	15.7	1.7	5
Mexican Americans	Male	40-59	15-16	14.3	2.7	4
Mexican Americans	Male	60+	11-12	24.9	2	2
Mexican Americans	Male	60+	13-14	36.5	7.3	4
Mexican Americans	Male	60+	15-16	35.2	4.3	5
Mexican Americans	Female	12-19	11-12	2.91	0.38	4
Mexican Americans	Female	12-19	13-14	2.27	0.24	7
Mexican Americans	Female	12-19	15-16	1.79	0.3	5
Mexican Americans	Female	20-39	11-12	5.04	0.68	4
Mexican Americans	Female	20-39	13-14	4.49	0.51	5
Mexican Americans	Female	20-39	15-16	3.65	0.29	6
Mexican Americans	Female	40-59	11-12	16.1	0.4	3
Mexican Americans	Female	40-59	13-14	12.0	2.4	6
Mexican Americans	Female	40-59	15-16	13.8	1.4	8
Mexican Americans	Female	60+	11-12	48.4	5.1	3
Mexican Americans	Female	60+	13-14	40.2	4.9	5
Mexican Americans	Female	60+	15-16	39.6	3.4	7
All Hispanics	Male	12-19	11-12	3.24	0.36	7
All Hispanics	Male	12-19	13-14	2.82	0.32	10
All Hispanics	Male	12-19	15-16	2.27	0.23	9
All Hispanics	Male	20-39	11-12	5.62	0.81	8
All Hispanics	Male	20-39	13-14	5.00	0.53	8
All Hispanics	Male	20-39	15-16	5.09	0.87	11
All Hispanics	Male	40-59	11-12	16.2	2.7	7
All Hispanics	Male	40-59	13-14	13.4	1.4	9
All Hispanics	Male	40-59	15-16	11.6	2.2	9
All Hispanics	Male	60+	11-12	24.7	3.7	6
All Hispanics	Male	60+	13-14	33.6	6	7
All Hispanics	Male	60+	15-16	38.1	6.4	9
All Hispanics	Female	12-19	11-12	2.62	0.33	7
All Hispanics	Female	12-19	13-14	2.64	0.38	10
All Hispanics	Female	12-19	15-16	1.72	0.28	8
All Hispanics	Female	20-39	11-12	4.18	0.5	8
All Hispanics	Female	20-39	13-14	4.08	0.33	9
All Hispanics	Female	20-39	15-16	3.29	0.22	11
All Hispanics	Female	40-59	11-12	12.5	1.6	7
All Hispanics	Female	40-59	13-14	12.0	1.5	10
All Hispanics	Female	40-59	15-16	12.6	1.4	13
All Hispanics	Female	60+	11-12	40.9	5	7
All Hispanics	Female	60+	13-14	35.7	3.7	9
All Hispanics	Female	60+	15-16	35.1	3	13
Asians	Male	12-19	11-12	2.60	0.11	3
Asians	Male	12-19	13-14	3.50	0.96	3
Asians	Male	12-19	15-16	3.03	0.46	3
Asians	Male	20-39	11-12	6.39	1.1	6
Asians	Male	20-39	13-14	5.62	1.3	4
Asians	Male	20-39	15-16	3.75	0.7	5
Asians	Male	40-59	11-12	16.9	1.8	6
Asians	Male	40-59	13-14	14.8	2.1	4
Asians	Male	40-59	15-16	13.7	1.6	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	11-12	27.1	4.7	4
Asians	Male	60+	13-14	29.9	5.9	3
Asians	Male	60+	15-16	25.0	6.9	3
Asians	Female	12-19	11-12	2.08	0.12	4
Asians	Female	12-19	13-14	4.52	1.27	3
Asians	Female	12-19	15-16	1.82	0.35	3
Asians	Female	20-39	11-12	7.23	1.83	6
Asians	Female	20-39	13-14	5.14	0.44	5
Asians	Female	20-39	15-16	3.38	0.19	4
Asians	Female	40-59	11-12	13.3	2	6
Asians	Female	40-59	13-14	13.4	1.9	7
Asians	Female	40-59	15-16	13.1	1.8	5
Asians	Female	60+	11-12	51.9 **	16.1	3
Asians	Female	60+	13-14	40.4	11.8	3
Asians	Female	60+	15-16	29.1	8	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 1.3, 1.3, and 1.3, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

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

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

Serum trans-Nonachlor (whole weight) (2005 - 2010)†

CAS Number 39765-80-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.048 **	0.015	9
Non-Hispanic Whites	12-19	Male	07-08	.030	0.005	6
Non-Hispanic Whites	12-19	Male	09-10	.033	0.006	10
Non-Hispanic Whites	20-39	Male	05-06	.086	0.019	12
Non-Hispanic Whites	20-39	Male	07-08	.076	0.011	15
Non-Hispanic Whites	20-39	Male	09-10	.061	0.005	17
Non-Hispanic Whites	40-59	Male	05-06	.206	0.034	12
Non-Hispanic Whites	40-59	Male	07-08	.159	0.011	16
Non-Hispanic Whites	40-59	Male	09-10	.122	0.01	17
Non-Hispanic Whites	60+	Male	05-06	.331	0.049	15
Non-Hispanic Whites	60+	Male	07-08	.325	0.028	23
Non-Hispanic Whites	60+	Male	09-10	.221	0.02	21
Non-Hispanic Whites	12-19	Female	05-06	.026	0.003	10
Non-Hispanic Whites	12-19	Female	07-08	.031	0.004	7
Non-Hispanic Whites	12-19	Female	09-10	.017	0.001	8
Non-Hispanic Whites	20-39	Female	05-06	.063	0.01	16
Non-Hispanic Whites	20-39	Female	07-08	.054	0.006	13
Non-Hispanic Whites	20-39	Female	09-10	.034	0.003	19
Non-Hispanic Whites	40-59	Female	05-06	.161	0.019	13
Non-Hispanic Whites	40-59	Female	07-08	.108	0.009	17
Non-Hispanic Whites	40-59	Female	09-10	.111	0.009	17
Non-Hispanic Whites	60+	Female	05-06	.362	0.04	17
Non-Hispanic Whites	60+	Female	07-08	.352	0.044	21
Non-Hispanic Whites	60+	Female	09-10	.259	0.023	22
Non-Hispanic Blacks	12-19	Male	05-06	.032	0.003	13
Non-Hispanic Blacks	12-19	Male	07-08	.022	0.003	6
Non-Hispanic Blacks	12-19	Male	09-10	.020	0.005	6
Non-Hispanic Blacks	20-39	Male	05-06	.049	0.006	6
Non-Hispanic Blacks	20-39	Male	07-08	.050	0.006	6
Non-Hispanic Blacks	20-39	Male	09-10	.039	0.008	5
Non-Hispanic Blacks	40-59	Male	05-06	.140	0.014	5
Non-Hispanic Blacks	40-59	Male	07-08	.138	0.012	6
Non-Hispanic Blacks	40-59	Male	09-10	.139	0.014	7
Non-Hispanic Blacks	60+	Male	05-06	.390	0.071	5
Non-Hispanic Blacks	60+	Male	07-08	.331	0.03	8
Non-Hispanic Blacks	60+	Male	09-10	.275	0.04	9
Non-Hispanic Blacks	12-19	Female	05-06	.022	0.003	14
Non-Hispanic Blacks	12-19	Female	07-08	.016	0.005	5
Non-Hispanic Blacks	12-19	Female	09-10	.014	0.001	6
Non-Hispanic Blacks	20-39	Female	05-06	.054	0.007	7
Non-Hispanic Blacks	20-39	Female	07-08	.032	0.003	8
Non-Hispanic Blacks	20-39	Female	09-10	.034	0.003	7
Non-Hispanic Blacks	40-59	Female	05-06	.154	0.009	7
Non-Hispanic Blacks	40-59	Female	07-08	.124	0.012	8
Non-Hispanic Blacks	40-59	Female	09-10	.121	0.014	7
Non-Hispanic Blacks	60+	Female	05-06	.588	0.088	5
Non-Hispanic Blacks	60+	Female	07-08	.409	0.025	7
Non-Hispanic Blacks	60+	Female	09-10	.365	0.023	7
Mexican Americans	12-19	Male	05-06	.020	0.002	11
Mexican Americans	12-19	Male	07-08	.020	0.003	6
Mexican Americans	12-19	Male	09-10	.018	0.002	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.054	0.005	9
Mexican Americans	20-39	Male	07-08	.058	0.007	9
Mexican Americans	20-39	Male	09-10	.040	0.007	8
Mexican Americans	40-59	Male	05-06	.153	0.022	4
Mexican Americans	40-59	Male	07-08	.176	0.022	6
Mexican Americans	40-59	Male	09-10	.129	0.012	8
Mexican Americans	60+	Male	05-06	.228	0.06	4
Mexican Americans	60+	Male	07-08	.289	0.025	5
Mexican Americans	60+	Male	09-10	.387	0.065	5
Mexican Americans	12-19	Female	05-06	.019	0.001	16
Mexican Americans	12-19	Female	07-08	*	*	5
Mexican Americans	12-19	Female	09-10	*	*	7
Mexican Americans	20-39	Female	05-06	.042	0.005	9
Mexican Americans	20-39	Female	07-08	.044	0.005	8
Mexican Americans	20-39	Female	09-10	.033	0.004	10
Mexican Americans	40-59	Female	05-06	.135	0.011	6
Mexican Americans	40-59	Female	07-08	.151	0.026	6
Mexican Americans	40-59	Female	09-10	.128	0.012	9
Mexican Americans	60+	Female	05-06	.360	0.095	3
Mexican Americans	60+	Female	07-08	.323	0.052	5
Mexican Americans	60+	Female	09-10	.321	0.051	6
All Hispanics	12-19	Male	09-10	.016	0.001	11
All Hispanics	20-39	Male	09-10	.049	0.008	13
All Hispanics	40-59	Male	09-10	.117	0.009	13
All Hispanics	60+	Male	09-10	.327	0.051	8
All Hispanics	12-19	Female	09-10	*	*	10
All Hispanics	20-39	Female	09-10	.034	0.004	14
All Hispanics	40-59	Female	09-10	.110	0.012	14
All Hispanics	60+	Female	09-10	.299	0.036	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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

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

Serum trans-Nonachlor (whole weight) (2011 - 2016)†

CAS Number 39765-80-5

Metabolite of Chlordane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.019	0.003	6
Non-Hispanic Whites	Male	12-19	13-14	.015	0.001	8
Non-Hispanic Whites	Male	12-19	15-16	.029	0.006	7
Non-Hispanic Whites	Male	20-39	11-12	.043	0.003	12
Non-Hispanic Whites	Male	20-39	13-14	.035	0.003	14
Non-Hispanic Whites	Male	20-39	15-16	.054	0.012	10
Non-Hispanic Whites	Male	40-59	11-12	.126	0.01	12
Non-Hispanic Whites	Male	40-59	13-14	.100	0.009	14
Non-Hispanic Whites	Male	40-59	15-16	.118	0.006	10
Non-Hispanic Whites	Male	60+	11-12	.289	0.044	12
Non-Hispanic Whites	Male	60+	13-14	.225	0.016	17
Non-Hispanic Whites	Male	60+	15-16	.149	0.013	14
Non-Hispanic Whites	Female	12-19	11-12	.026	0.006	5
Non-Hispanic Whites	Female	12-19	13-14	.018	0.002	6
Non-Hispanic Whites	Female	12-19	15-16	.015	0.003	5
Non-Hispanic Whites	Female	20-39	11-12	.038	0.005	13
Non-Hispanic Whites	Female	20-39	13-14	.040	0.004	15
Non-Hispanic Whites	Female	20-39	15-16	.027	0.003	11
Non-Hispanic Whites	Female	40-59	11-12	.139	0.021	11
Non-Hispanic Whites	Female	40-59	13-14	.103	0.012	16
Non-Hispanic Whites	Female	40-59	15-16	.077	0.008	9
Non-Hispanic Whites	Female	60+	11-12	.291	0.048	14
Non-Hispanic Whites	Female	60+	13-14	.269	0.03	20
Non-Hispanic Whites	Female	60+	15-16	.224	0.032	13
Non-Hispanic Blacks	Male	12-19	11-12	.020	0.004	7
Non-Hispanic Blacks	Male	12-19	13-14	.018	0.002	6
Non-Hispanic Blacks	Male	12-19	15-16	.015	0.002	5
Non-Hispanic Blacks	Male	20-39	11-12	.044	0.005	9
Non-Hispanic Blacks	Male	20-39	13-14	.031	0.004	7
Non-Hispanic Blacks	Male	20-39	15-16	.025	0.002	7
Non-Hispanic Blacks	Male	40-59	11-12	.091	0.011	7
Non-Hispanic Blacks	Male	40-59	13-14	.109	0.017	7
Non-Hispanic Blacks	Male	40-59	15-16	.108	0.016	7
Non-Hispanic Blacks	Male	60+	11-12	.236	0.019	9
Non-Hispanic Blacks	Male	60+	13-14	.214	0.016	9
Non-Hispanic Blacks	Male	60+	15-16	.176	0.018	7
Non-Hispanic Blacks	Female	12-19	11-12	.014	0.003	6
Non-Hispanic Blacks	Female	12-19	13-14	.017	0.003	6
Non-Hispanic Blacks	Female	12-19	15-16	.009	0.001	4
Non-Hispanic Blacks	Female	20-39	11-12	.032	0.005	8
Non-Hispanic Blacks	Female	20-39	13-14	.023	0.002	8
Non-Hispanic Blacks	Female	20-39	15-16	.023	0.001	9
Non-Hispanic Blacks	Female	40-59	11-12	.127	0.017	8
Non-Hispanic Blacks	Female	40-59	13-14	.110	0.011	8
Non-Hispanic Blacks	Female	40-59	15-16	.089	0.01	12
Non-Hispanic Blacks	Female	60+	11-12	.283	0.031	8
Non-Hispanic Blacks	Female	60+	13-14	.329	0.04	8
Non-Hispanic Blacks	Female	60+	15-16	.236	0.029	7
Mexican Americans	Male	12-19	11-12	.017	0.002	5

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	13-14	.012	0.001	7
Mexican Americans	Male	12-19	15-16	.013	0.001	6
Mexican Americans	Male	20-39	11-12	.045	0.005	4
Mexican Americans	Male	20-39	13-14	.031	0.004	5
Mexican Americans	Male	20-39	15-16	.042 **	0.015	7
Mexican Americans	Male	40-59	11-12	.168	0.01	4
Mexican Americans	Male	40-59	13-14	.097	0.011	5
Mexican Americans	Male	40-59	15-16	.094	0.015	4
Mexican Americans	Male	60+	11-12	.147	0.009	2
Mexican Americans	Male	60+	13-14	.193	0.03	4
Mexican Americans	Male	60+	15-16	.200	0.023	5
Mexican Americans	Female	12-19	11-12	.014	0.002	4
Mexican Americans	Female	12-19	13-14	.011	0.001	7
Mexican Americans	Female	12-19	15-16	.009	0.001	5
Mexican Americans	Female	20-39	11-12	.028	0.003	4
Mexican Americans	Female	20-39	13-14	.023	0.003	5
Mexican Americans	Female	20-39	15-16	.020	0.002	6
Mexican Americans	Female	40-59	11-12	.096	0.004	3
Mexican Americans	Female	40-59	13-14	.069	0.013	6
Mexican Americans	Female	40-59	15-16	.088	0.009	8
Mexican Americans	Female	60+	11-12	.300	0.041	3
Mexican Americans	Female	60+	13-14	.232	0.021	5
Mexican Americans	Female	60+	15-16	.248	0.02	7
All Hispanics	Male	12-19	11-12	15.7	1.8	7
All Hispanics	Male	12-19	13-14	13.5	1.4	10
All Hispanics	Male	12-19	15-16	11.5	0.9	9
All Hispanics	Male	20-39	11-12	34.4	5.1	8
All Hispanics	Male	20-39	13-14	29.9	3	8
All Hispanics	Male	20-39	15-16	35.8	10	11
All Hispanics	Male	40-59	11-12	122	20	7
All Hispanics	Male	40-59	13-14	81.9	9.3	9
All Hispanics	Male	40-59	15-16	74.5	13.8	9
All Hispanics	Male	60+	11-12	147	26	6
All Hispanics	Male	60+	13-14	179	27	7
All Hispanics	Male	60+	15-16	228	44	9
All Hispanics	Female	12-19	11-12	13.0	1.8	7
All Hispanics	Female	12-19	13-14	12.2	1.6	10
All Hispanics	Female	12-19	15-16	8.15	1.26	8
All Hispanics	Female	20-39	11-12	22.9	2.6	8
All Hispanics	Female	20-39	13-14	22.3	1.8	9
All Hispanics	Female	20-39	15-16	17.9	1.3	11
All Hispanics	Female	40-59	11-12	78.5	9.9	7
All Hispanics	Female	40-59	13-14	69.1	7.9	10
All Hispanics	Female	40-59	15-16	81.4	10.2	13
All Hispanics	Female	60+	11-12	251	30	7
All Hispanics	Female	60+	13-14	209	17	9
All Hispanics	Female	60+	15-16	215	19	13
Asians	Male	12-19	11-12	.013	0.001	3
Asians	Male	12-19	13-14	.017	0.004	3
Asians	Male	12-19	15-16	.014	0.002	3
Asians	Male	20-39	11-12	.035	0.006	6
Asians	Male	20-39	13-14	.034	0.008	4
Asians	Male	20-39	15-16	.025	0.006	5
Asians	Male	40-59	11-12	.104	0.013	6
Asians	Male	40-59	13-14	.083	0.009	4
Asians	Male	40-59	15-16	.089	0.014	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	11-12	.145	0.023	4
Asians	Male	60+	13-14	.178	0.021	3
Asians	Male	60+	15-16	.135	0.032	3
Asians	Female	12-19	11-12	.010	0.001	4
Asians	Female	12-19	13-14	.021	0.005	3
Asians	Female	12-19	15-16	.010	0.002	3
Asians	Female	20-39	11-12	.039	0.009	6
Asians	Female	20-39	13-14	.026	0.002	5
Asians	Female	20-39	15-16	.019	0.001	4
Asians	Female	40-59	11-12	.082	0.013	6
Asians	Female	40-59	13-14	.077	0.008	7
Asians	Female	40-59	15-16	.079	0.012	5
Asians	Female	60+	11-12	.300 **	0.099	3
Asians	Female	60+	13-14	.233	0.047	3
Asians	Female	60+	15-16	.180	0.053	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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

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

Serum p,p'-DDT (lipid adjusted) (2005 - 2010)†

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	2.23	0.15	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	10.7 **	8.4	12
Non-Hispanic Whites	Male	20-39	07-08	2.05	0.36	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	3.79	0.26	12
Non-Hispanic Whites	Male	40-59	07-08	2.81	0.24	16
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	5.68	0.54	15
Non-Hispanic Whites	Male	60+	07-08	4.85	0.46	23
Non-Hispanic Whites	Male	60+	09-10	3.91	0.4	21
Non-Hispanic Whites	Female	12-19	05-06	2.27	0.45	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	2.72	0.22	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	3.81	0.41	13
Non-Hispanic Whites	Female	40-59	07-08	2.90	0.22	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	6.21	0.41	17
Non-Hispanic Whites	Female	60+	07-08	6.37	0.89	21
Non-Hispanic Whites	Female	60+	09-10	4.86	0.5	22
Non-Hispanic Blacks	Male	12-19	05-06	4.98 **	1.85	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	7.55 **	3.07	6
Non-Hispanic Blacks	Male	20-39	07-08	1.80	0.34	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	7.42 **	3.13	5
Non-Hispanic Blacks	Male	40-59	07-08	4.68	0.63	6
Non-Hispanic Blacks	Male	40-59	09-10	4.41	0.65	7
Non-Hispanic Blacks	Male	60+	05-06	14.9	3.2	5
Non-Hispanic Blacks	Male	60+	07-08	6.57	0.78	8
Non-Hispanic Blacks	Male	60+	09-10	6.49	0.73	9
Non-Hispanic Blacks	Female	12-19	05-06	2.59	0.34	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	26.1 **	24.7	6
Non-Hispanic Blacks	Female	20-39	05-06	14.5 **	10.8	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	7.36	1.11	7
Non-Hispanic Blacks	Female	40-59	07-08	5.86	0.47	8
Non-Hispanic Blacks	Female	40-59	09-10	21.4 **	8.9	7
Non-Hispanic Blacks	Female	60+	05-06	32.5 **	11.5	5
Non-Hispanic Blacks	Female	60+	07-08	19.3	2.8	7
Non-Hispanic Blacks	Female	60+	09-10	14.8 **	4.7	7
Mexican Americans	Male	12-19	05-06	118 **	67	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	4.94 **	2.04	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	46.9 **	16	9
Mexican Americans	Male	20-39	07-08	18.6	3.9	9
Mexican Americans	Male	20-39	09-10	12.2 **	9.1	8
Mexican Americans	Male	40-59	05-06	107 **	62	4
Mexican Americans	Male	40-59	07-08	14.7 **	6.5	6
Mexican Americans	Male	40-59	09-10	9.00 **	3.08	8
Mexican Americans	Male	60+	05-06	7.14	1.69	4
Mexican Americans	Male	60+	07-08	17.5 **	14.4	5
Mexican Americans	Male	60+	09-10	6.36	1.04	5
Mexican Americans	Female	12-19	05-06	21.5 **	12.2	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	9.22 **	3.3	7
Mexican Americans	Female	20-39	05-06	47.9 **	27.9	9
Mexican Americans	Female	20-39	07-08	40.4 **	26.2	8
Mexican Americans	Female	20-39	09-10	23.5 **	11.4	10
Mexican Americans	Female	40-59	05-06	33.7 **	15.9	6
Mexican Americans	Female	40-59	07-08	11.8	2.8	6
Mexican Americans	Female	40-59	09-10	113 **	60	9
Mexican Americans	Female	60+	05-06	17.3	4.8	3
Mexican Americans	Female	60+	07-08	119 **	135	5
Mexican Americans	Female	60+	09-10	56.9 **	29.6	6
All Hispanics	Male	12-19	09-10	4.10 **	1.55	11
All Hispanics	Male	20-39	09-10	9.70 **	5.74	13
All Hispanics	Male	40-59	09-10	7.35	1.99	13
All Hispanics	Male	60+	09-10	7.75	1.34	8
All Hispanics	Female	12-19	09-10	7.08 **	2.6	10
All Hispanics	Female	20-39	09-10	17.5 **	8.3	14
All Hispanics	Female	40-59	09-10	75.2 **	40.8	14
All Hispanics	Female	60+	09-10	37.0 **	17.9	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.24, 1.41, and 3.1, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum p,p'-DDT (lipid adjusted) (2011 - 2016)†

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	2.74 **	0.85	6
Non-Hispanic Whites	Male	20-39	11-12	2.41	0.33	12
Non-Hispanic Whites	Male	20-39	13-14	1.58	0.16	14
Non-Hispanic Whites	Male	20-39	15-16	1.55	0.15	9
Non-Hispanic Whites	Male	40-59	11-12	2.86	0.3	12
Non-Hispanic Whites	Male	40-59	13-14	2.65	0.25	14
Non-Hispanic Whites	Male	40-59	15-16	2.29	0.21	9
Non-Hispanic Whites	Male	60+	11-12	3.20	0.15	12
Non-Hispanic Whites	Male	60+	13-14	3.01	0.23	17
Non-Hispanic Whites	Male	60+	15-16	4.27 **	2.42	12
Non-Hispanic Whites	Female	12-19	11-12	1.33	0.34	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	1.34	0.18	5
Non-Hispanic Whites	Female	20-39	11-12	2.07	0.26	13
Non-Hispanic Whites	Female	20-39	13-14	1.62	0.15	15
Non-Hispanic Whites	Female	20-39	15-16	1.40	0.06	11
Non-Hispanic Whites	Female	40-59	11-12	2.30	0.17	11
Non-Hispanic Whites	Female	40-59	13-14	1.94	0.11	16
Non-Hispanic Whites	Female	40-59	15-16	1.63	0.1	9
Non-Hispanic Whites	Female	60+	11-12	4.35	0.79	14
Non-Hispanic Whites	Female	60+	13-14	3.86	0.39	20
Non-Hispanic Whites	Female	60+	15-16	2.59	0.21	13
Non-Hispanic Blacks	Male	12-19	11-12	1.90	0.42	7
Non-Hispanic Blacks	Male	12-19	13-14	1.65	0.39	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	2.10	0.23	9
Non-Hispanic Blacks	Male	20-39	13-14	1.79	0.17	7
Non-Hispanic Blacks	Male	20-39	15-16	1.91	0.16	7
Non-Hispanic Blacks	Male	40-59	11-12	5.36 **	1.79	7
Non-Hispanic Blacks	Male	40-59	13-14	2.77	0.33	7
Non-Hispanic Blacks	Male	40-59	15-16	4.43 **	1.9	6
Non-Hispanic Blacks	Male	60+	11-12	4.04	0.49	9
Non-Hispanic Blacks	Male	60+	13-14	3.62	0.59	8
Non-Hispanic Blacks	Male	60+	15-16	2.56	0.25	5
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	8.30 **	2.88	8
Non-Hispanic Blacks	Female	20-39	13-14	1.47	0.2	8
Non-Hispanic Blacks	Female	20-39	15-16	1.33	0.11	8
Non-Hispanic Blacks	Female	40-59	11-12	9.09 **	3.54	8
Non-Hispanic Blacks	Female	40-59	13-14	5.08 **	2.28	8
Non-Hispanic Blacks	Female	40-59	15-16	9.81 **	4.45	11
Non-Hispanic Blacks	Female	60+	11-12	10.2	2.1	8
Non-Hispanic Blacks	Female	60+	13-14	13.5	2.7	8
Non-Hispanic Blacks	Female	60+	15-16	8.38	1.47	5
Mexican Americans	Male	12-19	11-12	2.02	0.07	5
Mexican Americans	Male	12-19	13-14	2.51 **	0.96	7
Mexican Americans	Male	12-19	15-16	2.58 **	1.19	5

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	4.86 **	1.6	4
Mexican Americans	Male	20-39	13-14	7.84	2.08	5
Mexican Americans	Male	20-39	15-16	9.36 **	4.12	7
Mexican Americans	Male	40-59	11-12	52.9 **	36.3	4
Mexican Americans	Male	40-59	13-14	3.33	0.62	5
Mexican Americans	Male	40-59	15-16	33.6 **	17.9	3
Mexican Americans	Male	60+	11-12	6.98	0.2	2
Mexican Americans	Male	60+	13-14	12.1 **	8.7	4
Mexican Americans	Male	60+	15-16	8.84 **	3.35	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	2.44 **	0.77	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	16.9 **	10.4	4
Mexican Americans	Female	20-39	13-14	17.1 **	8.6	5
Mexican Americans	Female	20-39	15-16	12.3 **	7.9	6
Mexican Americans	Female	40-59	11-12	19.1 **	12.4	3
Mexican Americans	Female	40-59	13-14	3.83	0.43	6
Mexican Americans	Female	40-59	15-16	10.2 **	4.8	8
Mexican Americans	Female	60+	11-12	22.1	3.1	3
Mexican Americans	Female	60+	13-14	9.62	2.34	5
Mexican Americans	Female	60+	15-16	20.1 **	12	6
All Hispanics	Male	12-19	11-12	2.03	0.09	7
All Hispanics	Male	12-19	13-14	2.09 **	0.7	10
All Hispanics	Male	12-19	15-16	3.14 **	1.19	8
All Hispanics	Male	20-39	11-12	3.66	1.01	8
All Hispanics	Male	20-39	13-14	6.40	1.57	8
All Hispanics	Male	20-39	15-16	7.22 **	2.99	10
All Hispanics	Male	40-59	11-12	29.6 **	22.1	7
All Hispanics	Male	40-59	13-14	3.60	0.49	9
All Hispanics	Male	40-59	15-16	12.8 **	8.3	8
All Hispanics	Male	60+	11-12	7.41	1.31	6
All Hispanics	Male	60+	13-14	8.82 **	5.01	7
All Hispanics	Male	60+	15-16	8.39	2.25	8
All Hispanics	Female	12-19	11-12	2.24 **	0.7	7
All Hispanics	Female	12-19	13-14	2.11	0.57	10
All Hispanics	Female	12-19	15-16	*	*	7
All Hispanics	Female	20-39	11-12	10.2 **	5.8	8
All Hispanics	Female	20-39	13-14	10.0 **	5.2	9
All Hispanics	Female	20-39	15-16	8.15 **	5.09	10
All Hispanics	Female	40-59	11-12	13.7 **	5.6	7
All Hispanics	Female	40-59	13-14	4.35	0.55	10
All Hispanics	Female	40-59	15-16	8.46 **	3.38	12
All Hispanics	Female	60+	11-12	13.1	3.1	7
All Hispanics	Female	60+	13-14	9.27	1.41	9
All Hispanics	Female	60+	15-16	15.3 **	7	11
Asians	Male	12-19	11-12	7.74	1.49	3
Asians	Male	12-19	13-14	3.26	0.94	3
Asians	Male	12-19	15-16	5.59 **	2.03	3
Asians	Male	20-39	11-12	12.4	2.6	6
Asians	Male	20-39	13-14	10.2	2.2	4
Asians	Male	20-39	15-16	22.0	5.9	4
Asians	Male	40-59	11-12	15.5	3.8	6
Asians	Male	40-59	13-14	24.9 **	11.4	4
Asians	Male	40-59	15-16	14.0	3.1	3
Asians	Male	60+	11-12	18.9	3.2	4
Asians	Male	60+	13-14	13.8	3	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	18.9	3.7	3
Asians	Female	12-19	11-12	3.98	0.52	4
Asians	Female	12-19	13-14	2.23	0.62	3
Asians	Female	12-19	15-16	3.98	0.76	2
Asians	Female	20-39	11-12	16.0	4	6
Asians	Female	20-39	13-14	8.98 **	3.11	5
Asians	Female	20-39	15-16	12.9 **	4.7	4
Asians	Female	40-59	11-12	18.0	4	6
Asians	Female	40-59	13-14	15.1	3.9	7
Asians	Female	40-59	15-16	9.90	1.74	5
Asians	Female	60+	11-12	29.4	1.9	3
Asians	Female	60+	13-14	107 **	54	3
Asians	Female	60+	15-16	13.3	1.8	2

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 1.3, 1.3, and 1.3, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum p,p'-DDT (whole weight) (2005 - 2010)†

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.012	0.001	9
Non-Hispanic Whites	12-19	Male	07-08	.005	0.001	6
Non-Hispanic Whites	12-19	Male	09-10	.011	0.001	10
Non-Hispanic Whites	20-39	Male	05-06	.088 **	0.072	12
Non-Hispanic Whites	20-39	Male	07-08	.014	0.003	15
Non-Hispanic Whites	20-39	Male	09-10	.016	0.002	17
Non-Hispanic Whites	40-59	Male	05-06	.028	0.002	12
Non-Hispanic Whites	40-59	Male	07-08	.021	0.002	16
Non-Hispanic Whites	40-59	Male	09-10	.017	0.001	17
Non-Hispanic Whites	60+	Male	05-06	.038	0.003	15
Non-Hispanic Whites	60+	Male	07-08	.031	0.003	23
Non-Hispanic Whites	60+	Male	09-10	.024	0.002	21
Non-Hispanic Whites	12-19	Female	05-06	.012	0.002	10
Non-Hispanic Whites	12-19	Female	07-08	.006	0.001	7
Non-Hispanic Whites	12-19	Female	09-10	.009	0.002	8
Non-Hispanic Whites	20-39	Female	05-06	.018	0.002	16
Non-Hispanic Whites	20-39	Female	07-08	.010	0.002	13
Non-Hispanic Whites	20-39	Female	09-10	.014	0.002	19
Non-Hispanic Whites	40-59	Female	05-06	.028	0.003	13
Non-Hispanic Whites	40-59	Female	07-08	.019	0.002	17
Non-Hispanic Whites	40-59	Female	09-10	.018	0.002	17
Non-Hispanic Whites	60+	Female	05-06	.045	0.003	17
Non-Hispanic Whites	60+	Female	07-08	.043	0.006	21
Non-Hispanic Whites	60+	Female	09-10	.029	0.003	22
Non-Hispanic Blacks	12-19	Male	05-06	.025 **	0.01	13
Non-Hispanic Blacks	12-19	Male	07-08	.010	0.003	6
Non-Hispanic Blacks	12-19	Male	09-10	.011	0.001	6
Non-Hispanic Blacks	20-39	Male	05-06	.047 **	0.02	6
Non-Hispanic Blacks	20-39	Male	07-08	.010	0.002	6
Non-Hispanic Blacks	20-39	Male	09-10	.023 **	0.008	7
Non-Hispanic Blacks	40-59	Male	05-06	.048 **	0.021	5
Non-Hispanic Blacks	40-59	Male	07-08	.030	0.004	6
Non-Hispanic Blacks	40-59	Male	09-10	.028	0.004	7
Non-Hispanic Blacks	60+	Male	05-06	.088	0.019	5
Non-Hispanic Blacks	60+	Male	07-08	.040	0.005	8
Non-Hispanic Blacks	60+	Male	09-10	.034	0.003	9
Non-Hispanic Blacks	12-19	Female	05-06	.013	0.002	14
Non-Hispanic Blacks	12-19	Female	07-08	.004	0	5
Non-Hispanic Blacks	12-19	Female	09-10	.113 **	0.107	6
Non-Hispanic Blacks	20-39	Female	05-06	.085 **	0.064	7
Non-Hispanic Blacks	20-39	Female	07-08	.009	0.003	8
Non-Hispanic Blacks	20-39	Female	09-10	.015	0.003	7
Non-Hispanic Blacks	40-59	Female	05-06	.047	0.007	7
Non-Hispanic Blacks	40-59	Female	07-08	.035	0.003	8
Non-Hispanic Blacks	40-59	Female	09-10	.119 **	0.05	7
Non-Hispanic Blacks	60+	Female	05-06	.216 **	0.078	5
Non-Hispanic Blacks	60+	Female	07-08	.115	0.016	7
Non-Hispanic Blacks	60+	Female	09-10	.086 **	0.028	7
Mexican Americans	12-19	Male	05-06	.632 **	0.352	11
Mexican Americans	12-19	Male	07-08	.016 **	0.006	6
Mexican Americans	12-19	Male	09-10	.024 **	0.01	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.349 **	0.127	9
Mexican Americans	20-39	Male	07-08	.129	0.028	9
Mexican Americans	20-39	Male	09-10	.070 **	0.05	8
Mexican Americans	40-59	Male	05-06	.864 **	0.515	4
Mexican Americans	40-59	Male	07-08	.108 **	0.047	6
Mexican Americans	40-59	Male	09-10	.060 **	0.02	8
Mexican Americans	60+	Male	05-06	.053	0.015	4
Mexican Americans	60+	Male	07-08	.131 **	0.108	5
Mexican Americans	60+	Male	09-10	.040	0.008	5
Mexican Americans	12-19	Female	05-06	.117 **	0.068	16
Mexican Americans	12-19	Female	07-08	.011 **	0.005	5
Mexican Americans	12-19	Female	09-10	.043 **	0.015	7
Mexican Americans	20-39	Female	05-06	.293 **	0.163	9
Mexican Americans	20-39	Female	07-08	.233 **	0.149	8
Mexican Americans	20-39	Female	09-10	.136 **	0.069	10
Mexican Americans	40-59	Female	05-06	.239 **	0.107	6
Mexican Americans	40-59	Female	07-08	.081	0.02	6
Mexican Americans	40-59	Female	09-10	.796 **	0.458	9
Mexican Americans	60+	Female	05-06	.138 **	0.05	3
Mexican Americans	60+	Female	07-08	.820 **	0.939	5
Mexican Americans	60+	Female	09-10	.338 **	0.19	6
All Hispanics	12-19	Male	09-10	.019 **	0.007	11
All Hispanics	20-39	Male	09-10	.058 **	0.032	13
All Hispanics	40-59	Male	09-10	.049	0.013	13
All Hispanics	60+	Male	09-10	.050	0.009	8
All Hispanics	12-19	Female	09-10	.033 **	0.012	10
All Hispanics	20-39	Female	09-10	.101 **	0.05	14
All Hispanics	40-59	Female	09-10	.525 **	0.309	14
All Hispanics	60+	Female	09-10	.223 **	0.113	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum p,p'-DDT (whole weight) (2011 - 2016)†

CAS Number 50-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	.014 **	0.004	6
Non-Hispanic Whites	Male	20-39	11-12	.014	0.002	12
Non-Hispanic Whites	Male	20-39	13-14	.009	0.001	14
Non-Hispanic Whites	Male	20-39	15-16	.010	0.001	9
Non-Hispanic Whites	Male	40-59	11-12	.020	0.003	12
Non-Hispanic Whites	Male	40-59	13-14	.016	0.002	14
Non-Hispanic Whites	Male	40-59	15-16	.016	0.002	9
Non-Hispanic Whites	Male	60+	11-12	.018	0.001	12
Non-Hispanic Whites	Male	60+	13-14	.016	0.001	17
Non-Hispanic Whites	Male	60+	15-16	.024 **	0.015	12
Non-Hispanic Whites	Female	12-19	11-12	.007	0.002	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	.007	0.001	5
Non-Hispanic Whites	Female	20-39	11-12	.011	0.001	13
Non-Hispanic Whites	Female	20-39	13-14	.008	0.001	15
Non-Hispanic Whites	Female	20-39	15-16	.008	0	11
Non-Hispanic Whites	Female	40-59	11-12	.015	0.001	11
Non-Hispanic Whites	Female	40-59	13-14	.011	0.001	16
Non-Hispanic Whites	Female	40-59	15-16	.010	0.001	9
Non-Hispanic Whites	Female	60+	11-12	.027	0.005	14
Non-Hispanic Whites	Female	60+	13-14	.023	0.002	20
Non-Hispanic Whites	Female	60+	15-16	.016	0.001	13
Non-Hispanic Blacks	Male	12-19	11-12	.008	0.002	7
Non-Hispanic Blacks	Male	12-19	13-14	.007	0.002	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	.011	0.001	9
Non-Hispanic Blacks	Male	20-39	13-14	.009	0.001	7
Non-Hispanic Blacks	Male	20-39	15-16	.010	0.001	7
Non-Hispanic Blacks	Male	40-59	11-12	.030 **	0.009	7
Non-Hispanic Blacks	Male	40-59	13-14	.015	0.002	7
Non-Hispanic Blacks	Male	40-59	15-16	.029 **	0.014	6
Non-Hispanic Blacks	Male	60+	11-12	.022	0.003	9
Non-Hispanic Blacks	Male	60+	13-14	.018	0.002	8
Non-Hispanic Blacks	Male	60+	15-16	.014	0.002	5
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.045 **	0.015	8
Non-Hispanic Blacks	Female	20-39	13-14	.007	0.001	8
Non-Hispanic Blacks	Female	20-39	15-16	.006	0	8
Non-Hispanic Blacks	Female	40-59	11-12	.058 **	0.024	8
Non-Hispanic Blacks	Female	40-59	13-14	.027 **	0.012	8
Non-Hispanic Blacks	Female	40-59	15-16	.055 **	0.023	11
Non-Hispanic Blacks	Female	60+	11-12	.057	0.012	8
Non-Hispanic Blacks	Female	60+	13-14	.071	0.012	8
Non-Hispanic Blacks	Female	60+	15-16	.049	0.009	5
Mexican Americans	Male	12-19	11-12	.010	0	5
Mexican Americans	Male	12-19	13-14	.012 **	0.005	7
Mexican Americans	Male	12-19	15-16	.013 **	0.006	5

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.029 **	0.009	4
Mexican Americans	Male	20-39	13-14	.049	0.012	5
Mexican Americans	Male	20-39	15-16	.061 **	0.026	7
Mexican Americans	Male	40-59	11-12	.369 **	0.24	4
Mexican Americans	Male	40-59	13-14	.021	0.004	5
Mexican Americans	Male	40-59	15-16	.244 **	0.134	3
Mexican Americans	Male	60+	11-12	.041	0	2
Mexican Americans	Male	60+	13-14	.063 **	0.038	4
Mexican Americans	Male	60+	15-16	.052 **	0.02	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	.011	0.003	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.094 **	0.058	4
Mexican Americans	Female	20-39	13-14	.090 **	0.04	5
Mexican Americans	Female	20-39	15-16	.074 **	0.05	6
Mexican Americans	Female	40-59	11-12	.107 **	0.068	3
Mexican Americans	Female	40-59	13-14	.022	0.002	6
Mexican Americans	Female	40-59	15-16	.065 **	0.03	8
Mexican Americans	Female	60+	11-12	.137	0.022	3
Mexican Americans	Female	60+	13-14	.055	0.01	5
Mexican Americans	Female	60+	15-16	.132 **	0.081	6
All Hispanics	Male	12-19	11-12	9.84	0.55	7
All Hispanics	Male	12-19	13-14	10.1 **	3.4	10
All Hispanics	Male	12-19	15-16	15.8 **	5.8	8
All Hispanics	Male	20-39	11-12	21.5	5.7	8
All Hispanics	Male	20-39	13-14	39.5	9.7	8
All Hispanics	Male	20-39	15-16	46.3 **	19.3	10
All Hispanics	Male	40-59	11-12	206 **	148	7
All Hispanics	Male	40-59	13-14	21.9	2.8	9
All Hispanics	Male	40-59	15-16	91.4 **	61.5	8
All Hispanics	Male	60+	11-12	43.0	6.9	6
All Hispanics	Male	60+	13-14	46.7 **	23.5	7
All Hispanics	Male	60+	15-16	50.0	13.6	8
All Hispanics	Female	12-19	11-12	10.9	3.2	7
All Hispanics	Female	12-19	13-14	9.70	2.38	10
All Hispanics	Female	12-19	15-16	*	*	7
All Hispanics	Female	20-39	11-12	56.2 **	32.5	8
All Hispanics	Female	20-39	13-14	53.0 **	25.5	9
All Hispanics	Female	20-39	15-16	48.9 **	32.1	10
All Hispanics	Female	40-59	11-12	79.9 **	30.3	7
All Hispanics	Female	40-59	13-14	25.3	3.2	10
All Hispanics	Female	40-59	15-16	54.4 **	21.2	12
All Hispanics	Female	60+	11-12	81.6	19.7	7
All Hispanics	Female	60+	13-14	54.1	6.8	9
All Hispanics	Female	60+	15-16	97.2 **	47	11
Asians	Male	12-19	11-12	.041	0.009	3
Asians	Male	12-19	13-14	.015	0.003	3
Asians	Male	12-19	15-16	.026 **	0.009	3
Asians	Male	20-39	11-12	.070	0.015	6
Asians	Male	20-39	13-14	.058	0.009	4
Asians	Male	20-39	15-16	.148	0.041	4
Asians	Male	40-59	11-12	.098	0.025	6
Asians	Male	40-59	13-14	.151 **	0.067	4
Asians	Male	40-59	15-16	.086	0.019	3
Asians	Male	60+	11-12	.100	0.015	4
Asians	Male	60+	13-14	.082	0.012	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.108	0.024	3
Asians	Female	12-19	11-12	.019	0.002	4
Asians	Female	12-19	13-14	.011	0.002	3
Asians	Female	12-19	15-16	.021	0.004	2
Asians	Female	20-39	11-12	.086	0.019	6
Asians	Female	20-39	13-14	.046 **	0.014	5
Asians	Female	20-39	15-16	.076 **	0.03	4
Asians	Female	40-59	11-12	.110	0.025	6
Asians	Female	40-59	13-14	.091	0.024	7
Asians	Female	40-59	15-16	.061	0.011	5
Asians	Female	60+	11-12	.166	0.012	3
Asians	Female	60+	13-14	.605 **	0.232	3
Asians	Female	60+	15-16	.084	0.012	2

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum p,p'-DDE (lipid adjusted) (2005 - 2010)†

CAS Number 72-55-9

Metabolite of Dichlorodiphenyltrichloroethane

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	113	20	9
Non-Hispanic Whites	Male	12-19	07-08	86.7	7.1	6
Non-Hispanic Whites	Male	12-19	09-10	85.4	16.8	10
Non-Hispanic Whites	Male	20-39	05-06	399 **	280	12
Non-Hispanic Whites	Male	20-39	07-08	113	11	15
Non-Hispanic Whites	Male	20-39	09-10	102	7	17
Non-Hispanic Whites	Male	40-59	05-06	220	19	12
Non-Hispanic Whites	Male	40-59	07-08	176	14	16
Non-Hispanic Whites	Male	40-59	09-10	153	16	17
Non-Hispanic Whites	Male	60+	05-06	696	53	15
Non-Hispanic Whites	Male	60+	07-08	502	45	23
Non-Hispanic Whites	Male	60+	09-10	368	25	21
Non-Hispanic Whites	Female	12-19	05-06	83.6	6.7	10
Non-Hispanic Whites	Female	12-19	07-08	70.2	13.8	7
Non-Hispanic Whites	Female	12-19	09-10	51.6	5.1	8
Non-Hispanic Whites	Female	20-39	05-06	102	7	16
Non-Hispanic Whites	Female	20-39	07-08	91.8	6	13
Non-Hispanic Whites	Female	20-39	09-10	86.3	6.1	19
Non-Hispanic Whites	Female	40-59	05-06	276	36	13
Non-Hispanic Whites	Female	40-59	07-08	179	12	17
Non-Hispanic Whites	Female	40-59	09-10	256	63	17
Non-Hispanic Whites	Female	60+	05-06	736	71	17
Non-Hispanic Whites	Female	60+	07-08	521	45	21
Non-Hispanic Whites	Female	60+	09-10	538	46	22
Non-Hispanic Blacks	Male	12-19	05-06	141	21	13
Non-Hispanic Blacks	Male	12-19	07-08	91.5	7.8	6
Non-Hispanic Blacks	Male	12-19	09-10	98.4	14.8	6
Non-Hispanic Blacks	Male	20-39	05-06	236	59	6
Non-Hispanic Blacks	Male	20-39	07-08	123	11	6
Non-Hispanic Blacks	Male	20-39	09-10	263 **	98	7
Non-Hispanic Blacks	Male	40-59	05-06	454	70	5
Non-Hispanic Blacks	Male	40-59	07-08	333	18	6
Non-Hispanic Blacks	Male	40-59	09-10	325	44	7
Non-Hispanic Blacks	Male	60+	05-06	1910	448	5
Non-Hispanic Blacks	Male	60+	07-08	854	83	8
Non-Hispanic Blacks	Male	60+	09-10	1030	217	9
Non-Hispanic Blacks	Female	12-19	05-06	81.8	4.8	14
Non-Hispanic Blacks	Female	12-19	07-08	63.6	7.5	5
Non-Hispanic Blacks	Female	12-19	09-10	287 **	221	6
Non-Hispanic Blacks	Female	20-39	05-06	237 **	87	7
Non-Hispanic Blacks	Female	20-39	07-08	105	10	8
Non-Hispanic Blacks	Female	20-39	09-10	110	14	7
Non-Hispanic Blacks	Female	40-59	05-06	691	130	7
Non-Hispanic Blacks	Female	40-59	07-08	495	77	8
Non-Hispanic Blacks	Female	40-59	09-10	736	187	7
Non-Hispanic Blacks	Female	60+	05-06	2110	398	5
Non-Hispanic Blacks	Female	60+	07-08	2390	328	7
Non-Hispanic Blacks	Female	60+	09-10	1510	318	6
Mexican Americans	Male	12-19	05-06	2450 **	1272	11

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	07-08	265	35	6
Mexican Americans	Male	12-19	09-10	254	48	8
Mexican Americans	Male	20-39	05-06	1730	472	9
Mexican Americans	Male	20-39	07-08	1090	219	9
Mexican Americans	Male	20-39	09-10	583	134	8
Mexican Americans	Male	40-59	05-06	2160 **	845	4
Mexican Americans	Male	40-59	07-08	1010	136	6
Mexican Americans	Male	40-59	09-10	803	101	8
Mexican Americans	Male	60+	05-06	1180 **	394	4
Mexican Americans	Male	60+	07-08	1160	199	5
Mexican Americans	Male	60+	09-10	1130	138	5
Mexican Americans	Female	12-19	05-06	464	118	16
Mexican Americans	Female	12-19	07-08	164	31	5
Mexican Americans	Female	12-19	09-10	489	117	7
Mexican Americans	Female	20-39	05-06	895	239	9
Mexican Americans	Female	20-39	07-08	653 **	282	8
Mexican Americans	Female	20-39	09-10	694 **	215	9
Mexican Americans	Female	40-59	05-06	1320	121	6
Mexican Americans	Female	40-59	07-08	1080	121	6
Mexican Americans	Female	40-59	09-10	2550	719	9
Mexican Americans	Female	60+	05-06	1550	153	3
Mexican Americans	Female	60+	07-08	2960 **	1321	5
Mexican Americans	Female	60+	09-10	2590	482	6
All Hispanics	Male	12-19	09-10	233	37	11
All Hispanics	Male	20-39	09-10	571	110	13
All Hispanics	Male	40-59	09-10	798	72	13
All Hispanics	Male	60+	09-10	1040	99	8
All Hispanics	Female	12-19	09-10	384	100	10
All Hispanics	Female	20-39	09-10	563	156	13
All Hispanics	Female	40-59	09-10	1940	510	14
All Hispanics	Female	60+	09-10	2040	346	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.64, 1.41, and 5.2, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum p,p'-DDE (lipid adjusted) (2011 - 2016)†

CAS Number 72-55-9

Metabolite of Dichlorodiphenyltrichloroethane

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	62.6	3.3	6
Non-Hispanic Whites	Male	12-19	13-14	57.8	6.3	8
Non-Hispanic Whites	Male	12-19	15-16	50.4	4.2	7
Non-Hispanic Whites	Male	20-39	11-12	118	15	12
Non-Hispanic Whites	Male	20-39	13-14	76.3	6.2	14
Non-Hispanic Whites	Male	20-39	15-16	68.6	3.3	10
Non-Hispanic Whites	Male	40-59	11-12	132	8	12
Non-Hispanic Whites	Male	40-59	13-14	151	16	14
Non-Hispanic Whites	Male	40-59	15-16	106	9	10
Non-Hispanic Whites	Male	60+	11-12	391	45	12
Non-Hispanic Whites	Male	60+	13-14	387	34	17
Non-Hispanic Whites	Male	60+	15-16	260	21	14
Non-Hispanic Whites	Female	12-19	11-12	62.6	13.3	5
Non-Hispanic Whites	Female	12-19	13-14	40.4	2.9	6
Non-Hispanic Whites	Female	12-19	15-16	34.9	4.6	5
Non-Hispanic Whites	Female	20-39	11-12	83.8	6.7	13
Non-Hispanic Whites	Female	20-39	13-14	72.3	5.2	15
Non-Hispanic Whites	Female	20-39	15-16	55.4	6.5	11
Non-Hispanic Whites	Female	40-59	11-12	157	14	11
Non-Hispanic Whites	Female	40-59	13-14	133	12	16
Non-Hispanic Whites	Female	40-59	15-16	112	7	9
Non-Hispanic Whites	Female	60+	11-12	561	96	13
Non-Hispanic Whites	Female	60+	13-14	503	54	20
Non-Hispanic Whites	Female	60+	15-16	339	41	13
Non-Hispanic Blacks	Male	12-19	11-12	81.0	14.9	7
Non-Hispanic Blacks	Male	12-19	13-14	83.4	16	6
Non-Hispanic Blacks	Male	12-19	15-16	69.9	15	5
Non-Hispanic Blacks	Male	20-39	11-12	93.2	4.9	9
Non-Hispanic Blacks	Male	20-39	13-14	162 **	58	7
Non-Hispanic Blacks	Male	20-39	15-16	79.5	7.9	7
Non-Hispanic Blacks	Male	40-59	11-12	249	45	7
Non-Hispanic Blacks	Male	40-59	13-14	207	50	7
Non-Hispanic Blacks	Male	40-59	15-16	268	66	7
Non-Hispanic Blacks	Male	60+	11-12	725	63	9
Non-Hispanic Blacks	Male	60+	13-14	525	51	9
Non-Hispanic Blacks	Male	60+	15-16	337	62	7
Non-Hispanic Blacks	Female	12-19	11-12	48.5	6.3	6
Non-Hispanic Blacks	Female	12-19	13-14	44.1	3.9	6
Non-Hispanic Blacks	Female	12-19	15-16	33.4 **	10.7	4
Non-Hispanic Blacks	Female	20-39	11-12	161	37	8
Non-Hispanic Blacks	Female	20-39	13-14	79.9	15.1	8
Non-Hispanic Blacks	Female	20-39	15-16	71.1	6	9
Non-Hispanic Blacks	Female	40-59	11-12	408	78	8
Non-Hispanic Blacks	Female	40-59	13-14	384	87	8
Non-Hispanic Blacks	Female	40-59	15-16	363	76	12
Non-Hispanic Blacks	Female	60+	11-12	1450	237	8
Non-Hispanic Blacks	Female	60+	13-14	1670	156	8
Non-Hispanic Blacks	Female	60+	15-16	887	158	6
Mexican Americans	Male	12-19	11-12	267	44	5

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	13-14	162	26	7
Mexican Americans	Male	12-19	15-16	142 **	43	6
Mexican Americans	Male	20-39	11-12	325 **	103	4
Mexican Americans	Male	20-39	13-14	578	166	5
Mexican Americans	Male	20-39	15-16	489 **	150	7
Mexican Americans	Male	40-59	11-12	2030 **	960	4
Mexican Americans	Male	40-59	13-14	549 **	170	5
Mexican Americans	Male	40-59	15-16	510 **	224	3
Mexican Americans	Male	60+	11-12	1430	245	2
Mexican Americans	Male	60+	13-14	1140	271	4
Mexican Americans	Male	60+	15-16	796	97	5
Mexican Americans	Female	12-19	11-12	117	25	4
Mexican Americans	Female	12-19	13-14	136	18	7
Mexican Americans	Female	12-19	15-16	88.4	10.5	5
Mexican Americans	Female	20-39	11-12	560 **	236	4
Mexican Americans	Female	20-39	13-14	571	150	5
Mexican Americans	Female	20-39	15-16	386 **	150	6
Mexican Americans	Female	40-59	11-12	1050 **	341	3
Mexican Americans	Female	40-59	13-14	482	67	6
Mexican Americans	Female	40-59	15-16	802	155	8
Mexican Americans	Female	60+	11-12	2010	210	3
Mexican Americans	Female	60+	13-14	1700	273	5
Mexican Americans	Female	60+	15-16	954	114	5
All Hispanics	Male	12-19	11-12	238	41	7
All Hispanics	Male	12-19	13-14	145	21	10
All Hispanics	Male	12-19	15-16	135	31	9
All Hispanics	Male	20-39	11-12	263	61	8
All Hispanics	Male	20-39	13-14	455	127	8
All Hispanics	Male	20-39	15-16	353 **	108	11
All Hispanics	Male	40-59	11-12	1190 **	628	7
All Hispanics	Male	40-59	13-14	546	102	9
All Hispanics	Male	40-59	15-16	351	96	8
All Hispanics	Male	60+	11-12	1200	197	6
All Hispanics	Male	60+	13-14	962	194	7
All Hispanics	Male	60+	15-16	782	79	9
All Hispanics	Female	12-19	11-12	180 **	60	7
All Hispanics	Female	12-19	13-14	126	14	10
All Hispanics	Female	12-19	15-16	72.5	10.6	8
All Hispanics	Female	20-39	11-12	389 **	136	8
All Hispanics	Female	20-39	13-14	397	105	9
All Hispanics	Female	20-39	15-16	289 **	90	11
All Hispanics	Female	40-59	11-12	998	154	7
All Hispanics	Female	40-59	13-14	549	107	10
All Hispanics	Female	40-59	15-16	656	115	13
All Hispanics	Female	60+	11-12	1590	163	7
All Hispanics	Female	60+	13-14	1440	187	9
All Hispanics	Female	60+	15-16	1040	95	10
Asians	Male	12-19	11-12	204	7	3
Asians	Male	12-19	13-14	109	20	3
Asians	Male	12-19	15-16	216	54	3
Asians	Male	20-39	11-12	512	78	6
Asians	Male	20-39	13-14	307	67	4
Asians	Male	20-39	15-16	306	79	5
Asians	Male	40-59	11-12	647	110	6
Asians	Male	40-59	13-14	931 **	286	4
Asians	Male	40-59	15-16	533	34	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	11-12	1070	132	4
Asians	Male	60+	13-14	934	226	3
Asians	Male	60+	15-16	589	30	2
Asians	Female	12-19	11-12	231	62	4
Asians	Female	12-19	13-14	186 **	100	3
Asians	Female	12-19	15-16	86.5	9	3
Asians	Female	20-39	11-12	486	117	6
Asians	Female	20-39	13-14	275	76	5
Asians	Female	20-39	15-16	335 **	141	4
Asians	Female	40-59	11-12	808	72	6
Asians	Female	40-59	13-14	733	125	7
Asians	Female	40-59	15-16	524	108	5
Asians	Female	60+	11-12	2610	308	3
Asians	Female	60+	13-14	2320	492	3
Asians	Female	60+	15-16	938	148	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 4.38, 1.84, and 1.3, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum p,p'-DDE (whole weight) (2005 - 2010)†

CAS Number 72-55-9

Metabolite of Dichlorodiphenyltrichloroethane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.592	0.071	9
Non-Hispanic Whites	12-19	Male	07-08	.429	0.029	6
Non-Hispanic Whites	12-19	Male	09-10	.454	0.085	10
Non-Hispanic Whites	20-39	Male	05-06	3.23 **	2.4	12
Non-Hispanic Whites	20-39	Male	07-08	.745	0.07	15
Non-Hispanic Whites	20-39	Male	09-10	.670	0.051	17
Non-Hispanic Whites	40-59	Male	05-06	1.64	0.13	12
Non-Hispanic Whites	40-59	Male	07-08	1.27	0.09	16
Non-Hispanic Whites	40-59	Male	09-10	1.05	0.12	17
Non-Hispanic Whites	60+	Male	05-06	4.72	0.32	15
Non-Hispanic Whites	60+	Male	07-08	3.21	0.28	23
Non-Hispanic Whites	60+	Male	09-10	2.21	0.13	21
Non-Hispanic Whites	12-19	Female	05-06	.444	0.034	10
Non-Hispanic Whites	12-19	Female	07-08	.334	0.073	7
Non-Hispanic Whites	12-19	Female	09-10	.247	0.027	8
Non-Hispanic Whites	20-39	Female	05-06	.657	0.046	16
Non-Hispanic Whites	20-39	Female	07-08	.546	0.035	13
Non-Hispanic Whites	20-39	Female	09-10	.457	0.032	19
Non-Hispanic Whites	40-59	Female	05-06	2.02	0.27	13
Non-Hispanic Whites	40-59	Female	07-08	1.18	0.08	17
Non-Hispanic Whites	40-59	Female	09-10	1.59	0.38	17
Non-Hispanic Whites	60+	Female	05-06	5.38	0.51	17
Non-Hispanic Whites	60+	Female	07-08	3.50	0.3	21
Non-Hispanic Whites	60+	Female	09-10	3.21	0.24	22
Non-Hispanic Blacks	12-19	Male	05-06	.705	0.099	13
Non-Hispanic Blacks	12-19	Male	07-08	.434	0.04	6
Non-Hispanic Blacks	12-19	Male	09-10	.436	0.049	6
Non-Hispanic Blacks	20-39	Male	05-06	1.43	0.39	6
Non-Hispanic Blacks	20-39	Male	07-08	.694	0.07	6
Non-Hispanic Blacks	20-39	Male	09-10	1.64 **	0.69	7
Non-Hispanic Blacks	40-59	Male	05-06	2.86	0.39	5
Non-Hispanic Blacks	40-59	Male	07-08	2.14	0.14	6
Non-Hispanic Blacks	40-59	Male	09-10	2.03	0.32	7
Non-Hispanic Blacks	60+	Male	05-06	11.4	2.7	5
Non-Hispanic Blacks	60+	Male	07-08	5.21	0.55	8
Non-Hispanic Blacks	60+	Male	09-10	5.36	1.06	9
Non-Hispanic Blacks	12-19	Female	05-06	.406	0.025	14
Non-Hispanic Blacks	12-19	Female	07-08	.300	0.033	5
Non-Hispanic Blacks	12-19	Female	09-10	1.25 **	0.95	6
Non-Hispanic Blacks	20-39	Female	05-06	1.38 **	0.52	7
Non-Hispanic Blacks	20-39	Female	07-08	.524	0.047	8
Non-Hispanic Blacks	20-39	Female	09-10	.548	0.078	7
Non-Hispanic Blacks	40-59	Female	05-06	4.51	0.94	7
Non-Hispanic Blacks	40-59	Female	07-08	2.97	0.46	8
Non-Hispanic Blacks	40-59	Female	09-10	4.11	1.04	7
Non-Hispanic Blacks	60+	Female	05-06	14.0	2.5	5
Non-Hispanic Blacks	60+	Female	07-08	14.4	2	7
Non-Hispanic Blacks	60+	Female	09-10	8.88	1.99	6
Mexican Americans	12-19	Male	05-06	13.0 **	6.7	11

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	12-19	Male	07-08	1.39	0.16	6
Mexican Americans	12-19	Male	09-10	1.20	0.23	8
Mexican Americans	20-39	Male	05-06	12.8	3.7	9
Mexican Americans	20-39	Male	07-08	7.50	1.59	9
Mexican Americans	20-39	Male	09-10	3.54	0.78	8
Mexican Americans	40-59	Male	05-06	17.0 **	6	4
Mexican Americans	40-59	Male	07-08	7.34	1.22	6
Mexican Americans	40-59	Male	09-10	5.42	0.65	8
Mexican Americans	60+	Male	05-06	8.69 **	3.03	4
Mexican Americans	60+	Male	07-08	8.68	1.86	5
Mexican Americans	60+	Male	09-10	6.96	0.87	5
Mexican Americans	12-19	Female	05-06	2.52	0.65	16
Mexican Americans	12-19	Female	07-08	.803	0.154	5
Mexican Americans	12-19	Female	09-10	2.28	0.54	7
Mexican Americans	20-39	Female	05-06	5.94	1.49	9
Mexican Americans	20-39	Female	07-08	3.80 **	1.6	8
Mexican Americans	20-39	Female	09-10	3.86 **	1.24	9
Mexican Americans	40-59	Female	05-06	9.64	0.85	6
Mexican Americans	40-59	Female	07-08	7.28	0.88	6
Mexican Americans	40-59	Female	09-10	17.1 **	5.3	9
Mexican Americans	60+	Female	05-06	12.1	2.3	3
Mexican Americans	60+	Female	07-08	20.4 **	9.2	5
Mexican Americans	60+	Female	09-10	14.7	3.2	6
All Hispanics	12-19	Male	09-10	1.09	0.18	11
All Hispanics	20-39	Male	09-10	3.84	0.89	13
All Hispanics	40-59	Male	09-10	5.42	0.51	13
All Hispanics	60+	Male	09-10	6.51	0.6	8
All Hispanics	12-19	Female	09-10	1.79	0.46	10
All Hispanics	20-39	Female	09-10	3.14	0.9	13
All Hispanics	40-59	Female	09-10	12.8	3.7	14
All Hispanics	60+	Female	09-10	12.1	2.1	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum p,p'-DDE (whole weight) (2011 - 2016)†

CAS Number 72-55-9

Metabolite of Dichlorodiphenyltrichloroethane

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.296	0.01	6
Non-Hispanic Whites	Male	12-19	13-14	.272	0.024	8
Non-Hispanic Whites	Male	12-19	15-16	.246	0.021	7
Non-Hispanic Whites	Male	20-39	11-12	.684	0.09	12
Non-Hispanic Whites	Male	20-39	13-14	.411	0.029	14
Non-Hispanic Whites	Male	20-39	15-16	.431	0.03	10
Non-Hispanic Whites	Male	40-59	11-12	.870	0.05	12
Non-Hispanic Whites	Male	40-59	13-14	.894	0.1	14
Non-Hispanic Whites	Male	40-59	15-16	.721	0.068	10
Non-Hispanic Whites	Male	60+	11-12	2.13	0.23	12
Non-Hispanic Whites	Male	60+	13-14	2.06	0.15	17
Non-Hispanic Whites	Male	60+	15-16	1.41	0.1	14
Non-Hispanic Whites	Female	12-19	11-12	.330	0.055	5
Non-Hispanic Whites	Female	12-19	13-14	.200	0.014	6
Non-Hispanic Whites	Female	12-19	15-16	.168	0.02	5
Non-Hispanic Whites	Female	20-39	11-12	.455	0.038	13
Non-Hispanic Whites	Female	20-39	13-14	.381	0.028	15
Non-Hispanic Whites	Female	20-39	15-16	.300	0.036	11
Non-Hispanic Whites	Female	40-59	11-12	1.00	0.1	11
Non-Hispanic Whites	Female	40-59	13-14	.793	0.075	16
Non-Hispanic Whites	Female	40-59	15-16	.723	0.054	9
Non-Hispanic Whites	Female	60+	11-12	3.39	0.52	13
Non-Hispanic Whites	Female	60+	13-14	2.97	0.32	20
Non-Hispanic Whites	Female	60+	15-16	2.12	0.27	13
Non-Hispanic Blacks	Male	12-19	11-12	.356	0.06	7
Non-Hispanic Blacks	Male	12-19	13-14	.379	0.08	6
Non-Hispanic Blacks	Male	12-19	15-16	.308	0.069	5
Non-Hispanic Blacks	Male	20-39	11-12	.485	0.029	9
Non-Hispanic Blacks	Male	20-39	13-14	.810 **	0.266	7
Non-Hispanic Blacks	Male	20-39	15-16	.415	0.039	7
Non-Hispanic Blacks	Male	40-59	11-12	1.39	0.25	7
Non-Hispanic Blacks	Male	40-59	13-14	1.15	0.26	7
Non-Hispanic Blacks	Male	40-59	15-16	1.65	0.37	7
Non-Hispanic Blacks	Male	60+	11-12	3.96	0.37	9
Non-Hispanic Blacks	Male	60+	13-14	2.75	0.28	9
Non-Hispanic Blacks	Male	60+	15-16	1.86	0.39	7
Non-Hispanic Blacks	Female	12-19	11-12	.214	0.028	6
Non-Hispanic Blacks	Female	12-19	13-14	.193	0.014	6
Non-Hispanic Blacks	Female	12-19	15-16	.156 **	0.06	4
Non-Hispanic Blacks	Female	20-39	11-12	.872	0.202	8
Non-Hispanic Blacks	Female	20-39	13-14	.395	0.073	8
Non-Hispanic Blacks	Female	20-39	15-16	.344	0.028	9
Non-Hispanic Blacks	Female	40-59	11-12	2.55	0.57	8
Non-Hispanic Blacks	Female	40-59	13-14	2.03	0.46	8
Non-Hispanic Blacks	Female	40-59	15-16	2.10	0.48	12
Non-Hispanic Blacks	Female	60+	11-12	8.10	1.27	8
Non-Hispanic Blacks	Female	60+	13-14	8.94	0.69	8
Non-Hispanic Blacks	Female	60+	15-16	5.14	0.91	6
Mexican Americans	Male	12-19	11-12	1.29	0.2	5

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	13-14	.750	0.114	7
Mexican Americans	Male	12-19	15-16	.697	0.202	6
Mexican Americans	Male	20-39	11-12	1.99 **	0.65	4
Mexican Americans	Male	20-39	13-14	3.55	0.82	5
Mexican Americans	Male	20-39	15-16	3.26	0.95	7
Mexican Americans	Male	40-59	11-12	14.9 **	6.1	4
Mexican Americans	Male	40-59	13-14	3.43	0.96	5
Mexican Americans	Male	40-59	15-16	3.21 **	1.38	3
Mexican Americans	Male	60+	11-12	8.41	1.3	2
Mexican Americans	Male	60+	13-14	5.95	1.06	4
Mexican Americans	Male	60+	15-16	4.60	0.62	5
Mexican Americans	Female	12-19	11-12	.565	0.107	4
Mexican Americans	Female	12-19	13-14	.633	0.075	7
Mexican Americans	Female	12-19	15-16	.445	0.063	5
Mexican Americans	Female	20-39	11-12	3.09 **	1.32	4
Mexican Americans	Female	20-39	13-14	3.00	0.73	5
Mexican Americans	Female	20-39	15-16	2.23 **	0.95	6
Mexican Americans	Female	40-59	11-12	6.06	1.77	3
Mexican Americans	Female	40-59	13-14	2.80	0.36	6
Mexican Americans	Female	40-59	15-16	5.00	0.92	8
Mexican Americans	Female	60+	11-12	12.4	1.4	3
Mexican Americans	Female	60+	13-14	9.86	1.39	5
Mexican Americans	Female	60+	15-16	5.99	0.73	5
All Hispanics	Male	12-19	11-12	1140	191	7
All Hispanics	Male	12-19	13-14	684	89	10
All Hispanics	Male	12-19	15-16	676	144	9
All Hispanics	Male	20-39	11-12	1610	387	8
All Hispanics	Male	20-39	13-14	2760	694	8
All Hispanics	Male	20-39	15-16	2290 **	707	11
All Hispanics	Male	40-59	11-12	8680 **	4205	7
All Hispanics	Male	40-59	13-14	3330	600	9
All Hispanics	Male	40-59	15-16	2200	599	8
All Hispanics	Male	60+	11-12	7050	1119	6
All Hispanics	Male	60+	13-14	5170	907	7
All Hispanics	Male	60+	15-16	4650	528	9
All Hispanics	Female	12-19	11-12	862 **	273	7
All Hispanics	Female	12-19	13-14	588	61	10
All Hispanics	Female	12-19	15-16	352	59	8
All Hispanics	Female	20-39	11-12	2140 **	759	8
All Hispanics	Female	20-39	13-14	2130	526	9
All Hispanics	Female	20-39	15-16	1650 **	566	11
All Hispanics	Female	40-59	11-12	6150	857	7
All Hispanics	Female	40-59	13-14	3200	625	10
All Hispanics	Female	40-59	15-16	4160	691	13
All Hispanics	Female	60+	11-12	9870	1063	7
All Hispanics	Female	60+	13-14	8520	1021	9
All Hispanics	Female	60+	15-16	6360	555	10
Asians	Male	12-19	11-12	1.05	0.05	3
Asians	Male	12-19	13-14	.509	0.073	3
Asians	Male	12-19	15-16	1.01	0.25	3
Asians	Male	20-39	11-12	2.90	0.49	6
Asians	Male	20-39	13-14	1.82	0.38	4
Asians	Male	20-39	15-16	1.98	0.53	5
Asians	Male	40-59	11-12	4.04	0.76	6
Asians	Male	40-59	13-14	5.49	1.55	4
Asians	Male	40-59	15-16	3.37	0.18	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	11-12	5.70	0.61	4
Asians	Male	60+	13-14	5.50	0.76	3
Asians	Male	60+	15-16	3.10	0.29	2
Asians	Female	12-19	11-12	1.09	0.28	4
Asians	Female	12-19	13-14	.878 **	0.389	3
Asians	Female	12-19	15-16	.459	0.051	3
Asians	Female	20-39	11-12	2.61	0.55	6
Asians	Female	20-39	13-14	1.41	0.35	5
Asians	Female	20-39	15-16	1.97 **	0.9	4
Asians	Female	40-59	11-12	4.96	0.48	6
Asians	Female	40-59	13-14	4.35	0.73	7
Asians	Female	40-59	15-16	3.19	0.64	5
Asians	Female	60+	11-12	14.9	2.1	3
Asians	Female	60+	13-14	13.8	2.3	3
Asians	Female	60+	15-16	5.77	1.03	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum Hexachlorobenzene (lipid adjusted) (2005 - 2010)†

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	7.62	1.17	9
Non-Hispanic Whites	Male	12-19	07-08	12.4	0.7	6
Non-Hispanic Whites	Male	12-19	09-10	9.69	0.54	10
Non-Hispanic Whites	Male	20-39	05-06	7.34	0.41	12
Non-Hispanic Whites	Male	20-39	07-08	9.45	0.45	15
Non-Hispanic Whites	Male	20-39	09-10	8.56	0.16	17
Non-Hispanic Whites	Male	40-59	05-06	8.85	0.38	12
Non-Hispanic Whites	Male	40-59	07-08	10.1	0.3	16
Non-Hispanic Whites	Male	40-59	09-10	9.29	0.43	17
Non-Hispanic Whites	Male	60+	05-06	11.1	0.5	15
Non-Hispanic Whites	Male	60+	07-08	11.8	0.5	23
Non-Hispanic Whites	Male	60+	09-10	9.95	0.42	21
Non-Hispanic Whites	Female	12-19	05-06	5.44	0.49	10
Non-Hispanic Whites	Female	12-19	07-08	7.06	0.27	7
Non-Hispanic Whites	Female	12-19	09-10	7.36	0.36	8
Non-Hispanic Whites	Female	20-39	05-06	7.11	0.33	16
Non-Hispanic Whites	Female	20-39	07-08	7.94	0.22	13
Non-Hispanic Whites	Female	20-39	09-10	7.57	0.25	19
Non-Hispanic Whites	Female	40-59	05-06	9.25	0.44	13
Non-Hispanic Whites	Female	40-59	07-08	10.8	0.6	17
Non-Hispanic Whites	Female	40-59	09-10	11.1	1	17
Non-Hispanic Whites	Female	60+	05-06	13.9	0.7	17
Non-Hispanic Whites	Female	60+	07-08	15.1	0.7	21
Non-Hispanic Whites	Female	60+	09-10	14.9	1.2	22
Non-Hispanic Blacks	Male	12-19	05-06	6.42	0.37	13
Non-Hispanic Blacks	Male	12-19	07-08	9.67	0.72	6
Non-Hispanic Blacks	Male	12-19	09-10	7.82	0.9	6
Non-Hispanic Blacks	Male	20-39	05-06	5.77	0.38	6
Non-Hispanic Blacks	Male	20-39	07-08	9.11	0.53	6
Non-Hispanic Blacks	Male	20-39	09-10	7.45	0.56	7
Non-Hispanic Blacks	Male	40-59	05-06	7.19	0.45	5
Non-Hispanic Blacks	Male	40-59	07-08	9.58	0.39	6
Non-Hispanic Blacks	Male	40-59	09-10	9.27	0.6	7
Non-Hispanic Blacks	Male	60+	05-06	10.9	1.6	5
Non-Hispanic Blacks	Male	60+	07-08	10.3	0.5	8
Non-Hispanic Blacks	Male	60+	09-10	10.1	0.5	9
Non-Hispanic Blacks	Female	12-19	05-06	4.41	0.27	14
Non-Hispanic Blacks	Female	12-19	07-08	7.20	0.51	5
Non-Hispanic Blacks	Female	12-19	09-10	5.97	0.45	6
Non-Hispanic Blacks	Female	20-39	05-06	5.90	0.64	7
Non-Hispanic Blacks	Female	20-39	07-08	7.04	0.28	8
Non-Hispanic Blacks	Female	20-39	09-10	6.41	0.25	7
Non-Hispanic Blacks	Female	40-59	05-06	9.19	0.42	7
Non-Hispanic Blacks	Female	40-59	07-08	9.90	0.54	8
Non-Hispanic Blacks	Female	40-59	09-10	8.58	0.63	7
Non-Hispanic Blacks	Female	60+	05-06	18.1	1.9	5
Non-Hispanic Blacks	Female	60+	07-08	15.1	1.1	7
Non-Hispanic Blacks	Female	60+	09-10	15.6	0.8	7
Mexican Americans	Male	12-19	05-06	6.25	0.43	11
Mexican Americans	Male	12-19	07-08	9.49	0.64	6
Mexican Americans	Male	12-19	09-10	11.3	0.3	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	9.61	1.74	9
Mexican Americans	Male	20-39	07-08	9.47	0.54	9
Mexican Americans	Male	20-39	09-10	11.5	1.5	8
Mexican Americans	Male	40-59	05-06	14.0	1.9	4
Mexican Americans	Male	40-59	07-08	20.6 **	7.5	6
Mexican Americans	Male	40-59	09-10	14.7	2.2	8
Mexican Americans	Male	60+	05-06	10.5	1.3	4
Mexican Americans	Male	60+	07-08	12.1	0.7	5
Mexican Americans	Male	60+	09-10	12.7	0.3	5
Mexican Americans	Female	12-19	05-06	5.93	0.55	16
Mexican Americans	Female	12-19	07-08	6.81	0.4	5
Mexican Americans	Female	12-19	09-10	7.48	0.36	7
Mexican Americans	Female	20-39	05-06	9.78	0.81	9
Mexican Americans	Female	20-39	07-08	10.4	0.7	8
Mexican Americans	Female	20-39	09-10	8.88	0.56	10
Mexican Americans	Female	40-59	05-06	15.9	1.4	6
Mexican Americans	Female	40-59	07-08	20.6	2.4	6
Mexican Americans	Female	40-59	09-10	12.3	0.7	9
Mexican Americans	Female	60+	05-06	19.6	2.6	3
Mexican Americans	Female	60+	07-08	20.7	1.7	5
Mexican Americans	Female	60+	09-10	21.8	3.1	6
All Hispanics	Male	12-19	09-10	10.5	0.5	11
All Hispanics	Male	20-39	09-10	10.5	1	13
All Hispanics	Male	40-59	09-10	13.1	1.5	13
All Hispanics	Male	60+	09-10	12.0	0.4	8
All Hispanics	Female	12-19	09-10	7.11	0.33	10
All Hispanics	Female	20-39	09-10	8.26	0.49	14
All Hispanics	Female	40-59	09-10	15.2	2.6	14
All Hispanics	Female	60+	09-10	22.8 **	8	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 3.85, 1.41, and 4.4, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum Hexachlorobenzene (lipid adjusted) (2011 - 2016)†

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	8.17	0.67	6
Non-Hispanic Whites	Male	12-19	13-14	7.39	0.47	8
Non-Hispanic Whites	Male	12-19	15-16	6.57	0.24	7
Non-Hispanic Whites	Male	20-39	11-12	9.33	0.51	12
Non-Hispanic Whites	Male	20-39	13-14	8.66	0.34	14
Non-Hispanic Whites	Male	20-39	15-16	7.40	0.23	10
Non-Hispanic Whites	Male	40-59	11-12	9.78	0.32	12
Non-Hispanic Whites	Male	40-59	13-14	10.5	0.5	14
Non-Hispanic Whites	Male	40-59	15-16	8.56	0.39	10
Non-Hispanic Whites	Male	60+	11-12	10.1	0.3	12
Non-Hispanic Whites	Male	60+	13-14	11.3	0.4	17
Non-Hispanic Whites	Male	60+	15-16	10.2	0.3	14
Non-Hispanic Whites	Female	12-19	11-12	6.34	0.31	5
Non-Hispanic Whites	Female	12-19	13-14	6.70	0.24	6
Non-Hispanic Whites	Female	12-19	15-16	5.18	0.27	5
Non-Hispanic Whites	Female	20-39	11-12	6.96	0.22	13
Non-Hispanic Whites	Female	20-39	13-14	7.90	0.27	15
Non-Hispanic Whites	Female	20-39	15-16	6.45	0.21	11
Non-Hispanic Whites	Female	40-59	11-12	9.66	0.49	11
Non-Hispanic Whites	Female	40-59	13-14	9.75	0.25	16
Non-Hispanic Whites	Female	40-59	15-16	7.96	0.28	9
Non-Hispanic Whites	Female	60+	11-12	13.0	1.4	14
Non-Hispanic Whites	Female	60+	13-14	13.9	0.5	20
Non-Hispanic Whites	Female	60+	15-16	14.7	2.3	13
Non-Hispanic Blacks	Male	12-19	11-12	8.44	0.73	7
Non-Hispanic Blacks	Male	12-19	13-14	7.57	0.46	6
Non-Hispanic Blacks	Male	12-19	15-16	6.70	0.74	5
Non-Hispanic Blacks	Male	20-39	11-12	7.41	0.34	9
Non-Hispanic Blacks	Male	20-39	13-14	7.88	0.52	7
Non-Hispanic Blacks	Male	20-39	15-16	6.69	0.4	7
Non-Hispanic Blacks	Male	40-59	11-12	8.63	0.41	7
Non-Hispanic Blacks	Male	40-59	13-14	9.64	0.51	7
Non-Hispanic Blacks	Male	40-59	15-16	8.17	0.31	7
Non-Hispanic Blacks	Male	60+	11-12	9.20	0.38	9
Non-Hispanic Blacks	Male	60+	13-14	9.90	0.45	9
Non-Hispanic Blacks	Male	60+	15-16	8.48	0.27	7
Non-Hispanic Blacks	Female	12-19	11-12	5.64	0.24	6
Non-Hispanic Blacks	Female	12-19	13-14	6.62	0.3	6
Non-Hispanic Blacks	Female	12-19	15-16	5.21	0.45	4
Non-Hispanic Blacks	Female	20-39	11-12	6.62	0.27	8
Non-Hispanic Blacks	Female	20-39	13-14	6.18	0.27	8
Non-Hispanic Blacks	Female	20-39	15-16	6.14	0.19	9
Non-Hispanic Blacks	Female	40-59	11-12	8.31	0.21	8
Non-Hispanic Blacks	Female	40-59	13-14	10.8	0.8	8
Non-Hispanic Blacks	Female	40-59	15-16	8.22	0.26	12
Non-Hispanic Blacks	Female	60+	11-12	12.2	0.6	8
Non-Hispanic Blacks	Female	60+	13-14	14.8	0.8	8
Non-Hispanic Blacks	Female	60+	15-16	12.0	0.6	7
Mexican Americans	Male	12-19	11-12	7.75	0.55	5
Mexican Americans	Male	12-19	13-14	8.70	0.34	7
Mexican Americans	Male	12-19	15-16	7.38	0.3	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	8.92	1.01	4
Mexican Americans	Male	20-39	13-14	9.85	0.78	5
Mexican Americans	Male	20-39	15-16	7.61	0.55	7
Mexican Americans	Male	40-59	11-12	14.3	3.7	4
Mexican Americans	Male	40-59	13-14	11.6	0.2	5
Mexican Americans	Male	40-59	15-16	9.16	0.71	4
Mexican Americans	Male	60+	11-12	13.3	0.8	2
Mexican Americans	Male	60+	13-14	13.7	1.2	4
Mexican Americans	Male	60+	15-16	10.5	0.6	5
Mexican Americans	Female	12-19	11-12	6.37	0.36	4
Mexican Americans	Female	12-19	13-14	7.47	0.33	7
Mexican Americans	Female	12-19	15-16	5.71	0.35	5
Mexican Americans	Female	20-39	11-12	7.29	0.42	4
Mexican Americans	Female	20-39	13-14	8.86	0.59	5
Mexican Americans	Female	20-39	15-16	7.72	0.69	6
Mexican Americans	Female	40-59	11-12	19.0	3.7	3
Mexican Americans	Female	40-59	13-14	13.0	1.4	6
Mexican Americans	Female	40-59	15-16	10.9	0.8	8
Mexican Americans	Female	60+	11-12	18.7	2.6	3
Mexican Americans	Female	60+	13-14	21.6	2	5
Mexican Americans	Female	60+	15-16	14.1	0.9	7
All Hispanics	Male	12-19	11-12	7.47	0.48	7
All Hispanics	Male	12-19	13-14	8.47	0.28	10
All Hispanics	Male	12-19	15-16	6.99	0.28	9
All Hispanics	Male	20-39	11-12	8.07	0.67	8
All Hispanics	Male	20-39	13-14	9.54	0.66	8
All Hispanics	Male	20-39	15-16	7.85	0.58	11
All Hispanics	Male	40-59	11-12	11.2	2.4	7
All Hispanics	Male	40-59	13-14	11.5	0.6	9
All Hispanics	Male	40-59	15-16	8.14	0.46	9
All Hispanics	Male	60+	11-12	10.7	1.1	6
All Hispanics	Male	60+	13-14	11.7	1.1	7
All Hispanics	Male	60+	15-16	11.0	0.6	9
All Hispanics	Female	12-19	11-12	6.08	0.31	7
All Hispanics	Female	12-19	13-14	7.12	0.31	10
All Hispanics	Female	12-19	15-16	5.58	0.3	8
All Hispanics	Female	20-39	11-12	6.56	0.38	8
All Hispanics	Female	20-39	13-14	7.86	0.52	9
All Hispanics	Female	20-39	15-16	6.85	0.48	11
All Hispanics	Female	40-59	11-12	12.4	2.6	7
All Hispanics	Female	40-59	13-14	12.2	0.9	10
All Hispanics	Female	40-59	15-16	9.99	0.69	13
All Hispanics	Female	60+	11-12	15.9	1.6	7
All Hispanics	Female	60+	13-14	18.7	1.7	9
All Hispanics	Female	60+	15-16	13.1	0.6	13
Asians	Male	12-19	11-12	8.48	1.16	3
Asians	Male	12-19	13-14	7.57	0.35	3
Asians	Male	12-19	15-16	18.8	3.1	3
Asians	Male	20-39	11-12	15.1	2.4	6
Asians	Male	20-39	13-14	11.1	1.2	4
Asians	Male	20-39	15-16	8.67	1.02	5
Asians	Male	40-59	11-12	12.1	1.2	6
Asians	Male	40-59	13-14	15.3	2.5	4
Asians	Male	40-59	15-16	8.99	0.37	4
Asians	Male	60+	11-12	14.9	2.2	4
Asians	Male	60+	13-14	12.9	2.1	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	11.0	2.4	3
Asians	Female	12-19	11-12	7.36	0.68	4
Asians	Female	12-19	13-14	8.17	0.13	3
Asians	Female	12-19	15-16	6.92	0.9	3
Asians	Female	20-39	11-12	8.93	1.54	6
Asians	Female	20-39	13-14	8.59	0.75	5
Asians	Female	20-39	15-16	13.9	2.6	4
Asians	Female	40-59	11-12	10.7	0.8	6
Asians	Female	40-59	13-14	13.1	1.3	7
Asians	Female	40-59	15-16	9.32	0.46	5
Asians	Female	60+	11-12	21.7	1.5	3
Asians	Female	60+	13-14	14.6	3	3
Asians	Female	60+	15-16	11.8	0.9	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 2.4, 1.3, and 1.3, respectively.

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

Serum Hexachlorobenzene (whole weight) (2005 - 2010)†

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.043	0.008	9
Non-Hispanic Whites	12-19	Male	07-08	.062	0.003	6
Non-Hispanic Whites	12-19	Male	09-10	.052	0.003	10
Non-Hispanic Whites	20-39	Male	05-06	.054	0.004	12
Non-Hispanic Whites	20-39	Male	07-08	.062	0.003	15
Non-Hispanic Whites	20-39	Male	09-10	.056	0.002	17
Non-Hispanic Whites	40-59	Male	05-06	.067	0.003	12
Non-Hispanic Whites	40-59	Male	07-08	.074	0.003	16
Non-Hispanic Whites	40-59	Male	09-10	.063	0.003	17
Non-Hispanic Whites	60+	Male	05-06	.076	0.002	15
Non-Hispanic Whites	60+	Male	07-08	.075	0.003	23
Non-Hispanic Whites	60+	Male	09-10	.060	0.003	21
Non-Hispanic Whites	12-19	Female	05-06	.029	0.003	10
Non-Hispanic Whites	12-19	Female	07-08	.033	0.001	7
Non-Hispanic Whites	12-19	Female	09-10	.035	0.002	8
Non-Hispanic Whites	20-39	Female	05-06	.046	0.002	16
Non-Hispanic Whites	20-39	Female	07-08	.047	0.001	13
Non-Hispanic Whites	20-39	Female	09-10	.040	0.001	19
Non-Hispanic Whites	40-59	Female	05-06	.069	0.005	13
Non-Hispanic Whites	40-59	Female	07-08	.071	0.005	17
Non-Hispanic Whites	40-59	Female	09-10	.070	0.007	17
Non-Hispanic Whites	60+	Female	05-06	.102	0.005	17
Non-Hispanic Whites	60+	Female	07-08	.102	0.004	21
Non-Hispanic Whites	60+	Female	09-10	.090	0.006	22
Non-Hispanic Blacks	12-19	Male	05-06	.032	0.001	13
Non-Hispanic Blacks	12-19	Male	07-08	.046	0.004	6
Non-Hispanic Blacks	12-19	Male	09-10	.036	0.005	6
Non-Hispanic Blacks	20-39	Male	05-06	.034	0.003	6
Non-Hispanic Blacks	20-39	Male	07-08	.051	0.003	6
Non-Hispanic Blacks	20-39	Male	09-10	.042	0.003	7
Non-Hispanic Blacks	40-59	Male	05-06	.046	0.003	5
Non-Hispanic Blacks	40-59	Male	07-08	.061	0.002	6
Non-Hispanic Blacks	40-59	Male	09-10	.057	0.005	7
Non-Hispanic Blacks	60+	Male	05-06	.064	0.008	5
Non-Hispanic Blacks	60+	Male	07-08	.062	0.003	8
Non-Hispanic Blacks	60+	Male	09-10	.054	0.003	9
Non-Hispanic Blacks	12-19	Female	05-06	.022	0.001	14
Non-Hispanic Blacks	12-19	Female	07-08	.034	0.002	5
Non-Hispanic Blacks	12-19	Female	09-10	.026	0.002	6
Non-Hispanic Blacks	20-39	Female	05-06	.034	0.004	7
Non-Hispanic Blacks	20-39	Female	07-08	.035	0.001	8
Non-Hispanic Blacks	20-39	Female	09-10	.032	0.002	7
Non-Hispanic Blacks	40-59	Female	05-06	.059	0.003	7
Non-Hispanic Blacks	40-59	Female	07-08	.059	0.004	8
Non-Hispanic Blacks	40-59	Female	09-10	.048	0.004	7
Non-Hispanic Blacks	60+	Female	05-06	.121	0.012	5
Non-Hispanic Blacks	60+	Female	07-08	.090	0.005	7
Non-Hispanic Blacks	60+	Female	09-10	.090	0.005	7
Mexican Americans	12-19	Male	05-06	.034	0.002	11
Mexican Americans	12-19	Male	07-08	.050	0.003	6
Mexican Americans	12-19	Male	09-10	.053	0.001	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.066	0.01	9
Mexican Americans	20-39	Male	07-08	.065	0.005	9
Mexican Americans	20-39	Male	09-10	.070	0.01	8
Mexican Americans	40-59	Male	05-06	.113	0.011	4
Mexican Americans	40-59	Male	07-08	.146 **	0.053	6
Mexican Americans	40-59	Male	09-10	.099	0.013	8
Mexican Americans	60+	Male	05-06	.076	0.011	4
Mexican Americans	60+	Male	07-08	.089	0.01	5
Mexican Americans	60+	Male	09-10	.078	0.003	5
Mexican Americans	12-19	Female	05-06	.032	0.003	16
Mexican Americans	12-19	Female	07-08	.033	0.002	5
Mexican Americans	12-19	Female	09-10	.035	0.002	7
Mexican Americans	20-39	Female	05-06	.066	0.008	9
Mexican Americans	20-39	Female	07-08	.060	0.004	8
Mexican Americans	20-39	Female	09-10	.049	0.003	10
Mexican Americans	40-59	Female	05-06	.117	0.01	6
Mexican Americans	40-59	Female	07-08	.138	0.014	6
Mexican Americans	40-59	Female	09-10	.080	0.007	9
Mexican Americans	60+	Female	05-06	.148	0.02	3
Mexican Americans	60+	Female	07-08	.141	0.012	5
Mexican Americans	60+	Female	09-10	.122	0.018	6
All Hispanics	12-19	Male	09-10	.049	0.002	11
All Hispanics	20-39	Male	09-10	.066	0.007	13
All Hispanics	40-59	Male	09-10	.088	0.009	13
All Hispanics	60+	Male	09-10	.076	0.003	8
All Hispanics	12-19	Female	09-10	.033	0.002	10
All Hispanics	20-39	Female	09-10	.046	0.003	14
All Hispanics	40-59	Female	09-10	.096	0.017	14
All Hispanics	60+	Female	09-10	.139 **	0.056	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum Hexachlorobenzene (whole weight) (2011 - 2016)†

CAS Number 118-74-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.039	0.004	6
Non-Hispanic Whites	Male	12-19	13-14	.035	0.002	8
Non-Hispanic Whites	Male	12-19	15-16	.032	0.001	7
Non-Hispanic Whites	Male	20-39	11-12	.053	0.002	12
Non-Hispanic Whites	Male	20-39	13-14	.047	0.002	14
Non-Hispanic Whites	Male	20-39	15-16	.046	0.003	10
Non-Hispanic Whites	Male	40-59	11-12	.065	0.003	12
Non-Hispanic Whites	Male	40-59	13-14	.062	0.004	14
Non-Hispanic Whites	Male	40-59	15-16	.058	0.004	10
Non-Hispanic Whites	Male	60+	11-12	.056	0.002	12
Non-Hispanic Whites	Male	60+	13-14	.061	0.002	17
Non-Hispanic Whites	Male	60+	15-16	.056	0.002	14
Non-Hispanic Whites	Female	12-19	11-12	.035	0.001	5
Non-Hispanic Whites	Female	12-19	13-14	.033	0.001	6
Non-Hispanic Whites	Female	12-19	15-16	.025	0.001	5
Non-Hispanic Whites	Female	20-39	11-12	.038	0.001	13
Non-Hispanic Whites	Female	20-39	13-14	.041	0.001	15
Non-Hispanic Whites	Female	20-39	15-16	.035	0.001	11
Non-Hispanic Whites	Female	40-59	11-12	.062	0.004	11
Non-Hispanic Whites	Female	40-59	13-14	.058	0.002	16
Non-Hispanic Whites	Female	40-59	15-16	.051	0.002	9
Non-Hispanic Whites	Female	60+	11-12	.081	0.01	14
Non-Hispanic Whites	Female	60+	13-14	.082	0.004	20
Non-Hispanic Whites	Female	60+	15-16	.091	0.014	13
Non-Hispanic Blacks	Male	12-19	11-12	.037	0.003	7
Non-Hispanic Blacks	Male	12-19	13-14	.033	0.002	6
Non-Hispanic Blacks	Male	12-19	15-16	.029	0.002	5
Non-Hispanic Blacks	Male	20-39	11-12	.039	0.002	9
Non-Hispanic Blacks	Male	20-39	13-14	.040	0.002	7
Non-Hispanic Blacks	Male	20-39	15-16	.035	0.002	7
Non-Hispanic Blacks	Male	40-59	11-12	.048	0.003	7
Non-Hispanic Blacks	Male	40-59	13-14	.054	0.003	7
Non-Hispanic Blacks	Male	40-59	15-16	.052	0.002	7
Non-Hispanic Blacks	Male	60+	11-12	.050	0.002	9
Non-Hispanic Blacks	Male	60+	13-14	.052	0.003	9
Non-Hispanic Blacks	Male	60+	15-16	.046	0.001	7
Non-Hispanic Blacks	Female	12-19	11-12	.025	0.001	6
Non-Hispanic Blacks	Female	12-19	13-14	.029	0.001	6
Non-Hispanic Blacks	Female	12-19	15-16	.023	0.003	4
Non-Hispanic Blacks	Female	20-39	11-12	.036	0.002	8
Non-Hispanic Blacks	Female	20-39	13-14	.030	0.002	8
Non-Hispanic Blacks	Female	20-39	15-16	.030	0.001	9
Non-Hispanic Blacks	Female	40-59	11-12	.050	0.002	8
Non-Hispanic Blacks	Female	40-59	13-14	.056	0.004	8
Non-Hispanic Blacks	Female	40-59	15-16	.047	0.002	12
Non-Hispanic Blacks	Female	60+	11-12	.069	0.003	8
Non-Hispanic Blacks	Female	60+	13-14	.079	0.003	8
Non-Hispanic Blacks	Female	60+	15-16	.071	0.005	7
Mexican Americans	Male	12-19	11-12	.038	0.004	5
Mexican Americans	Male	12-19	13-14	.040	0.001	7
Mexican Americans	Male	12-19	15-16	.037	0.001	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.055	0.008	4
Mexican Americans	Male	20-39	13-14	.061	0.002	5
Mexican Americans	Male	20-39	15-16	.054	0.008	7
Mexican Americans	Male	40-59	11-12	.109	0.021	4
Mexican Americans	Male	40-59	13-14	.072	0.004	5
Mexican Americans	Male	40-59	15-16	.061	0.005	4
Mexican Americans	Male	60+	11-12	.079	0.006	2
Mexican Americans	Male	60+	13-14	.073	0.005	4
Mexican Americans	Male	60+	15-16	.060	0.003	5
Mexican Americans	Female	12-19	11-12	.031	0.001	4
Mexican Americans	Female	12-19	13-14	.035	0.001	7
Mexican Americans	Female	12-19	15-16	.029	0.002	5
Mexican Americans	Female	20-39	11-12	.040	0.002	4
Mexican Americans	Female	20-39	13-14	.046	0.004	5
Mexican Americans	Female	20-39	15-16	.042	0.003	6
Mexican Americans	Female	40-59	11-12	.113	0.023	3
Mexican Americans	Female	40-59	13-14	.075	0.005	6
Mexican Americans	Female	40-59	15-16	.069	0.006	8
Mexican Americans	Female	60+	11-12	.114	0.014	3
Mexican Americans	Female	60+	13-14	.126	0.011	5
Mexican Americans	Female	60+	15-16	.089	0.007	7
All Hispanics	Male	12-19	11-12	36.4	3.1	7
All Hispanics	Male	12-19	13-14	40.4	0.9	10
All Hispanics	Male	12-19	15-16	35.8	1	9
All Hispanics	Male	20-39	11-12	49.5	4.9	8
All Hispanics	Male	20-39	13-14	56.9	3.2	8
All Hispanics	Male	20-39	15-16	51.2	5.5	11
All Hispanics	Male	40-59	11-12	83.1	15.9	7
All Hispanics	Male	40-59	13-14	69.8	3.4	9
All Hispanics	Male	40-59	15-16	52.3	3.6	9
All Hispanics	Male	60+	11-12	63.2	7.5	6
All Hispanics	Male	60+	13-14	63.5	5.4	7
All Hispanics	Male	60+	15-16	65.0	4	9
All Hispanics	Female	12-19	11-12	29.9	1.4	7
All Hispanics	Female	12-19	13-14	33.1	1.3	10
All Hispanics	Female	12-19	15-16	26.4	1.6	8
All Hispanics	Female	20-39	11-12	36.0	2.2	8
All Hispanics	Female	20-39	13-14	42.9	2.9	9
All Hispanics	Female	20-39	15-16	37.1	2.4	11
All Hispanics	Female	40-59	11-12	76.6	15.4	7
All Hispanics	Female	40-59	13-14	69.8	3.8	10
All Hispanics	Female	40-59	15-16	64.5	5.2	13
All Hispanics	Female	60+	11-12	97.7	8.4	7
All Hispanics	Female	60+	13-14	111	10	9
All Hispanics	Female	60+	15-16	80.7	4.9	13
Asians	Male	12-19	11-12	.043	0.004	3
Asians	Male	12-19	13-14	.036	0.001	3
Asians	Male	12-19	15-16	.087	0.014	3
Asians	Male	20-39	11-12	.086	0.016	6
Asians	Male	20-39	13-14	.065	0.006	4
Asians	Male	20-39	15-16	.055	0.005	5
Asians	Male	40-59	11-12	.074	0.008	6
Asians	Male	40-59	13-14	.087	0.012	4
Asians	Male	40-59	15-16	.057	0.004	4
Asians	Male	60+	11-12	.081	0.014	4
Asians	Male	60+	13-14	.080	0.014	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.061	0.013	3
Asians	Female	12-19	11-12	.035	0.003	4
Asians	Female	12-19	13-14	.038	0.001	3
Asians	Female	12-19	15-16	.036	0.004	3
Asians	Female	20-39	11-12	.047	0.006	6
Asians	Female	20-39	13-14	.044	0.003	5
Asians	Female	20-39	15-16	.080	0.018	4
Asians	Female	40-59	11-12	.066	0.005	6
Asians	Female	40-59	13-14	.076	0.006	7
Asians	Female	40-59	15-16	.057	0.004	5
Asians	Female	60+	11-12	.123	0.011	3
Asians	Female	60+	13-14	.088	0.018	3
Asians	Female	60+	15-16	.072	0.004	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

Serum beta-Hexachlorocyclohexane (lipid adjusted) (2005 - 2010)†

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	3.53 **	1.51	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	4.44	0.23	12
Non-Hispanic Whites	Male	40-59	07-08	3.34	0.34	16
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	14.3	2.1	15
Non-Hispanic Whites	Male	60+	07-08	11.3	2.5	23
Non-Hispanic Whites	Male	60+	09-10	8.84	1.11	20
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	2.79	0.55	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	7.32	0.81	13
Non-Hispanic Whites	Female	40-59	07-08	3.90	0.97	17
Non-Hispanic Whites	Female	40-59	09-10	9.70 **	3.09	17
Non-Hispanic Whites	Female	60+	05-06	19.6	1.3	17
Non-Hispanic Whites	Female	60+	07-08	17.3	1.6	21
Non-Hispanic Whites	Female	60+	09-10	16.6	1.7	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	2.00	0.39	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	5.64	1.62	5
Non-Hispanic Blacks	Male	40-59	07-08	3.62	0.39	6
Non-Hispanic Blacks	Male	40-59	09-10	4.19	0.89	6
Non-Hispanic Blacks	Male	60+	05-06	15.0	3.5	5
Non-Hispanic Blacks	Male	60+	07-08	7.79	1.13	8
Non-Hispanic Blacks	Male	60+	09-10	7.12	0.83	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	3.89 **	1.98	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	6
Non-Hispanic Blacks	Female	40-59	05-06	9.50	1.59	7
Non-Hispanic Blacks	Female	40-59	07-08	6.79	1.05	8
Non-Hispanic Blacks	Female	40-59	09-10	8.52 **	2.7	6
Non-Hispanic Blacks	Female	60+	05-06	56.1	12.3	5
Non-Hispanic Blacks	Female	60+	07-08	34.4	5.1	7
Non-Hispanic Blacks	Female	60+	09-10	31.6	6.3	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	10.7	2.2	9
Mexican Americans	Male	20-39	07-08	5.59	1.48	9
Mexican Americans	Male	20-39	09-10	5.07 **	1.69	8
Mexican Americans	Male	40-59	05-06	23.7 **	8.6	4
Mexican Americans	Male	40-59	07-08	16.6	4.5	6
Mexican Americans	Male	40-59	09-10	14.4	3.9	8
Mexican Americans	Male	60+	05-06	20.5	1.6	4
Mexican Americans	Male	60+	07-08	21.9	5.1	5
Mexican Americans	Male	60+	09-10	20.7	2.6	5
Mexican Americans	Female	12-19	05-06	3.50	0.67	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	12.0	2.2	9
Mexican Americans	Female	20-39	07-08	5.65	1.5	8
Mexican Americans	Female	20-39	09-10	10.2 **	3.1	9
Mexican Americans	Female	40-59	05-06	25.3	3.5	6
Mexican Americans	Female	40-59	07-08	16.8	1.9	6
Mexican Americans	Female	40-59	09-10	21.9	3.1	9
Mexican Americans	Female	60+	05-06	36.8	5.5	3
Mexican Americans	Female	60+	07-08	50.2	7.7	5
Mexican Americans	Female	60+	09-10	56.9	8.5	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	5.24	1.52	13
All Hispanics	Male	40-59	09-10	10.8	2.7	13
All Hispanics	Male	60+	09-10	17.8	2.4	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	8.31	2.32	13
All Hispanics	Female	40-59	09-10	20.3	4.1	14
All Hispanics	Female	60+	09-10	45.4	7.2	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.44, 1.41, and 3.1, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum beta-Hexachlorocyclohexane (lipid adjusted) (2011 - 2016)†

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	2.79	0.25	12
Non-Hispanic Whites	Male	40-59	13-14	3.67	1.05	14
Non-Hispanic Whites	Male	40-59	15-16	1.75	0.14	10
Non-Hispanic Whites	Male	60+	11-12	8.70	1.41	12
Non-Hispanic Whites	Male	60+	13-14	11.8	1.6	16
Non-Hispanic Whites	Male	60+	15-16	5.62	0.74	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	1.37	0.19	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	3.95	0.5	11
Non-Hispanic Whites	Female	40-59	13-14	3.29	0.45	14
Non-Hispanic Whites	Female	40-59	15-16	2.33	0.32	9
Non-Hispanic Whites	Female	60+	11-12	16.4	2.8	14
Non-Hispanic Whites	Female	60+	13-14	18.4	5.2	20
Non-Hispanic Whites	Female	60+	15-16	15.5	4.4	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	20-39	13-14	*	*	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	2.28	0.25	7
Non-Hispanic Blacks	Male	40-59	13-14	3.70	1.11	7
Non-Hispanic Blacks	Male	40-59	15-16	2.14	0.36	7
Non-Hispanic Blacks	Male	60+	11-12	6.67	0.92	9
Non-Hispanic Blacks	Male	60+	13-14	6.90	1.67	9
Non-Hispanic Blacks	Male	60+	15-16	3.12	0.18	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	1.78	0.33	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	6.16	1.17	8
Non-Hispanic Blacks	Female	40-59	13-14	5.61 **	1.73	8
Non-Hispanic Blacks	Female	40-59	15-16	3.15	0.3	12
Non-Hispanic Blacks	Female	60+	11-12	27.4	5.4	8
Non-Hispanic Blacks	Female	60+	13-14	32.9	8.1	8
Non-Hispanic Blacks	Female	60+	15-16	15.8	2	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	2.96	0.42	4
Mexican Americans	Male	20-39	13-14	5.52 **	3.05	5
Mexican Americans	Male	20-39	15-16	1.64	0.35	7
Mexican Americans	Male	40-59	11-12	17.0 **	7.6	4
Mexican Americans	Male	40-59	13-14	4.54	1.08	5
Mexican Americans	Male	40-59	15-16	4.11	0.78	4
Mexican Americans	Male	60+	11-12	15.0	0.1	2
Mexican Americans	Male	60+	13-14	8.64	1.27	4
Mexican Americans	Male	60+	15-16	10.2	2	5
Mexican Americans	Female	12-19	11-12	3.37 **	1.39	4
Mexican Americans	Female	12-19	13-14	1.35	0.25	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	3.33	0.66	4
Mexican Americans	Female	20-39	13-14	8.28	1.76	5
Mexican Americans	Female	20-39	15-16	2.87	0.44	6
Mexican Americans	Female	40-59	11-12	20.2	2.6	3
Mexican Americans	Female	40-59	13-14	11.4	1.1	6
Mexican Americans	Female	40-59	15-16	8.68	1.1	8
Mexican Americans	Female	60+	11-12	42.0	3.5	3
Mexican Americans	Female	60+	13-14	44.4	9.6	5
Mexican Americans	Female	60+	15-16	25.3	5.4	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	2.51	0.43	8
All Hispanics	Male	20-39	13-14	4.38 **	2.08	8
All Hispanics	Male	20-39	15-16	1.34	0.25	11
All Hispanics	Male	40-59	11-12	11.0 **	4.9	7
All Hispanics	Male	40-59	13-14	4.35	0.98	9
All Hispanics	Male	40-59	15-16	2.71	0.61	9
All Hispanics	Male	60+	11-12	15.6	3.2	6
All Hispanics	Male	60+	13-14	10.7	1.4	7
All Hispanics	Male	60+	15-16	13.8	2.2	9
All Hispanics	Female	12-19	11-12	2.57 **	0.91	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	2.11	0.56	8
All Hispanics	Female	20-39	13-14	5.58	1.46	9
All Hispanics	Female	20-39	15-16	2.15	0.35	11
All Hispanics	Female	40-59	11-12	14.2	2.5	7
All Hispanics	Female	40-59	13-14	10.3	1.5	10
All Hispanics	Female	40-59	15-16	8.17	0.83	13
All Hispanics	Female	60+	11-12	36.6	3.5	7
All Hispanics	Female	60+	13-14	37.8	6.9	9
All Hispanics	Female	60+	15-16	21.7	3.3	13
Asians	Male	12-19	11-12	22.5 **	8.6	3
Asians	Male	12-19	13-14	23.0 **	17.7	3
Asians	Male	12-19	15-16	12.6	3.4	3
Asians	Male	20-39	11-12	97.7	22.1	6
Asians	Male	20-39	13-14	25.7	0.7	4
Asians	Male	20-39	15-16	58.6 **	18.7	5
Asians	Male	40-59	11-12	72.7	18.9	6
Asians	Male	40-59	13-14	143	22	4
Asians	Male	40-59	15-16	75.2	14.7	4
Asians	Male	60+	11-12	179	18	4
Asians	Male	60+	13-14	57.4 **	41	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	142	14	3
Asians	Female	12-19	11-12	29.2 **	10	4
Asians	Female	12-19	13-14	9.01 **	5.74	3
Asians	Female	12-19	15-16	10.6	1.1	3
Asians	Female	20-39	11-12	74.1	14.2	6
Asians	Female	20-39	13-14	44.7 **	14.1	5
Asians	Female	20-39	15-16	83.4 **	35.4	4
Asians	Female	40-59	11-12	136	32	6
Asians	Female	40-59	13-14	227 **	115	7
Asians	Female	40-59	15-16	26.4 **	12	5
Asians	Female	60+	11-12	775	91	3
Asians	Female	60+	13-14	242 **	101	3
Asians	Female	60+	15-16	198	20	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 1.3, 1.3, and 1.3, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum beta-Hexachlorocyclohexane (whole weight) (2005 - 2010)†

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.006	0.001	9
Non-Hispanic Whites	12-19	Male	07-08	.004	0	6
Non-Hispanic Whites	12-19	Male	09-10	.009	0.002	10
Non-Hispanic Whites	20-39	Male	05-06	.028 **	0.013	12
Non-Hispanic Whites	20-39	Male	07-08	.012 **	0.006	15
Non-Hispanic Whites	20-39	Male	09-10	.012	0.003	17
Non-Hispanic Whites	40-59	Male	05-06	.033	0.002	12
Non-Hispanic Whites	40-59	Male	07-08	.025	0.003	16
Non-Hispanic Whites	40-59	Male	09-10	.020	0.001	17
Non-Hispanic Whites	60+	Male	05-06	.095	0.012	15
Non-Hispanic Whites	60+	Male	07-08	.071	0.015	23
Non-Hispanic Whites	60+	Male	09-10	.053	0.006	20
Non-Hispanic Whites	12-19	Female	05-06	.008 **	0.003	10
Non-Hispanic Whites	12-19	Female	07-08	.009 **	0.004	7
Non-Hispanic Whites	12-19	Female	09-10	.007	0.002	8
Non-Hispanic Whites	20-39	Female	05-06	.018	0.004	16
Non-Hispanic Whites	20-39	Female	07-08	.012 **	0.007	13
Non-Hispanic Whites	20-39	Female	09-10	.012	0.002	19
Non-Hispanic Whites	40-59	Female	05-06	.055	0.007	13
Non-Hispanic Whites	40-59	Female	07-08	.026	0.007	17
Non-Hispanic Whites	40-59	Female	09-10	.060 **	0.019	17
Non-Hispanic Whites	60+	Female	05-06	.142	0.008	17
Non-Hispanic Whites	60+	Female	07-08	.117	0.011	21
Non-Hispanic Whites	60+	Female	09-10	.100	0.009	21
Non-Hispanic Blacks	12-19	Male	05-06	.005	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.004	0	6
Non-Hispanic Blacks	12-19	Male	09-10	.008	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.012	0.002	6
Non-Hispanic Blacks	20-39	Male	07-08	.004	0	6
Non-Hispanic Blacks	20-39	Male	09-10	.014	0.004	7
Non-Hispanic Blacks	40-59	Male	05-06	.036	0.011	5
Non-Hispanic Blacks	40-59	Male	07-08	.023	0.003	6
Non-Hispanic Blacks	40-59	Male	09-10	.027	0.006	6
Non-Hispanic Blacks	60+	Male	05-06	.087	0.018	5
Non-Hispanic Blacks	60+	Male	07-08	.047	0.007	8
Non-Hispanic Blacks	60+	Male	09-10	.038	0.004	9
Non-Hispanic Blacks	12-19	Female	05-06	.004	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.004	0	5
Non-Hispanic Blacks	12-19	Female	09-10	.004	0	6
Non-Hispanic Blacks	20-39	Female	05-06	.021 **	0.01	7
Non-Hispanic Blacks	20-39	Female	07-08	.004	0	8
Non-Hispanic Blacks	20-39	Female	09-10	.010	0.002	6
Non-Hispanic Blacks	40-59	Female	05-06	.062	0.011	7
Non-Hispanic Blacks	40-59	Female	07-08	.041	0.007	8
Non-Hispanic Blacks	40-59	Female	09-10	.046	0.014	6
Non-Hispanic Blacks	60+	Female	05-06	.369	0.07	5
Non-Hispanic Blacks	60+	Female	07-08	.204	0.027	7
Non-Hispanic Blacks	60+	Female	09-10	.180	0.034	7
Mexican Americans	12-19	Male	05-06	.013 **	0.004	11
Mexican Americans	12-19	Male	07-08	.008	0.002	6
Mexican Americans	12-19	Male	09-10	.009	0.001	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.075	0.015	9
Mexican Americans	20-39	Male	07-08	.041 **	0.013	9
Mexican Americans	20-39	Male	09-10	.034 **	0.013	8
Mexican Americans	40-59	Male	05-06	.185 **	0.058	4
Mexican Americans	40-59	Male	07-08	.120	0.035	6
Mexican Americans	40-59	Male	09-10	.101	0.029	8
Mexican Americans	60+	Male	05-06	.150	0.02	4
Mexican Americans	60+	Male	07-08	.171 **	0.052	5
Mexican Americans	60+	Male	09-10	.130	0.021	5
Mexican Americans	12-19	Female	05-06	.019	0.003	16
Mexican Americans	12-19	Female	07-08	.006	0.002	5
Mexican Americans	12-19	Female	09-10	.009	0.001	7
Mexican Americans	20-39	Female	05-06	.082	0.016	9
Mexican Americans	20-39	Female	07-08	.033	0.009	8
Mexican Americans	20-39	Female	09-10	.055 **	0.017	9
Mexican Americans	40-59	Female	05-06	.186	0.025	6
Mexican Americans	40-59	Female	07-08	.114	0.014	6
Mexican Americans	40-59	Female	09-10	.141	0.019	9
Mexican Americans	60+	Female	05-06	.275	0.037	3
Mexican Americans	60+	Female	07-08	.344	0.054	5
Mexican Americans	60+	Female	09-10	.322	0.053	6
All Hispanics	12-19	Male	09-10	.007	0.001	11
All Hispanics	20-39	Male	09-10	.039 **	0.013	13
All Hispanics	40-59	Male	09-10	.075	0.02	13
All Hispanics	60+	Male	09-10	.115	0.017	8
All Hispanics	12-19	Female	09-10	.008	0.001	10
All Hispanics	20-39	Female	09-10	.045	0.012	13
All Hispanics	40-59	Female	09-10	.129	0.026	14
All Hispanics	60+	Female	09-10	.268	0.044	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum beta-Hexachlorocyclohexane (whole weight) (2011 - 2016)†

CAS Number 319-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.018	0.002	12
Non-Hispanic Whites	Male	40-59	13-14	.022	0.006	14
Non-Hispanic Whites	Male	40-59	15-16	.012	0.001	10
Non-Hispanic Whites	Male	60+	11-12	.048	0.008	12
Non-Hispanic Whites	Male	60+	13-14	.064	0.008	16
Non-Hispanic Whites	Male	60+	15-16	.030	0.004	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.007	0.001	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	.026	0.004	11
Non-Hispanic Whites	Female	40-59	13-14	.020	0.003	14
Non-Hispanic Whites	Female	40-59	15-16	.015	0.002	9
Non-Hispanic Whites	Female	60+	11-12	.100	0.017	14
Non-Hispanic Whites	Female	60+	13-14	.108	0.03	20
Non-Hispanic Whites	Female	60+	15-16	.095	0.026	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	20-39	13-14	*	*	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.013	0.002	7
Non-Hispanic Blacks	Male	40-59	13-14	.021	0.006	7
Non-Hispanic Blacks	Male	40-59	15-16	.013	0.002	7
Non-Hispanic Blacks	Male	60+	11-12	.036	0.005	9
Non-Hispanic Blacks	Male	60+	13-14	.037	0.009	9
Non-Hispanic Blacks	Male	60+	15-16	.017	0.001	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.010	0.002	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.039	0.009	8
Non-Hispanic Blacks	Female	40-59	13-14	.030 **	0.009	8
Non-Hispanic Blacks	Female	40-59	15-16	.018	0.002	12
Non-Hispanic Blacks	Female	60+	11-12	.153	0.029	8
Non-Hispanic Blacks	Female	60+	13-14	.173	0.037	8
Non-Hispanic Blacks	Female	60+	15-16	.095	0.014	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.019	0.003	4
Mexican Americans	Male	20-39	13-14	.033 **	0.015	5
Mexican Americans	Male	20-39	15-16	.011	0.002	7
Mexican Americans	Male	40-59	11-12	.127 **	0.052	4
Mexican Americans	Male	40-59	13-14	.029	0.008	5
Mexican Americans	Male	40-59	15-16	.027	0.005	4
Mexican Americans	Male	60+	11-12	.089	0.003	2
Mexican Americans	Male	60+	13-14	.048	0.008	4
Mexican Americans	Male	60+	15-16	.058	0.01	5
Mexican Americans	Female	12-19	11-12	.016 **	0.007	4
Mexican Americans	Female	12-19	13-14	.006	0.001	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.018	0.003	4
Mexican Americans	Female	20-39	13-14	.044	0.009	5
Mexican Americans	Female	20-39	15-16	.016	0.003	6
Mexican Americans	Female	40-59	11-12	.119	0.013	3
Mexican Americans	Female	40-59	13-14	.068	0.009	6
Mexican Americans	Female	40-59	15-16	.055	0.006	8
Mexican Americans	Female	60+	11-12	.259	0.024	3
Mexican Americans	Female	60+	13-14	.253	0.044	5
Mexican Americans	Female	60+	15-16	.160	0.037	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	15.9	3	8
All Hispanics	Male	20-39	13-14	25.5 **	11	8
All Hispanics	Male	20-39	15-16	8.86	1.79	11
All Hispanics	Male	40-59	11-12	80.9 **	34.5	7
All Hispanics	Male	40-59	13-14	27.5	7	9
All Hispanics	Male	40-59	15-16	17.6	3.9	9
All Hispanics	Male	60+	11-12	93.8	22	6
All Hispanics	Male	60+	13-14	58.9	7.4	7
All Hispanics	Male	60+	15-16	81.2	13	9
All Hispanics	Female	12-19	11-12	12.5 **	4.3	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	11.5	3	8
All Hispanics	Female	20-39	13-14	29.9	7.4	9
All Hispanics	Female	20-39	15-16	11.9	2	11
All Hispanics	Female	40-59	11-12	88.4	14.7	7
All Hispanics	Female	40-59	13-14	61.4	9.5	10
All Hispanics	Female	40-59	15-16	52.5	5.3	13
All Hispanics	Female	60+	11-12	226	20	7
All Hispanics	Female	60+	13-14	222	36	9
All Hispanics	Female	60+	15-16	135	22	13
Asians	Male	12-19	11-12	.121 **	0.049	3
Asians	Male	12-19	13-14	.107 **	0.066	3
Asians	Male	12-19	15-16	.058	0.015	3
Asians	Male	20-39	11-12	.557	0.13	6
Asians	Male	20-39	13-14	.152	0.011	4
Asians	Male	20-39	15-16	.391 **	0.127	5
Asians	Male	40-59	11-12	.452	0.118	6
Asians	Male	40-59	13-14	.812	0.11	4
Asians	Male	40-59	15-16	.488	0.114	4
Asians	Male	60+	11-12	.965	0.107	4
Asians	Male	60+	13-14	.370 **	0.228	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.805	0.108	3
Asians	Female	12-19	11-12	.138 **	0.046	4
Asians	Female	12-19	13-14	.043 **	0.022	3
Asians	Female	12-19	15-16	.056	0.007	3
Asians	Female	20-39	11-12	.418	0.086	6
Asians	Female	20-39	13-14	.232	0.066	5
Asians	Female	20-39	15-16	.496 **	0.225	4
Asians	Female	40-59	11-12	.829	0.196	6
Asians	Female	40-59	13-14	1.42 **	0.71	7
Asians	Female	40-59	15-16	.166 **	0.078	5
Asians	Female	60+	11-12	4.42	0.61	3
Asians	Female	60+	13-14	1.50 **	0.59	3
Asians	Female	60+	15-16	1.20	0.11	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum gamma-Hexachlorocyclohexane (Lindane) (lipid adjusted) (2005 - 2010)†

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	16
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Male	60+	09-10	*	*	21
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	21
Non-Hispanic Whites	Female	60+	09-10	*	*	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	09-10	*	*	7
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	7
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	*	*	8
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	13
All Hispanics	Male	60+	09-10	*	*	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.41, and 3.1, 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/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum gamma-Hexachlorocyclohexane (Lindane) (lipid adjusted) (2011 - 2012)†

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	40-59	11-12	*	*	12
Non-Hispanic Whites	Male	60+	11-12	*	*	12
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	40-59	11-12	*	*	11
Non-Hispanic Whites	Female	60+	11-12	*	*	14
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	40-59	11-12	*	*	7
Non-Hispanic Blacks	Male	60+	11-12	*	*	9
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	40-59	11-12	*	*	8
Non-Hispanic Blacks	Female	60+	11-12	*	*	8
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	40-59	11-12	*	*	4
Mexican Americans	Male	60+	11-12	*	*	2
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	40-59	11-12	*	*	3
Mexican Americans	Female	60+	11-12	*	*	3
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	40-59	11-12	*	*	7
All Hispanics	Male	60+	11-12	*	*	6
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	40-59	11-12	*	*	7
All Hispanics	Female	60+	11-12	*	*	7
Asians	Male	12-19	11-12	*	*	3
Asians	Male	20-39	11-12	*	*	6
Asians	Male	40-59	11-12	*	*	6
Asians	Male	60+	11-12	*	*	4
Asians	Female	12-19	11-12	*	*	4
Asians	Female	20-39	11-12	*	*	6
Asians	Female	40-59	11-12	*	*	6
Asians	Female	60+	11-12	*	*	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 1.3.

* 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) (2005 - 2010)†

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	*	*	9
Non-Hispanic Whites	12-19	Male	07-08	*	*	6
Non-Hispanic Whites	12-19	Male	09-10	*	*	10
Non-Hispanic Whites	20-39	Male	05-06	*	*	12
Non-Hispanic Whites	20-39	Male	07-08	*	*	15
Non-Hispanic Whites	20-39	Male	09-10	*	*	17
Non-Hispanic Whites	40-59	Male	05-06	*	*	12
Non-Hispanic Whites	40-59	Male	07-08	*	*	16
Non-Hispanic Whites	40-59	Male	09-10	*	*	17
Non-Hispanic Whites	60+	Male	05-06	*	*	15
Non-Hispanic Whites	60+	Male	07-08	*	*	23
Non-Hispanic Whites	60+	Male	09-10	*	*	21
Non-Hispanic Whites	12-19	Female	05-06	*	*	10
Non-Hispanic Whites	12-19	Female	07-08	*	*	7
Non-Hispanic Whites	12-19	Female	09-10	*	*	8
Non-Hispanic Whites	20-39	Female	05-06	*	*	16
Non-Hispanic Whites	20-39	Female	07-08	*	*	13
Non-Hispanic Whites	20-39	Female	09-10	*	*	19
Non-Hispanic Whites	40-59	Female	05-06	*	*	13
Non-Hispanic Whites	40-59	Female	07-08	*	*	17
Non-Hispanic Whites	40-59	Female	09-10	*	*	17
Non-Hispanic Whites	60+	Female	05-06	*	*	17
Non-Hispanic Whites	60+	Female	07-08	*	*	21
Non-Hispanic Whites	60+	Female	09-10	*	*	22
Non-Hispanic Blacks	12-19	Male	05-06	*	*	13
Non-Hispanic Blacks	12-19	Male	07-08	*	*	6
Non-Hispanic Blacks	12-19	Male	09-10	*	*	6
Non-Hispanic Blacks	20-39	Male	05-06	*	*	6
Non-Hispanic Blacks	20-39	Male	07-08	*	*	6
Non-Hispanic Blacks	20-39	Male	09-10	*	*	7
Non-Hispanic Blacks	40-59	Male	05-06	*	*	5
Non-Hispanic Blacks	40-59	Male	07-08	*	*	6
Non-Hispanic Blacks	40-59	Male	09-10	*	*	7
Non-Hispanic Blacks	60+	Male	05-06	*	*	5
Non-Hispanic Blacks	60+	Male	07-08	*	*	8
Non-Hispanic Blacks	60+	Male	09-10	*	*	9
Non-Hispanic Blacks	12-19	Female	05-06	*	*	14
Non-Hispanic Blacks	12-19	Female	07-08	*	*	5
Non-Hispanic Blacks	12-19	Female	09-10	*	*	6
Non-Hispanic Blacks	20-39	Female	05-06	*	*	7
Non-Hispanic Blacks	20-39	Female	07-08	*	*	8
Non-Hispanic Blacks	20-39	Female	09-10	*	*	7
Non-Hispanic Blacks	40-59	Female	05-06	*	*	7
Non-Hispanic Blacks	40-59	Female	07-08	*	*	8
Non-Hispanic Blacks	40-59	Female	09-10	*	*	7
Non-Hispanic Blacks	60+	Female	05-06	*	*	5
Non-Hispanic Blacks	60+	Female	07-08	*	*	7
Non-Hispanic Blacks	60+	Female	09-10	*	*	7
Mexican Americans	12-19	Male	05-06	*	*	11
Mexican Americans	12-19	Male	07-08	*	*	6
Mexican Americans	12-19	Male	09-10	*	*	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	*	*	9
Mexican Americans	20-39	Male	07-08	*	*	9
Mexican Americans	20-39	Male	09-10	*	*	8
Mexican Americans	40-59	Male	05-06	*	*	4
Mexican Americans	40-59	Male	07-08	*	*	6
Mexican Americans	40-59	Male	09-10	*	*	8
Mexican Americans	60+	Male	05-06	*	*	4
Mexican Americans	60+	Male	07-08	*	*	5
Mexican Americans	60+	Male	09-10	*	*	5
Mexican Americans	12-19	Female	05-06	*	*	16
Mexican Americans	12-19	Female	07-08	*	*	5
Mexican Americans	12-19	Female	09-10	*	*	7
Mexican Americans	20-39	Female	05-06	*	*	9
Mexican Americans	20-39	Female	07-08	*	*	8
Mexican Americans	20-39	Female	09-10	*	*	10
Mexican Americans	40-59	Female	05-06	*	*	6
Mexican Americans	40-59	Female	07-08	*	*	6
Mexican Americans	40-59	Female	09-10	*	*	9
Mexican Americans	60+	Female	05-06	*	*	3
Mexican Americans	60+	Female	07-08	*	*	5
Mexican Americans	60+	Female	09-10	*	*	6
All Hispanics	12-19	Male	09-10	*	*	11
All Hispanics	20-39	Male	09-10	*	*	13
All Hispanics	40-59	Male	09-10	*	*	13
All Hispanics	60+	Male	09-10	*	*	8
All Hispanics	12-19	Female	09-10	*	*	10
All Hispanics	20-39	Female	09-10	*	*	14
All Hispanics	40-59	Female	09-10	*	*	14
All Hispanics	60+	Female	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

* 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) (2011 - 2012)†

CAS Number 58-89-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	40-59	11-12	*	*	12
Non-Hispanic Whites	Male	60+	11-12	*	*	12
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	40-59	11-12	*	*	11
Non-Hispanic Whites	Female	60+	11-12	*	*	14
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	40-59	11-12	*	*	7
Non-Hispanic Blacks	Male	60+	11-12	*	*	9
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	40-59	11-12	*	*	8
Non-Hispanic Blacks	Female	60+	11-12	*	*	8
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	40-59	11-12	*	*	4
Mexican Americans	Male	60+	11-12	*	*	2
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	40-59	11-12	*	*	3
Mexican Americans	Female	60+	11-12	*	*	3
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	40-59	11-12	*	*	7
All Hispanics	Male	60+	11-12	*	*	6
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	40-59	11-12	*	*	7
All Hispanics	Female	60+	11-12	*	*	7
Asians	Male	12-19	11-12	*	*	3
Asians	Male	20-39	11-12	*	*	6
Asians	Male	40-59	11-12	*	*	6
Asians	Male	60+	11-12	*	*	4
Asians	Female	12-19	11-12	*	*	4
Asians	Female	20-39	11-12	*	*	6
Asians	Female	40-59	11-12	*	*	6
Asians	Female	60+	11-12	*	*	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

* 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) (2005 - 2010)†

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	3.88 **	2.18	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	6.39 **	2.15	12
Non-Hispanic Whites	Male	40-59	07-08	4.25	0.3	16
Non-Hispanic Whites	Male	40-59	09-10	5.25	1.28	17
Non-Hispanic Whites	Male	60+	05-06	5.32	0.61	15
Non-Hispanic Whites	Male	60+	07-08	6.36	1.31	23
Non-Hispanic Whites	Male	60+	09-10	4.89	0.43	21
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	2.42	0.14	13
Non-Hispanic Whites	Female	40-59	07-08	2.05	0.27	17
Non-Hispanic Whites	Female	40-59	09-10	3.32	0.32	17
Non-Hispanic Whites	Female	60+	05-06	3.51	0.24	17
Non-Hispanic Whites	Female	60+	07-08	3.90	0.38	21
Non-Hispanic Whites	Female	60+	09-10	4.42	0.39	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	2.68	0.59	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	5.90	0.49	5
Non-Hispanic Blacks	Male	40-59	07-08	16.8 **	5.5	6
Non-Hispanic Blacks	Male	40-59	09-10	6.44	0.96	7
Non-Hispanic Blacks	Male	60+	05-06	27.2 **	10.1	5
Non-Hispanic Blacks	Male	60+	07-08	13.9	1.9	8
Non-Hispanic Blacks	Male	60+	09-10	14.2	3.8	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	1.62	0.32	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	5.92	0.65	7
Non-Hispanic Blacks	Female	40-59	07-08	5.42	1.14	8
Non-Hispanic Blacks	Female	40-59	09-10	5.03	0.78	7
Non-Hispanic Blacks	Female	60+	05-06	10.3	2.7	5
Non-Hispanic Blacks	Female	60+	07-08	24.0 **	8.6	7
Non-Hispanic Blacks	Female	60+	09-10	7.49	1.56	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	2.66	0.74	4
Mexican Americans	Male	40-59	07-08	4.37	1.26	6
Mexican Americans	Male	40-59	09-10	*	*	8
Mexican Americans	Male	60+	05-06	2.89	0.78	4
Mexican Americans	Male	60+	07-08	11.0 **	7.1	5
Mexican Americans	Male	60+	09-10	5.10	1.14	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	1.84	0.34	6
Mexican Americans	Female	40-59	07-08	3.76 **	1.19	6
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	2.84	0.37	3
Mexican Americans	Female	60+	07-08	2.59	0.44	5
Mexican Americans	Female	60+	09-10	4.04	0.89	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	4.58	1.22	13
All Hispanics	Male	60+	09-10	5.18	0.77	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	4.13	0.53	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.46, 1.41, and 3.1, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum Mirex (lipid adjusted) (2011 - 2016)†

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	4.08	0.49	12
Non-Hispanic Whites	Male	40-59	13-14	5.04 **	2	14
Non-Hispanic Whites	Male	40-59	15-16	2.58	0.6	10
Non-Hispanic Whites	Male	60+	11-12	8.59	1.86	12
Non-Hispanic Whites	Male	60+	13-14	19.1	5.3	17
Non-Hispanic Whites	Male	60+	15-16	6.38	1.02	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	2.19	0.17	11
Non-Hispanic Whites	Female	40-59	13-14	4.18	1	16
Non-Hispanic Whites	Female	40-59	15-16	3.89	0.72	9
Non-Hispanic Whites	Female	60+	11-12	5.43	1.41	14
Non-Hispanic Whites	Female	60+	13-14	9.05 **	2.9	20
Non-Hispanic Whites	Female	60+	15-16	3.63	0.45	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	1.42	0.24	9
Non-Hispanic Blacks	Male	20-39	13-14	1.96 **	0.64	7
Non-Hispanic Blacks	Male	20-39	15-16	1.46	0.25	7
Non-Hispanic Blacks	Male	40-59	11-12	4.58	0.49	7
Non-Hispanic Blacks	Male	40-59	13-14	12.2 **	3.8	7
Non-Hispanic Blacks	Male	40-59	15-16	12.2 **	4.2	7
Non-Hispanic Blacks	Male	60+	11-12	11.4	1.6	9
Non-Hispanic Blacks	Male	60+	13-14	23.6	6.6	9
Non-Hispanic Blacks	Male	60+	15-16	13.2	2.8	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	3.36	0.33	8
Non-Hispanic Blacks	Female	40-59	13-14	13.7	4	8
Non-Hispanic Blacks	Female	40-59	15-16	5.17	0.91	12
Non-Hispanic Blacks	Female	60+	11-12	8.25	1.55	8
Non-Hispanic Blacks	Female	60+	13-14	42.3 **	14.8	8
Non-Hispanic Blacks	Female	60+	15-16	14.6	3.8	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	2.93	0.41	4
Mexican Americans	Male	40-59	13-14	2.37	0.41	5
Mexican Americans	Male	40-59	15-16	2.66 **	0.97	4
Mexican Americans	Male	60+	11-12	3.12	0.32	2
Mexican Americans	Male	60+	13-14	8.17 **	5.25	4
Mexican Americans	Male	60+	15-16	4.96	0.5	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	2.39	0.64	3
Mexican Americans	Female	40-59	13-14	1.47	0.32	6
Mexican Americans	Female	40-59	15-16	2.04	0.35	8
Mexican Americans	Female	60+	11-12	5.24 **	2.39	3
Mexican Americans	Female	60+	13-14	4.55	1.13	5
Mexican Americans	Female	60+	15-16	2.79	0.23	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	2.58	0.28	7
All Hispanics	Male	40-59	13-14	2.80	0.32	9
All Hispanics	Male	40-59	15-16	3.50	0.74	9
All Hispanics	Male	60+	11-12	4.90 **	1.56	6
All Hispanics	Male	60+	13-14	6.56 **	2.96	7
All Hispanics	Male	60+	15-16	4.73	0.38	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	2.35	0.46	7
All Hispanics	Female	40-59	13-14	1.69	0.21	10
All Hispanics	Female	40-59	15-16	2.18	0.32	13
All Hispanics	Female	60+	11-12	4.18	1.1	7
All Hispanics	Female	60+	13-14	3.95	0.73	9
All Hispanics	Female	60+	15-16	3.47	0.37	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	1.30	0.26	6
Asians	Male	20-39	13-14	3.93 **	2.01	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	6.21 **	4.14	6
Asians	Male	40-59	13-14	7.85 **	4.89	4
Asians	Male	40-59	15-16	1.97	0.44	4
Asians	Male	60+	11-12	3.61	0.47	4
Asians	Male	60+	13-14	4.23	1.22	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	14.0 **	5.5	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	*	*	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	*	*	6
Asians	Female	20-39	13-14	*	*	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	1.36	0.08	6
Asians	Female	40-59	13-14	1.82	0.33	7
Asians	Female	40-59	15-16	2.22	0.34	5
Asians	Female	60+	11-12	2.53	0.29	3
Asians	Female	60+	13-14	4.21 **	1.75	3
Asians	Female	60+	15-16	4.91 **	1.99	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 1.3, 1.3, and 1.3, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum Mirex (whole weight) (2005 - 2010)†

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.004	0	9
Non-Hispanic Whites	12-19	Male	07-08	.004	0	6
Non-Hispanic Whites	12-19	Male	09-10	.004	0	10
Non-Hispanic Whites	20-39	Male	05-06	.027 **	0.014	12
Non-Hispanic Whites	20-39	Male	07-08	.011	0.003	15
Non-Hispanic Whites	20-39	Male	09-10	.007	0.001	17
Non-Hispanic Whites	40-59	Male	05-06	.048 **	0.016	12
Non-Hispanic Whites	40-59	Male	07-08	.031	0.003	16
Non-Hispanic Whites	40-59	Male	09-10	.034	0.007	17
Non-Hispanic Whites	60+	Male	05-06	.036	0.004	15
Non-Hispanic Whites	60+	Male	07-08	.040	0.007	23
Non-Hispanic Whites	60+	Male	09-10	.030	0.003	21
Non-Hispanic Whites	12-19	Female	05-06	.004	0	10
Non-Hispanic Whites	12-19	Female	07-08	.004	0	7
Non-Hispanic Whites	12-19	Female	09-10	.004	0	8
Non-Hispanic Whites	20-39	Female	05-06	.006	0.001	16
Non-Hispanic Whites	20-39	Female	07-08	.006	0.001	13
Non-Hispanic Whites	20-39	Female	09-10	.004	0	19
Non-Hispanic Whites	40-59	Female	05-06	.018	0.002	13
Non-Hispanic Whites	40-59	Female	07-08	.014	0.002	17
Non-Hispanic Whites	40-59	Female	09-10	.021	0.002	17
Non-Hispanic Whites	60+	Female	05-06	.026	0.002	17
Non-Hispanic Whites	60+	Female	07-08	.026	0.003	21
Non-Hispanic Whites	60+	Female	09-10	.027	0.002	22
Non-Hispanic Blacks	12-19	Male	05-06	.004	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.004	0	6
Non-Hispanic Blacks	12-19	Male	09-10	.008	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.016	0.004	6
Non-Hispanic Blacks	20-39	Male	07-08	.008	0.002	6
Non-Hispanic Blacks	20-39	Male	09-10	.009	0.001	7
Non-Hispanic Blacks	40-59	Male	05-06	.038	0.003	5
Non-Hispanic Blacks	40-59	Male	07-08	.109 **	0.036	6
Non-Hispanic Blacks	40-59	Male	09-10	.041	0.007	7
Non-Hispanic Blacks	60+	Male	05-06	.168 **	0.062	5
Non-Hispanic Blacks	60+	Male	07-08	.084	0.012	8
Non-Hispanic Blacks	60+	Male	09-10	.076	0.021	9
Non-Hispanic Blacks	12-19	Female	05-06	.004	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.004	0	5
Non-Hispanic Blacks	12-19	Female	09-10	.004	0	6
Non-Hispanic Blacks	20-39	Female	05-06	.009	0.002	7
Non-Hispanic Blacks	20-39	Female	07-08	.010 **	0.003	8
Non-Hispanic Blacks	20-39	Female	09-10	.004	0.001	7
Non-Hispanic Blacks	40-59	Female	05-06	.038	0.004	7
Non-Hispanic Blacks	40-59	Female	07-08	.032	0.007	8
Non-Hispanic Blacks	40-59	Female	09-10	.028	0.004	7
Non-Hispanic Blacks	60+	Female	05-06	.067	0.016	5
Non-Hispanic Blacks	60+	Female	07-08	.146 **	0.052	7
Non-Hispanic Blacks	60+	Female	09-10	.043	0.009	7
Mexican Americans	12-19	Male	05-06	.005	0	11
Mexican Americans	12-19	Male	07-08	.004	0	6
Mexican Americans	12-19	Male	09-10	.011 **	0.004	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.008	0.001	9
Mexican Americans	20-39	Male	07-08	.006 **	0.002	9
Mexican Americans	20-39	Male	09-10	.004	0	8
Mexican Americans	40-59	Male	05-06	.022 **	0.007	4
Mexican Americans	40-59	Male	07-08	.031	0.009	6
Mexican Americans	40-59	Male	09-10	.020	0.004	8
Mexican Americans	60+	Male	05-06	.022 **	0.008	4
Mexican Americans	60+	Male	07-08	.074 **	0.046	5
Mexican Americans	60+	Male	09-10	.031	0.007	5
Mexican Americans	12-19	Female	05-06	.004	0	16
Mexican Americans	12-19	Female	07-08	.004	0	5
Mexican Americans	12-19	Female	09-10	.004	0	7
Mexican Americans	20-39	Female	05-06	.006	0.001	9
Mexican Americans	20-39	Female	07-08	.004	0	8
Mexican Americans	20-39	Female	09-10	.004	0	10
Mexican Americans	40-59	Female	05-06	.014	0.003	6
Mexican Americans	40-59	Female	07-08	.024	0.007	6
Mexican Americans	40-59	Female	09-10	.010	0.002	9
Mexican Americans	60+	Female	05-06	.022	0.005	3
Mexican Americans	60+	Female	07-08	.018	0.003	5
Mexican Americans	60+	Female	09-10	.023	0.005	6
All Hispanics	12-19	Male	09-10	.010 **	0.003	11
All Hispanics	20-39	Male	09-10	.010	0.003	13
All Hispanics	40-59	Male	09-10	.031	0.008	13
All Hispanics	60+	Male	09-10	.032	0.005	8
All Hispanics	12-19	Female	09-10	.004	0	10
All Hispanics	20-39	Female	09-10	.005	0.001	14
All Hispanics	40-59	Female	09-10	.011	0.001	14
All Hispanics	60+	Female	09-10	.025	0.003	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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

Serum Mirex (whole weight) (2011 - 2016)†

CAS Number 2385-85-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.027	0.003	12
Non-Hispanic Whites	Male	40-59	13-14	.029 **	0.013	14
Non-Hispanic Whites	Male	40-59	15-16	.017	0.004	10
Non-Hispanic Whites	Male	60+	11-12	.045	0.009	12
Non-Hispanic Whites	Male	60+	13-14	.101	0.028	17
Non-Hispanic Whites	Male	60+	15-16	.035	0.006	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	.014	0.001	11
Non-Hispanic Whites	Female	40-59	13-14	.026	0.007	16
Non-Hispanic Whites	Female	40-59	15-16	.025	0.004	9
Non-Hispanic Whites	Female	60+	11-12	.033	0.009	14
Non-Hispanic Whites	Female	60+	13-14	.053	0.016	20
Non-Hispanic Whites	Female	60+	15-16	.023	0.003	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	.007	0.001	9
Non-Hispanic Blacks	Male	20-39	13-14	.010	0.003	7
Non-Hispanic Blacks	Male	20-39	15-16	.008	0.001	7
Non-Hispanic Blacks	Male	40-59	11-12	.025	0.003	7
Non-Hispanic Blacks	Male	40-59	13-14	.068	0.019	7
Non-Hispanic Blacks	Male	40-59	15-16	.080 **	0.028	7
Non-Hispanic Blacks	Male	60+	11-12	.061	0.008	9
Non-Hispanic Blacks	Male	60+	13-14	.118	0.029	9
Non-Hispanic Blacks	Male	60+	15-16	.070	0.014	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.020	0.002	8
Non-Hispanic Blacks	Female	40-59	13-14	.072	0.019	8
Non-Hispanic Blacks	Female	40-59	15-16	.029	0.005	12
Non-Hispanic Blacks	Female	60+	11-12	.046	0.008	8
Non-Hispanic Blacks	Female	60+	13-14	.225 **	0.07	8
Non-Hispanic Blacks	Female	60+	15-16	.084	0.021	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.023	0.003	4
Mexican Americans	Male	40-59	13-14	.015	0.003	5
Mexican Americans	Male	40-59	15-16	.018 **	0.007	4
Mexican Americans	Male	60+	11-12	.018	0.002	2
Mexican Americans	Male	60+	13-14	.042 **	0.023	4
Mexican Americans	Male	60+	15-16	.029	0.003	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	.014	0.004	3
Mexican Americans	Female	40-59	13-14	.008	0.002	6
Mexican Americans	Female	40-59	15-16	.013	0.002	8
Mexican Americans	Female	60+	11-12	.034 **	0.016	3
Mexican Americans	Female	60+	13-14	.026	0.005	5
Mexican Americans	Female	60+	15-16	.017	0.001	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	19.4	2.2	7
All Hispanics	Male	40-59	13-14	17.1	1.9	9
All Hispanics	Male	40-59	15-16	22.7	5	9
All Hispanics	Male	60+	11-12	29.8 **	10.5	6
All Hispanics	Male	60+	13-14	34.5 **	13.8	7
All Hispanics	Male	60+	15-16	28.1	2.7	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	14.8	3	7
All Hispanics	Female	40-59	13-14	9.63	1.13	10
All Hispanics	Female	40-59	15-16	14.3	2.2	13
All Hispanics	Female	60+	11-12	26.0	7.2	7
All Hispanics	Female	60+	13-14	22.8	3.6	9
All Hispanics	Female	60+	15-16	20.9	2	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	.007	0.002	6
Asians	Male	20-39	13-14	.024 **	0.011	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	.039 **	0.027	6
Asians	Male	40-59	13-14	.042 **	0.022	4
Asians	Male	40-59	15-16	.012	0.003	4
Asians	Male	60+	11-12	.020	0.003	4
Asians	Male	60+	13-14	.027	0.007	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.074 **	0.026	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	*	*	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	*	*	6
Asians	Female	20-39	13-14	*	*	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	.008	0.001	6
Asians	Female	40-59	13-14	.011	0.002	7
Asians	Female	40-59	15-16	.014	0.002	5
Asians	Female	60+	11-12	.014	0.002	3
Asians	Female	60+	13-14	.024 **	0.007	3
Asians	Female	60+	15-16	.031 **	0.013	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 147217-75-2

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	16
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Male	60+	09-10	*	*	21
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	16
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	21
Non-Hispanic Whites	Female	60+	09-10	*	*	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	09-10	*	*	6
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	7
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	*	*	8
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	13
All Hispanics	Male	60+	09-10	*	*	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.57, 0.57, and 0.83, 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/PBDEs_BiomonitoringSummary.html

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

Serum 2,2',4-Tribromodiphenyl ether (BDE 17) (lipid adjusted) (2011 - 2016)†

CAS Number 147217-75-2

Weighted arithmetic mean and unadjusted standard error of pooled 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 previous page for data from earlier NHANES Survey periods.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	6
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	*	*	12
Non-Hispanic Whites	Male	40-59	13-14	*	*	14
Non-Hispanic Whites	Male	40-59	15-16	*	*	10
Non-Hispanic Whites	Male	60+	11-12	*	*	12
Non-Hispanic Whites	Male	60+	13-14	*	*	17
Non-Hispanic Whites	Male	60+	15-16	*	*	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	*	*	11
Non-Hispanic Whites	Female	40-59	13-14	*	*	16
Non-Hispanic Whites	Female	40-59	15-16	*	*	9
Non-Hispanic Whites	Female	60+	11-12	*	*	14
Non-Hispanic Whites	Female	60+	13-14	*	*	20
Non-Hispanic Whites	Female	60+	15-16	*	*	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	20-39	13-14	*	*	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	*	*	7
Non-Hispanic Blacks	Male	40-59	13-14	*	*	7
Non-Hispanic Blacks	Male	40-59	15-16	*	*	7
Non-Hispanic Blacks	Male	60+	11-12	*	*	9
Non-Hispanic Blacks	Male	60+	13-14	*	*	9
Non-Hispanic Blacks	Male	60+	15-16	*	*	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	5
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	*	*	7
Non-Hispanic Blacks	Female	40-59	13-14	*	*	8
Non-Hispanic Blacks	Female	40-59	15-16	*	*	12
Non-Hispanic Blacks	Female	60+	11-12	*	*	8
Non-Hispanic Blacks	Female	60+	13-14	*	*	8
Non-Hispanic Blacks	Female	60+	15-16	*	*	6
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	15-16	*	*	6
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	*	*	4
Mexican Americans	Male	40-59	13-14	*	*	5
Mexican Americans	Male	40-59	15-16	*	*	4
Mexican Americans	Male	60+	11-12	*	*	2
Mexican Americans	Male	60+	13-14	*	*	4
Mexican Americans	Male	60+	15-16	*	*	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	*	*	3
Mexican Americans	Female	40-59	13-14	*	*	6
Mexican Americans	Female	40-59	15-16	*	*	8
Mexican Americans	Female	60+	11-12	*	*	3
Mexican Americans	Female	60+	13-14	*	*	5
Mexican Americans	Female	60+	15-16	*	*	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	*	*	7
All Hispanics	Male	40-59	13-14	*	*	9
All Hispanics	Male	40-59	15-16	*	*	9
All Hispanics	Male	60+	11-12	*	*	6
All Hispanics	Male	60+	13-14	*	*	7
All Hispanics	Male	60+	15-16	*	*	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	*	*	7
All Hispanics	Female	40-59	13-14	*	*	10
All Hispanics	Female	40-59	15-16	*	*	13
All Hispanics	Female	60+	11-12	*	*	7
All Hispanics	Female	60+	13-14	*	*	9
All Hispanics	Female	60+	15-16	*	*	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	*	*	6
Asians	Male	20-39	13-14	*	*	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	*	*	6
Asians	Male	40-59	13-14	*	*	4
Asians	Male	40-59	15-16	*	*	4
Asians	Male	60+	11-12	*	*	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	13-14	*	*	3
Asians	Male	60+	15-16	*	*	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	*	*	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	*	*	6
Asians	Female	20-39	13-14	*	*	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	*	*	6
Asians	Female	40-59	13-14	*	*	7
Asians	Female	40-59	15-16	*	*	5
Asians	Female	60+	11-12	*	*	3
Asians	Female	60+	13-14	*	*	3
Asians	Female	60+	15-16	*	*	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.47, 0.25, and 0.37, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 41318-75-6

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	1.82	0.44	9
Non-Hispanic Whites	Male	12-19	07-08	1.38	0.19	6
Non-Hispanic Whites	Male	12-19	09-10	1.68	0.48	10
Non-Hispanic Whites	Male	20-39	05-06	2.16	0.45	12
Non-Hispanic Whites	Male	20-39	07-08	1.37	0.16	15
Non-Hispanic Whites	Male	20-39	09-10	1.10	0.12	17
Non-Hispanic Whites	Male	40-59	05-06	1.23	0.12	12
Non-Hispanic Whites	Male	40-59	07-08	1.97	0.43	16
Non-Hispanic Whites	Male	40-59	09-10	1.09	0.15	17
Non-Hispanic Whites	Male	60+	05-06	3.07	0.34	15
Non-Hispanic Whites	Male	60+	07-08	2.39	0.29	23
Non-Hispanic Whites	Male	60+	09-10	1.46	0.2	21
Non-Hispanic Whites	Female	12-19	05-06	2.37	0.49	10
Non-Hispanic Whites	Female	12-19	07-08	1.31	0.12	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	1.70	0.32	16
Non-Hispanic Whites	Female	20-39	07-08	1.67	0.23	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	1.44	0.2	13
Non-Hispanic Whites	Female	40-59	07-08	1.37	0.15	17
Non-Hispanic Whites	Female	40-59	09-10	1.09	0.15	16
Non-Hispanic Whites	Female	60+	05-06	2.59	0.55	17
Non-Hispanic Whites	Female	60+	07-08	2.51	0.38	21
Non-Hispanic Whites	Female	60+	09-10	2.02	0.22	22
Non-Hispanic Blacks	Male	12-19	05-06	1.79	0.2	13
Non-Hispanic Blacks	Male	12-19	07-08	1.21	0.1	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	1.38	0.19	6
Non-Hispanic Blacks	Male	20-39	07-08	1.25	0.14	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	1.47	0.35	5
Non-Hispanic Blacks	Male	40-59	07-08	1.33	0.17	6
Non-Hispanic Blacks	Male	40-59	09-10	2.30	0.52	7
Non-Hispanic Blacks	Male	60+	05-06	1.91	0.5	5
Non-Hispanic Blacks	Male	60+	07-08	1.94	0.3	8
Non-Hispanic Blacks	Male	60+	09-10	2.34	0.34	9
Non-Hispanic Blacks	Female	12-19	05-06	2.29	0.39	14
Non-Hispanic Blacks	Female	12-19	07-08	1.66 **	0.56	5
Non-Hispanic Blacks	Female	12-19	09-10	1.19	0.23	6
Non-Hispanic Blacks	Female	20-39	05-06	1.93	0.37	7
Non-Hispanic Blacks	Female	20-39	07-08	1.61	0.21	8
Non-Hispanic Blacks	Female	20-39	09-10	1.37	0.08	7
Non-Hispanic Blacks	Female	40-59	05-06	2.07 **	0.77	7
Non-Hispanic Blacks	Female	40-59	07-08	1.29	0.11	8
Non-Hispanic Blacks	Female	40-59	09-10	1.06	0.18	7
Non-Hispanic Blacks	Female	60+	05-06	1.76 **	0.56	5
Non-Hispanic Blacks	Female	60+	07-08	2.33	0.61	7
Non-Hispanic Blacks	Female	60+	09-10	1.70	0.3	7
Mexican Americans	Male	12-19	05-06	2.04	0.21	11
Mexican Americans	Male	12-19	07-08	2.06	0.38	6
Mexican Americans	Male	12-19	09-10	1.88	0.25	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	1.99	0.21	9
Mexican Americans	Male	20-39	07-08	1.52	0.21	9
Mexican Americans	Male	20-39	09-10	1.56	0.18	8
Mexican Americans	Male	40-59	05-06	2.06	0.13	4
Mexican Americans	Male	40-59	07-08	2.15	0.28	6
Mexican Americans	Male	40-59	09-10	1.64	0.25	8
Mexican Americans	Male	60+	05-06	2.38	0.14	4
Mexican Americans	Male	60+	07-08	2.87	0.84	5
Mexican Americans	Male	60+	09-10	2.25	0.45	5
Mexican Americans	Female	12-19	05-06	2.08	0.19	16
Mexican Americans	Female	12-19	07-08	1.49	0.24	5
Mexican Americans	Female	12-19	09-10	1.79	0.23	7
Mexican Americans	Female	20-39	05-06	1.51	0.14	9
Mexican Americans	Female	20-39	07-08	1.84	0.42	8
Mexican Americans	Female	20-39	09-10	1.36	0.2	10
Mexican Americans	Female	40-59	05-06	1.57	0.29	6
Mexican Americans	Female	40-59	07-08	1.81	0.31	6
Mexican Americans	Female	40-59	09-10	1.68	0.22	9
Mexican Americans	Female	60+	05-06	3.29	0.62	3
Mexican Americans	Female	60+	07-08	2.34	0.33	5
Mexican Americans	Female	60+	09-10	1.95	0.21	6
All Hispanics	Male	12-19	09-10	1.65	0.22	11
All Hispanics	Male	20-39	09-10	1.61	0.16	13
All Hispanics	Male	40-59	09-10	1.53	0.17	13
All Hispanics	Male	60+	09-10	1.90	0.34	8
All Hispanics	Female	12-19	09-10	1.66	0.18	10
All Hispanics	Female	20-39	09-10	1.21	0.15	14
All Hispanics	Female	40-59	09-10	1.46	0.16	14
All Hispanics	Female	60+	09-10	1.77	0.22	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.57, 0.57, and 0.93, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 41318-75-6

Weighted arithmetic mean and unadjusted standard error of pooled 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 previous page for data from earlier NHANES Survey periods.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.936	0.19	6
Non-Hispanic Whites	Male	12-19	13-14	1.52	0.38	8
Non-Hispanic Whites	Male	12-19	15-16	.625	0.107	7
Non-Hispanic Whites	Male	20-39	11-12	.975	0.141	12
Non-Hispanic Whites	Male	20-39	13-14	.884	0.078	14
Non-Hispanic Whites	Male	20-39	15-16	.737	0.139	10
Non-Hispanic Whites	Male	40-59	11-12	1.34	0.19	12
Non-Hispanic Whites	Male	40-59	13-14	1.19	0.14	14
Non-Hispanic Whites	Male	40-59	15-16	.753	0.09	10
Non-Hispanic Whites	Male	60+	11-12	1.54	0.22	12
Non-Hispanic Whites	Male	60+	13-14	2.04	0.18	17
Non-Hispanic Whites	Male	60+	15-16	.986	0.081	14
Non-Hispanic Whites	Female	12-19	11-12	1.25 **	0.48	5
Non-Hispanic Whites	Female	12-19	13-14	.888	0.108	6
Non-Hispanic Whites	Female	12-19	15-16	.584	0.095	5
Non-Hispanic Whites	Female	20-39	11-12	.958	0.096	13
Non-Hispanic Whites	Female	20-39	13-14	.959	0.104	15
Non-Hispanic Whites	Female	20-39	15-16	.556	0.066	11
Non-Hispanic Whites	Female	40-59	11-12	1.50	0.41	11
Non-Hispanic Whites	Female	40-59	13-14	.941	0.124	16
Non-Hispanic Whites	Female	40-59	15-16	.825	0.112	9
Non-Hispanic Whites	Female	60+	11-12	1.29	0.14	14
Non-Hispanic Whites	Female	60+	13-14	1.50	0.17	20
Non-Hispanic Whites	Female	60+	15-16	1.51	0.45	13
Non-Hispanic Blacks	Male	12-19	11-12	1.00	0.16	7
Non-Hispanic Blacks	Male	12-19	13-14	.941	0.135	6
Non-Hispanic Blacks	Male	12-19	15-16	.727	0.143	5
Non-Hispanic Blacks	Male	20-39	11-12	1.31	0.32	9
Non-Hispanic Blacks	Male	20-39	13-14	.914	0.237	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	1.28	0.22	7
Non-Hispanic Blacks	Male	40-59	13-14	1.40 **	0.42	7
Non-Hispanic Blacks	Male	40-59	15-16	1.04	0.15	7
Non-Hispanic Blacks	Male	60+	11-12	1.59	0.27	9
Non-Hispanic Blacks	Male	60+	13-14	1.70 **	0.54	9
Non-Hispanic Blacks	Male	60+	15-16	1.06	0.1	7
Non-Hispanic Blacks	Female	12-19	11-12	1.10	0.2	6
Non-Hispanic Blacks	Female	12-19	13-14	1.04	0.19	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	1.09	0.11	8
Non-Hispanic Blacks	Female	20-39	13-14	.866	0.129	8
Non-Hispanic Blacks	Female	20-39	15-16	.577	0.066	9
Non-Hispanic Blacks	Female	40-59	11-12	1.60 **	0.5	8
Non-Hispanic Blacks	Female	40-59	13-14	1.45	0.16	8
Non-Hispanic Blacks	Female	40-59	15-16	1.03	0.18	12
Non-Hispanic Blacks	Female	60+	11-12	.846	0.124	8
Non-Hispanic Blacks	Female	60+	13-14	1.44	0.16	8
Non-Hispanic Blacks	Female	60+	15-16	1.13	0.18	7
Mexican Americans	Male	12-19	11-12	2.10	0.41	5
Mexican Americans	Male	12-19	13-14	1.53	0.4	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	15-16	.926	0.238	6
Mexican Americans	Male	20-39	11-12	1.48	0.2	4
Mexican Americans	Male	20-39	13-14	1.48	0.37	5
Mexican Americans	Male	20-39	15-16	.623	0.134	7
Mexican Americans	Male	40-59	11-12	1.99	0.57	4
Mexican Americans	Male	40-59	13-14	1.37	0.25	5
Mexican Americans	Male	40-59	15-16	1.06	0.31	4
Mexican Americans	Male	60+	11-12	1.24	0.13	2
Mexican Americans	Male	60+	13-14	2.90	0.47	4
Mexican Americans	Male	60+	15-16	1.96 **	0.77	5
Mexican Americans	Female	12-19	11-12	1.38	0.37	4
Mexican Americans	Female	12-19	13-14	1.06	0.11	7
Mexican Americans	Female	12-19	15-16	.566	0.08	5
Mexican Americans	Female	20-39	11-12	1.25 **	0.44	4
Mexican Americans	Female	20-39	13-14	1.15	0.22	5
Mexican Americans	Female	20-39	15-16	.715	0.062	6
Mexican Americans	Female	40-59	11-12	2.33	0.3	3
Mexican Americans	Female	40-59	13-14	1.36	0.2	6
Mexican Americans	Female	40-59	15-16	.737	0.124	8
Mexican Americans	Female	60+	11-12	1.73	0.32	3
Mexican Americans	Female	60+	13-14	1.46	0.14	5
Mexican Americans	Female	60+	15-16	.991	0.094	7
All Hispanics	Male	12-19	11-12	1.88	0.36	7
All Hispanics	Male	12-19	13-14	1.36	0.29	10
All Hispanics	Male	12-19	15-16	.906	0.199	9
All Hispanics	Male	20-39	11-12	1.18	0.21	8
All Hispanics	Male	20-39	13-14	1.38	0.27	8
All Hispanics	Male	20-39	15-16	.671	0.113	11
All Hispanics	Male	40-59	11-12	1.60	0.35	7
All Hispanics	Male	40-59	13-14	1.27	0.17	9
All Hispanics	Male	40-59	15-16	.853	0.165	9
All Hispanics	Male	60+	11-12	1.59	0.35	6
All Hispanics	Male	60+	13-14	2.52	0.32	7
All Hispanics	Male	60+	15-16	1.53 **	0.48	9
All Hispanics	Female	12-19	11-12	1.08	0.26	7
All Hispanics	Female	12-19	13-14	1.08	0.1	10
All Hispanics	Female	12-19	15-16	.609	0.067	8
All Hispanics	Female	20-39	11-12	1.06	0.23	8
All Hispanics	Female	20-39	13-14	.927	0.17	9
All Hispanics	Female	20-39	15-16	.589	0.062	11
All Hispanics	Female	40-59	11-12	1.62	0.29	7
All Hispanics	Female	40-59	13-14	1.43	0.16	10
All Hispanics	Female	40-59	15-16	.923	0.193	13
All Hispanics	Female	60+	11-12	1.11	0.25	7
All Hispanics	Female	60+	13-14	1.25	0.14	9
All Hispanics	Female	60+	15-16	.879	0.073	13
Asians	Male	12-19	11-12	.808	0.088	3
Asians	Male	12-19	13-14	1.92 **	1.02	3
Asians	Male	12-19	15-16	.604 **	0.261	3
Asians	Male	20-39	11-12	.865	0.12	6
Asians	Male	20-39	13-14	.551	0.094	4
Asians	Male	20-39	15-16	.544	0.083	5
Asians	Male	40-59	11-12	1.15	0.2	6
Asians	Male	40-59	13-14	1.23	0.27	4
Asians	Male	40-59	15-16	1.25 **	0.48	4
Asians	Male	60+	11-12	1.20	0.24	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	13-14	1.37 **	0.56	3
Asians	Male	60+	15-16	*	*	3
Asians	Female	12-19	11-12	1.38	0.35	4
Asians	Female	12-19	13-14	1.31	0.34	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	*	*	6
Asians	Female	20-39	13-14	1.02	0.19	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	1.42	0.2	6
Asians	Female	40-59	13-14	1.17	0.14	7
Asians	Female	40-59	15-16	.776	0.127	5
Asians	Female	60+	11-12	1.67	0.09	3
Asians	Female	60+	13-14	2.65 **	1.52	3
Asians	Female	60+	15-16	.954	0.112	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.68, 0.25, and 0.52, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 5436-43-1

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	59.0	16.8	9
Non-Hispanic Whites	Male	12-19	07-08	32.9	4.8	6
Non-Hispanic Whites	Male	12-19	09-10	46.8 **	16.5	10
Non-Hispanic Whites	Male	20-39	05-06	46.1 **	14.4	12
Non-Hispanic Whites	Male	20-39	07-08	29.1	4.2	15
Non-Hispanic Whites	Male	20-39	09-10	25.7	4.1	17
Non-Hispanic Whites	Male	40-59	05-06	21.2	2.6	12
Non-Hispanic Whites	Male	40-59	07-08	38.7	9.7	16
Non-Hispanic Whites	Male	40-59	09-10	23.3	4.4	17
Non-Hispanic Whites	Male	60+	05-06	67.3	12.4	15
Non-Hispanic Whites	Male	60+	07-08	40.1	6.5	23
Non-Hispanic Whites	Male	60+	09-10	26.0	4.8	21
Non-Hispanic Whites	Female	12-19	05-06	62.5	14.4	10
Non-Hispanic Whites	Female	12-19	07-08	31.2	3.2	7
Non-Hispanic Whites	Female	12-19	09-10	22.0	1.7	8
Non-Hispanic Whites	Female	20-39	05-06	50.0 **	16.4	16
Non-Hispanic Whites	Female	20-39	07-08	32.2	6.6	13
Non-Hispanic Whites	Female	20-39	09-10	15.2	1.6	19
Non-Hispanic Whites	Female	40-59	05-06	22.5	4.6	13
Non-Hispanic Whites	Female	40-59	07-08	20.5	3.1	17
Non-Hispanic Whites	Female	40-59	09-10	17.1	2.3	17
Non-Hispanic Whites	Female	60+	05-06	60.0 **	20.4	17
Non-Hispanic Whites	Female	60+	07-08	40.4	7.5	21
Non-Hispanic Whites	Female	60+	09-10	33.6	5	22
Non-Hispanic Blacks	Male	12-19	05-06	51.3	4.9	13
Non-Hispanic Blacks	Male	12-19	07-08	31.0	4.9	6
Non-Hispanic Blacks	Male	12-19	09-10	20.3	3.5	6
Non-Hispanic Blacks	Male	20-39	05-06	42.8	8.7	6
Non-Hispanic Blacks	Male	20-39	07-08	28.1	3.3	6
Non-Hispanic Blacks	Male	20-39	09-10	19.6	3.3	7
Non-Hispanic Blacks	Male	40-59	05-06	29.6	6.9	5
Non-Hispanic Blacks	Male	40-59	07-08	30.5	5.3	6
Non-Hispanic Blacks	Male	40-59	09-10	60.3 **	21.1	7
Non-Hispanic Blacks	Male	60+	05-06	65.8	18.9	5
Non-Hispanic Blacks	Male	60+	07-08	31.8	4.1	8
Non-Hispanic Blacks	Male	60+	09-10	68.4	19	9
Non-Hispanic Blacks	Female	12-19	05-06	74.9	13.9	14
Non-Hispanic Blacks	Female	12-19	07-08	56.4 **	23.5	5
Non-Hispanic Blacks	Female	12-19	09-10	36.6	6	6
Non-Hispanic Blacks	Female	20-39	05-06	61.0 **	21.6	7
Non-Hispanic Blacks	Female	20-39	07-08	32.2	4.1	8
Non-Hispanic Blacks	Female	20-39	09-10	36.3	2.3	7
Non-Hispanic Blacks	Female	40-59	05-06	59.0 **	26.9	7
Non-Hispanic Blacks	Female	40-59	07-08	20.9	2.4	8
Non-Hispanic Blacks	Female	40-59	09-10	22.0	5.4	7
Non-Hispanic Blacks	Female	60+	05-06	41.4	8.5	5
Non-Hispanic Blacks	Female	60+	07-08	46.4	12.5	7
Non-Hispanic Blacks	Female	60+	09-10	28.6	5.5	7
Mexican Americans	Male	12-19	05-06	46.8	5	11
Mexican Americans	Male	12-19	07-08	53.1	9.7	6
Mexican Americans	Male	12-19	09-10	45.3	6.4	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	41.2	4.2	9
Mexican Americans	Male	20-39	07-08	33.9	6	9
Mexican Americans	Male	20-39	09-10	32.2	3.9	8
Mexican Americans	Male	40-59	05-06	36.4	3.7	4
Mexican Americans	Male	40-59	07-08	37.4	8.6	6
Mexican Americans	Male	40-59	09-10	25.1	3.5	8
Mexican Americans	Male	60+	05-06	36.8	2.9	4
Mexican Americans	Male	60+	07-08	41.5	6.6	5
Mexican Americans	Male	60+	09-10	36.0	7.4	5
Mexican Americans	Female	12-19	05-06	50.7	5.4	16
Mexican Americans	Female	12-19	07-08	34.2	6	5
Mexican Americans	Female	12-19	09-10	37.6	4.6	7
Mexican Americans	Female	20-39	05-06	30.4	3.6	9
Mexican Americans	Female	20-39	07-08	31.2	8.1	8
Mexican Americans	Female	20-39	09-10	25.1	3.9	10
Mexican Americans	Female	40-59	05-06	25.4	4	6
Mexican Americans	Female	40-59	07-08	23.0	3	6
Mexican Americans	Female	40-59	09-10	29.6	4.1	9
Mexican Americans	Female	60+	05-06	52.9	12.1	3
Mexican Americans	Female	60+	07-08	37.8	6.9	5
Mexican Americans	Female	60+	09-10	33.1	4	6
All Hispanics	Male	12-19	09-10	40.2	5.3	11
All Hispanics	Male	20-39	09-10	31.0	2.9	13
All Hispanics	Male	40-59	09-10	26.7	3.3	13
All Hispanics	Male	60+	09-10	29.8	5.7	8
All Hispanics	Female	12-19	09-10	39.6	4.2	10
All Hispanics	Female	20-39	09-10	23.3	2.9	14
All Hispanics	Female	40-59	09-10	27.4	3.2	14
All Hispanics	Female	60+	09-10	29.8	4.5	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.57, 0.57, and 0.91, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 5436-43-1

Weighted arithmetic mean and unadjusted standard error of pooled 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 previous page for data from earlier NHANES Survey periods.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	26.7	4.8	6
Non-Hispanic Whites	Male	12-19	13-14	38.7	11	8
Non-Hispanic Whites	Male	12-19	15-16	16.9	3.8	7
Non-Hispanic Whites	Male	20-39	11-12	19.1	3.7	12
Non-Hispanic Whites	Male	20-39	13-14	14.2	1.3	14
Non-Hispanic Whites	Male	20-39	15-16	14.6	2.2	10
Non-Hispanic Whites	Male	40-59	11-12	26.4	4.6	12
Non-Hispanic Whites	Male	40-59	13-14	21.4	3.4	14
Non-Hispanic Whites	Male	40-59	15-16	15.4	2.8	10
Non-Hispanic Whites	Male	60+	11-12	31.6	6.1	12
Non-Hispanic Whites	Male	60+	13-14	31.5	4.1	17
Non-Hispanic Whites	Male	60+	15-16	17.2	2	14
Non-Hispanic Whites	Female	12-19	11-12	25.3 **	8.5	5
Non-Hispanic Whites	Female	12-19	13-14	17.9	2.1	6
Non-Hispanic Whites	Female	12-19	15-16	12.4	2.4	5
Non-Hispanic Whites	Female	20-39	11-12	21.3	3.7	13
Non-Hispanic Whites	Female	20-39	13-14	19.1	2.5	15
Non-Hispanic Whites	Female	20-39	15-16	11.7	1.5	11
Non-Hispanic Whites	Female	40-59	11-12	25.5 **	9.2	11
Non-Hispanic Whites	Female	40-59	13-14	16.5	2.5	16
Non-Hispanic Whites	Female	40-59	15-16	13.8	1.8	9
Non-Hispanic Whites	Female	60+	11-12	25.0	4.6	14
Non-Hispanic Whites	Female	60+	13-14	21.6	2.6	20
Non-Hispanic Whites	Female	60+	15-16	26.0 **	8	13
Non-Hispanic Blacks	Male	12-19	11-12	32.7	7.2	7
Non-Hispanic Blacks	Male	12-19	13-14	24.6	4	6
Non-Hispanic Blacks	Male	12-19	15-16	25.3	6.1	5
Non-Hispanic Blacks	Male	20-39	11-12	36.9	8.9	9
Non-Hispanic Blacks	Male	20-39	13-14	22.6	6.5	7
Non-Hispanic Blacks	Male	20-39	15-16	13.7	2.1	7
Non-Hispanic Blacks	Male	40-59	11-12	28.2	6.7	7
Non-Hispanic Blacks	Male	40-59	13-14	31.7 **	14.2	7
Non-Hispanic Blacks	Male	40-59	15-16	25.8	5.5	7
Non-Hispanic Blacks	Male	60+	11-12	40.5	8.9	9
Non-Hispanic Blacks	Male	60+	13-14	38.3 **	15	9
Non-Hispanic Blacks	Male	60+	15-16	17.6	1.4	7
Non-Hispanic Blacks	Female	12-19	11-12	32.0	7	6
Non-Hispanic Blacks	Female	12-19	13-14	25.7	4	6
Non-Hispanic Blacks	Female	12-19	15-16	16.5 **	5.2	4
Non-Hispanic Blacks	Female	20-39	11-12	21.7	2.3	8
Non-Hispanic Blacks	Female	20-39	13-14	17.3	2.8	8
Non-Hispanic Blacks	Female	20-39	15-16	16.7	3.6	9
Non-Hispanic Blacks	Female	40-59	11-12	36.0 **	12.1	8
Non-Hispanic Blacks	Female	40-59	13-14	26.2	3.6	8
Non-Hispanic Blacks	Female	40-59	15-16	25.4	6.3	12
Non-Hispanic Blacks	Female	60+	11-12	20.2	4.5	8
Non-Hispanic Blacks	Female	60+	13-14	25.4	3.7	8
Non-Hispanic Blacks	Female	60+	15-16	37.1 **	13.1	7
Mexican Americans	Male	12-19	11-12	63.3	9.3	5
Mexican Americans	Male	12-19	13-14	31.6	6.9	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	15-16	24.8	7.4	6
Mexican Americans	Male	20-39	11-12	28.4	6.1	4
Mexican Americans	Male	20-39	13-14	29.9 **	9.8	5
Mexican Americans	Male	20-39	15-16	12.4	1.9	7
Mexican Americans	Male	40-59	11-12	27.5 **	8.4	4
Mexican Americans	Male	40-59	13-14	17.3	2.4	5
Mexican Americans	Male	40-59	15-16	18.7 **	8.2	4
Mexican Americans	Male	60+	11-12	19.6	1.5	2
Mexican Americans	Male	60+	13-14	33.4	0.9	4
Mexican Americans	Male	60+	15-16	36.0 **	16.4	5
Mexican Americans	Female	12-19	11-12	30.3	7.4	4
Mexican Americans	Female	12-19	13-14	23.9	2	7
Mexican Americans	Female	12-19	15-16	14.2	2.1	5
Mexican Americans	Female	20-39	11-12	23.3 **	9.2	4
Mexican Americans	Female	20-39	13-14	19.7	2.8	5
Mexican Americans	Female	20-39	15-16	13.4	1.8	6
Mexican Americans	Female	40-59	11-12	52.9	14.1	3
Mexican Americans	Female	40-59	13-14	22.9	3.9	6
Mexican Americans	Female	40-59	15-16	13.2	2.5	8
Mexican Americans	Female	60+	11-12	29.3	7.6	3
Mexican Americans	Female	60+	13-14	17.0	2.1	5
Mexican Americans	Female	60+	15-16	15.0	1.9	7
All Hispanics	Male	12-19	11-12	55.5	9.7	7
All Hispanics	Male	12-19	13-14	28.6	5.1	10
All Hispanics	Male	12-19	15-16	25.1	5.9	9
All Hispanics	Male	20-39	11-12	22.9	4.5	8
All Hispanics	Male	20-39	13-14	25.3	6.8	8
All Hispanics	Male	20-39	15-16	13.8	2.2	11
All Hispanics	Male	40-59	11-12	23.8	5	7
All Hispanics	Male	40-59	13-14	16.8	1.6	9
All Hispanics	Male	40-59	15-16	14.7	4.1	9
All Hispanics	Male	60+	11-12	24.7	3.6	6
All Hispanics	Male	60+	13-14	33.4	1	7
All Hispanics	Male	60+	15-16	28.0 **	10.2	9
All Hispanics	Female	12-19	11-12	24.1	5.2	7
All Hispanics	Female	12-19	13-14	24.4	1.8	10
All Hispanics	Female	12-19	15-16	15.0	1.9	8
All Hispanics	Female	20-39	11-12	20.0	4.9	8
All Hispanics	Female	20-39	13-14	15.7	2.7	9
All Hispanics	Female	20-39	15-16	11.1	1.4	11
All Hispanics	Female	40-59	11-12	36.1	8.7	7
All Hispanics	Female	40-59	13-14	25.3	4	10
All Hispanics	Female	40-59	15-16	16.8	4.6	13
All Hispanics	Female	60+	11-12	16.0 **	5	7
All Hispanics	Female	60+	13-14	16.0	1.6	9
All Hispanics	Female	60+	15-16	13.2	1.4	13
Asians	Male	12-19	11-12	14.7	3.6	3
Asians	Male	12-19	13-14	42.5 **	27.5	3
Asians	Male	12-19	15-16	15.6 **	10.5	3
Asians	Male	20-39	11-12	14.5	3.9	6
Asians	Male	20-39	13-14	8.00	1.24	4
Asians	Male	20-39	15-16	9.66	1.69	5
Asians	Male	40-59	11-12	14.9	2.2	6
Asians	Male	40-59	13-14	19.1	2.4	4
Asians	Male	40-59	15-16	18.9 **	7	4
Asians	Male	60+	11-12	19.2	4.1	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	13-14	17.7 **	7.5	3
Asians	Male	60+	15-16	4.83	0.5	3
Asians	Female	12-19	11-12	24.1	5.9	4
Asians	Female	12-19	13-14	29.9 **	11	3
Asians	Female	12-19	15-16	8.19	0.89	3
Asians	Female	20-39	11-12	11.1	2.2	6
Asians	Female	20-39	13-14	13.8	3.5	5
Asians	Female	20-39	15-16	6.72	1.57	4
Asians	Female	40-59	11-12	21.6	3.1	6
Asians	Female	40-59	13-14	15.1	2	7
Asians	Female	40-59	15-16	11.0	1.2	5
Asians	Female	60+	11-12	23.0	1.8	3
Asians	Female	60+	13-14	45.8 **	30.6	3
Asians	Female	60+	15-16	12.0	1.5	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.99, 1.0, and 0.44, 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/PBDEs_BiomonitoringSummary.html

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

Serum 2,3',4,4'-Tetrabromodiphenyl ether (BDE 66) (lipid adjusted) (2005 - 2010)†

CAS Number 189084-61-5

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	16
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Male	60+	09-10	*	*	21
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	21
Non-Hispanic Whites	Female	60+	09-10	*	*	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	09-10	*	*	7
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	7
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	*	*	8
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	13
All Hispanics	Male	60+	09-10	*	*	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.57, 0.57, and 0.62, 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/PBDEs_BiomonitoringSummary.html

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

Serum 2,3',4,4'-Tetrabromodiphenyl ether (BDE 66) (lipid adjusted) (2011 - 2016)†

CAS Number 189084-61-5

Weighted arithmetic mean and unadjusted standard error of pooled 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 previous page for data from earlier NHANES Survey periods.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	*	*	12
Non-Hispanic Whites	Male	40-59	13-14	*	*	14
Non-Hispanic Whites	Male	40-59	15-16	*	*	10
Non-Hispanic Whites	Male	60+	11-12	*	*	12
Non-Hispanic Whites	Male	60+	13-14	*	*	17
Non-Hispanic Whites	Male	60+	15-16	*	*	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	*	*	11
Non-Hispanic Whites	Female	40-59	13-14	*	*	16
Non-Hispanic Whites	Female	40-59	15-16	*	*	9
Non-Hispanic Whites	Female	60+	11-12	*	*	14
Non-Hispanic Whites	Female	60+	13-14	*	*	20
Non-Hispanic Whites	Female	60+	15-16	*	*	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	20-39	13-14	*	*	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	*	*	7
Non-Hispanic Blacks	Male	40-59	13-14	*	*	7
Non-Hispanic Blacks	Male	40-59	15-16	*	*	7
Non-Hispanic Blacks	Male	60+	11-12	*	*	9
Non-Hispanic Blacks	Male	60+	13-14	*	*	9
Non-Hispanic Blacks	Male	60+	15-16	*	*	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	*	*	8
Non-Hispanic Blacks	Female	40-59	13-14	*	*	8
Non-Hispanic Blacks	Female	40-59	15-16	*	*	12
Non-Hispanic Blacks	Female	60+	11-12	*	*	8
Non-Hispanic Blacks	Female	60+	13-14	*	*	8
Non-Hispanic Blacks	Female	60+	15-16	*	*	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	15-16	*	*	6
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	*	*	4
Mexican Americans	Male	40-59	13-14	*	*	5
Mexican Americans	Male	40-59	15-16	*	*	4
Mexican Americans	Male	60+	11-12	*	*	2
Mexican Americans	Male	60+	13-14	*	*	4
Mexican Americans	Male	60+	15-16	*	*	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	*	*	3
Mexican Americans	Female	40-59	13-14	*	*	6
Mexican Americans	Female	40-59	15-16	*	*	8
Mexican Americans	Female	60+	11-12	*	*	3
Mexican Americans	Female	60+	13-14	*	*	5
Mexican Americans	Female	60+	15-16	*	*	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	*	*	7
All Hispanics	Male	40-59	13-14	*	*	9
All Hispanics	Male	40-59	15-16	*	*	9
All Hispanics	Male	60+	11-12	*	*	6
All Hispanics	Male	60+	13-14	*	*	7
All Hispanics	Male	60+	15-16	*	*	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	*	*	7
All Hispanics	Female	40-59	13-14	*	*	10
All Hispanics	Female	40-59	15-16	*	*	13
All Hispanics	Female	60+	11-12	*	*	7
All Hispanics	Female	60+	13-14	*	*	9
All Hispanics	Female	60+	15-16	*	*	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	*	*	6
Asians	Male	20-39	13-14	*	*	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	*	*	6
Asians	Male	40-59	13-14	*	*	4
Asians	Male	40-59	15-16	*	*	4
Asians	Male	60+	11-12	*	*	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	13-14	*	*	3
Asians	Male	60+	15-16	*	*	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	*	*	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	*	*	6
Asians	Female	20-39	13-14	*	*	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	*	*	6
Asians	Female	40-59	13-14	*	*	7
Asians	Female	40-59	15-16	*	*	5
Asians	Female	60+	11-12	*	*	3
Asians	Female	60+	13-14	*	*	3
Asians	Female	60+	15-16	*	*	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.58, 0.74, and 0.42, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 182346-21-0

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	1.56 **	0.49	9
Non-Hispanic Whites	Male	12-19	07-08	.648	0.088	6
Non-Hispanic Whites	Male	12-19	09-10	1.07 **	0.47	10
Non-Hispanic Whites	Male	20-39	05-06	.960 **	0.337	12
Non-Hispanic Whites	Male	20-39	07-08	.618	0.09	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	1.06	0.29	16
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	1.58	0.32	15
Non-Hispanic Whites	Male	60+	07-08	.971	0.197	23
Non-Hispanic Whites	Male	60+	09-10	*	*	21
Non-Hispanic Whites	Female	12-19	05-06	1.50	0.41	10
Non-Hispanic Whites	Female	12-19	07-08	.807	0.166	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	1.26 **	0.43	16
Non-Hispanic Whites	Female	20-39	07-08	.804	0.207	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	1.70 **	0.77	17
Non-Hispanic Whites	Female	60+	07-08	.802	0.172	21
Non-Hispanic Whites	Female	60+	09-10	*	*	22
Non-Hispanic Blacks	Male	12-19	05-06	1.14	0.11	13
Non-Hispanic Blacks	Male	12-19	07-08	.763	0.149	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	1.08	0.2	6
Non-Hispanic Blacks	Male	20-39	07-08	.727	0.104	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	.829	0.141	6
Non-Hispanic Blacks	Male	40-59	09-10	1.53 **	0.71	7
Non-Hispanic Blacks	Male	60+	05-06	1.55 **	0.6	5
Non-Hispanic Blacks	Male	60+	07-08	.848	0.199	8
Non-Hispanic Blacks	Male	60+	09-10	1.34 **	0.46	9
Non-Hispanic Blacks	Female	12-19	05-06	1.88	0.41	14
Non-Hispanic Blacks	Female	12-19	07-08	1.61 **	0.74	5
Non-Hispanic Blacks	Female	12-19	09-10	.732	0.112	6
Non-Hispanic Blacks	Female	20-39	05-06	1.58 **	0.69	7
Non-Hispanic Blacks	Female	20-39	07-08	.905	0.109	8
Non-Hispanic Blacks	Female	20-39	09-10	.779	0.039	7
Non-Hispanic Blacks	Female	40-59	05-06	1.51 **	0.8	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	09-10	*	*	7
Non-Hispanic Blacks	Female	60+	05-06	1.11	0.32	5
Non-Hispanic Blacks	Female	60+	07-08	1.16	0.33	7
Non-Hispanic Blacks	Female	60+	09-10	.625	0.141	7
Mexican Americans	Male	12-19	05-06	.899	0.078	11
Mexican Americans	Male	12-19	07-08	1.04	0.3	6
Mexican Americans	Male	12-19	09-10	.684	0.096	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	.825	0.081	9
Mexican Americans	Male	20-39	07-08	.790	0.125	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	.900	0.144	4
Mexican Americans	Male	40-59	07-08	.804	0.214	6
Mexican Americans	Male	40-59	09-10	*	*	8
Mexican Americans	Male	60+	05-06	.683	0.167	4
Mexican Americans	Male	60+	07-08	.967	0.239	5
Mexican Americans	Male	60+	09-10	.711	0.155	5
Mexican Americans	Female	12-19	05-06	1.00	0.1	16
Mexican Americans	Female	12-19	07-08	.766	0.147	5
Mexican Americans	Female	12-19	09-10	.687	0.096	7
Mexican Americans	Female	20-39	05-06	.662	0.098	9
Mexican Americans	Female	20-39	07-08	.789 **	0.256	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	40-59	09-10	.675	0.118	9
Mexican Americans	Female	60+	05-06	1.10	0.33	3
Mexican Americans	Female	60+	07-08	1.00	0.25	5
Mexican Americans	Female	60+	09-10	.684	0.132	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	13
All Hispanics	Male	60+	09-10	*	*	8
All Hispanics	Female	12-19	09-10	.778	0.107	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.57, 0.57, and 0.62, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 182346-21-0

Weighted arithmetic mean and unadjusted standard error of pooled 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 previous page for data from earlier NHANES Survey periods.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.481	0.094	6
Non-Hispanic Whites	Male	12-19	13-14	.960 **	0.332	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	.367	0.073	12
Non-Hispanic Whites	Male	20-39	13-14	.351	0.043	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.545	0.12	12
Non-Hispanic Whites	Male	40-59	13-14	.516	0.072	14
Non-Hispanic Whites	Male	40-59	15-16	*	*	10
Non-Hispanic Whites	Male	60+	11-12	.698	0.157	12
Non-Hispanic Whites	Male	60+	13-14	.674	0.121	17
Non-Hispanic Whites	Male	60+	15-16	*	*	14
Non-Hispanic Whites	Female	12-19	11-12	.496	0.144	5
Non-Hispanic Whites	Female	12-19	13-14	.415	0.07	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.422	0.117	13
Non-Hispanic Whites	Female	20-39	13-14	.550 **	0.183	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	.544 **	0.238	11
Non-Hispanic Whites	Female	40-59	13-14	.338	0.049	16
Non-Hispanic Whites	Female	40-59	15-16	*	*	9
Non-Hispanic Whites	Female	60+	11-12	.504	0.128	14
Non-Hispanic Whites	Female	60+	13-14	.409	0.075	20
Non-Hispanic Whites	Female	60+	15-16	*	*	13
Non-Hispanic Blacks	Male	12-19	11-12	.659	0.174	7
Non-Hispanic Blacks	Male	12-19	13-14	.528	0.074	6
Non-Hispanic Blacks	Male	12-19	15-16	.551	0.101	5
Non-Hispanic Blacks	Male	20-39	11-12	.824 **	0.276	9
Non-Hispanic Blacks	Male	20-39	13-14	.535	0.155	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.615	0.155	7
Non-Hispanic Blacks	Male	40-59	13-14	.850 **	0.416	7
Non-Hispanic Blacks	Male	40-59	15-16	*	*	7
Non-Hispanic Blacks	Male	60+	11-12	.967	0.266	9
Non-Hispanic Blacks	Male	60+	13-14	.862 **	0.336	9
Non-Hispanic Blacks	Male	60+	15-16	*	*	7
Non-Hispanic Blacks	Female	12-19	11-12	.716	0.132	6
Non-Hispanic Blacks	Female	12-19	13-14	.557	0.09	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.451	0.059	8
Non-Hispanic Blacks	Female	20-39	13-14	.416	0.066	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.785 **	0.303	8
Non-Hispanic Blacks	Female	40-59	13-14	.560	0.104	8
Non-Hispanic Blacks	Female	40-59	15-16	.675	0.173	12
Non-Hispanic Blacks	Female	60+	11-12	.457	0.102	8
Non-Hispanic Blacks	Female	60+	13-14	.665	0.114	8
Non-Hispanic Blacks	Female	60+	15-16	1.05 **	0.36	7
Mexican Americans	Male	12-19	11-12	1.16	0.21	5
Mexican Americans	Male	12-19	13-14	.614	0.148	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	15-16	.556 **	0.177	6
Mexican Americans	Male	20-39	11-12	.504	0.129	4
Mexican Americans	Male	20-39	13-14	.709 **	0.306	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.673 **	0.264	4
Mexican Americans	Male	40-59	13-14	.344	0.055	5
Mexican Americans	Male	40-59	15-16	*	*	4
Mexican Americans	Male	60+	11-12	.284	0.004	2
Mexican Americans	Male	60+	13-14	.815	0.067	4
Mexican Americans	Male	60+	15-16	1.11 **	0.6	5
Mexican Americans	Female	12-19	11-12	.567	0.098	4
Mexican Americans	Female	12-19	13-14	.435	0.038	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.402 **	0.145	4
Mexican Americans	Female	20-39	13-14	.415	0.037	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	1.27 **	0.47	3
Mexican Americans	Female	40-59	13-14	.533	0.113	6
Mexican Americans	Female	40-59	15-16	*	*	8
Mexican Americans	Female	60+	11-12	.538 **	0.168	3
Mexican Americans	Female	60+	13-14	.421	0.089	5
Mexican Americans	Female	60+	15-16	*	*	7
All Hispanics	Male	12-19	11-12	1.02	0.2	7
All Hispanics	Male	12-19	13-14	.591	0.105	10
All Hispanics	Male	12-19	15-16	.560	0.152	9
All Hispanics	Male	20-39	11-12	.426	0.079	8
All Hispanics	Male	20-39	13-14	.592 **	0.206	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	.507 **	0.158	7
All Hispanics	Male	40-59	13-14	.325	0.04	9
All Hispanics	Male	40-59	15-16	*	*	9
All Hispanics	Male	60+	11-12	.376	0.06	6
All Hispanics	Male	60+	13-14	.804	0.109	7
All Hispanics	Male	60+	15-16	.843 **	0.369	9
All Hispanics	Female	12-19	11-12	.459	0.077	7
All Hispanics	Female	12-19	13-14	.462	0.038	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	.331	0.079	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	.829	0.249	7
All Hispanics	Female	40-59	13-14	.551	0.091	10
All Hispanics	Female	40-59	15-16	*	*	13
All Hispanics	Female	60+	11-12	*	*	7
All Hispanics	Female	60+	13-14	.356	0.059	9
All Hispanics	Female	60+	15-16	*	*	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	.707 **	0.436	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	.278 **	0.107	6
Asians	Male	20-39	13-14	*	*	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	*	*	6
Asians	Male	40-59	13-14	.360	0.012	4
Asians	Male	40-59	15-16	*	*	4
Asians	Male	60+	11-12	*	*	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	13-14	.356 **	0.123	3
Asians	Male	60+	15-16	*	*	3
Asians	Female	12-19	11-12	.575	0.049	4
Asians	Female	12-19	13-14	.634 **	0.38	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	*	*	6
Asians	Female	20-39	13-14	.266	0.056	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	.312	0.033	6
Asians	Female	40-59	13-14	.283	0.048	7
Asians	Female	40-59	15-16	*	*	5
Asians	Female	60+	11-12	.291	0.063	3
Asians	Female	60+	13-14	1.21 **	0.9	3
Asians	Female	60+	15-16	*	*	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.27, 0.25, and 0.49, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 60348-60-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	14.6 **	4.7	9
Non-Hispanic Whites	Male	12-19	07-08	6.80	1.22	6
Non-Hispanic Whites	Male	12-19	09-10	11.8 **	5.1	10
Non-Hispanic Whites	Male	20-39	05-06	10.3 **	3.6	12
Non-Hispanic Whites	Male	20-39	07-08	5.38	0.78	15
Non-Hispanic Whites	Male	20-39	09-10	5.13	1.02	17
Non-Hispanic Whites	Male	40-59	05-06	4.45	0.74	12
Non-Hispanic Whites	Male	40-59	07-08	9.95 **	3.12	16
Non-Hispanic Whites	Male	40-59	09-10	4.56	1.02	17
Non-Hispanic Whites	Male	60+	05-06	15.4	4.3	15
Non-Hispanic Whites	Male	60+	07-08	9.80	2.13	23
Non-Hispanic Whites	Male	60+	09-10	5.22	1.24	21
Non-Hispanic Whites	Female	12-19	05-06	17.5	4.8	10
Non-Hispanic Whites	Female	12-19	07-08	8.10	2.09	7
Non-Hispanic Whites	Female	12-19	09-10	4.95	0.84	8
Non-Hispanic Whites	Female	20-39	05-06	13.4 **	5	16
Non-Hispanic Whites	Female	20-39	07-08	7.72	2.02	13
Non-Hispanic Whites	Female	20-39	09-10	2.74	0.48	19
Non-Hispanic Whites	Female	40-59	05-06	4.16	0.79	13
Non-Hispanic Whites	Female	40-59	07-08	4.40	0.82	17
Non-Hispanic Whites	Female	40-59	09-10	3.25	0.42	17
Non-Hispanic Whites	Female	60+	05-06	12.3 **	4.4	17
Non-Hispanic Whites	Female	60+	07-08	8.00	1.79	21
Non-Hispanic Whites	Female	60+	09-10	6.60	1.33	22
Non-Hispanic Blacks	Male	12-19	05-06	12.6	1.4	13
Non-Hispanic Blacks	Male	12-19	07-08	7.39	1.79	6
Non-Hispanic Blacks	Male	12-19	09-10	4.38	0.94	6
Non-Hispanic Blacks	Male	20-39	05-06	16.5 **	6.2	6
Non-Hispanic Blacks	Male	20-39	07-08	6.25	0.82	6
Non-Hispanic Blacks	Male	20-39	09-10	4.28	0.78	7
Non-Hispanic Blacks	Male	40-59	05-06	5.66	1.1	5
Non-Hispanic Blacks	Male	40-59	07-08	7.22	1.5	6
Non-Hispanic Blacks	Male	40-59	09-10	18.3 **	10.8	7
Non-Hispanic Blacks	Male	60+	05-06	19.5 **	10.2	5
Non-Hispanic Blacks	Male	60+	07-08	8.27	1.74	8
Non-Hispanic Blacks	Male	60+	09-10	21.6 **	9.4	9
Non-Hispanic Blacks	Female	12-19	05-06	23.3	4.8	14
Non-Hispanic Blacks	Female	12-19	07-08	17.6 **	8.3	5
Non-Hispanic Blacks	Female	12-19	09-10	9.84	1.81	6
Non-Hispanic Blacks	Female	20-39	05-06	17.5 **	7.8	7
Non-Hispanic Blacks	Female	20-39	07-08	7.19	1.14	8
Non-Hispanic Blacks	Female	20-39	09-10	8.51	0.96	7
Non-Hispanic Blacks	Female	40-59	05-06	16.1 **	8.9	7
Non-Hispanic Blacks	Female	40-59	07-08	4.30	0.6	8
Non-Hispanic Blacks	Female	40-59	09-10	4.18	1.1	7
Non-Hispanic Blacks	Female	60+	05-06	11.2	3.1	5
Non-Hispanic Blacks	Female	60+	07-08	11.3 **	4	7
Non-Hispanic Blacks	Female	60+	09-10	5.92	1.34	7
Mexican Americans	Male	12-19	05-06	9.27	0.91	11
Mexican Americans	Male	12-19	07-08	10.7	2.5	6
Mexican Americans	Male	12-19	09-10	8.21	1.28	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	8.47	1	9
Mexican Americans	Male	20-39	07-08	7.77	1.66	9
Mexican Americans	Male	20-39	09-10	5.66	0.66	8
Mexican Americans	Male	40-59	05-06	9.14	0.97	4
Mexican Americans	Male	40-59	07-08	6.94	1.71	6
Mexican Americans	Male	40-59	09-10	5.98	1.19	8
Mexican Americans	Male	60+	05-06	7.52	1.13	4
Mexican Americans	Male	60+	07-08	8.39	1.47	5
Mexican Americans	Male	60+	09-10	6.99	1.39	5
Mexican Americans	Female	12-19	05-06	10.7	1.3	16
Mexican Americans	Female	12-19	07-08	7.04	0.95	5
Mexican Americans	Female	12-19	09-10	7.91	1.43	7
Mexican Americans	Female	20-39	05-06	6.51	0.65	9
Mexican Americans	Female	20-39	07-08	6.44 **	1.97	8
Mexican Americans	Female	20-39	09-10	4.74	0.64	10
Mexican Americans	Female	40-59	05-06	6.30 **	2.32	6
Mexican Americans	Female	40-59	07-08	4.47	0.66	6
Mexican Americans	Female	40-59	09-10	6.48	1.14	9
Mexican Americans	Female	60+	05-06	13.0	3.7	3
Mexican Americans	Female	60+	07-08	9.24	1.82	5
Mexican Americans	Female	60+	09-10	6.99	1.41	6
All Hispanics	Male	12-19	09-10	7.16	1.08	11
All Hispanics	Male	20-39	09-10	5.92	0.57	13
All Hispanics	Male	40-59	09-10	6.42	1.02	13
All Hispanics	Male	60+	09-10	5.81	1.12	8
All Hispanics	Female	12-19	09-10	8.98	1.38	10
All Hispanics	Female	20-39	09-10	4.88	0.6	14
All Hispanics	Female	40-59	09-10	5.77	0.83	14
All Hispanics	Female	60+	09-10	5.98	0.96	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.57, 0.57, and 0.79, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 60348-60-9

Weighted arithmetic mean and unadjusted standard error of pooled 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 previous page for data from earlier NHANES Survey periods.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	5.45	1	6
Non-Hispanic Whites	Male	12-19	13-14	8.98 **	3.15	8
Non-Hispanic Whites	Male	12-19	15-16	3.70	0.91	7
Non-Hispanic Whites	Male	20-39	11-12	3.48	0.75	12
Non-Hispanic Whites	Male	20-39	13-14	2.94	0.4	14
Non-Hispanic Whites	Male	20-39	15-16	2.90	0.43	10
Non-Hispanic Whites	Male	40-59	11-12	6.03	1.68	12
Non-Hispanic Whites	Male	40-59	13-14	5.00	0.88	14
Non-Hispanic Whites	Male	40-59	15-16	2.97	0.49	10
Non-Hispanic Whites	Male	60+	11-12	6.06	1.17	12
Non-Hispanic Whites	Male	60+	13-14	6.32	1.15	17
Non-Hispanic Whites	Male	60+	15-16	3.32	0.49	14
Non-Hispanic Whites	Female	12-19	11-12	5.74 **	1.84	5
Non-Hispanic Whites	Female	12-19	13-14	3.82	0.64	6
Non-Hispanic Whites	Female	12-19	15-16	2.38	0.54	5
Non-Hispanic Whites	Female	20-39	11-12	5.21 **	1.9	13
Non-Hispanic Whites	Female	20-39	13-14	4.16	1.08	15
Non-Hispanic Whites	Female	20-39	15-16	2.33	0.35	11
Non-Hispanic Whites	Female	40-59	11-12	5.76 **	2.6	11
Non-Hispanic Whites	Female	40-59	13-14	3.08	0.49	16
Non-Hispanic Whites	Female	40-59	15-16	2.65	0.37	9
Non-Hispanic Whites	Female	60+	11-12	5.25	1.39	14
Non-Hispanic Whites	Female	60+	13-14	4.20	0.7	20
Non-Hispanic Whites	Female	60+	15-16	6.37 **	2.25	13
Non-Hispanic Blacks	Male	12-19	11-12	8.32 **	2.7	7
Non-Hispanic Blacks	Male	12-19	13-14	5.66	1.69	6
Non-Hispanic Blacks	Male	12-19	15-16	5.60	1.23	5
Non-Hispanic Blacks	Male	20-39	11-12	9.17	2.18	9
Non-Hispanic Blacks	Male	20-39	13-14	4.48	0.95	7
Non-Hispanic Blacks	Male	20-39	15-16	2.96	0.42	7
Non-Hispanic Blacks	Male	40-59	11-12	8.42 **	2.66	7
Non-Hispanic Blacks	Male	40-59	13-14	9.17 **	5.04	7
Non-Hispanic Blacks	Male	40-59	15-16	6.59 **	2.03	7
Non-Hispanic Blacks	Male	60+	11-12	12.0 **	3.8	9
Non-Hispanic Blacks	Male	60+	13-14	8.74 **	3.68	9
Non-Hispanic Blacks	Male	60+	15-16	3.70	0.37	7
Non-Hispanic Blacks	Female	12-19	11-12	7.33	1.63	6
Non-Hispanic Blacks	Female	12-19	13-14	5.49	1.05	6
Non-Hispanic Blacks	Female	12-19	15-16	3.29 **	1.1	4
Non-Hispanic Blacks	Female	20-39	11-12	4.72	0.58	8
Non-Hispanic Blacks	Female	20-39	13-14	3.63	0.61	8
Non-Hispanic Blacks	Female	20-39	15-16	3.30	0.85	9
Non-Hispanic Blacks	Female	40-59	11-12	8.70 **	3.23	8
Non-Hispanic Blacks	Female	40-59	13-14	4.66	0.84	8
Non-Hispanic Blacks	Female	40-59	15-16	6.59 **	2.13	12
Non-Hispanic Blacks	Female	60+	11-12	5.20 **	1.75	8
Non-Hispanic Blacks	Female	60+	13-14	4.95	0.88	8
Non-Hispanic Blacks	Female	60+	15-16	14.2 **	6.8	7
Mexican Americans	Male	12-19	11-12	13.6	2.5	5
Mexican Americans	Male	12-19	13-14	5.63	1.23	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	15-16	5.98 **	2.66	6
Mexican Americans	Male	20-39	11-12	4.92	1.38	4
Mexican Americans	Male	20-39	13-14	6.43 **	2.66	5
Mexican Americans	Male	20-39	15-16	2.10	0.3	7
Mexican Americans	Male	40-59	11-12	5.39 **	2.08	4
Mexican Americans	Male	40-59	13-14	2.86	0.29	5
Mexican Americans	Male	40-59	15-16	3.97 **	2.01	4
Mexican Americans	Male	60+	11-12	2.94	0.2	2
Mexican Americans	Male	60+	13-14	7.32	0.29	4
Mexican Americans	Male	60+	15-16	7.53 **	3.12	5
Mexican Americans	Female	12-19	11-12	5.96	0.81	4
Mexican Americans	Female	12-19	13-14	4.16	0.33	7
Mexican Americans	Female	12-19	15-16	2.68	0.43	5
Mexican Americans	Female	20-39	11-12	4.38 **	1.92	4
Mexican Americans	Female	20-39	13-14	3.89	0.56	5
Mexican Americans	Female	20-39	15-16	2.45	0.29	6
Mexican Americans	Female	40-59	11-12	13.4	3.6	3
Mexican Americans	Female	40-59	13-14	4.92	1.19	6
Mexican Americans	Female	40-59	15-16	2.54	0.57	8
Mexican Americans	Female	60+	11-12	4.98	1.35	3
Mexican Americans	Female	60+	13-14	3.67	0.84	5
Mexican Americans	Female	60+	15-16	2.80	0.37	7
All Hispanics	Male	12-19	11-12	11.9	2.4	7
All Hispanics	Male	12-19	13-14	5.41	0.88	10
All Hispanics	Male	12-19	15-16	5.75 **	1.93	9
All Hispanics	Male	20-39	11-12	4.09	0.88	8
All Hispanics	Male	20-39	13-14	5.28 **	1.81	8
All Hispanics	Male	20-39	15-16	2.90	0.83	11
All Hispanics	Male	40-59	11-12	4.51	1.19	7
All Hispanics	Male	40-59	13-14	2.99	0.23	9
All Hispanics	Male	40-59	15-16	2.82 **	0.99	9
All Hispanics	Male	60+	11-12	3.97	0.62	6
All Hispanics	Male	60+	13-14	7.54	0.72	7
All Hispanics	Male	60+	15-16	6.04 **	1.94	9
All Hispanics	Female	12-19	11-12	4.94	0.73	7
All Hispanics	Female	12-19	13-14	4.34	0.36	10
All Hispanics	Female	12-19	15-16	2.75	0.34	8
All Hispanics	Female	20-39	11-12	3.64	1.02	8
All Hispanics	Female	20-39	13-14	2.99	0.59	9
All Hispanics	Female	20-39	15-16	1.97	0.24	11
All Hispanics	Female	40-59	11-12	8.74	2.33	7
All Hispanics	Female	40-59	13-14	5.35	0.97	10
All Hispanics	Female	40-59	15-16	3.21 **	0.99	13
All Hispanics	Female	60+	11-12	2.74 **	0.86	7
All Hispanics	Female	60+	13-14	3.26	0.53	9
All Hispanics	Female	60+	15-16	2.48	0.27	13
Asians	Male	12-19	11-12	2.89	0.67	3
Asians	Male	12-19	13-14	6.99 **	4.64	3
Asians	Male	12-19	15-16	3.92 **	3.47	3
Asians	Male	20-39	11-12	3.26 **	1.39	6
Asians	Male	20-39	13-14	1.37	0.28	4
Asians	Male	20-39	15-16	1.91	0.57	5
Asians	Male	40-59	11-12	2.24	0.39	6
Asians	Male	40-59	13-14	3.24	0.25	4
Asians	Male	40-59	15-16	4.20 **	1.89	4
Asians	Male	60+	11-12	3.96	0.91	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	13-14	3.71 **	1.43	3
Asians	Male	60+	15-16	.833	0.075	3
Asians	Female	12-19	11-12	4.70	0.58	4
Asians	Female	12-19	13-14	7.21 **	3.87	3
Asians	Female	12-19	15-16	1.53	0.22	3
Asians	Female	20-39	11-12	2.12	0.61	6
Asians	Female	20-39	13-14	2.38	0.63	5
Asians	Female	20-39	15-16	1.24	0.26	4
Asians	Female	40-59	11-12	3.76	0.47	6
Asians	Female	40-59	13-14	2.73	0.39	7
Asians	Female	40-59	15-16	2.15	0.38	5
Asians	Female	60+	11-12	3.68	0.66	3
Asians	Female	60+	13-14	12.6 **	10.1	3
Asians	Female	60+	15-16	1.79	0.1	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.52, 0.44, and 0.42, 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/PBDEs_BiomonitoringSummary.html

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

Serum 2,2',4,4',6-Pentabromodiphenyl ether (BDE 100) (lipid adjusted) (2005 - 2010)†

CAS Number 189084-64-8

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	13.1 **	4.2	9
Non-Hispanic Whites	Male	12-19	07-08	5.68	0.92	6
Non-Hispanic Whites	Male	12-19	09-10	8.17 **	2.49	10
Non-Hispanic Whites	Male	20-39	05-06	8.98 **	2.81	12
Non-Hispanic Whites	Male	20-39	07-08	7.65	1.18	15
Non-Hispanic Whites	Male	20-39	09-10	5.37	0.8	17
Non-Hispanic Whites	Male	40-59	05-06	4.07	0.61	12
Non-Hispanic Whites	Male	40-59	07-08	9.00	2.08	16
Non-Hispanic Whites	Male	40-59	09-10	4.66	0.97	17
Non-Hispanic Whites	Male	60+	05-06	14.2	2.6	15
Non-Hispanic Whites	Male	60+	07-08	7.76	1.41	23
Non-Hispanic Whites	Male	60+	09-10	4.63	0.76	21
Non-Hispanic Whites	Female	12-19	05-06	10.8	1.9	10
Non-Hispanic Whites	Female	12-19	07-08	5.98	0.69	7
Non-Hispanic Whites	Female	12-19	09-10	4.31	0.34	8
Non-Hispanic Whites	Female	20-39	05-06	9.89	2.83	16
Non-Hispanic Whites	Female	20-39	07-08	6.11	1.05	13
Non-Hispanic Whites	Female	20-39	09-10	3.52	0.44	19
Non-Hispanic Whites	Female	40-59	05-06	4.06	0.66	13
Non-Hispanic Whites	Female	40-59	07-08	4.12	0.55	17
Non-Hispanic Whites	Female	40-59	09-10	4.46	1.15	17
Non-Hispanic Whites	Female	60+	05-06	12.8 **	5.3	17
Non-Hispanic Whites	Female	60+	07-08	8.12	1.66	21
Non-Hispanic Whites	Female	60+	09-10	7.17	1.35	22
Non-Hispanic Blacks	Male	12-19	05-06	10.8	1	13
Non-Hispanic Blacks	Male	12-19	07-08	6.45	0.92	6
Non-Hispanic Blacks	Male	12-19	09-10	4.69	1.19	6
Non-Hispanic Blacks	Male	20-39	05-06	9.11	2.32	6
Non-Hispanic Blacks	Male	20-39	07-08	7.18	1.05	6
Non-Hispanic Blacks	Male	20-39	09-10	3.93	0.6	7
Non-Hispanic Blacks	Male	40-59	05-06	7.19	1.91	5
Non-Hispanic Blacks	Male	40-59	07-08	7.41	0.94	6
Non-Hispanic Blacks	Male	40-59	09-10	12.5	3.4	7
Non-Hispanic Blacks	Male	60+	05-06	12.1	2.6	5
Non-Hispanic Blacks	Male	60+	07-08	6.56	0.9	8
Non-Hispanic Blacks	Male	60+	09-10	11.4	2.8	9
Non-Hispanic Blacks	Female	12-19	05-06	14.2	2.8	14
Non-Hispanic Blacks	Female	12-19	07-08	10.2 **	3.6	5
Non-Hispanic Blacks	Female	12-19	09-10	8.70	1.56	6
Non-Hispanic Blacks	Female	20-39	05-06	11.7 **	4.5	7
Non-Hispanic Blacks	Female	20-39	07-08	7.39	1.17	8
Non-Hispanic Blacks	Female	20-39	09-10	7.49	0.98	7
Non-Hispanic Blacks	Female	40-59	05-06	10.4 **	5	7
Non-Hispanic Blacks	Female	40-59	07-08	4.37	0.48	8
Non-Hispanic Blacks	Female	40-59	09-10	4.39	0.99	7
Non-Hispanic Blacks	Female	60+	05-06	8.03	2.35	5
Non-Hispanic Blacks	Female	60+	07-08	8.54	2.26	7
Non-Hispanic Blacks	Female	60+	09-10	5.70	1.01	7
Mexican Americans	Male	12-19	05-06	8.93	1.09	11
Mexican Americans	Male	12-19	07-08	11.0	2.6	6
Mexican Americans	Male	12-19	09-10	7.19	0.77	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	8.90	1.44	9
Mexican Americans	Male	20-39	07-08	7.71	1.43	9
Mexican Americans	Male	20-39	09-10	6.01	0.83	8
Mexican Americans	Male	40-59	05-06	7.89	1.25	4
Mexican Americans	Male	40-59	07-08	8.15	1.99	6
Mexican Americans	Male	40-59	09-10	5.55	0.8	8
Mexican Americans	Male	60+	05-06	6.74	0.97	4
Mexican Americans	Male	60+	07-08	9.53 **	3.21	5
Mexican Americans	Male	60+	09-10	7.70	1.84	5
Mexican Americans	Female	12-19	05-06	9.45	1.14	16
Mexican Americans	Female	12-19	07-08	6.40	1.09	5
Mexican Americans	Female	12-19	09-10	7.20	0.83	7
Mexican Americans	Female	20-39	05-06	5.36	0.72	9
Mexican Americans	Female	20-39	07-08	7.45	1.76	8
Mexican Americans	Female	20-39	09-10	5.39	0.9	10
Mexican Americans	Female	40-59	05-06	5.98	1.15	6
Mexican Americans	Female	40-59	07-08	4.87	0.76	6
Mexican Americans	Female	40-59	09-10	6.46	0.86	9
Mexican Americans	Female	60+	05-06	10.2	2.3	3
Mexican Americans	Female	60+	07-08	7.86	1.53	5
Mexican Americans	Female	60+	09-10	6.30	0.81	6
All Hispanics	Male	12-19	09-10	6.44	0.69	11
All Hispanics	Male	20-39	09-10	5.74	0.61	13
All Hispanics	Male	40-59	09-10	5.96	0.87	13
All Hispanics	Male	60+	09-10	6.25	1.34	8
All Hispanics	Female	12-19	09-10	7.58	0.79	10
All Hispanics	Female	20-39	09-10	4.85	0.67	14
All Hispanics	Female	40-59	09-10	5.88	0.72	14
All Hispanics	Female	60+	09-10	5.52	0.74	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.57, 0.57, and 0.62, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 189084-64-8

Weighted arithmetic mean and unadjusted standard error of pooled 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 previous page for data from earlier NHANES Survey periods.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	4.98	0.79	6
Non-Hispanic Whites	Male	12-19	13-14	7.10	1.65	8
Non-Hispanic Whites	Male	12-19	15-16	3.48 **	1.05	7
Non-Hispanic Whites	Male	20-39	11-12	4.32	0.89	12
Non-Hispanic Whites	Male	20-39	13-14	3.49	0.46	14
Non-Hispanic Whites	Male	20-39	15-16	2.71	0.32	10
Non-Hispanic Whites	Male	40-59	11-12	5.12	0.9	12
Non-Hispanic Whites	Male	40-59	13-14	4.41	0.58	14
Non-Hispanic Whites	Male	40-59	15-16	3.59	0.75	10
Non-Hispanic Whites	Male	60+	11-12	8.06	1.92	12
Non-Hispanic Whites	Male	60+	13-14	6.77	0.99	17
Non-Hispanic Whites	Male	60+	15-16	3.21	0.35	14
Non-Hispanic Whites	Female	12-19	11-12	4.93	0.86	5
Non-Hispanic Whites	Female	12-19	13-14	3.71	0.39	6
Non-Hispanic Whites	Female	12-19	15-16	2.34	0.47	5
Non-Hispanic Whites	Female	20-39	11-12	4.33	0.6	13
Non-Hispanic Whites	Female	20-39	13-14	5.00	0.95	15
Non-Hispanic Whites	Female	20-39	15-16	2.29	0.21	11
Non-Hispanic Whites	Female	40-59	11-12	4.63 **	1.47	11
Non-Hispanic Whites	Female	40-59	13-14	3.29	0.47	16
Non-Hispanic Whites	Female	40-59	15-16	3.53	0.65	9
Non-Hispanic Whites	Female	60+	11-12	5.62	1.5	14
Non-Hispanic Whites	Female	60+	13-14	4.28	0.58	20
Non-Hispanic Whites	Female	60+	15-16	5.54	1.51	13
Non-Hispanic Blacks	Male	12-19	11-12	6.47	1.31	7
Non-Hispanic Blacks	Male	12-19	13-14	5.68	0.83	6
Non-Hispanic Blacks	Male	12-19	15-16	4.97	0.81	5
Non-Hispanic Blacks	Male	20-39	11-12	7.40	2	9
Non-Hispanic Blacks	Male	20-39	13-14	5.49	1.34	7
Non-Hispanic Blacks	Male	20-39	15-16	3.02	0.35	7
Non-Hispanic Blacks	Male	40-59	11-12	6.05	1.15	7
Non-Hispanic Blacks	Male	40-59	13-14	5.91 **	2	7
Non-Hispanic Blacks	Male	40-59	15-16	6.14	1.04	7
Non-Hispanic Blacks	Male	60+	11-12	7.78	1.4	9
Non-Hispanic Blacks	Male	60+	13-14	6.09 **	2	9
Non-Hispanic Blacks	Male	60+	15-16	3.33	0.29	7
Non-Hispanic Blacks	Female	12-19	11-12	7.14	1.55	6
Non-Hispanic Blacks	Female	12-19	13-14	5.37	0.59	6
Non-Hispanic Blacks	Female	12-19	15-16	4.16 **	1.41	4
Non-Hispanic Blacks	Female	20-39	11-12	4.79	0.7	8
Non-Hispanic Blacks	Female	20-39	13-14	3.68	0.46	8
Non-Hispanic Blacks	Female	20-39	15-16	4.98	1.41	9
Non-Hispanic Blacks	Female	40-59	11-12	5.82	1.58	8
Non-Hispanic Blacks	Female	40-59	13-14	5.75	0.75	8
Non-Hispanic Blacks	Female	40-59	15-16	5.91	1.39	12
Non-Hispanic Blacks	Female	60+	11-12	3.85	0.73	8
Non-Hispanic Blacks	Female	60+	13-14	5.59	0.8	8
Non-Hispanic Blacks	Female	60+	15-16	6.86 **	2.2	7
Mexican Americans	Male	12-19	11-12	12.9	2.3	5
Mexican Americans	Male	12-19	13-14	6.12	1.05	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	15-16	5.00	0.92	6
Mexican Americans	Male	20-39	11-12	5.78	1.54	4
Mexican Americans	Male	20-39	13-14	5.89	1.53	5
Mexican Americans	Male	20-39	15-16	3.30	0.32	7
Mexican Americans	Male	40-59	11-12	8.67 **	3.47	4
Mexican Americans	Male	40-59	13-14	3.79	0.73	5
Mexican Americans	Male	40-59	15-16	4.10 **	1.38	4
Mexican Americans	Male	60+	11-12	3.68	0.24	2
Mexican Americans	Male	60+	13-14	5.41	0.6	4
Mexican Americans	Male	60+	15-16	11.3 **	6.6	5
Mexican Americans	Female	12-19	11-12	5.71	1.31	4
Mexican Americans	Female	12-19	13-14	4.82	0.48	7
Mexican Americans	Female	12-19	15-16	2.94	0.26	5
Mexican Americans	Female	20-39	11-12	4.00	1.04	4
Mexican Americans	Female	20-39	13-14	3.69	0.39	5
Mexican Americans	Female	20-39	15-16	2.78	0.2	6
Mexican Americans	Female	40-59	11-12	9.37	2.51	3
Mexican Americans	Female	40-59	13-14	4.36	0.65	6
Mexican Americans	Female	40-59	15-16	2.87	0.49	8
Mexican Americans	Female	60+	11-12	6.85 **	2.47	3
Mexican Americans	Female	60+	13-14	3.95	0.65	5
Mexican Americans	Female	60+	15-16	4.22	0.66	7
All Hispanics	Male	12-19	11-12	11.2	2.3	7
All Hispanics	Male	12-19	13-14	5.70	0.77	10
All Hispanics	Male	12-19	15-16	5.03	0.99	9
All Hispanics	Male	20-39	11-12	4.71	0.98	8
All Hispanics	Male	20-39	13-14	4.99	1.1	8
All Hispanics	Male	20-39	15-16	3.53	0.5	11
All Hispanics	Male	40-59	11-12	6.03 **	2.13	7
All Hispanics	Male	40-59	13-14	3.81	0.45	9
All Hispanics	Male	40-59	15-16	3.37	0.74	9
All Hispanics	Male	60+	11-12	4.52	0.93	6
All Hispanics	Male	60+	13-14	6.00	0.7	7
All Hispanics	Male	60+	15-16	8.47 **	4.01	9
All Hispanics	Female	12-19	11-12	4.55	0.94	7
All Hispanics	Female	12-19	13-14	4.82	0.36	10
All Hispanics	Female	12-19	15-16	3.26	0.41	8
All Hispanics	Female	20-39	11-12	3.64	0.59	8
All Hispanics	Female	20-39	13-14	3.03	0.4	9
All Hispanics	Female	20-39	15-16	2.38	0.19	11
All Hispanics	Female	40-59	11-12	6.97	1.55	7
All Hispanics	Female	40-59	13-14	4.95	0.76	10
All Hispanics	Female	40-59	15-16	3.53	0.88	13
All Hispanics	Female	60+	11-12	3.72 **	1.33	7
All Hispanics	Female	60+	13-14	3.37	0.44	9
All Hispanics	Female	60+	15-16	3.52	0.5	13
Asians	Male	12-19	11-12	2.78 **	0.93	3
Asians	Male	12-19	13-14	9.67 **	6.79	3
Asians	Male	12-19	15-16	3.16 **	2.18	3
Asians	Male	20-39	11-12	2.31	0.52	6
Asians	Male	20-39	13-14	1.54	0.22	4
Asians	Male	20-39	15-16	2.09	0.17	5
Asians	Male	40-59	11-12	2.63	0.26	6
Asians	Male	40-59	13-14	4.17	0.79	4
Asians	Male	40-59	15-16	3.28 **	1.08	4
Asians	Male	60+	11-12	3.74	0.73	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	13-14	3.44	0.74	3
Asians	Male	60+	15-16	1.09	0.18	3
Asians	Female	12-19	11-12	3.73	0.46	4
Asians	Female	12-19	13-14	4.77 **	1.8	3
Asians	Female	12-19	15-16	1.89	0.17	3
Asians	Female	20-39	11-12	2.11	0.37	6
Asians	Female	20-39	13-14	2.79	0.52	5
Asians	Female	20-39	15-16	1.26	0.24	4
Asians	Female	40-59	11-12	3.60	0.52	6
Asians	Female	40-59	13-14	3.18	0.45	7
Asians	Female	40-59	15-16	2.35	0.13	5
Asians	Female	60+	11-12	3.77	0.1	3
Asians	Female	60+	13-14	9.59 **	6.2	3
Asians	Female	60+	15-16	2.66	0.42	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 1.0, 0.25, and 0.35, 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/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) (2005 - 2010)†

CAS Number 68631-49-2

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	18.0	4.4	9
Non-Hispanic Whites	Male	12-19	07-08	13.8	2.3	6
Non-Hispanic Whites	Male	12-19	09-10	13.8	2	10
Non-Hispanic Whites	Male	20-39	05-06	15.4	3.7	12
Non-Hispanic Whites	Male	20-39	07-08	20.9	3.1	15
Non-Hispanic Whites	Male	20-39	09-10	13.0	1.4	17
Non-Hispanic Whites	Male	40-59	05-06	7.53	1.04	12
Non-Hispanic Whites	Male	40-59	07-08	16.0	3.1	16
Non-Hispanic Whites	Male	40-59	09-10	16.5	3	17
Non-Hispanic Whites	Male	60+	05-06	19.7	4.7	15
Non-Hispanic Whites	Male	60+	07-08	14.7	3.8	23
Non-Hispanic Whites	Male	60+	09-10	10.8	1.9	21
Non-Hispanic Whites	Female	12-19	05-06	12.8	2.2	10
Non-Hispanic Whites	Female	12-19	07-08	8.84	0.94	7
Non-Hispanic Whites	Female	12-19	09-10	8.53	0.94	8
Non-Hispanic Whites	Female	20-39	05-06	11.1	1.9	16
Non-Hispanic Whites	Female	20-39	07-08	11.8	1.7	13
Non-Hispanic Whites	Female	20-39	09-10	13.2	3	19
Non-Hispanic Whites	Female	40-59	05-06	10.4	2.3	13
Non-Hispanic Whites	Female	40-59	07-08	9.89	1.77	17
Non-Hispanic Whites	Female	40-59	09-10	12.5	3.1	17
Non-Hispanic Whites	Female	60+	05-06	9.64 **	2.9	17
Non-Hispanic Whites	Female	60+	07-08	13.2	2.5	21
Non-Hispanic Whites	Female	60+	09-10	11.7	2.3	22
Non-Hispanic Blacks	Male	12-19	05-06	16.5	1.5	13
Non-Hispanic Blacks	Male	12-19	07-08	20.7	3.9	6
Non-Hispanic Blacks	Male	12-19	09-10	13.3	2.6	6
Non-Hispanic Blacks	Male	20-39	05-06	10.3	1.6	6
Non-Hispanic Blacks	Male	20-39	07-08	13.4	2.8	6
Non-Hispanic Blacks	Male	20-39	09-10	21.7 **	8.3	7
Non-Hispanic Blacks	Male	40-59	05-06	13.4	3.6	5
Non-Hispanic Blacks	Male	40-59	07-08	10.2	1.1	6
Non-Hispanic Blacks	Male	40-59	09-10	13.5	2.6	7
Non-Hispanic Blacks	Male	60+	05-06	14.7	1.6	5
Non-Hispanic Blacks	Male	60+	07-08	10.6	1.8	8
Non-Hispanic Blacks	Male	60+	09-10	14.8 **	5.1	9
Non-Hispanic Blacks	Female	12-19	05-06	12.1	1.5	14
Non-Hispanic Blacks	Female	12-19	07-08	11.1	2	5
Non-Hispanic Blacks	Female	12-19	09-10	12.8	2.7	6
Non-Hispanic Blacks	Female	20-39	05-06	9.55	1.69	7
Non-Hispanic Blacks	Female	20-39	07-08	11.0	1.7	8
Non-Hispanic Blacks	Female	20-39	09-10	10.1	2.8	7
Non-Hispanic Blacks	Female	40-59	05-06	7.41	2.22	7
Non-Hispanic Blacks	Female	40-59	07-08	6.28	1.03	8
Non-Hispanic Blacks	Female	40-59	09-10	4.46	0.65	7
Non-Hispanic Blacks	Female	60+	05-06	6.89 **	2.52	5
Non-Hispanic Blacks	Female	60+	07-08	7.91	2.1	7
Non-Hispanic Blacks	Female	60+	09-10	7.22	1.1	7
Mexican Americans	Male	12-19	05-06	11.0	1	11
Mexican Americans	Male	12-19	07-08	17.2	5	6
Mexican Americans	Male	12-19	09-10	11.0	1.1	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	11.9	2.6	9
Mexican Americans	Male	20-39	07-08	10.7	2.1	9
Mexican Americans	Male	20-39	09-10	10.2	2.5	8
Mexican Americans	Male	40-59	05-06	11.3 **	3.7	4
Mexican Americans	Male	40-59	07-08	11.9	2.4	6
Mexican Americans	Male	40-59	09-10	15.9	4.5	8
Mexican Americans	Male	60+	05-06	8.00	1.44	4
Mexican Americans	Male	60+	07-08	17.6	4.5	5
Mexican Americans	Male	60+	09-10	10.3	2.3	5
Mexican Americans	Female	12-19	05-06	10.5	1.4	16
Mexican Americans	Female	12-19	07-08	7.14	0.72	5
Mexican Americans	Female	12-19	09-10	8.58	1.78	7
Mexican Americans	Female	20-39	05-06	6.73	1.42	9
Mexican Americans	Female	20-39	07-08	11.1	2.3	8
Mexican Americans	Female	20-39	09-10	7.75	1.4	10
Mexican Americans	Female	40-59	05-06	9.24	2.16	6
Mexican Americans	Female	40-59	07-08	6.55	1.61	6
Mexican Americans	Female	40-59	09-10	10.3	1.5	9
Mexican Americans	Female	60+	05-06	11.0	1.8	3
Mexican Americans	Female	60+	07-08	10.2 **	3.7	5
Mexican Americans	Female	60+	09-10	9.72	1.92	6
All Hispanics	Male	12-19	09-10	10.9	1	11
All Hispanics	Male	20-39	09-10	9.04	1.6	13
All Hispanics	Male	40-59	09-10	14.9	2.9	13
All Hispanics	Male	60+	09-10	9.73	1.5	8
All Hispanics	Female	12-19	09-10	8.80	1.34	10
All Hispanics	Female	20-39	09-10	7.37	1.02	14
All Hispanics	Female	40-59	09-10	8.98	1.14	14
All Hispanics	Female	60+	09-10	7.97	1.23	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.57, 0.57, and 0.85, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 68631-49-2

Weighted arithmetic mean and unadjusted standard error of pooled 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 previous page for data from earlier NHANES Survey periods.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	11.7	1.4	6
Non-Hispanic Whites	Male	12-19	13-14	12.8	1.8	8
Non-Hispanic Whites	Male	12-19	15-16	10.2	1.7	7
Non-Hispanic Whites	Male	20-39	11-12	15.3	1.8	12
Non-Hispanic Whites	Male	20-39	13-14	12.9	1.4	14
Non-Hispanic Whites	Male	20-39	15-16	10.7	1.2	10
Non-Hispanic Whites	Male	40-59	11-12	20.1	2.7	12
Non-Hispanic Whites	Male	40-59	13-14	20.6	2.9	14
Non-Hispanic Whites	Male	40-59	15-16	18.2	3.5	10
Non-Hispanic Whites	Male	60+	11-12	13.9	3.3	12
Non-Hispanic Whites	Male	60+	13-14	26.3	7.3	17
Non-Hispanic Whites	Male	60+	15-16	13.4	3.8	14
Non-Hispanic Whites	Female	12-19	11-12	8.63	1.51	5
Non-Hispanic Whites	Female	12-19	13-14	9.69	1.28	6
Non-Hispanic Whites	Female	12-19	15-16	6.64	1.17	5
Non-Hispanic Whites	Female	20-39	11-12	11.2	2	13
Non-Hispanic Whites	Female	20-39	13-14	10.7	1	15
Non-Hispanic Whites	Female	20-39	15-16	11.6	1.6	11
Non-Hispanic Whites	Female	40-59	11-12	9.07	1.99	11
Non-Hispanic Whites	Female	40-59	13-14	12.3	1.7	16
Non-Hispanic Whites	Female	40-59	15-16	13.8	2.5	9
Non-Hispanic Whites	Female	60+	11-12	18.5 **	9.2	14
Non-Hispanic Whites	Female	60+	13-14	11.6	1.1	20
Non-Hispanic Whites	Female	60+	15-16	13.1	2.7	13
Non-Hispanic Blacks	Male	12-19	11-12	13.1	1.7	7
Non-Hispanic Blacks	Male	12-19	13-14	16.5	2	6
Non-Hispanic Blacks	Male	12-19	15-16	14.1	2.7	5
Non-Hispanic Blacks	Male	20-39	11-12	16.2	4.3	9
Non-Hispanic Blacks	Male	20-39	13-14	12.4	1.6	7
Non-Hispanic Blacks	Male	20-39	15-16	11.6	1.3	7
Non-Hispanic Blacks	Male	40-59	11-12	14.4	3.3	7
Non-Hispanic Blacks	Male	40-59	13-14	12.7	2.2	7
Non-Hispanic Blacks	Male	40-59	15-16	18.7	2.9	7
Non-Hispanic Blacks	Male	60+	11-12	14.8	2.6	9
Non-Hispanic Blacks	Male	60+	13-14	9.51	1.29	9
Non-Hispanic Blacks	Male	60+	15-16	11.2	2.3	7
Non-Hispanic Blacks	Female	12-19	11-12	17.9 **	6.4	6
Non-Hispanic Blacks	Female	12-19	13-14	11.2	1.6	6
Non-Hispanic Blacks	Female	12-19	15-16	8.72	1.2	4
Non-Hispanic Blacks	Female	20-39	11-12	10.2	2	8
Non-Hispanic Blacks	Female	20-39	13-14	7.89	1.11	8
Non-Hispanic Blacks	Female	20-39	15-16	10.5	1.6	9
Non-Hispanic Blacks	Female	40-59	11-12	8.00	2.06	8
Non-Hispanic Blacks	Female	40-59	13-14	10.0	1.6	8
Non-Hispanic Blacks	Female	40-59	15-16	11.1	1.6	12
Non-Hispanic Blacks	Female	60+	11-12	4.32	0.66	8
Non-Hispanic Blacks	Female	60+	13-14	7.70	1.28	8
Non-Hispanic Blacks	Female	60+	15-16	10.2	2.4	7
Mexican Americans	Male	12-19	11-12	20.6	5.5	5
Mexican Americans	Male	12-19	13-14	10.8	0.9	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	15-16	9.95	1.21	6
Mexican Americans	Male	20-39	11-12	9.79	2.01	4
Mexican Americans	Male	20-39	13-14	7.89	0.94	5
Mexican Americans	Male	20-39	15-16	12.0	1.8	7
Mexican Americans	Male	40-59	11-12	16.0 **	8.4	4
Mexican Americans	Male	40-59	13-14	9.66	2.11	5
Mexican Americans	Male	40-59	15-16	9.39	2.04	4
Mexican Americans	Male	60+	11-12	7.67	0.05	2
Mexican Americans	Male	60+	13-14	14.9 **	4.9	4
Mexican Americans	Male	60+	15-16	21.5 **	7.4	5
Mexican Americans	Female	12-19	11-12	8.28	2.19	4
Mexican Americans	Female	12-19	13-14	8.38	1.4	7
Mexican Americans	Female	12-19	15-16	5.55	0.2	5
Mexican Americans	Female	20-39	11-12	7.17	1.12	4
Mexican Americans	Female	20-39	13-14	5.17	0.5	5
Mexican Americans	Female	20-39	15-16	5.35	0.4	6
Mexican Americans	Female	40-59	11-12	8.74	2.57	3
Mexican Americans	Female	40-59	13-14	6.97	1.19	6
Mexican Americans	Female	40-59	15-16	5.47	0.84	8
Mexican Americans	Female	60+	11-12	9.72	2.62	3
Mexican Americans	Female	60+	13-14	11.6 **	3.6	5
Mexican Americans	Female	60+	15-16	8.40	1.31	7
All Hispanics	Male	12-19	11-12	18.4	4.5	7
All Hispanics	Male	12-19	13-14	10.7	1.1	10
All Hispanics	Male	12-19	15-16	9.71	1.57	9
All Hispanics	Male	20-39	11-12	8.44	1.2	8
All Hispanics	Male	20-39	13-14	7.34	0.77	8
All Hispanics	Male	20-39	15-16	11.7	1.4	11
All Hispanics	Male	40-59	11-12	12.1 **	4.7	7
All Hispanics	Male	40-59	13-14	10.9	1.6	9
All Hispanics	Male	40-59	15-16	10.7	1.5	9
All Hispanics	Male	60+	11-12	8.76	1.64	6
All Hispanics	Male	60+	13-14	14.0	2.7	7
All Hispanics	Male	60+	15-16	17.8	4.6	9
All Hispanics	Female	12-19	11-12	7.06	1.4	7
All Hispanics	Female	12-19	13-14	8.17	1	10
All Hispanics	Female	12-19	15-16	5.57	0.49	8
All Hispanics	Female	20-39	11-12	5.74	0.8	8
All Hispanics	Female	20-39	13-14	5.95	0.92	9
All Hispanics	Female	20-39	15-16	5.06	0.37	11
All Hispanics	Female	40-59	11-12	6.87	1.35	7
All Hispanics	Female	40-59	13-14	7.63	1.07	10
All Hispanics	Female	40-59	15-16	6.39	0.94	13
All Hispanics	Female	60+	11-12	6.72	1.54	7
All Hispanics	Female	60+	13-14	8.55	2.29	9
All Hispanics	Female	60+	15-16	8.14	0.99	13
Asians	Male	12-19	11-12	7.24	1.96	3
Asians	Male	12-19	13-14	11.7 **	4	3
Asians	Male	12-19	15-16	7.58 **	3.42	3
Asians	Male	20-39	11-12	4.63	1.21	6
Asians	Male	20-39	13-14	4.02	0.57	4
Asians	Male	20-39	15-16	4.87	0.73	5
Asians	Male	40-59	11-12	7.13	0.76	6
Asians	Male	40-59	13-14	8.18	1.37	4
Asians	Male	40-59	15-16	9.24	2.44	4
Asians	Male	60+	11-12	9.60 **	3.38	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	13-14	9.33	2.08	3
Asians	Male	60+	15-16	4.60	0.85	3
Asians	Female	12-19	11-12	5.17	0.41	4
Asians	Female	12-19	13-14	6.77 **	2.57	3
Asians	Female	12-19	15-16	4.85	0.32	3
Asians	Female	20-39	11-12	3.38	0.61	6
Asians	Female	20-39	13-14	6.23 **	1.9	5
Asians	Female	20-39	15-16	2.37	0.27	4
Asians	Female	40-59	11-12	7.97 **	2.61	6
Asians	Female	40-59	13-14	5.19	0.44	7
Asians	Female	40-59	15-16	6.42	1.39	5
Asians	Female	60+	11-12	5.92	1.22	3
Asians	Female	60+	13-14	20.0 **	6.9	3
Asians	Female	60+	15-16	4.53	0.92	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.35, 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/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) (2005 - 2010)†

CAS Number 207122-15-4

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	1.30 **	0.45	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	.802	0.237	12
Non-Hispanic Whites	Male	20-39	07-08	.686	0.089	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	15
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	.974	0.279	16
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	1.36	0.28	15
Non-Hispanic Whites	Male	60+	07-08	.833	0.152	23
Non-Hispanic Whites	Male	60+	09-10	*	*	21
Non-Hispanic Whites	Female	12-19	05-06	1.23	0.3	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	1.30 **	0.53	17
Non-Hispanic Whites	Female	60+	07-08	.753	0.141	21
Non-Hispanic Whites	Female	60+	09-10	*	*	22
Non-Hispanic Blacks	Male	12-19	05-06	1.20	0.16	13
Non-Hispanic Blacks	Male	12-19	07-08	.712	0.108	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	1.24 **	0.42	6
Non-Hispanic Blacks	Male	20-39	07-08	.637	0.083	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	.623	0.16	5
Non-Hispanic Blacks	Male	40-59	07-08	.733	0.099	6
Non-Hispanic Blacks	Male	40-59	09-10	1.43 **	0.69	7
Non-Hispanic Blacks	Male	60+	05-06	1.40	0.38	5
Non-Hispanic Blacks	Male	60+	07-08	.693	0.103	8
Non-Hispanic Blacks	Male	60+	09-10	1.38 **	0.5	9
Non-Hispanic Blacks	Female	12-19	05-06	1.73	0.39	14
Non-Hispanic Blacks	Female	12-19	07-08	1.25 **	0.46	5
Non-Hispanic Blacks	Female	12-19	09-10	.972	0.24	6
Non-Hispanic Blacks	Female	20-39	05-06	1.32 **	0.55	7
Non-Hispanic Blacks	Female	20-39	07-08	.704	0.088	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	1.26 **	0.66	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	09-10	*	*	7
Non-Hispanic Blacks	Female	60+	05-06	1.11 **	0.46	5
Non-Hispanic Blacks	Female	60+	07-08	.940 **	0.329	7
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	.902	0.091	11
Mexican Americans	Male	12-19	07-08	.973	0.224	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	.827	0.103	9
Mexican Americans	Male	20-39	07-08	.789	0.148	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	.870	0.104	4
Mexican Americans	Male	40-59	07-08	.732	0.19	6
Mexican Americans	Male	40-59	09-10	*	*	8
Mexican Americans	Male	60+	05-06	.657	0.135	4
Mexican Americans	Male	60+	07-08	.797	0.177	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	.965	0.106	16
Mexican Americans	Female	12-19	07-08	.649	0.13	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	.609	0.061	9
Mexican Americans	Female	20-39	07-08	.671	0.177	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	.710 **	0.295	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	1.09	0.25	3
Mexican Americans	Female	60+	07-08	.898	0.201	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	13
All Hispanics	Male	60+	09-10	*	*	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.57, 0.57, and 0.82, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 207122-15-4

Weighted arithmetic mean and unadjusted standard error of pooled 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 previous page for data from earlier NHANES Survey periods.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.438	0.078	6
Non-Hispanic Whites	Male	12-19	13-14	.760	0.228	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	.332	0.091	12
Non-Hispanic Whites	Male	20-39	13-14	.295	0.036	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.526	0.12	12
Non-Hispanic Whites	Male	40-59	13-14	.415	0.068	14
Non-Hispanic Whites	Male	40-59	15-16	*	*	10
Non-Hispanic Whites	Male	60+	11-12	.762 **	0.245	12
Non-Hispanic Whites	Male	60+	13-14	.537	0.084	17
Non-Hispanic Whites	Male	60+	15-16	*	*	14
Non-Hispanic Whites	Female	12-19	11-12	.639	0.136	5
Non-Hispanic Whites	Female	12-19	13-14	.343	0.023	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.400	0.113	13
Non-Hispanic Whites	Female	20-39	13-14	.453	0.105	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	.446 **	0.142	11
Non-Hispanic Whites	Female	40-59	13-14	.265	0.04	16
Non-Hispanic Whites	Female	40-59	15-16	*	*	9
Non-Hispanic Whites	Female	60+	11-12	.533 **	0.186	14
Non-Hispanic Whites	Female	60+	13-14	*	*	20
Non-Hispanic Whites	Female	60+	15-16	*	*	13
Non-Hispanic Blacks	Male	12-19	11-12	.611	0.171	7
Non-Hispanic Blacks	Male	12-19	13-14	.515	0.13	6
Non-Hispanic Blacks	Male	12-19	15-16	.446	0.058	5
Non-Hispanic Blacks	Male	20-39	11-12	.781	0.182	9
Non-Hispanic Blacks	Male	20-39	13-14	.500	0.115	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.689	0.16	7
Non-Hispanic Blacks	Male	40-59	13-14	.739 **	0.335	7
Non-Hispanic Blacks	Male	40-59	15-16	.552	0.142	7
Non-Hispanic Blacks	Male	60+	11-12	.886	0.219	9
Non-Hispanic Blacks	Male	60+	13-14	.682 **	0.236	9
Non-Hispanic Blacks	Male	60+	15-16	*	*	7
Non-Hispanic Blacks	Female	12-19	11-12	.653	0.132	6
Non-Hispanic Blacks	Female	12-19	13-14	.466	0.053	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.471	0.073	8
Non-Hispanic Blacks	Female	20-39	13-14	.345	0.04	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.625 **	0.191	8
Non-Hispanic Blacks	Female	40-59	13-14	.474	0.078	8
Non-Hispanic Blacks	Female	40-59	15-16	.567	0.16	12
Non-Hispanic Blacks	Female	60+	11-12	.391	0.102	8
Non-Hispanic Blacks	Female	60+	13-14	.507	0.077	8
Non-Hispanic Blacks	Female	60+	15-16	.933 **	0.388	7
Mexican Americans	Male	12-19	11-12	1.24	0.24	5
Mexican Americans	Male	12-19	13-14	.516	0.088	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	15-16	.434	0.127	6
Mexican Americans	Male	20-39	11-12	.450	0.105	4
Mexican Americans	Male	20-39	13-14	.588	0.15	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.675 **	0.225	4
Mexican Americans	Male	40-59	13-14	.322	0.037	5
Mexican Americans	Male	40-59	15-16	.396 **	0.148	4
Mexican Americans	Male	60+	11-12	.305	0.013	2
Mexican Americans	Male	60+	13-14	.628	0.074	4
Mexican Americans	Male	60+	15-16	.870 **	0.468	5
Mexican Americans	Female	12-19	11-12	.503	0.104	4
Mexican Americans	Female	12-19	13-14	.427	0.039	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.394 **	0.142	4
Mexican Americans	Female	20-39	13-14	.367	0.034	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	1.06	0.26	3
Mexican Americans	Female	40-59	13-14	.392	0.069	6
Mexican Americans	Female	40-59	15-16	*	*	8
Mexican Americans	Female	60+	11-12	.549 **	0.216	3
Mexican Americans	Female	60+	13-14	.424	0.115	5
Mexican Americans	Female	60+	15-16	*	*	7
All Hispanics	Male	12-19	11-12	1.08	0.23	7
All Hispanics	Male	12-19	13-14	.492	0.063	10
All Hispanics	Male	12-19	15-16	.438	0.112	9
All Hispanics	Male	20-39	11-12	.390	0.078	8
All Hispanics	Male	20-39	13-14	.487	0.112	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	.496	0.141	7
All Hispanics	Male	40-59	13-14	.333	0.023	9
All Hispanics	Male	40-59	15-16	*	*	9
All Hispanics	Male	60+	11-12	.377	0.052	6
All Hispanics	Male	60+	13-14	.630	0.077	7
All Hispanics	Male	60+	15-16	.656 **	0.287	9
All Hispanics	Female	12-19	11-12	.399	0.08	7
All Hispanics	Female	12-19	13-14	.425	0.032	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	.318	0.078	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	.688	0.179	7
All Hispanics	Female	40-59	13-14	.432	0.063	10
All Hispanics	Female	40-59	15-16	*	*	13
All Hispanics	Female	60+	11-12	*	*	7
All Hispanics	Female	60+	13-14	.344	0.072	9
All Hispanics	Female	60+	15-16	*	*	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	.251	0.071	6
Asians	Male	20-39	13-14	*	*	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	*	*	6
Asians	Male	40-59	13-14	.386	0.043	4
Asians	Male	40-59	15-16	*	*	4
Asians	Male	60+	11-12	.368	0.093	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	13-14	.329	0.089	3
Asians	Male	60+	15-16	*	*	3
Asians	Female	12-19	11-12	.399	0.048	4
Asians	Female	12-19	13-14	*	*	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	*	*	6
Asians	Female	20-39	13-14	*	*	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	.305	0.034	6
Asians	Female	40-59	13-14	.311	0.032	7
Asians	Female	40-59	15-16	*	*	5
Asians	Female	60+	11-12	.301	0.008	3
Asians	Female	60+	13-14	1.12 **	0.84	3
Asians	Female	60+	15-16	*	*	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.34, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 207122-16-5

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	.694 **	0.238	16
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Male	60+	09-10	*	*	21
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	21
Non-Hispanic Whites	Female	60+	09-10	*	*	22
Non-Hispanic Blacks	Male	12-19	05-06	.611	0.077	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	.693	0.188	5
Non-Hispanic Blacks	Male	40-59	07-08	.733	0.087	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	09-10	*	*	7
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	7
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	*	*	8
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	13
All Hispanics	Male	60+	09-10	*	*	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.57, 0.57, and 0.69, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 207122-16-5

Weighted arithmetic mean and unadjusted standard error of pooled 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 previous page for data from earlier NHANES Survey periods.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	.335 **	0.169	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.380	0.076	12
Non-Hispanic Whites	Male	40-59	13-14	*	*	14
Non-Hispanic Whites	Male	40-59	15-16	*	*	10
Non-Hispanic Whites	Male	60+	11-12	.304	0.026	12
Non-Hispanic Whites	Male	60+	13-14	*	*	17
Non-Hispanic Whites	Male	60+	15-16	*	*	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	*	*	11
Non-Hispanic Whites	Female	40-59	13-14	*	*	16
Non-Hispanic Whites	Female	40-59	15-16	*	*	9
Non-Hispanic Whites	Female	60+	11-12	*	*	14
Non-Hispanic Whites	Female	60+	13-14	*	*	20
Non-Hispanic Whites	Female	60+	15-16	*	*	13
Non-Hispanic Blacks	Male	12-19	11-12	.326	0.041	7
Non-Hispanic Blacks	Male	12-19	13-14	.321	0.063	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	.344	0.059	9
Non-Hispanic Blacks	Male	20-39	13-14	.278	0.049	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.487	0.077	7
Non-Hispanic Blacks	Male	40-59	13-14	.377	0.088	7
Non-Hispanic Blacks	Male	40-59	15-16	*	*	7
Non-Hispanic Blacks	Male	60+	11-12	.460	0.129	9
Non-Hispanic Blacks	Male	60+	13-14	.404	0.109	9
Non-Hispanic Blacks	Male	60+	15-16	*	*	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	*	*	8
Non-Hispanic Blacks	Female	40-59	13-14	*	*	8
Non-Hispanic Blacks	Female	40-59	15-16	*	*	12
Non-Hispanic Blacks	Female	60+	11-12	*	*	8
Non-Hispanic Blacks	Female	60+	13-14	.325	0.069	8
Non-Hispanic Blacks	Female	60+	15-16	*	*	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	15-16	*	*	6
Mexican Americans	Male	20-39	11-12	.308	0.071	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.384	0.067	4
Mexican Americans	Male	40-59	13-14	.351	0.063	5
Mexican Americans	Male	40-59	15-16	*	*	4
Mexican Americans	Male	60+	11-12	.897 **	0.409	2
Mexican Americans	Male	60+	13-14	.510 **	0.156	4
Mexican Americans	Male	60+	15-16	*	*	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	*	*	3
Mexican Americans	Female	40-59	13-14	*	*	6
Mexican Americans	Female	40-59	15-16	*	*	8
Mexican Americans	Female	60+	11-12	*	*	3
Mexican Americans	Female	60+	13-14	.258	0.042	5
Mexican Americans	Female	60+	15-16	*	*	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	.317	0.047	7
All Hispanics	Male	40-59	13-14	.343	0.05	9
All Hispanics	Male	40-59	15-16	*	*	9
All Hispanics	Male	60+	11-12	.607	0.174	6
All Hispanics	Male	60+	13-14	.434	0.092	7
All Hispanics	Male	60+	15-16	*	*	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	*	*	7
All Hispanics	Female	40-59	13-14	*	*	10
All Hispanics	Female	40-59	15-16	*	*	13
All Hispanics	Female	60+	11-12	*	*	7
All Hispanics	Female	60+	13-14	*	*	9
All Hispanics	Female	60+	15-16	*	*	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	.305	0.033	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	*	*	6
Asians	Male	20-39	13-14	.256	0.026	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	.437 **	0.177	6
Asians	Male	40-59	13-14	*	*	4
Asians	Male	40-59	15-16	*	*	4
Asians	Male	60+	11-12	*	*	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	13-14	*	*	3
Asians	Male	60+	15-16	*	*	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	*	*	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	*	*	6
Asians	Female	20-39	13-14	*	*	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	*	*	6
Asians	Female	40-59	13-14	*	*	7
Asians	Female	40-59	15-16	*	*	5
Asians	Female	60+	11-12	*	*	3
Asians	Female	60+	13-14	*	*	3
Asians	Female	60+	15-16	*	*	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.3, 0.25, and 0.41, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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

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

Serum 2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE 209) (lipid adjusted) (2005 - 2010)†

CAS Number 1163-19-5

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	6.31 **	1.92	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	16
Non-Hispanic Whites	Male	40-59	09-10	6.36 **	3.89	17
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Male	60+	09-10	3.58	0.8	21
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	18
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	21
Non-Hispanic Whites	Female	60+	09-10	8.64 **	5.4	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	8.38 **	3.46	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	09-10	3.47	0.42	7
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Male	60+	09-10	3.59	0.73	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	09-10	*	*	7
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	7
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	3.62	0.5	8
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	20-39	09-10	3.25	0.44	10
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5
Mexican Americans	Female	60+	09-10	3.80	0.45	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	4.02	0.45	13
All Hispanics	Male	60+	09-10	*	*	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	3.29	0.43	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	3.75	0.47	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 5.8, 5.8, and 3.1, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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

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

Serum 2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE 209) (lipid adjusted) (2011 - 2016)†

CAS Number 1163-19-5

Weighted arithmetic mean and unadjusted standard error of pooled 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 previous page for data from earlier NHANES Survey periods.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	6
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	*	*	12
Non-Hispanic Whites	Male	40-59	13-14	*	*	13
Non-Hispanic Whites	Male	40-59	15-16	*	*	10
Non-Hispanic Whites	Male	60+	11-12	*	*	12
Non-Hispanic Whites	Male	60+	13-14	*	*	16
Non-Hispanic Whites	Male	60+	15-16	*	*	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	*	*	11
Non-Hispanic Whites	Female	40-59	13-14	*	*	16
Non-Hispanic Whites	Female	40-59	15-16	*	*	9
Non-Hispanic Whites	Female	60+	11-12	*	*	14
Non-Hispanic Whites	Female	60+	13-14	*	*	20
Non-Hispanic Whites	Female	60+	15-16	*	*	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	20-39	13-14	*	*	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	*	*	7
Non-Hispanic Blacks	Male	40-59	13-14	*	*	7
Non-Hispanic Blacks	Male	40-59	15-16	*	*	7
Non-Hispanic Blacks	Male	60+	11-12	*	*	9
Non-Hispanic Blacks	Male	60+	13-14	*	*	9
Non-Hispanic Blacks	Male	60+	15-16	*	*	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	5
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	*	*	7
Non-Hispanic Blacks	Female	40-59	13-14	*	*	8
Non-Hispanic Blacks	Female	40-59	15-16	*	*	12
Non-Hispanic Blacks	Female	60+	11-12	*	*	8
Non-Hispanic Blacks	Female	60+	13-14	*	*	8
Non-Hispanic Blacks	Female	60+	15-16	*	*	6
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	15-16	*	*	6
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	*	*	4
Mexican Americans	Male	40-59	13-14	*	*	5
Mexican Americans	Male	40-59	15-16	*	*	4
Mexican Americans	Male	60+	11-12	*	*	2
Mexican Americans	Male	60+	13-14	*	*	4
Mexican Americans	Male	60+	15-16	*	*	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	*	*	3
Mexican Americans	Female	40-59	13-14	*	*	6
Mexican Americans	Female	40-59	15-16	*	*	8
Mexican Americans	Female	60+	11-12	*	*	3
Mexican Americans	Female	60+	13-14	*	*	5
Mexican Americans	Female	60+	15-16	*	*	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	*	*	7
All Hispanics	Male	40-59	13-14	*	*	9
All Hispanics	Male	40-59	15-16	*	*	9
All Hispanics	Male	60+	11-12	*	*	6
All Hispanics	Male	60+	13-14	*	*	7
All Hispanics	Male	60+	15-16	*	*	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	*	*	7
All Hispanics	Female	40-59	13-14	*	*	10
All Hispanics	Female	40-59	15-16	*	*	13
All Hispanics	Female	60+	11-12	*	*	7
All Hispanics	Female	60+	13-14	*	*	9
All Hispanics	Female	60+	15-16	*	*	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	*	*	6
Asians	Male	20-39	13-14	*	*	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	*	*	6
Asians	Male	40-59	13-14	*	*	4
Asians	Male	40-59	15-16	*	*	4
Asians	Male	60+	11-12	*	*	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	13-14	*	*	3
Asians	Male	60+	15-16	*	*	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	*	*	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	*	*	6
Asians	Female	20-39	13-14	*	*	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	*	*	6
Asians	Female	40-59	13-14	*	*	7
Asians	Female	40-59	15-16	*	*	5
Asians	Female	60+	11-12	*	*	3
Asians	Female	60+	13-14	*	*	3
Asians	Female	60+	15-16	*	*	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 1.6, 1.3, and 1.3, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 59080-40-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	1.90 **	1.09	9
Non-Hispanic Whites	Male	12-19	07-08	.824	0.161	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	6.86 **	3.02	12
Non-Hispanic Whites	Male	20-39	07-08	3.58 **	1.27	15
Non-Hispanic Whites	Male	20-39	09-10	2.75	0.57	17
Non-Hispanic Whites	Male	40-59	05-06	16.8 **	11.2	12
Non-Hispanic Whites	Male	40-59	07-08	8.92	1.44	16
Non-Hispanic Whites	Male	40-59	09-10	9.87 **	3.19	17
Non-Hispanic Whites	Male	60+	05-06	8.95	2.02	15
Non-Hispanic Whites	Male	60+	07-08	6.84	0.74	23
Non-Hispanic Whites	Male	60+	09-10	9.28	1.76	21
Non-Hispanic Whites	Female	12-19	05-06	.826	0.18	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	2.63	0.45	16
Non-Hispanic Whites	Female	20-39	07-08	1.81	0.34	13
Non-Hispanic Whites	Female	20-39	09-10	1.69 **	0.52	18
Non-Hispanic Whites	Female	40-59	05-06	9.35 **	3.65	13
Non-Hispanic Whites	Female	40-59	07-08	4.63	1.07	17
Non-Hispanic Whites	Female	40-59	09-10	3.40	0.37	17
Non-Hispanic Whites	Female	60+	05-06	8.83	1.74	17
Non-Hispanic Whites	Female	60+	07-08	6.74	1.65	21
Non-Hispanic Whites	Female	60+	09-10	8.50	1.91	22
Non-Hispanic Blacks	Male	12-19	05-06	1.13	0.18	13
Non-Hispanic Blacks	Male	12-19	07-08	.689	0.111	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	4.08 **	2.26	6
Non-Hispanic Blacks	Male	20-39	07-08	2.10	0.56	6
Non-Hispanic Blacks	Male	20-39	09-10	1.46	0.23	7
Non-Hispanic Blacks	Male	40-59	05-06	17.1 **	8.8	5
Non-Hispanic Blacks	Male	40-59	07-08	14.5 **	6.6	6
Non-Hispanic Blacks	Male	40-59	09-10	4.59	0.67	7
Non-Hispanic Blacks	Male	60+	05-06	8.56	1.13	5
Non-Hispanic Blacks	Male	60+	07-08	7.25	1.17	8
Non-Hispanic Blacks	Male	60+	09-10	6.51	0.73	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	2.38	0.55	7
Non-Hispanic Blacks	Female	20-39	07-08	3.36 **	1.64	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	4.26 **	1.69	7
Non-Hispanic Blacks	Female	40-59	07-08	6.31	1.13	8
Non-Hispanic Blacks	Female	40-59	09-10	4.18 **	1.77	7
Non-Hispanic Blacks	Female	60+	05-06	6.84 **	2.86	5
Non-Hispanic Blacks	Female	60+	07-08	8.01	1.65	7
Non-Hispanic Blacks	Female	60+	09-10	4.88	1.46	7
Mexican Americans	Male	12-19	05-06	.601	0.074	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	1.69	0.44	9
Mexican Americans	Male	20-39	07-08	.962	0.178	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	4.29	1.26	4
Mexican Americans	Male	40-59	07-08	22.7 **	20.5	6
Mexican Americans	Male	40-59	09-10	4.74	1.14	8
Mexican Americans	Male	60+	05-06	19.7 **	9.8	4
Mexican Americans	Male	60+	07-08	14.0 **	8.8	5
Mexican Americans	Male	60+	09-10	4.69	0.94	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	2.53 **	1.14	9
Mexican Americans	Female	20-39	07-08	1.30 **	0.45	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	2.12	0.4	6
Mexican Americans	Female	40-59	07-08	1.64	0.35	6
Mexican Americans	Female	40-59	09-10	2.26	0.36	9
Mexican Americans	Female	60+	05-06	4.16 **	1.3	3
Mexican Americans	Female	60+	07-08	4.28 **	1.44	5
Mexican Americans	Female	60+	09-10	3.29	0.55	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	4.29	0.73	13
All Hispanics	Male	60+	09-10	4.53	0.66	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	2.17	0.25	14
All Hispanics	Female	60+	09-10	3.52	0.37	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.57, 0.57, and 1.3, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 59080-40-9

Weighted arithmetic mean and unadjusted standard error of pooled 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 previous page for data from earlier NHANES Survey periods.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	1.08 **	0.49	6
Non-Hispanic Whites	Male	12-19	13-14	.757	0.19	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	1.44	0.27	12
Non-Hispanic Whites	Male	20-39	13-14	1.95 **	0.62	14
Non-Hispanic Whites	Male	20-39	15-16	1.40	0.26	10
Non-Hispanic Whites	Male	40-59	11-12	7.64 **	2.31	12
Non-Hispanic Whites	Male	40-59	13-14	8.66	1.97	14
Non-Hispanic Whites	Male	40-59	15-16	2.81	0.38	10
Non-Hispanic Whites	Male	60+	11-12	4.49	1.01	12
Non-Hispanic Whites	Male	60+	13-14	15.8 **	6.3	17
Non-Hispanic Whites	Male	60+	15-16	9.21 **	6.01	14
Non-Hispanic Whites	Female	12-19	11-12	.442 **	0.14	5
Non-Hispanic Whites	Female	12-19	13-14	.594	0.153	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	1.01	0.14	13
Non-Hispanic Whites	Female	20-39	13-14	1.30	0.32	15
Non-Hispanic Whites	Female	20-39	15-16	.803	0.114	11
Non-Hispanic Whites	Female	40-59	11-12	2.97	0.64	11
Non-Hispanic Whites	Female	40-59	13-14	8.47 **	2.98	16
Non-Hispanic Whites	Female	40-59	15-16	2.20	0.32	9
Non-Hispanic Whites	Female	60+	11-12	7.25 **	2.41	14
Non-Hispanic Whites	Female	60+	13-14	5.93	1.16	20
Non-Hispanic Whites	Female	60+	15-16	3.68	0.35	13
Non-Hispanic Blacks	Male	12-19	11-12	.520 **	0.159	7
Non-Hispanic Blacks	Male	12-19	13-14	.353	0.066	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	2.97 **	1.51	9
Non-Hispanic Blacks	Male	20-39	13-14	1.74	0.43	7
Non-Hispanic Blacks	Male	20-39	15-16	1.07	0.23	7
Non-Hispanic Blacks	Male	40-59	11-12	5.18	1.03	7
Non-Hispanic Blacks	Male	40-59	13-14	3.78	0.48	7
Non-Hispanic Blacks	Male	40-59	15-16	3.49	0.23	7
Non-Hispanic Blacks	Male	60+	11-12	12.8	3.8	9
Non-Hispanic Blacks	Male	60+	13-14	13.5 **	5.1	9
Non-Hispanic Blacks	Male	60+	15-16	4.91	0.81	7
Non-Hispanic Blacks	Female	12-19	11-12	.316	0.048	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	3.21 **	1.41	8
Non-Hispanic Blacks	Female	20-39	13-14	.725	0.117	8
Non-Hispanic Blacks	Female	20-39	15-16	.720	0.095	9
Non-Hispanic Blacks	Female	40-59	11-12	2.05	0.31	8
Non-Hispanic Blacks	Female	40-59	13-14	5.01 **	1.8	8
Non-Hispanic Blacks	Female	40-59	15-16	5.52 **	2.31	12
Non-Hispanic Blacks	Female	60+	11-12	4.82	1.2	8
Non-Hispanic Blacks	Female	60+	13-14	6.59 **	2.06	8
Non-Hispanic Blacks	Female	60+	15-16	2.87	0.24	7
Mexican Americans	Male	12-19	11-12	1.26 **	0.75	5
Mexican Americans	Male	12-19	13-14	.259	0.034	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	15-16	*	*	6
Mexican Americans	Male	20-39	11-12	1.69	0.38	4
Mexican Americans	Male	20-39	13-14	.922	0.155	5
Mexican Americans	Male	20-39	15-16	1.87 **	0.83	7
Mexican Americans	Male	40-59	11-12	6.51 **	4.19	4
Mexican Americans	Male	40-59	13-14	2.28	0.25	5
Mexican Americans	Male	40-59	15-16	2.55 **	1.04	4
Mexican Americans	Male	60+	11-12	18.2	5	2
Mexican Americans	Male	60+	13-14	47.2 **	33.9	4
Mexican Americans	Male	60+	15-16	4.26	0.79	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	6.29 **	5.9	4
Mexican Americans	Female	20-39	13-14	.443	0.049	5
Mexican Americans	Female	20-39	15-16	.734	0.161	6
Mexican Americans	Female	40-59	11-12	3.85 **	4.09	3
Mexican Americans	Female	40-59	13-14	2.44 **	0.97	6
Mexican Americans	Female	40-59	15-16	1.72	0.17	8
Mexican Americans	Female	60+	11-12	1.76	0.21	3
Mexican Americans	Female	60+	13-14	5.03	1.13	5
Mexican Americans	Female	60+	15-16	4.13	1.1	7
All Hispanics	Male	12-19	11-12	1.06 **	0.58	7
All Hispanics	Male	12-19	13-14	.263	0.03	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	1.33	0.28	8
All Hispanics	Male	20-39	13-14	.800	0.126	8
All Hispanics	Male	20-39	15-16	1.35 **	0.56	11
All Hispanics	Male	40-59	11-12	4.60 **	2.32	7
All Hispanics	Male	40-59	13-14	2.29	0.16	9
All Hispanics	Male	40-59	15-16	2.83 **	1.04	9
All Hispanics	Male	60+	11-12	8.79 **	3.56	6
All Hispanics	Male	60+	13-14	32.6 **	19.7	7
All Hispanics	Male	60+	15-16	4.18	0.68	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	3.63 **	2.97	8
All Hispanics	Female	20-39	13-14	.586	0.099	9
All Hispanics	Female	20-39	15-16	.693	0.109	11
All Hispanics	Female	40-59	11-12	2.64 **	1.56	7
All Hispanics	Female	40-59	13-14	2.88	0.6	10
All Hispanics	Female	40-59	15-16	1.96	0.23	13
All Hispanics	Female	60+	11-12	2.11	0.33	7
All Hispanics	Female	60+	13-14	3.87	0.78	9
All Hispanics	Female	60+	15-16	3.33	0.67	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	.467	0.084	6
Asians	Male	20-39	13-14	.452	0.089	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	1.78	0.35	6
Asians	Male	40-59	13-14	1.47 **	0.62	4
Asians	Male	40-59	15-16	4.84 **	4.21	4
Asians	Male	60+	11-12	3.54	0.77	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	13-14	4.64 **	2.26	3
Asians	Male	60+	15-16	2.03 **	0.74	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	3.59 **	1.6	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	.866 **	0.468	6
Asians	Female	20-39	13-14	.634	0.113	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	1.43 **	0.59	6
Asians	Female	40-59	13-14	.906	0.085	7
Asians	Female	40-59	15-16	.926	0.152	5
Asians	Female	60+	11-12	1.82	0.44	3
Asians	Female	60+	13-14	2.51	0.64	3
Asians	Female	60+	15-16	2.28	0.67	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.4, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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

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

Polychlorinated Dibenzop-dioxins

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) (lipid adjusted) (2005 - 2010)†

CAS Number 35822-46-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	19.2	1.6	9
Non-Hispanic Whites	Male	12-19	07-08	14.5	0.3	6
Non-Hispanic Whites	Male	12-19	09-10	13.2	0.5	10
Non-Hispanic Whites	Male	20-39	05-06	19.4	1.4	12
Non-Hispanic Whites	Male	20-39	07-08	16.9	1.6	15
Non-Hispanic Whites	Male	20-39	09-10	17.1	1	17
Non-Hispanic Whites	Male	40-59	05-06	36.1	4.6	12
Non-Hispanic Whites	Male	40-59	07-08	21.0	1.7	15
Non-Hispanic Whites	Male	40-59	09-10	24.1	2.5	17
Non-Hispanic Whites	Male	60+	05-06	47.8	4.3	15
Non-Hispanic Whites	Male	60+	07-08	36.5	2.1	23
Non-Hispanic Whites	Male	60+	09-10	30.1	1.6	21
Non-Hispanic Whites	Female	12-19	05-06	15.0	1	10
Non-Hispanic Whites	Female	12-19	07-08	13.0	0.8	7
Non-Hispanic Whites	Female	12-19	09-10	9.94	0.9	8
Non-Hispanic Whites	Female	20-39	05-06	20.5	2.1	16
Non-Hispanic Whites	Female	20-39	07-08	17.3	0.8	12
Non-Hispanic Whites	Female	20-39	09-10	15.1	2.6	18
Non-Hispanic Whites	Female	40-59	05-06	32.2	2.9	13
Non-Hispanic Whites	Female	40-59	07-08	22.2	1.8	17
Non-Hispanic Whites	Female	40-59	09-10	19.0	0.9	17
Non-Hispanic Whites	Female	60+	05-06	49.8	3	17
Non-Hispanic Whites	Female	60+	07-08	41.6	3.8	19
Non-Hispanic Whites	Female	60+	09-10	30.8	2.8	14
Non-Hispanic Blacks	Male	12-19	05-06	17.2	0.7	13
Non-Hispanic Blacks	Male	12-19	07-08	12.2	0.8	6
Non-Hispanic Blacks	Male	12-19	09-10	8.75	0.59	6
Non-Hispanic Blacks	Male	20-39	05-06	16.1	1	6
Non-Hispanic Blacks	Male	20-39	07-08	16.0	1	6
Non-Hispanic Blacks	Male	20-39	09-10	11.6	1.5	7
Non-Hispanic Blacks	Male	40-59	05-06	23.4	1.6	5
Non-Hispanic Blacks	Male	40-59	07-08	20.8	1.3	6
Non-Hispanic Blacks	Male	40-59	09-10	17.6	2.6	7
Non-Hispanic Blacks	Male	60+	05-06	44.9	5.7	5
Non-Hispanic Blacks	Male	60+	07-08	28.9	4.7	8
Non-Hispanic Blacks	Male	60+	09-10	24.4	1.6	9
Non-Hispanic Blacks	Female	12-19	05-06	15.9	1.7	14
Non-Hispanic Blacks	Female	12-19	07-08	11.0	0.9	4
Non-Hispanic Blacks	Female	12-19	09-10	8.67	0.72	6
Non-Hispanic Blacks	Female	20-39	05-06	20.8	1.6	7
Non-Hispanic Blacks	Female	20-39	07-08	19.9	1.4	7
Non-Hispanic Blacks	Female	20-39	09-10	13.6	1.9	7
Non-Hispanic Blacks	Female	40-59	05-06	36.3	4.3	7
Non-Hispanic Blacks	Female	40-59	07-08	28.1	1.8	6
Non-Hispanic Blacks	Female	40-59	09-10	21.9	4.1	7
Non-Hispanic Blacks	Female	60+	05-06	77.4	12.5	5
Non-Hispanic Blacks	Female	60+	07-08	55.1	5.3	6
Non-Hispanic Blacks	Female	60+	09-10	51.0	5.4	7
Mexican Americans	Male	12-19	05-06	15.3	1.1	11
Mexican Americans	Male	12-19	07-08	12.8	1	6
Mexican Americans	Male	12-19	09-10	12.5	0.9	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	26.0	2.6	9
Mexican Americans	Male	20-39	07-08	18.0	1.2	9
Mexican Americans	Male	20-39	09-10	19.9	2.1	8
Mexican Americans	Male	40-59	05-06	34.5	3.6	4
Mexican Americans	Male	40-59	07-08	29.0	2	6
Mexican Americans	Male	40-59	09-10	29.5	2.2	7
Mexican Americans	Male	60+	05-06	40.3	5	4
Mexican Americans	Male	60+	07-08	28.2	3.2	5
Mexican Americans	Male	60+	09-10	46.0	7.2	5
Mexican Americans	Female	12-19	05-06	13.2	0.7	16
Mexican Americans	Female	12-19	07-08	11.2	2.3	5
Mexican Americans	Female	12-19	09-10	7.94	0.68	7
Mexican Americans	Female	20-39	05-06	25.1	1.9	9
Mexican Americans	Female	20-39	07-08	23.0	2.6	7
Mexican Americans	Female	20-39	09-10	14.0	2.2	10
Mexican Americans	Female	40-59	05-06	41.8	4.3	6
Mexican Americans	Female	40-59	07-08	30.9	3	5
Mexican Americans	Female	40-59	09-10	39.2	4.3	9
Mexican Americans	Female	60+	05-06	59.1	6.9	3
Mexican Americans	Female	60+	07-08	53.6	2.3	5
Mexican Americans	Female	60+	09-10	68.0	7.7	6
All Hispanics	Male	12-19	09-10	12.4	0.8	11
All Hispanics	Male	20-39	09-10	16.9	1.9	13
All Hispanics	Male	40-59	09-10	24.0	2.3	12
All Hispanics	Male	60+	09-10	37.4	6.3	8
All Hispanics	Female	12-19	09-10	8.23	0.56	10
All Hispanics	Female	20-39	09-10	14.1	1.6	14
All Hispanics	Female	40-59	09-10	33.3	3.6	14
All Hispanics	Female	60+	09-10	53.5	6.9	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.18, 0.62, and 6.36, respectively.

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) (2005 - 2010)†

CAS Number 35822-46-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	106	10	9
Non-Hispanic Whites	Male	12-19	07-08	72.5	2.3	6
Non-Hispanic Whites	Male	12-19	09-10	70.6	3.5	10
Non-Hispanic Whites	Male	20-39	05-06	140	12	12
Non-Hispanic Whites	Male	20-39	07-08	111	10	15
Non-Hispanic Whites	Male	20-39	09-10	113	8	17
Non-Hispanic Whites	Male	40-59	05-06	274	39	12
Non-Hispanic Whites	Male	40-59	07-08	154	12	15
Non-Hispanic Whites	Male	40-59	09-10	162	16	17
Non-Hispanic Whites	Male	60+	05-06	325	28	15
Non-Hispanic Whites	Male	60+	07-08	233	12	23
Non-Hispanic Whites	Male	60+	09-10	182	8	21
Non-Hispanic Whites	Female	12-19	05-06	79.4	5	10
Non-Hispanic Whites	Female	12-19	07-08	60.5	3.5	7
Non-Hispanic Whites	Female	12-19	09-10	47.5	4.6	8
Non-Hispanic Whites	Female	20-39	05-06	135	17	16
Non-Hispanic Whites	Female	20-39	07-08	103	6	12
Non-Hispanic Whites	Female	20-39	09-10	80.5	14.4	18
Non-Hispanic Whites	Female	40-59	05-06	237	23	13
Non-Hispanic Whites	Female	40-59	07-08	146	12	17
Non-Hispanic Whites	Female	40-59	09-10	120	7	17
Non-Hispanic Whites	Female	60+	05-06	365	24	17
Non-Hispanic Whites	Female	60+	07-08	279	26	19
Non-Hispanic Whites	Female	60+	09-10	190	15	14
Non-Hispanic Blacks	Male	12-19	05-06	86.6	3.3	13
Non-Hispanic Blacks	Male	12-19	07-08	58.0	3.7	6
Non-Hispanic Blacks	Male	12-19	09-10	40.1	3.5	6
Non-Hispanic Blacks	Male	20-39	05-06	95.6	7.3	6
Non-Hispanic Blacks	Male	20-39	07-08	90.1	6.4	6
Non-Hispanic Blacks	Male	20-39	09-10	64.2	6.9	7
Non-Hispanic Blacks	Male	40-59	05-06	149	12	5
Non-Hispanic Blacks	Male	40-59	07-08	133	8	6
Non-Hispanic Blacks	Male	40-59	09-10	107	13	7
Non-Hispanic Blacks	Male	60+	05-06	266	30	5
Non-Hispanic Blacks	Male	60+	07-08	174	29	8
Non-Hispanic Blacks	Male	60+	09-10	131	9	9
Non-Hispanic Blacks	Female	12-19	05-06	78.3	7.7	14
Non-Hispanic Blacks	Female	12-19	07-08	52.6	5.2	4
Non-Hispanic Blacks	Female	12-19	09-10	38.1	2.7	6
Non-Hispanic Blacks	Female	20-39	05-06	120	10	7
Non-Hispanic Blacks	Female	20-39	07-08	101	8	7
Non-Hispanic Blacks	Female	20-39	09-10	66.7	9	7
Non-Hispanic Blacks	Female	40-59	05-06	234	31	7
Non-Hispanic Blacks	Female	40-59	07-08	169	13	6
Non-Hispanic Blacks	Female	40-59	09-10	124	23	7
Non-Hispanic Blacks	Female	60+	05-06	522	90	5
Non-Hispanic Blacks	Female	60+	07-08	329	26	6
Non-Hispanic Blacks	Female	60+	09-10	290	27	7
Mexican Americans	Male	12-19	05-06	82.5	5.3	11
Mexican Americans	Male	12-19	07-08	67.4	4.1	6
Mexican Americans	Male	12-19	09-10	59.1	5	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	184	16	9
Mexican Americans	Male	20-39	07-08	124	14	9
Mexican Americans	Male	20-39	09-10	121	14	8
Mexican Americans	Male	40-59	05-06	284	41	4
Mexican Americans	Male	40-59	07-08	207	17	6
Mexican Americans	Male	40-59	09-10	207	13	7
Mexican Americans	Male	60+	05-06	286	26	4
Mexican Americans	Male	60+	07-08	212	39	5
Mexican Americans	Male	60+	09-10	282	44	5
Mexican Americans	Female	12-19	05-06	72.1	4.2	16
Mexican Americans	Female	12-19	07-08	54.3	10.5	5
Mexican Americans	Female	12-19	09-10	37.0	2.9	7
Mexican Americans	Female	20-39	05-06	168	15	9
Mexican Americans	Female	20-39	07-08	133	16	7
Mexican Americans	Female	20-39	09-10	75.9	12.5	10
Mexican Americans	Female	40-59	05-06	311	37	6
Mexican Americans	Female	40-59	07-08	210	24	5
Mexican Americans	Female	40-59	09-10	245	21	9
Mexican Americans	Female	60+	05-06	458	88	3
Mexican Americans	Female	60+	07-08	368	21	5
Mexican Americans	Female	60+	09-10	376	37	6
All Hispanics	Male	12-19	09-10	58.2	4.4	11
All Hispanics	Male	20-39	09-10	108	14	13
All Hispanics	Male	40-59	09-10	166	16	12
All Hispanics	Male	60+	09-10	236	38	8
All Hispanics	Female	12-19	09-10	38.1	2.5	10
All Hispanics	Female	20-39	09-10	77.4	9	14
All Hispanics	Female	40-59	09-10	206	20	14
All Hispanics	Female	60+	09-10	310	33	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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) (2005 - 2010)†

CAS Number 39227-28-6

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	1.11	0.23	6
Non-Hispanic Whites	Male	12-19	09-10	1.08	0.06	10
Non-Hispanic Whites	Male	20-39	05-06	1.44	0.35	12
Non-Hispanic Whites	Male	20-39	07-08	1.38	0.24	15
Non-Hispanic Whites	Male	20-39	09-10	1.79	0.1	17
Non-Hispanic Whites	Male	40-59	05-06	4.47	0.42	12
Non-Hispanic Whites	Male	40-59	07-08	2.95	0.16	15
Non-Hispanic Whites	Male	40-59	09-10	2.84	0.2	17
Non-Hispanic Whites	Male	60+	05-06	7.15	0.76	15
Non-Hispanic Whites	Male	60+	07-08	5.65	0.48	23
Non-Hispanic Whites	Male	60+	09-10	4.51	0.19	20
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	.767	0.094	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	1.10	0.18	12
Non-Hispanic Whites	Female	20-39	09-10	1.19	0.09	18
Non-Hispanic Whites	Female	40-59	05-06	3.59	0.2	13
Non-Hispanic Whites	Female	40-59	07-08	2.45	0.21	17
Non-Hispanic Whites	Female	40-59	09-10	2.42	0.11	17
Non-Hispanic Whites	Female	60+	05-06	6.40	0.33	17
Non-Hispanic Whites	Female	60+	07-08	5.71	0.43	20
Non-Hispanic Whites	Female	60+	09-10	4.93	0.38	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	.705	0.137	5
Non-Hispanic Blacks	Male	20-39	05-06	1.56	0.33	6
Non-Hispanic Blacks	Male	20-39	07-08	1.06 **	0.35	6
Non-Hispanic Blacks	Male	20-39	09-10	1.17	0.15	7
Non-Hispanic Blacks	Male	40-59	05-06	2.78	0.37	5
Non-Hispanic Blacks	Male	40-59	07-08	2.93	0.16	6
Non-Hispanic Blacks	Male	40-59	09-10	2.34	0.22	7
Non-Hispanic Blacks	Male	60+	05-06	6.65	0.19	5
Non-Hispanic Blacks	Male	60+	07-08	4.83	0.75	8
Non-Hispanic Blacks	Male	60+	09-10	3.85	0.34	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	.800	0.097	6
Non-Hispanic Blacks	Female	20-39	05-06	1.87	0.24	7
Non-Hispanic Blacks	Female	20-39	07-08	.972 **	0.312	7
Non-Hispanic Blacks	Female	20-39	09-10	1.23	0.13	7
Non-Hispanic Blacks	Female	40-59	05-06	3.83	0.44	7
Non-Hispanic Blacks	Female	40-59	07-08	3.34	0.39	6
Non-Hispanic Blacks	Female	40-59	09-10	2.49	0.36	7
Non-Hispanic Blacks	Female	60+	05-06	12.7	1.7	5
Non-Hispanic Blacks	Female	60+	07-08	9.88	1.5	6
Non-Hispanic Blacks	Female	60+	09-10	6.79	0.82	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	1.01	0.1	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	1.44	0.19	9
Mexican Americans	Male	20-39	09-10	1.44	0.17	8
Mexican Americans	Male	40-59	05-06	2.65 **	0.93	4
Mexican Americans	Male	40-59	07-08	2.91	0.18	6
Mexican Americans	Male	40-59	09-10	2.66	0.13	7
Mexican Americans	Male	60+	05-06	4.96	0.17	4
Mexican Americans	Male	60+	07-08	4.94	0.19	5
Mexican Americans	Male	60+	09-10	5.68	0.82	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	.544	0.043	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	1.47	0.25	7
Mexican Americans	Female	20-39	09-10	.944	0.133	10
Mexican Americans	Female	40-59	05-06	3.64	0.8	6
Mexican Americans	Female	40-59	07-08	3.03	0.4	5
Mexican Americans	Female	40-59	09-10	2.76	0.18	9
Mexican Americans	Female	60+	05-06	7.30	0.67	3
Mexican Americans	Female	60+	07-08	6.26	0.61	5
Mexican Americans	Female	60+	09-10	6.95	0.96	6
All Hispanics	Male	12-19	09-10	.954	0.081	11
All Hispanics	Male	20-39	09-10	1.30	0.14	13
All Hispanics	Male	40-59	09-10	2.41	0.15	12
All Hispanics	Male	60+	09-10	4.75	0.68	8
All Hispanics	Female	12-19	09-10	.573	0.036	10
All Hispanics	Female	20-39	09-10	.979	0.096	14
All Hispanics	Female	40-59	09-10	2.46	0.19	14
All Hispanics	Female	60+	09-10	5.85	0.71	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.14, 0.26, and 0.4, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 39227-28-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	5.49	1.13	6
Non-Hispanic Whites	Male	12-19	09-10	5.72	0.32	10
Non-Hispanic Whites	Male	20-39	05-06	10.8	2.9	12
Non-Hispanic Whites	Male	20-39	07-08	9.33	1.66	15
Non-Hispanic Whites	Male	20-39	09-10	11.8	0.8	17
Non-Hispanic Whites	Male	40-59	05-06	33.7	3.5	12
Non-Hispanic Whites	Male	40-59	07-08	21.5	0.9	15
Non-Hispanic Whites	Male	40-59	09-10	19.2	1.4	17
Non-Hispanic Whites	Male	60+	05-06	48.4	4.7	15
Non-Hispanic Whites	Male	60+	07-08	36.0	2.6	23
Non-Hispanic Whites	Male	60+	09-10	27.2	0.9	20
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	3.67	0.46	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	6.65	1.14	12
Non-Hispanic Whites	Female	20-39	09-10	6.35	0.53	18
Non-Hispanic Whites	Female	40-59	05-06	26.6	2.2	13
Non-Hispanic Whites	Female	40-59	07-08	16.2	1.4	17
Non-Hispanic Whites	Female	40-59	09-10	15.4	1	17
Non-Hispanic Whites	Female	60+	05-06	46.7	2.5	17
Non-Hispanic Whites	Female	60+	07-08	38.5	3.1	20
Non-Hispanic Whites	Female	60+	09-10	29.8	2.1	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	3.20	0.64	5
Non-Hispanic Blacks	Male	20-39	05-06	9.31	2.04	6
Non-Hispanic Blacks	Male	20-39	07-08	6.04 **	2.01	6
Non-Hispanic Blacks	Male	20-39	09-10	6.50	0.71	7
Non-Hispanic Blacks	Male	40-59	05-06	17.8	2.4	5
Non-Hispanic Blacks	Male	40-59	07-08	18.7	0.8	6
Non-Hispanic Blacks	Male	40-59	09-10	14.4	1.4	7
Non-Hispanic Blacks	Male	60+	05-06	40.0	2.1	5
Non-Hispanic Blacks	Male	60+	07-08	29.2	4.7	8
Non-Hispanic Blacks	Male	60+	09-10	20.5	1.7	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	3.52	0.39	6
Non-Hispanic Blacks	Female	20-39	05-06	10.7	1.4	7
Non-Hispanic Blacks	Female	20-39	07-08	5.04 **	1.65	7
Non-Hispanic Blacks	Female	20-39	09-10	6.07	0.64	7
Non-Hispanic Blacks	Female	40-59	05-06	24.6	3	7
Non-Hispanic Blacks	Female	40-59	07-08	20.0	2.4	6
Non-Hispanic Blacks	Female	40-59	09-10	14.1	2.1	7
Non-Hispanic Blacks	Female	60+	05-06	83.9	9.4	5
Non-Hispanic Blacks	Female	60+	07-08	59.3	8.9	6
Non-Hispanic Blacks	Female	60+	09-10	38.5	4.1	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	4.74	0.52	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	9.50	1.32	9
Mexican Americans	Male	20-39	09-10	8.95	1.39	8
Mexican Americans	Male	40-59	05-06	21.7 **	8.3	4
Mexican Americans	Male	40-59	07-08	20.8	1.8	6
Mexican Americans	Male	40-59	09-10	18.8	0.9	7
Mexican Americans	Male	60+	05-06	36.0	2.7	4
Mexican Americans	Male	60+	07-08	36.0	3	5
Mexican Americans	Male	60+	09-10	34.7	4.9	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	2.54	0.2	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	8.36	1.29	7
Mexican Americans	Female	20-39	09-10	5.10	0.74	10
Mexican Americans	Female	40-59	05-06	27.1	5.7	6
Mexican Americans	Female	40-59	07-08	20.4	2.8	5
Mexican Americans	Female	40-59	09-10	17.6	1.2	9
Mexican Americans	Female	60+	05-06	55.9	8.6	3
Mexican Americans	Female	60+	07-08	43.1	4.9	5
Mexican Americans	Female	60+	09-10	38.2	4.7	6
All Hispanics	Male	12-19	09-10	4.45	0.41	11
All Hispanics	Male	20-39	09-10	8.46	1.21	13
All Hispanics	Male	40-59	09-10	16.7	1.1	12
All Hispanics	Male	60+	09-10	29.7	4	8
All Hispanics	Female	12-19	09-10	2.65	0.17	10
All Hispanics	Female	20-39	09-10	5.36	0.54	14
All Hispanics	Female	40-59	09-10	15.4	1.3	14
All Hispanics	Female	60+	09-10	33.9	3.4	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 57653-85-7

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	10.5	0.8	9
Non-Hispanic Whites	Male	12-19	07-08	9.78	0.47	6
Non-Hispanic Whites	Male	12-19	09-10	7.25	0.47	10
Non-Hispanic Whites	Male	20-39	05-06	14.7	1.4	12
Non-Hispanic Whites	Male	20-39	07-08	14.2	0.6	15
Non-Hispanic Whites	Male	20-39	09-10	11.9	0.6	17
Non-Hispanic Whites	Male	40-59	05-06	31.8	3.4	12
Non-Hispanic Whites	Male	40-59	07-08	23.0	1	15
Non-Hispanic Whites	Male	40-59	09-10	23.4	1.5	17
Non-Hispanic Whites	Male	60+	05-06	46.6	3.4	15
Non-Hispanic Whites	Male	60+	07-08	40.5	2.6	23
Non-Hispanic Whites	Male	60+	09-10	36.5	2.1	20
Non-Hispanic Whites	Female	12-19	05-06	6.76	0.95	10
Non-Hispanic Whites	Female	12-19	07-08	6.86	0.36	7
Non-Hispanic Whites	Female	12-19	09-10	5.69	0.61	8
Non-Hispanic Whites	Female	20-39	05-06	13.1	1.4	16
Non-Hispanic Whites	Female	20-39	07-08	12.5	0.8	12
Non-Hispanic Whites	Female	20-39	09-10	10.8	1.1	18
Non-Hispanic Whites	Female	40-59	05-06	25.6	1.2	13
Non-Hispanic Whites	Female	40-59	07-08	23.7	0.9	17
Non-Hispanic Whites	Female	40-59	09-10	19.5	0.9	17
Non-Hispanic Whites	Female	60+	05-06	47.4	3.5	17
Non-Hispanic Whites	Female	60+	07-08	45.7	2.8	20
Non-Hispanic Whites	Female	60+	09-10	40.8	2.8	22
Non-Hispanic Blacks	Male	12-19	05-06	9.16	0.4	13
Non-Hispanic Blacks	Male	12-19	07-08	7.77	0.76	6
Non-Hispanic Blacks	Male	12-19	09-10	6.71	0.71	6
Non-Hispanic Blacks	Male	20-39	05-06	12.7	0.8	6
Non-Hispanic Blacks	Male	20-39	07-08	13.4	1.1	6
Non-Hispanic Blacks	Male	20-39	09-10	8.65	1.1	7
Non-Hispanic Blacks	Male	40-59	05-06	20.4	1.3	5
Non-Hispanic Blacks	Male	40-59	07-08	23.6	2.3	6
Non-Hispanic Blacks	Male	40-59	09-10	18.2	1.8	7
Non-Hispanic Blacks	Male	60+	05-06	45.5	6.1	5
Non-Hispanic Blacks	Male	60+	07-08	36.3	4.1	8
Non-Hispanic Blacks	Male	60+	09-10	31.0	2.1	9
Non-Hispanic Blacks	Female	12-19	05-06	5.50	0.65	14
Non-Hispanic Blacks	Female	12-19	07-08	6.07	0.32	4
Non-Hispanic Blacks	Female	12-19	09-10	4.70	0.41	6
Non-Hispanic Blacks	Female	20-39	05-06	12.2	0.8	7
Non-Hispanic Blacks	Female	20-39	07-08	13.7	1.2	7
Non-Hispanic Blacks	Female	20-39	09-10	9.23	0.94	7
Non-Hispanic Blacks	Female	40-59	05-06	25.1	2.6	7
Non-Hispanic Blacks	Female	40-59	07-08	25.8	1.3	6
Non-Hispanic Blacks	Female	40-59	09-10	19.8	1.8	7
Non-Hispanic Blacks	Female	60+	05-06	69.4	8	5
Non-Hispanic Blacks	Female	60+	07-08	54.2	4.7	6
Non-Hispanic Blacks	Female	60+	09-10	49.8	5.3	7
Mexican Americans	Male	12-19	05-06	4.25	1.01	11
Mexican Americans	Male	12-19	07-08	7.12	0.78	6
Mexican Americans	Male	12-19	09-10	6.08	0.48	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	9.78	0.77	9
Mexican Americans	Male	20-39	07-08	10.4	0.4	9
Mexican Americans	Male	20-39	09-10	8.73	0.74	8
Mexican Americans	Male	40-59	05-06	18.9	2.8	4
Mexican Americans	Male	40-59	07-08	19.4	1.2	6
Mexican Americans	Male	40-59	09-10	19.0	1.1	7
Mexican Americans	Male	60+	05-06	34.5	2.4	4
Mexican Americans	Male	60+	07-08	32.0	1.7	5
Mexican Americans	Male	60+	09-10	38.3	5.7	5
Mexican Americans	Female	12-19	05-06	3.62	0.73	16
Mexican Americans	Female	12-19	07-08	4.15	1.24	5
Mexican Americans	Female	12-19	09-10	3.95	0.2	7
Mexican Americans	Female	20-39	05-06	8.51	0.79	9
Mexican Americans	Female	20-39	07-08	9.61	0.78	7
Mexican Americans	Female	20-39	09-10	6.40	0.97	10
Mexican Americans	Female	40-59	05-06	18.9	1.5	6
Mexican Americans	Female	40-59	07-08	19.5	1.7	5
Mexican Americans	Female	40-59	09-10	18.4	1.4	9
Mexican Americans	Female	60+	05-06	36.4	3.3	3
Mexican Americans	Female	60+	07-08	37.0	3.9	5
Mexican Americans	Female	60+	09-10	43.6	6.2	6
All Hispanics	Male	12-19	09-10	6.11	0.38	11
All Hispanics	Male	20-39	09-10	8.06	0.83	13
All Hispanics	Male	40-59	09-10	16.8	1.1	12
All Hispanics	Male	60+	09-10	32.9	4.4	8
All Hispanics	Female	12-19	09-10	4.14	0.24	10
All Hispanics	Female	20-39	09-10	6.82	0.69	14
All Hispanics	Female	40-59	09-10	17.3	1	14
All Hispanics	Female	60+	09-10	37.9	4.1	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.09, 0.09, and 0.31, respectively.

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) (2005 - 2010)†

CAS Number 57653-85-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	57.9	5.2	9
Non-Hispanic Whites	Male	12-19	07-08	48.6	1.5	6
Non-Hispanic Whites	Male	12-19	09-10	38.3	1.9	10
Non-Hispanic Whites	Male	20-39	05-06	109	14	12
Non-Hispanic Whites	Male	20-39	07-08	93.4	4.8	15
Non-Hispanic Whites	Male	20-39	09-10	78.2	5.3	17
Non-Hispanic Whites	Male	40-59	05-06	240	27	12
Non-Hispanic Whites	Male	40-59	07-08	169	8	15
Non-Hispanic Whites	Male	40-59	09-10	159	10	17
Non-Hispanic Whites	Male	60+	05-06	316	21	15
Non-Hispanic Whites	Male	60+	07-08	257	13	23
Non-Hispanic Whites	Male	60+	09-10	220	10	20
Non-Hispanic Whites	Female	12-19	05-06	36.0	4.9	10
Non-Hispanic Whites	Female	12-19	07-08	32.2	2.1	7
Non-Hispanic Whites	Female	12-19	09-10	27.3	3.1	8
Non-Hispanic Whites	Female	20-39	05-06	85.9	10.4	16
Non-Hispanic Whites	Female	20-39	07-08	74.7	5.1	12
Non-Hispanic Whites	Female	20-39	09-10	57.6	6.6	18
Non-Hispanic Whites	Female	40-59	05-06	189	13	13
Non-Hispanic Whites	Female	40-59	07-08	157	7	17
Non-Hispanic Whites	Female	40-59	09-10	123	7	17
Non-Hispanic Whites	Female	60+	05-06	344	24	17
Non-Hispanic Whites	Female	60+	07-08	306	19	20
Non-Hispanic Whites	Female	60+	09-10	246	15	22
Non-Hispanic Blacks	Male	12-19	05-06	46.0	1.5	13
Non-Hispanic Blacks	Male	12-19	07-08	36.6	3	6
Non-Hispanic Blacks	Male	12-19	09-10	30.7	3.6	6
Non-Hispanic Blacks	Male	20-39	05-06	75.2	5.9	6
Non-Hispanic Blacks	Male	20-39	07-08	75.1	5.8	6
Non-Hispanic Blacks	Male	20-39	09-10	47.9	5.1	7
Non-Hispanic Blacks	Male	40-59	05-06	130	8	5
Non-Hispanic Blacks	Male	40-59	07-08	151	15	6
Non-Hispanic Blacks	Male	40-59	09-10	111	10	7
Non-Hispanic Blacks	Male	60+	05-06	270	32	5
Non-Hispanic Blacks	Male	60+	07-08	219	25	8
Non-Hispanic Blacks	Male	60+	09-10	166	11	9
Non-Hispanic Blacks	Female	12-19	05-06	27.2	3.2	14
Non-Hispanic Blacks	Female	12-19	07-08	28.9	2.1	4
Non-Hispanic Blacks	Female	12-19	09-10	20.7	1.6	6
Non-Hispanic Blacks	Female	20-39	05-06	70.2	4.3	7
Non-Hispanic Blacks	Female	20-39	07-08	69.3	6.3	7
Non-Hispanic Blacks	Female	20-39	09-10	45.7	4.7	7
Non-Hispanic Blacks	Female	40-59	05-06	160	17	7
Non-Hispanic Blacks	Female	40-59	07-08	156	11	6
Non-Hispanic Blacks	Female	40-59	09-10	112	10	7
Non-Hispanic Blacks	Female	60+	05-06	461	45	5
Non-Hispanic Blacks	Female	60+	07-08	325	24	6
Non-Hispanic Blacks	Female	60+	09-10	283	26	7
Mexican Americans	Male	12-19	05-06	22.8	5.3	11
Mexican Americans	Male	12-19	07-08	37.9	4.5	6
Mexican Americans	Male	12-19	09-10	28.7	2.6	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	68.7	4.7	9
Mexican Americans	Male	20-39	07-08	71.3	4.2	9
Mexican Americans	Male	20-39	09-10	53.6	5.9	8
Mexican Americans	Male	40-59	05-06	156	28	4
Mexican Americans	Male	40-59	07-08	139	11	6
Mexican Americans	Male	40-59	09-10	135	9	7
Mexican Americans	Male	60+	05-06	248	17	4
Mexican Americans	Male	60+	07-08	232	19	5
Mexican Americans	Male	60+	09-10	235	35	5
Mexican Americans	Female	12-19	05-06	20.3	4.1	16
Mexican Americans	Female	12-19	07-08	20.0	5.7	5
Mexican Americans	Female	12-19	09-10	18.4	0.9	7
Mexican Americans	Female	20-39	05-06	56.7	5.7	9
Mexican Americans	Female	20-39	07-08	55.4	4.5	7
Mexican Americans	Female	20-39	09-10	34.6	5.5	10
Mexican Americans	Female	40-59	05-06	140	13	6
Mexican Americans	Female	40-59	07-08	131	11	5
Mexican Americans	Female	40-59	09-10	117	8	9
Mexican Americans	Female	60+	05-06	280	43	3
Mexican Americans	Female	60+	07-08	254	29	5
Mexican Americans	Female	60+	09-10	239	29	6
All Hispanics	Male	12-19	09-10	28.7	2.1	11
All Hispanics	Male	20-39	09-10	52.8	8	13
All Hispanics	Male	40-59	09-10	116	9	12
All Hispanics	Male	60+	09-10	206	27	8
All Hispanics	Female	12-19	09-10	19.2	1	10
All Hispanics	Female	20-39	09-10	37.4	4	14
All Hispanics	Female	40-59	09-10	108	7	14
All Hispanics	Female	60+	09-10	221	19	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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) (2005 - 2010)†

CAS Number 19408-74-3

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	1.68	0.43	9
Non-Hispanic Whites	Male	12-19	07-08	2.18	0.1	6
Non-Hispanic Whites	Male	12-19	09-10	1.89	0.07	10
Non-Hispanic Whites	Male	20-39	05-06	1.92	0.26	12
Non-Hispanic Whites	Male	20-39	07-08	2.33	0.28	15
Non-Hispanic Whites	Male	20-39	09-10	2.25	0.1	17
Non-Hispanic Whites	Male	40-59	05-06	3.99	0.38	12
Non-Hispanic Whites	Male	40-59	07-08	2.99	0.15	15
Non-Hispanic Whites	Male	40-59	09-10	3.06	0.17	17
Non-Hispanic Whites	Male	60+	05-06	5.48	0.47	15
Non-Hispanic Whites	Male	60+	07-08	4.80	0.3	23
Non-Hispanic Whites	Male	60+	09-10	4.56	0.25	21
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	1.64	0.37	7
Non-Hispanic Whites	Female	12-19	09-10	1.60	0.21	8
Non-Hispanic Whites	Female	20-39	05-06	2.47	0.2	16
Non-Hispanic Whites	Female	20-39	07-08	2.29	0.27	12
Non-Hispanic Whites	Female	20-39	09-10	2.04	0.21	18
Non-Hispanic Whites	Female	40-59	05-06	3.93	0.25	13
Non-Hispanic Whites	Female	40-59	07-08	3.29	0.24	17
Non-Hispanic Whites	Female	40-59	09-10	2.91	0.14	17
Non-Hispanic Whites	Female	60+	05-06	6.02	0.36	17
Non-Hispanic Whites	Female	60+	07-08	6.23	0.4	20
Non-Hispanic Whites	Female	60+	09-10	5.59	0.35	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	1.73	0.28	6
Non-Hispanic Blacks	Male	12-19	09-10	1.49	0.03	5
Non-Hispanic Blacks	Male	20-39	05-06	2.08	0.11	6
Non-Hispanic Blacks	Male	20-39	07-08	1.37 **	0.43	6
Non-Hispanic Blacks	Male	20-39	09-10	1.52	0.18	7
Non-Hispanic Blacks	Male	40-59	05-06	2.57	0.18	5
Non-Hispanic Blacks	Male	40-59	07-08	3.26	0.3	6
Non-Hispanic Blacks	Male	40-59	09-10	2.36	0.25	7
Non-Hispanic Blacks	Male	60+	05-06	5.18	0.91	5
Non-Hispanic Blacks	Male	60+	07-08	4.15	0.49	8
Non-Hispanic Blacks	Male	60+	09-10	3.46	0.33	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	1.23	0.14	6
Non-Hispanic Blacks	Female	20-39	05-06	2.44	0.23	7
Non-Hispanic Blacks	Female	20-39	07-08	1.92	0.57	7
Non-Hispanic Blacks	Female	20-39	09-10	1.89	0.18	7
Non-Hispanic Blacks	Female	40-59	05-06	3.84	0.36	7
Non-Hispanic Blacks	Female	40-59	07-08	3.97	0.26	6
Non-Hispanic Blacks	Female	40-59	09-10	3.17	0.41	7
Non-Hispanic Blacks	Female	60+	05-06	9.10	1.09	5
Non-Hispanic Blacks	Female	60+	07-08	8.05	0.79	6
Non-Hispanic Blacks	Female	60+	09-10	6.54	0.63	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	1.67	0.09	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	2.20	0.29	9
Mexican Americans	Male	20-39	07-08	1.57	0.33	9
Mexican Americans	Male	20-39	09-10	1.67	0.15	8
Mexican Americans	Male	40-59	05-06	3.37	0.53	4
Mexican Americans	Male	40-59	07-08	2.47	0.55	6
Mexican Americans	Male	40-59	09-10	2.73	0.18	7
Mexican Americans	Male	60+	05-06	4.52	0.22	4
Mexican Americans	Male	60+	07-08	4.66	0.33	5
Mexican Americans	Male	60+	09-10	5.43	0.74	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	1.46	0.43	5
Mexican Americans	Female	12-19	09-10	1.16	0.11	7
Mexican Americans	Female	20-39	05-06	1.81	0.32	9
Mexican Americans	Female	20-39	07-08	*	*	7
Mexican Americans	Female	20-39	09-10	1.64	0.24	10
Mexican Americans	Female	40-59	05-06	4.02	0.32	6
Mexican Americans	Female	40-59	07-08	3.94	0.29	5
Mexican Americans	Female	40-59	09-10	4.04	0.32	9
Mexican Americans	Female	60+	05-06	6.50	0.96	3
Mexican Americans	Female	60+	07-08	7.48	0.57	5
Mexican Americans	Female	60+	09-10	7.73	0.92	6
All Hispanics	Male	12-19	09-10	1.77	0.12	10
All Hispanics	Male	20-39	09-10	1.74	0.12	13
All Hispanics	Male	40-59	09-10	2.50	0.14	12
All Hispanics	Male	60+	09-10	4.67	0.6	8
All Hispanics	Female	12-19	09-10	1.20	0.08	10
All Hispanics	Female	20-39	09-10	1.70	0.17	14
All Hispanics	Female	40-59	09-10	3.47	0.3	14
All Hispanics	Female	60+	09-10	6.25	0.74	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.07, 0.1, and 0.2, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 19408-74-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	9.49	2.41	9
Non-Hispanic Whites	Male	12-19	07-08	10.9	0.6	6
Non-Hispanic Whites	Male	12-19	09-10	10.0	0.3	10
Non-Hispanic Whites	Male	20-39	05-06	13.8	2	12
Non-Hispanic Whites	Male	20-39	07-08	15.4	1.7	15
Non-Hispanic Whites	Male	20-39	09-10	14.8	0.8	17
Non-Hispanic Whites	Male	40-59	05-06	30.2	3.2	12
Non-Hispanic Whites	Male	40-59	07-08	21.9	1	15
Non-Hispanic Whites	Male	40-59	09-10	20.8	1.2	17
Non-Hispanic Whites	Male	60+	05-06	37.3	3	15
Non-Hispanic Whites	Male	60+	07-08	30.5	1.6	23
Non-Hispanic Whites	Male	60+	09-10	27.5	1.4	21
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	7.64	1.71	7
Non-Hispanic Whites	Female	12-19	09-10	7.66	1.04	8
Non-Hispanic Whites	Female	20-39	05-06	16.1	1.5	16
Non-Hispanic Whites	Female	20-39	07-08	13.8	1.7	12
Non-Hispanic Whites	Female	20-39	09-10	10.9	1.2	18
Non-Hispanic Whites	Female	40-59	05-06	29.1	2.3	13
Non-Hispanic Whites	Female	40-59	07-08	21.8	1.7	17
Non-Hispanic Whites	Female	40-59	09-10	18.4	1	17
Non-Hispanic Whites	Female	60+	05-06	44.0	2.6	17
Non-Hispanic Whites	Female	60+	07-08	41.8	2.8	20
Non-Hispanic Whites	Female	60+	09-10	33.7	1.8	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	8.07	1.25	6
Non-Hispanic Blacks	Male	12-19	09-10	6.85	0.44	5
Non-Hispanic Blacks	Male	20-39	05-06	12.3	0.8	6
Non-Hispanic Blacks	Male	20-39	07-08	8.05 **	2.53	6
Non-Hispanic Blacks	Male	20-39	09-10	8.44	0.85	7
Non-Hispanic Blacks	Male	40-59	05-06	16.4	1.2	5
Non-Hispanic Blacks	Male	40-59	07-08	20.8	1.9	6
Non-Hispanic Blacks	Male	40-59	09-10	14.5	1.5	7
Non-Hispanic Blacks	Male	60+	05-06	30.7	5	5
Non-Hispanic Blacks	Male	60+	07-08	25.0	2.9	8
Non-Hispanic Blacks	Male	60+	09-10	18.4	1.7	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	5.39	0.54	6
Non-Hispanic Blacks	Female	20-39	05-06	14.0	1.3	7
Non-Hispanic Blacks	Female	20-39	07-08	9.97 **	3.01	7
Non-Hispanic Blacks	Female	20-39	09-10	9.32	0.88	7
Non-Hispanic Blacks	Female	40-59	05-06	24.6	2.4	7
Non-Hispanic Blacks	Female	40-59	07-08	23.9	1.9	6
Non-Hispanic Blacks	Female	40-59	09-10	17.9	2.3	7
Non-Hispanic Blacks	Female	60+	05-06	60.7	6.7	5
Non-Hispanic Blacks	Female	60+	07-08	48.1	4.1	6
Non-Hispanic Blacks	Female	60+	09-10	37.2	3	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	7.80	0.44	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	15.7	2	9
Mexican Americans	Male	20-39	07-08	10.2	2.1	9
Mexican Americans	Male	20-39	09-10	10.2	1.2	8
Mexican Americans	Male	40-59	05-06	27.8	5.5	4
Mexican Americans	Male	40-59	07-08	17.2	3.9	6
Mexican Americans	Male	40-59	09-10	19.2	1.1	7
Mexican Americans	Male	60+	05-06	32.5	1.2	4
Mexican Americans	Male	60+	07-08	33.9	3.5	5
Mexican Americans	Male	60+	09-10	33.3	4.6	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	7.02	1.96	5
Mexican Americans	Female	12-19	09-10	5.43	0.48	7
Mexican Americans	Female	20-39	05-06	12.3	2.2	9
Mexican Americans	Female	20-39	07-08	*	*	7
Mexican Americans	Female	20-39	09-10	8.87	1.33	10
Mexican Americans	Female	40-59	05-06	29.8	2.8	6
Mexican Americans	Female	40-59	07-08	26.6	2.3	5
Mexican Americans	Female	40-59	09-10	25.4	1.3	9
Mexican Americans	Female	60+	05-06	49.7	9.5	3
Mexican Americans	Female	60+	07-08	51.5	4.8	5
Mexican Americans	Female	60+	09-10	42.6	4.3	6
All Hispanics	Male	12-19	09-10	8.20	0.5	10
All Hispanics	Male	20-39	09-10	11.1	1.1	13
All Hispanics	Male	40-59	09-10	17.2	1	12
All Hispanics	Male	60+	09-10	29.3	3.6	8
All Hispanics	Female	12-19	09-10	5.57	0.36	10
All Hispanics	Female	20-39	09-10	9.31	0.96	14
All Hispanics	Female	40-59	09-10	21.6	1.7	14
All Hispanics	Female	60+	09-10	36.2	3.4	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 3268-87-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	123	13	9
Non-Hispanic Whites	Male	12-19	07-08	114	7	6
Non-Hispanic Whites	Male	12-19	09-10	96.4	7.3	10
Non-Hispanic Whites	Male	20-39	05-06	129	8	12
Non-Hispanic Whites	Male	20-39	07-08	125	12	15
Non-Hispanic Whites	Male	20-39	09-10	109	5	17
Non-Hispanic Whites	Male	40-59	05-06	238	25	12
Non-Hispanic Whites	Male	40-59	07-08	164	10	15
Non-Hispanic Whites	Male	40-59	09-10	172	16	17
Non-Hispanic Whites	Male	60+	05-06	379	38	15
Non-Hispanic Whites	Male	60+	07-08	306	23	23
Non-Hispanic Whites	Male	60+	09-10	284	18	21
Non-Hispanic Whites	Female	12-19	05-06	106	9	10
Non-Hispanic Whites	Female	12-19	07-08	104	5	7
Non-Hispanic Whites	Female	12-19	09-10	83.6	6.2	8
Non-Hispanic Whites	Female	20-39	05-06	179	19	16
Non-Hispanic Whites	Female	20-39	07-08	139	7	12
Non-Hispanic Whites	Female	20-39	09-10	126	11	18
Non-Hispanic Whites	Female	40-59	05-06	304	22	13
Non-Hispanic Whites	Female	40-59	07-08	222	15	17
Non-Hispanic Whites	Female	40-59	09-10	198	10	17
Non-Hispanic Whites	Female	60+	05-06	546	66	17
Non-Hispanic Whites	Female	60+	07-08	435	49	19
Non-Hispanic Whites	Female	60+	09-10	407	31	22
Non-Hispanic Blacks	Male	12-19	05-06	142	12	13
Non-Hispanic Blacks	Male	12-19	07-08	114	10	6
Non-Hispanic Blacks	Male	12-19	09-10	90.2	4.3	5
Non-Hispanic Blacks	Male	20-39	05-06	127	9	6
Non-Hispanic Blacks	Male	20-39	07-08	136	9	6
Non-Hispanic Blacks	Male	20-39	09-10	102	6	7
Non-Hispanic Blacks	Male	40-59	05-06	200	32	5
Non-Hispanic Blacks	Male	40-59	07-08	190	16	6
Non-Hispanic Blacks	Male	40-59	09-10	161	14	7
Non-Hispanic Blacks	Male	60+	05-06	420	82	5
Non-Hispanic Blacks	Male	60+	07-08	314	30	8
Non-Hispanic Blacks	Male	60+	09-10	265	11	9
Non-Hispanic Blacks	Female	12-19	05-06	153	22	14
Non-Hispanic Blacks	Female	12-19	07-08	100	9	4
Non-Hispanic Blacks	Female	12-19	09-10	81.7	5.6	6
Non-Hispanic Blacks	Female	20-39	05-06	188	18	7
Non-Hispanic Blacks	Female	20-39	07-08	197	23	7
Non-Hispanic Blacks	Female	20-39	09-10	139	15	7
Non-Hispanic Blacks	Female	40-59	05-06	381	43	7
Non-Hispanic Blacks	Female	40-59	07-08	303	22	6
Non-Hispanic Blacks	Female	40-59	09-10	239	29	7
Non-Hispanic Blacks	Female	60+	05-06	927	135	5
Non-Hispanic Blacks	Female	60+	07-08	660	78	6
Non-Hispanic Blacks	Female	60+	09-10	672	133	7
Mexican Americans	Male	12-19	05-06	111	9	11
Mexican Americans	Male	12-19	07-08	117	9	6
Mexican Americans	Male	12-19	09-10	98.4	10.6	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	180	21	9
Mexican Americans	Male	20-39	07-08	133	9	9
Mexican Americans	Male	20-39	09-10	130	12	8
Mexican Americans	Male	40-59	05-06	220	19	4
Mexican Americans	Male	40-59	07-08	217	13	6
Mexican Americans	Male	40-59	09-10	231	32	7
Mexican Americans	Male	60+	05-06	350	46	4
Mexican Americans	Male	60+	07-08	273	17	5
Mexican Americans	Male	60+	09-10	413	78	5
Mexican Americans	Female	12-19	05-06	111	5	16
Mexican Americans	Female	12-19	07-08	110	13	5
Mexican Americans	Female	12-19	09-10	79.3	5.7	7
Mexican Americans	Female	20-39	05-06	184	12	9
Mexican Americans	Female	20-39	07-08	174	12	7
Mexican Americans	Female	20-39	09-10	123	19	10
Mexican Americans	Female	40-59	05-06	410	60	6
Mexican Americans	Female	40-59	07-08	290	17	5
Mexican Americans	Female	40-59	09-10	336	34	9
Mexican Americans	Female	60+	05-06	540	65	3
Mexican Americans	Female	60+	07-08	434	33	5
Mexican Americans	Female	60+	09-10	552	52	6
All Hispanics	Male	12-19	09-10	109	11	11
All Hispanics	Male	20-39	09-10	128	13	13
All Hispanics	Male	40-59	09-10	200	22	12
All Hispanics	Male	60+	09-10	361	68	7
All Hispanics	Female	12-19	09-10	78.4	4.7	10
All Hispanics	Female	20-39	09-10	121	14	14
All Hispanics	Female	40-59	09-10	286	29	14
All Hispanics	Female	60+	09-10	458	48	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 8.88, 10.1, and 33.9, respectively.

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) (2005 - 2010)†

CAS Number 3268-87-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	674	73	9
Non-Hispanic Whites	Male	12-19	07-08	570	37	6
Non-Hispanic Whites	Male	12-19	09-10	514	41	10
Non-Hispanic Whites	Male	20-39	05-06	936	79	12
Non-Hispanic Whites	Male	20-39	07-08	809	63	15
Non-Hispanic Whites	Male	20-39	09-10	721	43	17
Non-Hispanic Whites	Male	40-59	05-06	1800	219	12
Non-Hispanic Whites	Male	40-59	07-08	1210	82	15
Non-Hispanic Whites	Male	40-59	09-10	1160	106	17
Non-Hispanic Whites	Male	60+	05-06	2580	245	15
Non-Hispanic Whites	Male	60+	07-08	1950	131	23
Non-Hispanic Whites	Male	60+	09-10	1700	92	21
Non-Hispanic Whites	Female	12-19	05-06	562	44	10
Non-Hispanic Whites	Female	12-19	07-08	485	20	7
Non-Hispanic Whites	Female	12-19	09-10	398	32	8
Non-Hispanic Whites	Female	20-39	05-06	1180	153	16
Non-Hispanic Whites	Female	20-39	07-08	829	46	12
Non-Hispanic Whites	Female	20-39	09-10	674	64	18
Non-Hispanic Whites	Female	40-59	05-06	2240	191	13
Non-Hispanic Whites	Female	40-59	07-08	1470	103	17
Non-Hispanic Whites	Female	40-59	09-10	1250	62	17
Non-Hispanic Whites	Female	60+	05-06	3970	469	17
Non-Hispanic Whites	Female	60+	07-08	2920	334	19
Non-Hispanic Whites	Female	60+	09-10	2460	164	22
Non-Hispanic Blacks	Male	12-19	05-06	712	59	13
Non-Hispanic Blacks	Male	12-19	07-08	537	39	6
Non-Hispanic Blacks	Male	12-19	09-10	412	28	5
Non-Hispanic Blacks	Male	20-39	05-06	761	71	6
Non-Hispanic Blacks	Male	20-39	07-08	771	65	6
Non-Hispanic Blacks	Male	20-39	09-10	573	23	7
Non-Hispanic Blacks	Male	40-59	05-06	1270	183	5
Non-Hispanic Blacks	Male	40-59	07-08	1210	99	6
Non-Hispanic Blacks	Male	40-59	09-10	991	83	7
Non-Hispanic Blacks	Male	60+	05-06	2470	424	5
Non-Hispanic Blacks	Male	60+	07-08	1900	172	8
Non-Hispanic Blacks	Male	60+	09-10	1420	61	9
Non-Hispanic Blacks	Female	12-19	05-06	753	106	14
Non-Hispanic Blacks	Female	12-19	07-08	483	61	4
Non-Hispanic Blacks	Female	12-19	09-10	360	22	6
Non-Hispanic Blacks	Female	20-39	05-06	1080	109	7
Non-Hispanic Blacks	Female	20-39	07-08	997	126	7
Non-Hispanic Blacks	Female	20-39	09-10	683	73	7
Non-Hispanic Blacks	Female	40-59	05-06	2450	300	7
Non-Hispanic Blacks	Female	40-59	07-08	1830	163	6
Non-Hispanic Blacks	Female	40-59	09-10	1350	173	7
Non-Hispanic Blacks	Female	60+	05-06	6220	925	5
Non-Hispanic Blacks	Female	60+	07-08	3920	359	6
Non-Hispanic Blacks	Female	60+	09-10	3800	678	7
Mexican Americans	Male	12-19	05-06	606	47	11
Mexican Americans	Male	12-19	07-08	614	29	6
Mexican Americans	Male	12-19	09-10	458	43	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	1280	156	9
Mexican Americans	Male	20-39	07-08	922	103	9
Mexican Americans	Male	20-39	09-10	784	70	8
Mexican Americans	Male	40-59	05-06	1800	216	4
Mexican Americans	Male	40-59	07-08	1540	126	6
Mexican Americans	Male	40-59	09-10	1620	211	7
Mexican Americans	Male	60+	05-06	2500	251	4
Mexican Americans	Male	60+	07-08	2030	259	5
Mexican Americans	Male	60+	09-10	2540	493	5
Mexican Americans	Female	12-19	05-06	605	23	16
Mexican Americans	Female	12-19	07-08	536	59	5
Mexican Americans	Female	12-19	09-10	369	24	7
Mexican Americans	Female	20-39	05-06	1240	104	9
Mexican Americans	Female	20-39	07-08	1000	63	7
Mexican Americans	Female	20-39	09-10	664	102	10
Mexican Americans	Female	40-59	05-06	3050	469	6
Mexican Americans	Female	40-59	07-08	1960	143	5
Mexican Americans	Female	40-59	09-10	2100	156	9
Mexican Americans	Female	60+	05-06	4190	843	3
Mexican Americans	Female	60+	07-08	2950	194	5
Mexican Americans	Female	60+	09-10	3050	242	6
All Hispanics	Male	12-19	09-10	508	54	11
All Hispanics	Male	20-39	09-10	837	128	13
All Hispanics	Male	40-59	09-10	1370	148	12
All Hispanics	Male	60+	09-10	2210	436	7
All Hispanics	Female	12-19	09-10	362	20	10
All Hispanics	Female	20-39	09-10	662	76	14
All Hispanics	Female	40-59	09-10	1770	165	14
All Hispanics	Female	60+	09-10	2670	230	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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) (2005 - 2010)†

CAS Number 40321-76-4

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	2.55	0.14	9
Non-Hispanic Whites	Male	12-19	07-08	2.31	0.29	6
Non-Hispanic Whites	Male	12-19	09-10	2.22	0.1	10
Non-Hispanic Whites	Male	20-39	05-06	2.49	0.23	12
Non-Hispanic Whites	Male	20-39	07-08	2.93	0.18	15
Non-Hispanic Whites	Male	20-39	09-10	2.59	0.17	17
Non-Hispanic Whites	Male	40-59	05-06	4.48	0.54	12
Non-Hispanic Whites	Male	40-59	07-08	3.96	0.13	15
Non-Hispanic Whites	Male	40-59	09-10	3.77	0.21	17
Non-Hispanic Whites	Male	60+	05-06	7.26	0.4	15
Non-Hispanic Whites	Male	60+	07-08	7.08	0.76	23
Non-Hispanic Whites	Male	60+	09-10	6.03	0.24	20
Non-Hispanic Whites	Female	12-19	05-06	1.55	0.22	10
Non-Hispanic Whites	Female	12-19	07-08	1.64	0.33	7
Non-Hispanic Whites	Female	12-19	09-10	1.70	0.24	8
Non-Hispanic Whites	Female	20-39	05-06	2.57	0.23	16
Non-Hispanic Whites	Female	20-39	07-08	2.40	0.17	12
Non-Hispanic Whites	Female	20-39	09-10	2.06	0.12	17
Non-Hispanic Whites	Female	40-59	05-06	4.25	0.2	13
Non-Hispanic Whites	Female	40-59	07-08	4.12	0.16	17
Non-Hispanic Whites	Female	40-59	09-10	3.65	0.17	17
Non-Hispanic Whites	Female	60+	05-06	7.83	0.56	17
Non-Hispanic Whites	Female	60+	07-08	8.09	0.41	20
Non-Hispanic Whites	Female	60+	09-10	7.06	0.48	22
Non-Hispanic Blacks	Male	12-19	05-06	2.34	0.15	13
Non-Hispanic Blacks	Male	12-19	07-08	2.21	0.42	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	2.95	0.16	6
Non-Hispanic Blacks	Male	20-39	07-08	2.94	0.26	6
Non-Hispanic Blacks	Male	20-39	09-10	2.14	0.29	5
Non-Hispanic Blacks	Male	40-59	05-06	4.00	0.24	5
Non-Hispanic Blacks	Male	40-59	07-08	4.41	0.34	6
Non-Hispanic Blacks	Male	40-59	09-10	2.81	0.31	7
Non-Hispanic Blacks	Male	60+	05-06	8.16	1.26	5
Non-Hispanic Blacks	Male	60+	07-08	6.56	0.8	8
Non-Hispanic Blacks	Male	60+	09-10	5.33	0.38	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	2.52	0.1	7
Non-Hispanic Blacks	Female	20-39	07-08	2.61	0.29	7
Non-Hispanic Blacks	Female	20-39	09-10	2.17	0.19	7
Non-Hispanic Blacks	Female	40-59	05-06	4.64	0.44	7
Non-Hispanic Blacks	Female	40-59	07-08	4.40	0.44	6
Non-Hispanic Blacks	Female	40-59	09-10	4.05	0.37	7
Non-Hispanic Blacks	Female	60+	05-06	12.5	1.7	5
Non-Hispanic Blacks	Female	60+	07-08	11.4	1	6
Non-Hispanic Blacks	Female	60+	09-10	8.95	0.84	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	1.84	0.12	6
Mexican Americans	Male	12-19	09-10	1.87	0.31	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	2.13	0.26	9
Mexican Americans	Male	20-39	07-08	2.48	0.29	9
Mexican Americans	Male	20-39	09-10	2.09	0.17	8
Mexican Americans	Male	40-59	05-06	3.61	0.63	4
Mexican Americans	Male	40-59	07-08	3.96	0.34	6
Mexican Americans	Male	40-59	09-10	3.45	0.19	7
Mexican Americans	Male	60+	05-06	5.59	0.16	4
Mexican Americans	Male	60+	07-08	6.07	0.17	5
Mexican Americans	Male	60+	09-10	6.57	1.05	5
Mexican Americans	Female	12-19	05-06	1.14	0.16	16
Mexican Americans	Female	12-19	07-08	1.53	0.28	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	1.65	0.23	9
Mexican Americans	Female	20-39	07-08	2.81	0.3	7
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	3.23	0.62	6
Mexican Americans	Female	40-59	07-08	4.15	0.68	5
Mexican Americans	Female	40-59	09-10	3.51	0.26	9
Mexican Americans	Female	60+	05-06	6.48	0.82	3
Mexican Americans	Female	60+	07-08	6.43	0.64	5
Mexican Americans	Female	60+	09-10	7.45	0.93	6
All Hispanics	Male	12-19	09-10	1.78	0.25	11
All Hispanics	Male	20-39	09-10	1.83	0.18	13
All Hispanics	Male	40-59	09-10	3.06	0.21	11
All Hispanics	Male	60+	09-10	6.07	0.84	7
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	3.25	0.2	14
All Hispanics	Female	60+	09-10	6.22	0.73	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.51, 1.07, and 1.56, 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/DioxinLikeChemicals_BiomonitoringSummary.html

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

Serum 1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD) (whole weight) (2005 - 2010)†

CAS Number 40321-76-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	13.8	0.6	9
Non-Hispanic Whites	Male	12-19	07-08	11.6	1.5	6
Non-Hispanic Whites	Male	12-19	09-10	11.8	0.6	10
Non-Hispanic Whites	Male	20-39	05-06	18.0	2.1	12
Non-Hispanic Whites	Male	20-39	07-08	19.3	1.1	15
Non-Hispanic Whites	Male	20-39	09-10	17.0	1.3	17
Non-Hispanic Whites	Male	40-59	05-06	34.2	4.3	12
Non-Hispanic Whites	Male	40-59	07-08	29.2	1	15
Non-Hispanic Whites	Male	40-59	09-10	25.6	1.5	17
Non-Hispanic Whites	Male	60+	05-06	49.2	2.3	15
Non-Hispanic Whites	Male	60+	07-08	45.3	4.4	23
Non-Hispanic Whites	Male	60+	09-10	36.4	1.2	20
Non-Hispanic Whites	Female	12-19	05-06	8.26	1.17	10
Non-Hispanic Whites	Female	12-19	07-08	7.69	1.62	7
Non-Hispanic Whites	Female	12-19	09-10	8.16	1.16	8
Non-Hispanic Whites	Female	20-39	05-06	16.8	1.7	16
Non-Hispanic Whites	Female	20-39	07-08	14.4	1.1	12
Non-Hispanic Whites	Female	20-39	09-10	10.8	0.7	17
Non-Hispanic Whites	Female	40-59	05-06	31.4	2.2	13
Non-Hispanic Whites	Female	40-59	07-08	27.2	1.2	17
Non-Hispanic Whites	Female	40-59	09-10	23.1	1.3	17
Non-Hispanic Whites	Female	60+	05-06	56.9	3.7	17
Non-Hispanic Whites	Female	60+	07-08	54.3	2.9	20
Non-Hispanic Whites	Female	60+	09-10	42.6	2.5	22
Non-Hispanic Blacks	Male	12-19	05-06	11.7	0.6	13
Non-Hispanic Blacks	Male	12-19	07-08	10.5	1.9	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	17.5	1	6
Non-Hispanic Blacks	Male	20-39	07-08	16.4	1.3	6
Non-Hispanic Blacks	Male	20-39	09-10	12.4	1.2	5
Non-Hispanic Blacks	Male	40-59	05-06	25.5	1.5	5
Non-Hispanic Blacks	Male	40-59	07-08	28.3	2.4	6
Non-Hispanic Blacks	Male	40-59	09-10	17.4	2.3	7
Non-Hispanic Blacks	Male	60+	05-06	48.9	7.8	5
Non-Hispanic Blacks	Male	60+	07-08	39.5	4.8	8
Non-Hispanic Blacks	Male	60+	09-10	28.4	1.8	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	14.5	0.7	7
Non-Hispanic Blacks	Female	20-39	07-08	13.2	1.5	7
Non-Hispanic Blacks	Female	20-39	09-10	10.7	0.9	7
Non-Hispanic Blacks	Female	40-59	05-06	29.8	3.1	7
Non-Hispanic Blacks	Female	40-59	07-08	26.6	3	6
Non-Hispanic Blacks	Female	40-59	09-10	22.8	2.1	7
Non-Hispanic Blacks	Female	60+	05-06	83.0	10	5
Non-Hispanic Blacks	Female	60+	07-08	68.3	5.1	6
Non-Hispanic Blacks	Female	60+	09-10	50.9	3.9	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	9.76	0.66	6
Mexican Americans	Male	12-19	09-10	8.83	1.5	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	15.0	1.9	9
Mexican Americans	Male	20-39	07-08	16.3	1.8	9
Mexican Americans	Male	20-39	09-10	12.8	1.3	8
Mexican Americans	Male	40-59	05-06	29.7	6.3	4
Mexican Americans	Male	40-59	07-08	28.3	3.1	6
Mexican Americans	Male	40-59	09-10	24.5	1.6	7
Mexican Americans	Male	60+	05-06	40.5	2.9	4
Mexican Americans	Male	60+	07-08	44.0	3	5
Mexican Americans	Male	60+	09-10	40.2	6.5	5
Mexican Americans	Female	12-19	05-06	6.29	0.9	16
Mexican Americans	Female	12-19	07-08	7.46	1.3	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	11.1	1.7	9
Mexican Americans	Female	20-39	07-08	16.0	1.3	7
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	24.1	4.6	6
Mexican Americans	Female	40-59	07-08	27.9	4.6	5
Mexican Americans	Female	40-59	09-10	22.3	1.4	9
Mexican Americans	Female	60+	05-06	49.3	8.2	3
Mexican Americans	Female	60+	07-08	44.3	4.9	5
Mexican Americans	Female	60+	09-10	41.1	4.5	6
All Hispanics	Male	12-19	09-10	8.36	1.22	11
All Hispanics	Male	20-39	09-10	11.6	1.3	13
All Hispanics	Male	40-59	09-10	21.5	1.7	11
All Hispanics	Male	60+	09-10	36.9	5.3	7
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	20.3	1.2	14
All Hispanics	Female	60+	09-10	36.2	3.5	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

* 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) (2005 - 2010)†

CAS Number 1746-01-6

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	1.21	0.16	12
Non-Hispanic Whites	Male	40-59	07-08	.931	0.086	15
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	2.34	0.19	15
Non-Hispanic Whites	Male	60+	07-08	2.13	0.22	23
Non-Hispanic Whites	Male	60+	09-10	1.52	0.1	20
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	12
Non-Hispanic Whites	Female	20-39	09-10	*	*	18
Non-Hispanic Whites	Female	40-59	05-06	1.31	0.19	13
Non-Hispanic Whites	Female	40-59	07-08	1.32	0.07	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	2.86	0.21	17
Non-Hispanic Whites	Female	60+	07-08	2.98	0.2	20
Non-Hispanic Whites	Female	60+	09-10	2.07	0.19	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	5
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	1.26	0.18	5
Non-Hispanic Blacks	Male	40-59	07-08	1.32	0.09	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	3.47 **	1.25	5
Non-Hispanic Blacks	Male	60+	07-08	2.04	0.42	8
Non-Hispanic Blacks	Male	60+	09-10	1.34	0.13	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	.712	0.117	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	7
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	1.81	0.21	7
Non-Hispanic Blacks	Female	40-59	07-08	1.68	0.15	6
Non-Hispanic Blacks	Female	40-59	09-10	1.17	0.22	7
Non-Hispanic Blacks	Female	60+	05-06	6.40	1.64	5
Non-Hispanic Blacks	Female	60+	07-08	4.50	0.46	6
Non-Hispanic Blacks	Female	60+	09-10	3.54	0.37	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	7
Mexican Americans	Male	40-59	05-06	1.01	0.24	4
Mexican Americans	Male	40-59	07-08	.984	0.188	6
Mexican Americans	Male	40-59	09-10	*	*	7
Mexican Americans	Male	60+	05-06	1.29	0.25	4
Mexican Americans	Male	60+	07-08	1.80	0.21	5
Mexican Americans	Male	60+	09-10	1.95	0.38	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	.925	0.121	7
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	1.08	0.3	6
Mexican Americans	Female	40-59	07-08	1.03 **	0.32	5
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	2.34	0.3	3
Mexican Americans	Female	60+	07-08	2.95	0.32	5
Mexican Americans	Female	60+	09-10	2.30	0.29	6
All Hispanics	Male	12-19	09-10	*	*	9
All Hispanics	Male	20-39	09-10	*	*	12
All Hispanics	Male	40-59	09-10	*	*	11
All Hispanics	Male	60+	09-10	1.82	0.29	7
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	2.30	0.2	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.39, 0.74, and 1.1, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 1746-01-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	9.21	1.29	12
Non-Hispanic Whites	Male	40-59	07-08	6.91	0.73	15
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	15.8	1.1	15
Non-Hispanic Whites	Male	60+	07-08	13.7	1.3	23
Non-Hispanic Whites	Male	60+	09-10	9.20	0.58	20
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	12
Non-Hispanic Whites	Female	20-39	09-10	*	*	18
Non-Hispanic Whites	Female	40-59	05-06	10.0	1.6	13
Non-Hispanic Whites	Female	40-59	07-08	8.72	0.52	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	20.7	1.4	17
Non-Hispanic Whites	Female	60+	07-08	19.9	1.4	20
Non-Hispanic Whites	Female	60+	09-10	12.4	1	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	5
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	7.96	1.02	5
Non-Hispanic Blacks	Male	40-59	07-08	8.41	0.59	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	20.7 **	7.7	5
Non-Hispanic Blacks	Male	60+	07-08	12.0	2.2	8
Non-Hispanic Blacks	Male	60+	09-10	7.13	0.65	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	4.10	0.69	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	7
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	11.7	1.5	7
Non-Hispanic Blacks	Female	40-59	07-08	10.2	1.2	6
Non-Hispanic Blacks	Female	40-59	09-10	6.53	1.19	7
Non-Hispanic Blacks	Female	60+	05-06	42.6	10.8	5
Non-Hispanic Blacks	Female	60+	07-08	26.9	2.4	6
Non-Hispanic Blacks	Female	60+	09-10	20.1	1.8	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	7
Mexican Americans	Male	40-59	05-06	8.36	2.32	4
Mexican Americans	Male	40-59	07-08	7.12	1.37	6
Mexican Americans	Male	40-59	09-10	*	*	7
Mexican Americans	Male	60+	05-06	9.23	1.8	4
Mexican Americans	Male	60+	07-08	13.0	1.7	5
Mexican Americans	Male	60+	09-10	11.9	2.3	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	5.31	0.66	7
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	7.85	2.09	6
Mexican Americans	Female	40-59	07-08	6.78 **	2.12	5
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	17.9	3.2	3
Mexican Americans	Female	60+	07-08	20.3	2.5	5
Mexican Americans	Female	60+	09-10	12.7	1.4	6
All Hispanics	Male	12-19	09-10	*	*	9
All Hispanics	Male	20-39	09-10	*	*	12
All Hispanics	Male	40-59	09-10	*	*	11
All Hispanics	Male	60+	09-10	11.0	1.8	7
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	13.6	1.2	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 67562-39-4

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	12.5	1.6	9
Non-Hispanic Whites	Male	12-19	07-08	12.0	0.8	6
Non-Hispanic Whites	Male	12-19	09-10	7.93	0.59	10
Non-Hispanic Whites	Male	20-39	05-06	7.09	0.32	12
Non-Hispanic Whites	Male	20-39	07-08	8.07	0.58	15
Non-Hispanic Whites	Male	20-39	09-10	6.63	0.54	17
Non-Hispanic Whites	Male	40-59	05-06	8.33	0.86	12
Non-Hispanic Whites	Male	40-59	07-08	7.42	0.48	15
Non-Hispanic Whites	Male	40-59	09-10	7.00	0.59	17
Non-Hispanic Whites	Male	60+	05-06	8.16	0.85	15
Non-Hispanic Whites	Male	60+	07-08	7.24	0.3	23
Non-Hispanic Whites	Male	60+	09-10	6.32	0.41	21
Non-Hispanic Whites	Female	12-19	05-06	7.63	0.43	10
Non-Hispanic Whites	Female	12-19	07-08	8.74	0.41	7
Non-Hispanic Whites	Female	12-19	09-10	7.84	0.83	8
Non-Hispanic Whites	Female	20-39	05-06	6.94	0.58	16
Non-Hispanic Whites	Female	20-39	07-08	8.22	0.57	12
Non-Hispanic Whites	Female	20-39	09-10	6.26	0.84	18
Non-Hispanic Whites	Female	40-59	05-06	6.85	0.46	13
Non-Hispanic Whites	Female	40-59	07-08	7.00	0.5	17
Non-Hispanic Whites	Female	40-59	09-10	4.96	0.33	17
Non-Hispanic Whites	Female	60+	05-06	7.74	0.6	17
Non-Hispanic Whites	Female	60+	07-08	8.12	0.89	19
Non-Hispanic Whites	Female	60+	09-10	6.30	0.64	22
Non-Hispanic Blacks	Male	12-19	05-06	10.8	1.2	13
Non-Hispanic Blacks	Male	12-19	07-08	10.2	0.7	6
Non-Hispanic Blacks	Male	12-19	09-10	7.62	0.66	6
Non-Hispanic Blacks	Male	20-39	05-06	8.24	1.31	6
Non-Hispanic Blacks	Male	20-39	07-08	7.61	0.83	6
Non-Hispanic Blacks	Male	20-39	09-10	5.58	0.85	7
Non-Hispanic Blacks	Male	40-59	05-06	7.85	1.02	5
Non-Hispanic Blacks	Male	40-59	07-08	7.10	0.7	6
Non-Hispanic Blacks	Male	40-59	09-10	6.14	0.73	7
Non-Hispanic Blacks	Male	60+	05-06	10.6	2.5	5
Non-Hispanic Blacks	Male	60+	07-08	7.78	0.83	8
Non-Hispanic Blacks	Male	60+	09-10	5.43	0.67	9
Non-Hispanic Blacks	Female	12-19	05-06	8.80	1.47	14
Non-Hispanic Blacks	Female	12-19	07-08	8.73	0.99	4
Non-Hispanic Blacks	Female	12-19	09-10	7.11	1.36	6
Non-Hispanic Blacks	Female	20-39	05-06	6.20	0.58	7
Non-Hispanic Blacks	Female	20-39	07-08	7.86	0.39	7
Non-Hispanic Blacks	Female	20-39	09-10	5.24	0.39	7
Non-Hispanic Blacks	Female	40-59	05-06	6.35	0.74	7
Non-Hispanic Blacks	Female	40-59	07-08	9.30	0.71	6
Non-Hispanic Blacks	Female	40-59	09-10	5.09	0.71	7
Non-Hispanic Blacks	Female	60+	05-06	10.5	1.2	5
Non-Hispanic Blacks	Female	60+	07-08	8.95	0.83	6
Non-Hispanic Blacks	Female	60+	09-10	7.45	0.9	7
Mexican Americans	Male	12-19	05-06	9.25	1.4	11
Mexican Americans	Male	12-19	07-08	8.38	0.64	6
Mexican Americans	Male	12-19	09-10	8.90	1.43	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	6.57	0.48	9
Mexican Americans	Male	20-39	07-08	8.14	0.68	9
Mexican Americans	Male	20-39	09-10	7.22	1.03	8
Mexican Americans	Male	40-59	05-06	7.45	1.52	4
Mexican Americans	Male	40-59	07-08	6.77	0.21	6
Mexican Americans	Male	40-59	09-10	5.63	0.28	7
Mexican Americans	Male	60+	05-06	7.18	0.99	4
Mexican Americans	Male	60+	07-08	6.33	0.3	5
Mexican Americans	Male	60+	09-10	7.47	0.7	5
Mexican Americans	Female	12-19	05-06	5.61	0.33	16
Mexican Americans	Female	12-19	07-08	8.97	0.69	5
Mexican Americans	Female	12-19	09-10	5.49	0.39	7
Mexican Americans	Female	20-39	05-06	6.00	0.4	9
Mexican Americans	Female	20-39	07-08	7.42	0.61	7
Mexican Americans	Female	20-39	09-10	6.11	0.89	10
Mexican Americans	Female	40-59	05-06	8.74	1.09	6
Mexican Americans	Female	40-59	07-08	6.36	0.58	5
Mexican Americans	Female	40-59	09-10	6.64	0.57	9
Mexican Americans	Female	60+	05-06	6.28	1.42	3
Mexican Americans	Female	60+	07-08	6.66	0.57	5
Mexican Americans	Female	60+	09-10	8.50	0.7	6
All Hispanics	Male	12-19	09-10	9.87	1.35	11
All Hispanics	Male	20-39	09-10	7.48	0.8	13
All Hispanics	Male	40-59	09-10	5.43	0.28	12
All Hispanics	Male	60+	09-10	7.24	0.64	8
All Hispanics	Female	12-19	09-10	5.81	0.38	10
All Hispanics	Female	20-39	09-10	5.76	0.63	14
All Hispanics	Female	40-59	09-10	6.65	0.4	14
All Hispanics	Female	60+	09-10	7.04	0.81	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.23, 0.05, and 2.69, respectively.

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) (2005 - 2010)†

CAS Number 67562-39-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	68.5	9.8	9
Non-Hispanic Whites	Male	12-19	07-08	59.8	4.3	6
Non-Hispanic Whites	Male	12-19	09-10	42.3	3.3	10
Non-Hispanic Whites	Male	20-39	05-06	51.2	3.2	12
Non-Hispanic Whites	Male	20-39	07-08	52.5	3.1	15
Non-Hispanic Whites	Male	20-39	09-10	43.1	3.4	17
Non-Hispanic Whites	Male	40-59	05-06	63.0	7.1	12
Non-Hispanic Whites	Male	40-59	07-08	54.3	3.2	15
Non-Hispanic Whites	Male	40-59	09-10	47.1	3.6	17
Non-Hispanic Whites	Male	60+	05-06	55.4	5.5	15
Non-Hispanic Whites	Male	60+	07-08	46.4	1.9	23
Non-Hispanic Whites	Male	60+	09-10	38.4	2.5	21
Non-Hispanic Whites	Female	12-19	05-06	40.7	2.6	10
Non-Hispanic Whites	Female	12-19	07-08	41.3	3.3	7
Non-Hispanic Whites	Female	12-19	09-10	37.5	4.3	8
Non-Hispanic Whites	Female	20-39	05-06	45.0	3.8	16
Non-Hispanic Whites	Female	20-39	07-08	49.0	3.7	12
Non-Hispanic Whites	Female	20-39	09-10	33.4	4.6	18
Non-Hispanic Whites	Female	40-59	05-06	50.3	3.7	13
Non-Hispanic Whites	Female	40-59	07-08	46.4	3.7	17
Non-Hispanic Whites	Female	40-59	09-10	31.3	2.1	17
Non-Hispanic Whites	Female	60+	05-06	56.3	4.2	17
Non-Hispanic Whites	Female	60+	07-08	54.4	5.9	19
Non-Hispanic Whites	Female	60+	09-10	38.5	4	22
Non-Hispanic Blacks	Male	12-19	05-06	54.8	6.7	13
Non-Hispanic Blacks	Male	12-19	07-08	48.3	2.8	6
Non-Hispanic Blacks	Male	12-19	09-10	34.8	3.6	6
Non-Hispanic Blacks	Male	20-39	05-06	49.7	9.1	6
Non-Hispanic Blacks	Male	20-39	07-08	42.9	4.8	6
Non-Hispanic Blacks	Male	20-39	09-10	30.6	3.9	7
Non-Hispanic Blacks	Male	40-59	05-06	50.1	6.7	5
Non-Hispanic Blacks	Male	40-59	07-08	45.3	4.1	6
Non-Hispanic Blacks	Male	40-59	09-10	37.9	4.8	7
Non-Hispanic Blacks	Male	60+	05-06	62.2	13.6	5
Non-Hispanic Blacks	Male	60+	07-08	46.9	5	8
Non-Hispanic Blacks	Male	60+	09-10	28.8	3.1	9
Non-Hispanic Blacks	Female	12-19	05-06	43.4	7.2	14
Non-Hispanic Blacks	Female	12-19	07-08	41.9	5.9	4
Non-Hispanic Blacks	Female	12-19	09-10	31.0	5.4	6
Non-Hispanic Blacks	Female	20-39	05-06	35.6	3.3	7
Non-Hispanic Blacks	Female	20-39	07-08	39.8	2.3	7
Non-Hispanic Blacks	Female	20-39	09-10	25.7	1.7	7
Non-Hispanic Blacks	Female	40-59	05-06	40.3	4.1	7
Non-Hispanic Blacks	Female	40-59	07-08	55.7	4.3	6
Non-Hispanic Blacks	Female	40-59	09-10	28.8	4.2	7
Non-Hispanic Blacks	Female	60+	05-06	69.9	7.9	5
Non-Hispanic Blacks	Female	60+	07-08	53.5	3.8	6
Non-Hispanic Blacks	Female	60+	09-10	42.7	5.3	7
Mexican Americans	Male	12-19	05-06	49.7	7.2	11
Mexican Americans	Male	12-19	07-08	44.5	3.5	6
Mexican Americans	Male	12-19	09-10	41.5	6.2	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	46.5	3.4	9
Mexican Americans	Male	20-39	07-08	55.0	4.2	9
Mexican Americans	Male	20-39	09-10	43.2	5.4	8
Mexican Americans	Male	40-59	05-06	59.9	11.2	4
Mexican Americans	Male	40-59	07-08	48.4	3.4	6
Mexican Americans	Male	40-59	09-10	39.9	2.3	7
Mexican Americans	Male	60+	05-06	50.8	4.8	4
Mexican Americans	Male	60+	07-08	45.6	2.6	5
Mexican Americans	Male	60+	09-10	45.9	4.2	5
Mexican Americans	Female	12-19	05-06	30.5	1.6	16
Mexican Americans	Female	12-19	07-08	44.2	4	5
Mexican Americans	Female	12-19	09-10	25.6	1.6	7
Mexican Americans	Female	20-39	05-06	39.8	2.8	9
Mexican Americans	Female	20-39	07-08	42.4	2.7	7
Mexican Americans	Female	20-39	09-10	32.6	4.4	10
Mexican Americans	Female	40-59	05-06	64.2	7.8	6
Mexican Americans	Female	40-59	07-08	42.8	4.2	5
Mexican Americans	Female	40-59	09-10	41.8	2.7	9
Mexican Americans	Female	60+	05-06	49.6 **	15.4	3
Mexican Americans	Female	60+	07-08	45.8	4.4	5
Mexican Americans	Female	60+	09-10	47.0	2.6	6
All Hispanics	Male	12-19	09-10	45.9	6.2	11
All Hispanics	Male	20-39	09-10	45.9	4.1	13
All Hispanics	Male	40-59	09-10	37.5	2	12
All Hispanics	Male	60+	09-10	46.4	5.3	8
All Hispanics	Female	12-19	09-10	26.8	1.7	10
All Hispanics	Female	20-39	09-10	31.1	3.2	14
All Hispanics	Female	40-59	09-10	41.0	1.9	14
All Hispanics	Female	60+	09-10	41.1	4.1	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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) (2005 - 2010)†

CAS Number 55673-89-7

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	09-10	*	*	14
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Male	60+	09-10	*	*	19
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	12
Non-Hispanic Whites	Female	20-39	09-10	*	*	18
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	19
Non-Hispanic Whites	Female	60+	09-10	*	*	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	5
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	7
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	6
Non-Hispanic Blacks	Female	40-59	09-10	*	*	7
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	6
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	*	*	7
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	7
Mexican Americans	Female	20-39	09-10	*	*	8
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	5
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	12
All Hispanics	Male	60+	09-10	*	*	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	12
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.23, 0.33, and 0.49, 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/DioxinLikeChemicals_BiomonitoringSummary.html

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

Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (whole weight) (2005 - 2010)†

CAS Number 55673-89-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	09-10	*	*	14
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Male	60+	09-10	*	*	19
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	12
Non-Hispanic Whites	Female	20-39	09-10	*	*	18
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	19
Non-Hispanic Whites	Female	60+	09-10	*	*	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	5
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	7
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	6
Non-Hispanic Blacks	Female	40-59	09-10	*	*	7
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	6
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	*	*	7
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	7
Mexican Americans	Female	20-39	09-10	*	*	8
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	5
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	12
All Hispanics	Male	60+	09-10	*	*	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	12
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

* 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) (2005 - 2010)†

CAS Number 70648-26-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	2.18	0.17	9
Non-Hispanic Whites	Male	12-19	07-08	2.58	0.22	6
Non-Hispanic Whites	Male	12-19	09-10	2.03	0.13	10
Non-Hispanic Whites	Male	20-39	05-06	2.51	0.29	12
Non-Hispanic Whites	Male	20-39	07-08	3.13	0.16	15
Non-Hispanic Whites	Male	20-39	09-10	2.50	0.13	17
Non-Hispanic Whites	Male	40-59	05-06	4.55	0.3	12
Non-Hispanic Whites	Male	40-59	07-08	3.78	0.14	15
Non-Hispanic Whites	Male	40-59	09-10	4.11	0.28	17
Non-Hispanic Whites	Male	60+	05-06	5.40	0.45	15
Non-Hispanic Whites	Male	60+	07-08	4.80	0.21	23
Non-Hispanic Whites	Male	60+	09-10	4.34	0.25	20
Non-Hispanic Whites	Female	12-19	05-06	1.71	0.15	10
Non-Hispanic Whites	Female	12-19	07-08	1.76	0.1	7
Non-Hispanic Whites	Female	12-19	09-10	1.61	0.16	8
Non-Hispanic Whites	Female	20-39	05-06	2.36	0.1	16
Non-Hispanic Whites	Female	20-39	07-08	2.29	0.11	12
Non-Hispanic Whites	Female	20-39	09-10	2.09	0.09	18
Non-Hispanic Whites	Female	40-59	05-06	3.58	0.18	13
Non-Hispanic Whites	Female	40-59	07-08	3.24	0.16	17
Non-Hispanic Whites	Female	40-59	09-10	2.77	0.14	17
Non-Hispanic Whites	Female	60+	05-06	5.54	0.34	17
Non-Hispanic Whites	Female	60+	07-08	5.29	0.3	20
Non-Hispanic Whites	Female	60+	09-10	4.06	0.46	14
Non-Hispanic Blacks	Male	12-19	05-06	1.79	0.17	13
Non-Hispanic Blacks	Male	12-19	07-08	1.87	0.11	6
Non-Hispanic Blacks	Male	12-19	09-10	1.45	0.11	6
Non-Hispanic Blacks	Male	20-39	05-06	2.61	0.23	6
Non-Hispanic Blacks	Male	20-39	07-08	2.68	0.12	6
Non-Hispanic Blacks	Male	20-39	09-10	1.59	0.21	7
Non-Hispanic Blacks	Male	40-59	05-06	3.33	0.33	5
Non-Hispanic Blacks	Male	40-59	07-08	3.69	0.48	6
Non-Hispanic Blacks	Male	40-59	09-10	2.52	0.19	7
Non-Hispanic Blacks	Male	60+	05-06	5.35	0.88	5
Non-Hispanic Blacks	Male	60+	07-08	4.49	0.41	8
Non-Hispanic Blacks	Male	60+	09-10	3.36	0.25	9
Non-Hispanic Blacks	Female	12-19	05-06	1.25	0.15	14
Non-Hispanic Blacks	Female	12-19	07-08	1.53	0.15	4
Non-Hispanic Blacks	Female	12-19	09-10	1.46	0.21	6
Non-Hispanic Blacks	Female	20-39	05-06	2.14	0.13	7
Non-Hispanic Blacks	Female	20-39	07-08	2.17	0.41	7
Non-Hispanic Blacks	Female	20-39	09-10	1.76	0.17	7
Non-Hispanic Blacks	Female	40-59	05-06	3.37	0.37	7
Non-Hispanic Blacks	Female	40-59	07-08	3.61	0.36	6
Non-Hispanic Blacks	Female	40-59	09-10	2.94	0.29	7
Non-Hispanic Blacks	Female	60+	05-06	8.98	1.22	5
Non-Hispanic Blacks	Female	60+	07-08	6.88	0.64	6
Non-Hispanic Blacks	Female	60+	09-10	6.00	0.67	7
Mexican Americans	Male	12-19	05-06	1.67	0.12	11
Mexican Americans	Male	12-19	07-08	1.30	0.33	6
Mexican Americans	Male	12-19	09-10	1.74	0.19	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	2.29	0.22	9
Mexican Americans	Male	20-39	07-08	2.70	0.25	9
Mexican Americans	Male	20-39	09-10	2.52	0.23	8
Mexican Americans	Male	40-59	05-06	3.28	0.58	4
Mexican Americans	Male	40-59	07-08	2.97	0.22	6
Mexican Americans	Male	40-59	09-10	2.94	0.19	7
Mexican Americans	Male	60+	05-06	4.09	0.28	4
Mexican Americans	Male	60+	07-08	3.52	0.21	5
Mexican Americans	Male	60+	09-10	5.04	0.47	5
Mexican Americans	Female	12-19	05-06	1.30	0.05	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	1.10	0.07	7
Mexican Americans	Female	20-39	05-06	1.83	0.17	9
Mexican Americans	Female	20-39	07-08	2.06	0.11	7
Mexican Americans	Female	20-39	09-10	1.60	0.24	10
Mexican Americans	Female	40-59	05-06	3.15	0.22	6
Mexican Americans	Female	40-59	07-08	2.71	0.19	5
Mexican Americans	Female	40-59	09-10	2.74	0.17	9
Mexican Americans	Female	60+	05-06	4.45	0.38	3
Mexican Americans	Female	60+	07-08	4.69	0.37	5
Mexican Americans	Female	60+	09-10	4.68	0.44	6
All Hispanics	Male	12-19	09-10	1.73	0.14	11
All Hispanics	Male	20-39	09-10	2.28	0.19	13
All Hispanics	Male	40-59	09-10	2.88	0.13	12
All Hispanics	Male	60+	09-10	4.30	0.47	8
All Hispanics	Female	12-19	09-10	1.19	0.08	10
All Hispanics	Female	20-39	09-10	1.65	0.17	14
All Hispanics	Female	40-59	09-10	2.75	0.14	14
All Hispanics	Female	60+	09-10	4.35	0.28	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.27, 0.39, and 0.78, 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/DioxinLikeChemicals_BiomonitoringSummary.html

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

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 - 2010)†

CAS Number 70648-26-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	12.1	1.1	9
Non-Hispanic Whites	Male	12-19	07-08	12.9	1.1	6
Non-Hispanic Whites	Male	12-19	09-10	10.8	0.7	10
Non-Hispanic Whites	Male	20-39	05-06	18.1	2.4	12
Non-Hispanic Whites	Male	20-39	07-08	20.8	1.4	15
Non-Hispanic Whites	Male	20-39	09-10	16.5	1.1	17
Non-Hispanic Whites	Male	40-59	05-06	34.3	2.6	12
Non-Hispanic Whites	Male	40-59	07-08	27.9	1.2	15
Non-Hispanic Whites	Male	40-59	09-10	27.6	1.7	17
Non-Hispanic Whites	Male	60+	05-06	36.8	2.8	15
Non-Hispanic Whites	Male	60+	07-08	30.6	1.1	23
Non-Hispanic Whites	Male	60+	09-10	26.3	1.5	20
Non-Hispanic Whites	Female	12-19	05-06	9.07	0.73	10
Non-Hispanic Whites	Female	12-19	07-08	8.24	0.51	7
Non-Hispanic Whites	Female	12-19	09-10	7.66	0.78	8
Non-Hispanic Whites	Female	20-39	05-06	15.3	0.8	16
Non-Hispanic Whites	Female	20-39	07-08	13.7	0.8	12
Non-Hispanic Whites	Female	20-39	09-10	11.1	0.6	18
Non-Hispanic Whites	Female	40-59	05-06	26.5	1.9	13
Non-Hispanic Whites	Female	40-59	07-08	21.4	1.1	17
Non-Hispanic Whites	Female	40-59	09-10	17.5	1	17
Non-Hispanic Whites	Female	60+	05-06	40.4	2.4	17
Non-Hispanic Whites	Female	60+	07-08	35.5	2.1	20
Non-Hispanic Whites	Female	60+	09-10	24.9	2.4	14
Non-Hispanic Blacks	Male	12-19	05-06	9.18	0.88	13
Non-Hispanic Blacks	Male	12-19	07-08	8.89	0.56	6
Non-Hispanic Blacks	Male	12-19	09-10	6.66	0.66	6
Non-Hispanic Blacks	Male	20-39	05-06	15.5	1.5	6
Non-Hispanic Blacks	Male	20-39	07-08	15.2	0.9	6
Non-Hispanic Blacks	Male	20-39	09-10	8.85	0.97	7
Non-Hispanic Blacks	Male	40-59	05-06	21.2	2.1	5
Non-Hispanic Blacks	Male	40-59	07-08	23.7	3.2	6
Non-Hispanic Blacks	Male	40-59	09-10	15.6	1.2	7
Non-Hispanic Blacks	Male	60+	05-06	31.5	4.4	5
Non-Hispanic Blacks	Male	60+	07-08	27.0	2.4	8
Non-Hispanic Blacks	Male	60+	09-10	17.9	1.2	9
Non-Hispanic Blacks	Female	12-19	05-06	6.19	0.73	14
Non-Hispanic Blacks	Female	12-19	07-08	7.18	0.55	4
Non-Hispanic Blacks	Female	12-19	09-10	6.41	0.83	6
Non-Hispanic Blacks	Female	20-39	05-06	12.2	0.7	7
Non-Hispanic Blacks	Female	20-39	07-08	11.1	2.2	7
Non-Hispanic Blacks	Female	20-39	09-10	8.70	0.83	7
Non-Hispanic Blacks	Female	40-59	05-06	21.5	2.4	7
Non-Hispanic Blacks	Female	40-59	07-08	21.8	2.5	6
Non-Hispanic Blacks	Female	40-59	09-10	16.6	1.8	7
Non-Hispanic Blacks	Female	60+	05-06	60.0	7.8	5
Non-Hispanic Blacks	Female	60+	07-08	41.1	2.9	6
Non-Hispanic Blacks	Female	60+	09-10	34.1	3.4	7
Mexican Americans	Male	12-19	05-06	9.02	0.49	11
Mexican Americans	Male	12-19	07-08	7.21	2.01	6
Mexican Americans	Male	12-19	09-10	8.26	1.07	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	16.0	1.1	9
Mexican Americans	Male	20-39	07-08	18.5	2	9
Mexican Americans	Male	20-39	09-10	15.5	1.8	8
Mexican Americans	Male	40-59	05-06	27.2	5.9	4
Mexican Americans	Male	40-59	07-08	21.4	2.4	6
Mexican Americans	Male	40-59	09-10	20.9	1.6	7
Mexican Americans	Male	60+	05-06	29.3	0.9	4
Mexican Americans	Male	60+	07-08	25.2	1.1	5
Mexican Americans	Male	60+	09-10	31.0	2.7	5
Mexican Americans	Female	12-19	05-06	7.08	0.27	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	5.13	0.3	7
Mexican Americans	Female	20-39	05-06	12.2	1.2	9
Mexican Americans	Female	20-39	07-08	11.9	0.8	7
Mexican Americans	Female	20-39	09-10	8.62	1.27	10
Mexican Americans	Female	40-59	05-06	23.3	2.1	6
Mexican Americans	Female	40-59	07-08	18.2	1.2	5
Mexican Americans	Female	40-59	09-10	17.4	1	9
Mexican Americans	Female	60+	05-06	34.2	5.3	3
Mexican Americans	Female	60+	07-08	32.2	2.9	5
Mexican Americans	Female	60+	09-10	25.7	1.7	6
All Hispanics	Male	12-19	09-10	8.13	0.78	11
All Hispanics	Male	20-39	09-10	14.5	1.5	13
All Hispanics	Male	40-59	09-10	20.0	1.2	12
All Hispanics	Male	60+	09-10	26.9	2.7	8
All Hispanics	Female	12-19	09-10	5.51	0.35	10
All Hispanics	Female	20-39	09-10	9.02	0.91	14
All Hispanics	Female	40-59	09-10	17.1	0.8	14
All Hispanics	Female	60+	09-10	25.6	1.1	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

* 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) (2005 - 2010)†

CAS Number 57117-44-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	2.46	0.17	9
Non-Hispanic Whites	Male	12-19	07-08	3.09	0.13	6
Non-Hispanic Whites	Male	12-19	09-10	2.21	0.1	10
Non-Hispanic Whites	Male	20-39	05-06	2.68	0.31	12
Non-Hispanic Whites	Male	20-39	07-08	2.98	0.18	15
Non-Hispanic Whites	Male	20-39	09-10	2.71	0.12	17
Non-Hispanic Whites	Male	40-59	05-06	4.91	0.42	12
Non-Hispanic Whites	Male	40-59	07-08	3.97	0.18	15
Non-Hispanic Whites	Male	40-59	09-10	4.62	0.36	17
Non-Hispanic Whites	Male	60+	05-06	5.44	0.36	15
Non-Hispanic Whites	Male	60+	07-08	4.82	0.21	23
Non-Hispanic Whites	Male	60+	09-10	4.41	0.29	21
Non-Hispanic Whites	Female	12-19	05-06	1.91	0.12	10
Non-Hispanic Whites	Female	12-19	07-08	1.71	0.33	7
Non-Hispanic Whites	Female	12-19	09-10	1.70	0.15	8
Non-Hispanic Whites	Female	20-39	05-06	2.43	0.11	16
Non-Hispanic Whites	Female	20-39	07-08	2.44	0.11	12
Non-Hispanic Whites	Female	20-39	09-10	2.30	0.12	18
Non-Hispanic Whites	Female	40-59	05-06	3.68	0.2	13
Non-Hispanic Whites	Female	40-59	07-08	3.30	0.15	17
Non-Hispanic Whites	Female	40-59	09-10	3.08	0.15	17
Non-Hispanic Whites	Female	60+	05-06	5.51	0.31	17
Non-Hispanic Whites	Female	60+	07-08	5.04	0.28	20
Non-Hispanic Whites	Female	60+	09-10	4.58	0.29	22
Non-Hispanic Blacks	Male	12-19	05-06	1.81	0.19	13
Non-Hispanic Blacks	Male	12-19	07-08	2.04	0.19	6
Non-Hispanic Blacks	Male	12-19	09-10	1.62	0.11	6
Non-Hispanic Blacks	Male	20-39	05-06	2.28	0.19	6
Non-Hispanic Blacks	Male	20-39	07-08	2.32	0.15	6
Non-Hispanic Blacks	Male	20-39	09-10	1.66	0.23	7
Non-Hispanic Blacks	Male	40-59	05-06	3.00	0.32	5
Non-Hispanic Blacks	Male	40-59	07-08	3.42	0.33	6
Non-Hispanic Blacks	Male	40-59	09-10	2.68	0.19	7
Non-Hispanic Blacks	Male	60+	05-06	5.27	0.86	5
Non-Hispanic Blacks	Male	60+	07-08	4.38	0.34	8
Non-Hispanic Blacks	Male	60+	09-10	3.73	0.34	9
Non-Hispanic Blacks	Female	12-19	05-06	1.26	0.18	14
Non-Hispanic Blacks	Female	12-19	07-08	1.19	0.3	4
Non-Hispanic Blacks	Female	12-19	09-10	1.57	0.23	6
Non-Hispanic Blacks	Female	20-39	05-06	2.02	0.1	7
Non-Hispanic Blacks	Female	20-39	07-08	2.21	0.19	7
Non-Hispanic Blacks	Female	20-39	09-10	1.80	0.12	7
Non-Hispanic Blacks	Female	40-59	05-06	2.97	0.34	7
Non-Hispanic Blacks	Female	40-59	07-08	3.17	0.23	6
Non-Hispanic Blacks	Female	40-59	09-10	2.93	0.33	7
Non-Hispanic Blacks	Female	60+	05-06	7.44	0.97	5
Non-Hispanic Blacks	Female	60+	07-08	5.96	0.46	6
Non-Hispanic Blacks	Female	60+	09-10	5.43	0.47	7
Mexican Americans	Male	12-19	05-06	1.68	0.26	11
Mexican Americans	Male	12-19	07-08	1.80	0.31	6
Mexican Americans	Male	12-19	09-10	1.99	0.24	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	2.25	0.28	9
Mexican Americans	Male	20-39	07-08	2.09	0.37	9
Mexican Americans	Male	20-39	09-10	2.49	0.32	8
Mexican Americans	Male	40-59	05-06	3.18	0.44	4
Mexican Americans	Male	40-59	07-08	3.00	0.2	6
Mexican Americans	Male	40-59	09-10	2.95	0.19	7
Mexican Americans	Male	60+	05-06	4.31	0.37	4
Mexican Americans	Male	60+	07-08	4.01	0.18	5
Mexican Americans	Male	60+	09-10	4.80	0.31	5
Mexican Americans	Female	12-19	05-06	1.42	0.07	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	1.47	0.06	7
Mexican Americans	Female	20-39	05-06	1.87	0.19	9
Mexican Americans	Female	20-39	07-08	2.13	0.12	7
Mexican Americans	Female	20-39	09-10	1.76	0.26	10
Mexican Americans	Female	40-59	05-06	2.88	0.13	6
Mexican Americans	Female	40-59	07-08	2.82	0.32	5
Mexican Americans	Female	40-59	09-10	2.88	0.21	9
Mexican Americans	Female	60+	05-06	4.10	0.35	3
Mexican Americans	Female	60+	07-08	4.74	0.46	5
Mexican Americans	Female	60+	09-10	4.61	0.4	6
All Hispanics	Male	12-19	09-10	1.97	0.2	11
All Hispanics	Male	20-39	09-10	2.25	0.22	13
All Hispanics	Male	40-59	09-10	2.93	0.16	12
All Hispanics	Male	60+	09-10	4.19	0.36	8
All Hispanics	Female	12-19	09-10	1.48	0.08	10
All Hispanics	Female	20-39	09-10	1.78	0.19	14
All Hispanics	Female	40-59	09-10	2.91	0.16	14
All Hispanics	Female	60+	09-10	4.27	0.25	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.1, 0.14, and 0.27, 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/DioxinLikeChemicals_BiomonitoringSummary.html

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

Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 - 2010)†

CAS Number 57117-44-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	13.5	1.1	9
Non-Hispanic Whites	Male	12-19	07-08	15.4	0.5	6
Non-Hispanic Whites	Male	12-19	09-10	11.8	0.7	10
Non-Hispanic Whites	Male	20-39	05-06	19.4	2.6	12
Non-Hispanic Whites	Male	20-39	07-08	19.8	1.4	15
Non-Hispanic Whites	Male	20-39	09-10	17.8	1	17
Non-Hispanic Whites	Male	40-59	05-06	37.2	3.6	12
Non-Hispanic Whites	Male	40-59	07-08	29.1	1.2	15
Non-Hispanic Whites	Male	40-59	09-10	31.0	2.1	17
Non-Hispanic Whites	Male	60+	05-06	37.0	2.2	15
Non-Hispanic Whites	Male	60+	07-08	30.7	1	23
Non-Hispanic Whites	Male	60+	09-10	26.7	1.7	21
Non-Hispanic Whites	Female	12-19	05-06	10.1	0.6	10
Non-Hispanic Whites	Female	12-19	07-08	8.00	1.54	7
Non-Hispanic Whites	Female	12-19	09-10	8.12	0.79	8
Non-Hispanic Whites	Female	20-39	05-06	15.8	0.8	16
Non-Hispanic Whites	Female	20-39	07-08	14.6	0.7	12
Non-Hispanic Whites	Female	20-39	09-10	12.2	0.7	18
Non-Hispanic Whites	Female	40-59	05-06	27.2	1.9	13
Non-Hispanic Whites	Female	40-59	07-08	21.8	1.1	17
Non-Hispanic Whites	Female	40-59	09-10	19.4	0.9	17
Non-Hispanic Whites	Female	60+	05-06	40.2	2.3	17
Non-Hispanic Whites	Female	60+	07-08	33.8	1.9	20
Non-Hispanic Whites	Female	60+	09-10	27.5	1.4	22
Non-Hispanic Blacks	Male	12-19	05-06	9.30	0.95	13
Non-Hispanic Blacks	Male	12-19	07-08	9.63	0.84	6
Non-Hispanic Blacks	Male	12-19	09-10	7.39	0.63	6
Non-Hispanic Blacks	Male	20-39	05-06	13.6	1.3	6
Non-Hispanic Blacks	Male	20-39	07-08	13.1	1.1	6
Non-Hispanic Blacks	Male	20-39	09-10	9.30	1.16	7
Non-Hispanic Blacks	Male	40-59	05-06	19.1	2.1	5
Non-Hispanic Blacks	Male	40-59	07-08	21.8	1.9	6
Non-Hispanic Blacks	Male	40-59	09-10	16.5	1.3	7
Non-Hispanic Blacks	Male	60+	05-06	31.3	5	5
Non-Hispanic Blacks	Male	60+	07-08	26.4	1.9	8
Non-Hispanic Blacks	Male	60+	09-10	19.9	1.7	9
Non-Hispanic Blacks	Female	12-19	05-06	6.16	0.89	14
Non-Hispanic Blacks	Female	12-19	07-08	5.62	1.37	4
Non-Hispanic Blacks	Female	12-19	09-10	6.89	0.9	6
Non-Hispanic Blacks	Female	20-39	05-06	11.6	0.4	7
Non-Hispanic Blacks	Female	20-39	07-08	11.2	1.1	7
Non-Hispanic Blacks	Female	20-39	09-10	8.85	0.57	7
Non-Hispanic Blacks	Female	40-59	05-06	19.1	2.3	7
Non-Hispanic Blacks	Female	40-59	07-08	19.2	1.8	6
Non-Hispanic Blacks	Female	40-59	09-10	16.5	1.9	7
Non-Hispanic Blacks	Female	60+	05-06	49.5	5.8	5
Non-Hispanic Blacks	Female	60+	07-08	35.7	1.8	6
Non-Hispanic Blacks	Female	60+	09-10	30.9	2.2	7
Mexican Americans	Male	12-19	05-06	8.94	1.33	11
Mexican Americans	Male	12-19	07-08	9.32	1.63	6
Mexican Americans	Male	12-19	09-10	9.38	1.25	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	15.7	1.5	9
Mexican Americans	Male	20-39	07-08	14.2	2.5	9
Mexican Americans	Male	20-39	09-10	15.5	2.4	8
Mexican Americans	Male	40-59	05-06	26.1	4.6	4
Mexican Americans	Male	40-59	07-08	21.6	2.3	6
Mexican Americans	Male	40-59	09-10	20.9	1.4	7
Mexican Americans	Male	60+	05-06	30.8	1.2	4
Mexican Americans	Male	60+	07-08	29.0	1.8	5
Mexican Americans	Male	60+	09-10	29.5	1.8	5
Mexican Americans	Female	12-19	05-06	7.68	0.31	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	6.84	0.19	7
Mexican Americans	Female	20-39	05-06	12.5	1.4	9
Mexican Americans	Female	20-39	07-08	12.2	0.6	7
Mexican Americans	Female	20-39	09-10	9.42	1.41	10
Mexican Americans	Female	40-59	05-06	21.3	1.5	6
Mexican Americans	Female	40-59	07-08	19.0	2.2	5
Mexican Americans	Female	40-59	09-10	18.2	0.9	9
Mexican Americans	Female	60+	05-06	31.5	5	3
Mexican Americans	Female	60+	07-08	32.7	3.6	5
Mexican Americans	Female	60+	09-10	25.4	1.5	6
All Hispanics	Male	12-19	09-10	9.25	1.04	11
All Hispanics	Male	20-39	09-10	14.4	1.7	13
All Hispanics	Male	40-59	09-10	20.3	1.2	12
All Hispanics	Male	60+	09-10	26.3	2	8
All Hispanics	Female	12-19	09-10	6.86	0.32	10
All Hispanics	Female	20-39	09-10	9.67	1	14
All Hispanics	Female	40-59	09-10	18.0	0.8	14
All Hispanics	Female	60+	09-10	25.1	0.9	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

* 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) (2005 - 2010)†

CAS Number 72918-21-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	09-10	*	*	15
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Male	60+	09-10	*	*	20
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	12
Non-Hispanic Whites	Female	20-39	09-10	*	*	18
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	19
Non-Hispanic Whites	Female	60+	09-10	*	*	14
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	7
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	6
Non-Hispanic Blacks	Female	40-59	09-10	*	*	7
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	6
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	*	*	7
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	7
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	5
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	12
All Hispanics	Male	60+	09-10	*	*	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.23, 0.35, and 0.52, 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/DioxinLikeChemicals_BiomonitoringSummary.html

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

Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 - 2010)†

CAS Number 72918-21-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	09-10	*	*	15
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Male	60+	09-10	*	*	20
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	12
Non-Hispanic Whites	Female	20-39	09-10	*	*	18
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	19
Non-Hispanic Whites	Female	60+	09-10	*	*	14
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	7
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	6
Non-Hispanic Blacks	Female	40-59	09-10	*	*	7
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	6
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	*	*	7
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	7
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	5
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	12
All Hispanics	Male	60+	09-10	*	*	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

* 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) (2005 - 2010)†

CAS Number 60851-34-5

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	.555	0.142	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	.743	0.084	10
Non-Hispanic Whites	Male	20-39	05-06	.882	0.14	12
Non-Hispanic Whites	Male	20-39	07-08	.782	0.166	15
Non-Hispanic Whites	Male	20-39	09-10	.960	0.086	17
Non-Hispanic Whites	Male	40-59	05-06	1.40	0.17	12
Non-Hispanic Whites	Male	40-59	07-08	1.08	0.14	15
Non-Hispanic Whites	Male	40-59	09-10	1.38	0.11	17
Non-Hispanic Whites	Male	60+	05-06	1.31	0.07	15
Non-Hispanic Whites	Male	60+	07-08	1.09	0.14	23
Non-Hispanic Whites	Male	60+	09-10	1.19	0.09	21
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	.685	0.097	8
Non-Hispanic Whites	Female	20-39	05-06	.714	0.087	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	12
Non-Hispanic Whites	Female	20-39	09-10	.910	0.056	18
Non-Hispanic Whites	Female	40-59	05-06	1.00	0.13	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	1.00	0.08	17
Non-Hispanic Whites	Female	60+	05-06	1.18	0.07	17
Non-Hispanic Whites	Female	60+	07-08	.803	0.121	19
Non-Hispanic Whites	Female	60+	09-10	1.01	0.06	22
Non-Hispanic Blacks	Male	12-19	05-06	.418	0.081	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	.404	0.093	6
Non-Hispanic Blacks	Male	20-39	05-06	1.23 **	0.68	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	.648	0.099	7
Non-Hispanic Blacks	Male	40-59	05-06	.794	0.114	5
Non-Hispanic Blacks	Male	40-59	07-08	.650	0.166	6
Non-Hispanic Blacks	Male	40-59	09-10	.677	0.142	6
Non-Hispanic Blacks	Male	60+	05-06	.969	0.082	5
Non-Hispanic Blacks	Male	60+	07-08	.699	0.187	8
Non-Hispanic Blacks	Male	60+	09-10	.750	0.05	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	.540	0.125	6
Non-Hispanic Blacks	Female	20-39	05-06	.528	0.108	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	7
Non-Hispanic Blacks	Female	20-39	09-10	.601	0.079	7
Non-Hispanic Blacks	Female	40-59	05-06	.773	0.099	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	6
Non-Hispanic Blacks	Female	40-59	09-10	.821	0.158	7
Non-Hispanic Blacks	Female	60+	05-06	1.11	0.18	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	6
Non-Hispanic Blacks	Female	60+	09-10	.955	0.139	6
Mexican Americans	Male	12-19	05-06	.481	0.12	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	.836	0.099	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	.825	0.155	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	1.13	0.15	8
Mexican Americans	Male	40-59	05-06	1.15	0.17	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	1.08	0.1	7
Mexican Americans	Male	60+	05-06	1.16	0.16	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Male	60+	09-10	1.52	0.09	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	.438	0.027	7
Mexican Americans	Female	20-39	05-06	.784	0.102	9
Mexican Americans	Female	20-39	07-08	*	*	7
Mexican Americans	Female	20-39	09-10	.733	0.114	10
Mexican Americans	Female	40-59	05-06	1.09	0.09	6
Mexican Americans	Female	40-59	07-08	*	*	5
Mexican Americans	Female	40-59	09-10	1.13	0.1	9
Mexican Americans	Female	60+	05-06	.926	0.18	3
Mexican Americans	Female	60+	07-08	*	*	5
Mexican Americans	Female	60+	09-10	1.27	0.13	6
All Hispanics	Male	12-19	09-10	.760	0.087	11
All Hispanics	Male	20-39	09-10	.971	0.12	13
All Hispanics	Male	40-59	09-10	1.12	0.06	12
All Hispanics	Male	60+	09-10	1.45	0.18	8
All Hispanics	Female	12-19	09-10	.437	0.024	10
All Hispanics	Female	20-39	09-10	.710	0.082	14
All Hispanics	Female	40-59	09-10	1.07	0.08	14
All Hispanics	Female	60+	09-10	1.12	0.1	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.13, 0.2, and 0.3, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 60851-34-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	3.03	0.8	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	4.00	0.5	10
Non-Hispanic Whites	Male	20-39	05-06	6.39	1.09	12
Non-Hispanic Whites	Male	20-39	07-08	5.50	1.25	15
Non-Hispanic Whites	Male	20-39	09-10	6.38	0.62	17
Non-Hispanic Whites	Male	40-59	05-06	10.6	1.4	12
Non-Hispanic Whites	Male	40-59	07-08	7.76	1	15
Non-Hispanic Whites	Male	40-59	09-10	9.29	0.69	17
Non-Hispanic Whites	Male	60+	05-06	8.97	0.52	15
Non-Hispanic Whites	Male	60+	07-08	6.78	0.86	23
Non-Hispanic Whites	Male	60+	09-10	7.29	0.58	21
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	3.27	0.48	8
Non-Hispanic Whites	Female	20-39	05-06	4.63	0.57	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	12
Non-Hispanic Whites	Female	20-39	09-10	4.80	0.31	18
Non-Hispanic Whites	Female	40-59	05-06	7.32	0.98	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	6.35	0.54	17
Non-Hispanic Whites	Female	60+	05-06	8.72	0.57	17
Non-Hispanic Whites	Female	60+	07-08	5.25	0.79	19
Non-Hispanic Whites	Female	60+	09-10	6.15	0.33	22
Non-Hispanic Blacks	Male	12-19	05-06	2.18	0.43	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	1.88	0.48	6
Non-Hispanic Blacks	Male	20-39	05-06	7.38 **	4.18	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	3.61	0.5	7
Non-Hispanic Blacks	Male	40-59	05-06	5.11	0.79	5
Non-Hispanic Blacks	Male	40-59	07-08	4.20	1.06	6
Non-Hispanic Blacks	Male	40-59	09-10	4.02	0.82	6
Non-Hispanic Blacks	Male	60+	05-06	5.80	0.53	5
Non-Hispanic Blacks	Male	60+	07-08	4.28	1.13	8
Non-Hispanic Blacks	Male	60+	09-10	4.02	0.29	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	2.36	0.51	6
Non-Hispanic Blacks	Female	20-39	05-06	3.05	0.64	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	7
Non-Hispanic Blacks	Female	20-39	09-10	2.95	0.36	7
Non-Hispanic Blacks	Female	40-59	05-06	4.93	0.62	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	6
Non-Hispanic Blacks	Female	40-59	09-10	4.66	0.91	7
Non-Hispanic Blacks	Female	60+	05-06	7.48	1.3	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	6
Non-Hispanic Blacks	Female	60+	09-10	5.41	0.76	6
Mexican Americans	Male	12-19	05-06	2.60	0.65	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	3.96	0.54	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	5.74	0.94	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	6.94	1	8
Mexican Americans	Male	40-59	05-06	9.51	1.79	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	7.67	0.72	7
Mexican Americans	Male	60+	05-06	8.23	0.86	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Male	60+	09-10	9.31	0.4	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	2.04	0.11	7
Mexican Americans	Female	20-39	05-06	5.22	0.65	9
Mexican Americans	Female	20-39	07-08	*	*	7
Mexican Americans	Female	20-39	09-10	3.91	0.57	10
Mexican Americans	Female	40-59	05-06	8.07	0.72	6
Mexican Americans	Female	40-59	07-08	*	*	5
Mexican Americans	Female	40-59	09-10	7.04	0.41	9
Mexican Americans	Female	60+	05-06	7.32	1.98	3
Mexican Americans	Female	60+	07-08	*	*	5
Mexican Americans	Female	60+	09-10	7.00	0.57	6
All Hispanics	Male	12-19	09-10	3.58	0.46	11
All Hispanics	Male	20-39	09-10	6.25	0.9	13
All Hispanics	Male	40-59	09-10	7.78	0.52	12
All Hispanics	Male	60+	09-10	9.28	1.35	8
All Hispanics	Female	12-19	09-10	2.02	0.11	10
All Hispanics	Female	20-39	09-10	3.85	0.41	14
All Hispanics	Female	40-59	09-10	6.58	0.38	14
All Hispanics	Female	60+	09-10	6.61	0.5	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 39001-02-0

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	3.27	0.8	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	1.80	0.41	12
Non-Hispanic Whites	Male	20-39	07-08	2.48	0.22	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	1.44	0.33	12
Non-Hispanic Whites	Male	40-59	07-08	2.07	0.13	15
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	2.08	0.19	23
Non-Hispanic Whites	Male	60+	09-10	*	*	21
Non-Hispanic Whites	Female	12-19	05-06	1.83	0.44	10
Non-Hispanic Whites	Female	12-19	07-08	2.92	0.44	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	1.96	0.32	12
Non-Hispanic Whites	Female	20-39	09-10	*	*	18
Non-Hispanic Whites	Female	40-59	05-06	1.55	0.37	13
Non-Hispanic Whites	Female	40-59	07-08	2.17	0.17	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	1.95	0.38	17
Non-Hispanic Whites	Female	60+	07-08	2.14	0.17	19
Non-Hispanic Whites	Female	60+	09-10	*	*	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	3.08	0.21	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	4.10 **	1.8	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	2.25	0.66	5
Non-Hispanic Blacks	Male	40-59	07-08	1.90	0.29	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	2.72 **	0.93	5
Non-Hispanic Blacks	Male	60+	07-08	2.15	0.27	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	9
Non-Hispanic Blacks	Female	12-19	05-06	2.95	0.57	14
Non-Hispanic Blacks	Female	12-19	07-08	2.11	0.4	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	3.42	0.31	7
Non-Hispanic Blacks	Female	20-39	07-08	2.86	0.43	7
Non-Hispanic Blacks	Female	20-39	09-10	*	*	6
Non-Hispanic Blacks	Female	40-59	05-06	3.09	0.53	7
Non-Hispanic Blacks	Female	40-59	07-08	2.93	0.34	6
Non-Hispanic Blacks	Female	40-59	09-10	*	*	6
Non-Hispanic Blacks	Female	60+	05-06	3.28	0.36	5
Non-Hispanic Blacks	Female	60+	07-08	2.37	0.35	6
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	2.65	0.29	6
Mexican Americans	Male	12-19	09-10	*	*	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	2.90	0.28	9
Mexican Americans	Male	20-39	09-10	*	*	7
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	1.88	0.31	6
Mexican Americans	Male	40-59	09-10	*	*	6
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	1.77	0.19	5
Mexican Americans	Male	60+	09-10	*	*	4
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	3.11	0.19	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	3.04	0.4	7
Mexican Americans	Female	20-39	09-10	*	*	9
Mexican Americans	Female	40-59	05-06	2.06 **	0.71	6
Mexican Americans	Female	40-59	07-08	2.78	0.38	5
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	2.63	0.2	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	10
All Hispanics	Male	20-39	09-10	*	*	12
All Hispanics	Male	40-59	09-10	*	*	11
All Hispanics	Male	60+	09-10	*	*	7
All Hispanics	Female	12-19	09-10	*	*	9
All Hispanics	Female	20-39	09-10	*	*	13
All Hispanics	Female	40-59	09-10	*	*	13
All Hispanics	Female	60+	09-10	*	*	10

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.17, 1.14, and 3.68, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 39001-02-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	16.0	3.5	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	12.1	2.6	12
Non-Hispanic Whites	Male	20-39	07-08	16.1	1.4	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	11.0	2.6	12
Non-Hispanic Whites	Male	40-59	07-08	15.4	1.1	15
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	13.3	1.2	23
Non-Hispanic Whites	Male	60+	09-10	*	*	21
Non-Hispanic Whites	Female	12-19	05-06	9.51	2.14	10
Non-Hispanic Whites	Female	12-19	07-08	13.6	2.1	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	11.8	2.1	12
Non-Hispanic Whites	Female	20-39	09-10	*	*	18
Non-Hispanic Whites	Female	40-59	05-06	11.5	2.9	13
Non-Hispanic Whites	Female	40-59	07-08	14.1	1	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	14.1	2.7	17
Non-Hispanic Whites	Female	60+	07-08	14.3	1.1	19
Non-Hispanic Whites	Female	60+	09-10	*	*	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	14.6	1	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	24.1 **	11	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	14.1	4.1	5
Non-Hispanic Blacks	Male	40-59	07-08	12.2	1.9	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	15.7 **	5.1	5
Non-Hispanic Blacks	Male	60+	07-08	12.9	1.5	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	9
Non-Hispanic Blacks	Female	12-19	05-06	14.4	2.7	14
Non-Hispanic Blacks	Female	12-19	07-08	10.1	1.9	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	19.7	1.7	7
Non-Hispanic Blacks	Female	20-39	07-08	14.3	2.1	7
Non-Hispanic Blacks	Female	20-39	09-10	*	*	6
Non-Hispanic Blacks	Female	40-59	05-06	19.7	3.4	7
Non-Hispanic Blacks	Female	40-59	07-08	17.7	2.4	6
Non-Hispanic Blacks	Female	40-59	09-10	*	*	6
Non-Hispanic Blacks	Female	60+	05-06	21.7	1.8	5
Non-Hispanic Blacks	Female	60+	07-08	14.6	2.3	6
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	14.5	2.2	6
Mexican Americans	Male	12-19	09-10	*	*	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	20.0	2.4	9
Mexican Americans	Male	20-39	09-10	*	*	7
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	13.5	2.3	6
Mexican Americans	Male	40-59	09-10	*	*	6
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	12.6	1.1	5
Mexican Americans	Male	60+	09-10	*	*	4
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	15.3	1.2	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	17.2	1.7	7
Mexican Americans	Female	20-39	09-10	*	*	9
Mexican Americans	Female	40-59	05-06	14.9 **	4.9	6
Mexican Americans	Female	40-59	07-08	18.6	2.6	5
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	18.0	1.4	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	10
All Hispanics	Male	20-39	09-10	*	*	12
All Hispanics	Male	40-59	09-10	*	*	11
All Hispanics	Male	60+	09-10	*	*	7
All Hispanics	Female	12-19	09-10	*	*	9
All Hispanics	Female	20-39	09-10	*	*	13
All Hispanics	Female	40-59	09-10	*	*	13
All Hispanics	Female	60+	09-10	*	*	10

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 57117-41-6

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Male	60+	09-10	*	*	19
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	12
Non-Hispanic Whites	Female	20-39	09-10	*	*	18
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	16
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	19
Non-Hispanic Whites	Female	60+	09-10	*	*	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	5
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	6
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	7
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	6
Non-Hispanic Blacks	Female	40-59	09-10	*	*	6
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	6
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	7
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	*	*	6
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	7
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	5
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	10
All Hispanics	Male	20-39	09-10	*	*	12
All Hispanics	Male	40-59	09-10	*	*	11
All Hispanics	Male	60+	09-10	*	*	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	13
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.47, 0.81, and 1.2, 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/DioxinLikeChemicals_BiomonitoringSummary.html

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

Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (2005 - 2010)†

CAS Number 57117-41-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Male	60+	09-10	*	*	19
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	12
Non-Hispanic Whites	Female	20-39	09-10	*	*	18
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	16
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	19
Non-Hispanic Whites	Female	60+	09-10	*	*	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	5
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	6
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	7
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	6
Non-Hispanic Blacks	Female	40-59	09-10	*	*	6
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	6
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	7
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	*	*	6
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	7
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	5
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	10
All Hispanics	Male	20-39	09-10	*	*	12
All Hispanics	Male	40-59	09-10	*	*	11
All Hispanics	Male	60+	09-10	*	*	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	13
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

* 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) (2005 - 2010)†

CAS Number 57117-31-4

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	2.26	0.14	9
Non-Hispanic Whites	Male	12-19	07-08	3.20	0.21	6
Non-Hispanic Whites	Male	12-19	09-10	2.51	0.13	10
Non-Hispanic Whites	Male	20-39	05-06	3.45	0.3	12
Non-Hispanic Whites	Male	20-39	07-08	3.76	0.18	15
Non-Hispanic Whites	Male	20-39	09-10	3.31	0.2	17
Non-Hispanic Whites	Male	40-59	05-06	5.82	0.26	12
Non-Hispanic Whites	Male	40-59	07-08	5.40	0.22	15
Non-Hispanic Whites	Male	40-59	09-10	6.16	0.46	17
Non-Hispanic Whites	Male	60+	05-06	8.03	0.43	15
Non-Hispanic Whites	Male	60+	07-08	7.32	0.46	23
Non-Hispanic Whites	Male	60+	09-10	7.33	0.43	20
Non-Hispanic Whites	Female	12-19	05-06	1.79	0.11	10
Non-Hispanic Whites	Female	12-19	07-08	1.97	0.22	7
Non-Hispanic Whites	Female	12-19	09-10	1.77	0.23	8
Non-Hispanic Whites	Female	20-39	05-06	2.70	0.16	16
Non-Hispanic Whites	Female	20-39	07-08	2.99	0.2	12
Non-Hispanic Whites	Female	20-39	09-10	2.46	0.14	18
Non-Hispanic Whites	Female	40-59	05-06	4.56	0.17	13
Non-Hispanic Whites	Female	40-59	07-08	4.59	0.19	17
Non-Hispanic Whites	Female	40-59	09-10	4.22	0.22	17
Non-Hispanic Whites	Female	60+	05-06	8.49	0.5	17
Non-Hispanic Whites	Female	60+	07-08	7.82	0.42	20
Non-Hispanic Whites	Female	60+	09-10	8.19	0.57	22
Non-Hispanic Blacks	Male	12-19	05-06	1.84	0.1	13
Non-Hispanic Blacks	Male	12-19	07-08	2.01	0.11	6
Non-Hispanic Blacks	Male	12-19	09-10	1.35	0.17	6
Non-Hispanic Blacks	Male	20-39	05-06	3.48	1	6
Non-Hispanic Blacks	Male	20-39	07-08	2.61	0.2	6
Non-Hispanic Blacks	Male	20-39	09-10	2.13	0.3	7
Non-Hispanic Blacks	Male	40-59	05-06	3.83	0.29	5
Non-Hispanic Blacks	Male	40-59	07-08	4.78	0.43	6
Non-Hispanic Blacks	Male	40-59	09-10	3.98	0.4	7
Non-Hispanic Blacks	Male	60+	05-06	7.19	0.95	5
Non-Hispanic Blacks	Male	60+	07-08	6.78	0.6	8
Non-Hispanic Blacks	Male	60+	09-10	5.62	0.5	9
Non-Hispanic Blacks	Female	12-19	05-06	1.19	0.1	14
Non-Hispanic Blacks	Female	12-19	07-08	1.41	0.07	4
Non-Hispanic Blacks	Female	12-19	09-10	1.39	0.4	6
Non-Hispanic Blacks	Female	20-39	05-06	2.13	0.15	7
Non-Hispanic Blacks	Female	20-39	07-08	2.09	0.18	7
Non-Hispanic Blacks	Female	20-39	09-10	1.70	0.16	7
Non-Hispanic Blacks	Female	40-59	05-06	3.98	0.4	7
Non-Hispanic Blacks	Female	40-59	07-08	4.58	0.46	6
Non-Hispanic Blacks	Female	40-59	09-10	4.13	0.48	7
Non-Hispanic Blacks	Female	60+	05-06	12.7	2.5	5
Non-Hispanic Blacks	Female	60+	07-08	9.57	0.76	6
Non-Hispanic Blacks	Female	60+	09-10	9.52	0.88	7
Mexican Americans	Male	12-19	05-06	1.67	0.24	11
Mexican Americans	Male	12-19	07-08	2.36	0.35	6
Mexican Americans	Male	12-19	09-10	2.01	0.18	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	2.65	0.26	9
Mexican Americans	Male	20-39	07-08	3.03	0.27	9
Mexican Americans	Male	20-39	09-10	2.82	0.27	8
Mexican Americans	Male	40-59	05-06	3.82	0.39	4
Mexican Americans	Male	40-59	07-08	4.45	0.63	6
Mexican Americans	Male	40-59	09-10	3.92	0.25	7
Mexican Americans	Male	60+	05-06	5.90	0.43	4
Mexican Americans	Male	60+	07-08	5.61	0.34	5
Mexican Americans	Male	60+	09-10	8.07	1.48	5
Mexican Americans	Female	12-19	05-06	1.00	0.15	16
Mexican Americans	Female	12-19	07-08	1.37	0.3	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	2.05	0.23	9
Mexican Americans	Female	20-39	07-08	2.10	0.21	7
Mexican Americans	Female	20-39	09-10	1.92	0.3	10
Mexican Americans	Female	40-59	05-06	3.51	0.19	6
Mexican Americans	Female	40-59	07-08	3.79	0.3	5
Mexican Americans	Female	40-59	09-10	3.61	0.28	9
Mexican Americans	Female	60+	05-06	6.10	0.41	3
Mexican Americans	Female	60+	07-08	7.29	0.7	5
Mexican Americans	Female	60+	09-10	7.10	0.82	6
All Hispanics	Male	12-19	09-10	1.96	0.14	11
All Hispanics	Male	20-39	09-10	2.54	0.23	13
All Hispanics	Male	40-59	09-10	4.17	0.26	12
All Hispanics	Male	60+	09-10	7.10	1.02	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	1.96	0.21	14
All Hispanics	Female	40-59	09-10	3.62	0.21	14
All Hispanics	Female	60+	09-10	6.83	0.49	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.39, 0.38, and 1.3, 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/DioxinLikeChemicals_BiomonitoringSummary.html

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

Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (2005 - 2010)†

CAS Number 57117-31-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	12.4	0.9	9
Non-Hispanic Whites	Male	12-19	07-08	15.9	0.9	6
Non-Hispanic Whites	Male	12-19	09-10	13.4	0.8	10
Non-Hispanic Whites	Male	20-39	05-06	25.6	3.2	12
Non-Hispanic Whites	Male	20-39	07-08	24.9	1.5	15
Non-Hispanic Whites	Male	20-39	09-10	21.8	1.6	17
Non-Hispanic Whites	Male	40-59	05-06	43.9	2.4	12
Non-Hispanic Whites	Male	40-59	07-08	39.9	2	15
Non-Hispanic Whites	Male	40-59	09-10	41.3	2.6	17
Non-Hispanic Whites	Male	60+	05-06	54.6	2.6	15
Non-Hispanic Whites	Male	60+	07-08	46.3	2.4	23
Non-Hispanic Whites	Male	60+	09-10	44.4	2.6	20
Non-Hispanic Whites	Female	12-19	05-06	9.51	0.56	10
Non-Hispanic Whites	Female	12-19	07-08	9.21	1.1	7
Non-Hispanic Whites	Female	12-19	09-10	8.50	1.2	8
Non-Hispanic Whites	Female	20-39	05-06	17.7	1.3	16
Non-Hispanic Whites	Female	20-39	07-08	17.7	1.2	12
Non-Hispanic Whites	Female	20-39	09-10	13.1	0.9	18
Non-Hispanic Whites	Female	40-59	05-06	33.7	2.2	13
Non-Hispanic Whites	Female	40-59	07-08	30.4	1.5	17
Non-Hispanic Whites	Female	40-59	09-10	26.7	1.5	17
Non-Hispanic Whites	Female	60+	05-06	62.0	3.8	17
Non-Hispanic Whites	Female	60+	07-08	52.4	2.9	20
Non-Hispanic Whites	Female	60+	09-10	49.3	2.9	22
Non-Hispanic Blacks	Male	12-19	05-06	9.24	0.4	13
Non-Hispanic Blacks	Male	12-19	07-08	9.50	0.4	6
Non-Hispanic Blacks	Male	12-19	09-10	6.16	0.85	6
Non-Hispanic Blacks	Male	20-39	05-06	20.7 **	6.2	6
Non-Hispanic Blacks	Male	20-39	07-08	14.8	1.3	6
Non-Hispanic Blacks	Male	20-39	09-10	11.9	1.4	7
Non-Hispanic Blacks	Male	40-59	05-06	24.5	2.1	5
Non-Hispanic Blacks	Male	40-59	07-08	30.6	2.6	6
Non-Hispanic Blacks	Male	40-59	09-10	24.4	2.1	7
Non-Hispanic Blacks	Male	60+	05-06	42.9	5.6	5
Non-Hispanic Blacks	Male	60+	07-08	40.9	3.4	8
Non-Hispanic Blacks	Male	60+	09-10	30.0	2.5	9
Non-Hispanic Blacks	Female	12-19	05-06	5.91	0.52	14
Non-Hispanic Blacks	Female	12-19	07-08	6.68	0.35	4
Non-Hispanic Blacks	Female	12-19	09-10	6.08	1.67	6
Non-Hispanic Blacks	Female	20-39	05-06	12.2	0.9	7
Non-Hispanic Blacks	Female	20-39	07-08	10.6	0.9	7
Non-Hispanic Blacks	Female	20-39	09-10	8.38	0.78	7
Non-Hispanic Blacks	Female	40-59	05-06	25.4	2.5	7
Non-Hispanic Blacks	Female	40-59	07-08	28.0	3.5	6
Non-Hispanic Blacks	Female	40-59	09-10	23.3	2.8	7
Non-Hispanic Blacks	Female	60+	05-06	84.3	16	5
Non-Hispanic Blacks	Female	60+	07-08	57.2	3.1	6
Non-Hispanic Blacks	Female	60+	09-10	54.4	4.7	7
Mexican Americans	Male	12-19	05-06	8.95	1.21	11
Mexican Americans	Male	12-19	07-08	12.9	2.5	6
Mexican Americans	Male	12-19	09-10	9.43	0.92	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	18.5	1.4	9
Mexican Americans	Male	20-39	07-08	20.8	2.2	9
Mexican Americans	Male	20-39	09-10	17.4	2.3	8
Mexican Americans	Male	40-59	05-06	31.2	4.2	4
Mexican Americans	Male	40-59	07-08	31.2	3.7	6
Mexican Americans	Male	40-59	09-10	27.9	2.2	7
Mexican Americans	Male	60+	05-06	42.4	2.1	4
Mexican Americans	Male	60+	07-08	40.6	3.2	5
Mexican Americans	Male	60+	09-10	49.8	9.2	5
Mexican Americans	Female	12-19	05-06	5.53	0.81	16
Mexican Americans	Female	12-19	07-08	6.64	1.38	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	13.8	1.7	9
Mexican Americans	Female	20-39	07-08	12.3	1.4	7
Mexican Americans	Female	20-39	09-10	10.3	1.6	10
Mexican Americans	Female	40-59	05-06	26.0	2	6
Mexican Americans	Female	40-59	07-08	25.4	1.8	5
Mexican Americans	Female	40-59	09-10	23.3	2.3	9
Mexican Americans	Female	60+	05-06	46.7	6.2	3
Mexican Americans	Female	60+	07-08	50.0	5.3	5
Mexican Americans	Female	60+	09-10	39.0	3.5	6
All Hispanics	Male	12-19	09-10	9.18	0.73	11
All Hispanics	Male	20-39	09-10	16.3	2	13
All Hispanics	Male	40-59	09-10	29.1	2.2	12
All Hispanics	Male	60+	09-10	44.8	6.3	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	10.7	1.2	14
All Hispanics	Female	40-59	09-10	22.7	1.6	14
All Hispanics	Female	60+	09-10	40.3	2.4	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

* 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) (2005 - 2010)†

CAS Number 51207-31-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	9
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	.502	0.1	15
Non-Hispanic Whites	Male	40-59	09-10	*	*	16
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Male	60+	09-10	*	*	20
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	12
Non-Hispanic Whites	Female	20-39	09-10	*	*	18
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	19
Non-Hispanic Whites	Female	60+	09-10	*	*	14
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	7
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	6
Non-Hispanic Blacks	Female	40-59	09-10	*	*	7
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	6
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	*	*	7
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	7
Mexican Americans	Female	20-39	09-10	*	*	9
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	5
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	12
All Hispanics	Male	60+	09-10	*	*	7
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	13
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.3, 0.45, and 0.68, 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/DioxinLikeChemicals_BiomonitoringSummary.html

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

Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (whole weight) (2005 - 2010)†

CAS Number 51207-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	9
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	3.65	0.7	15
Non-Hispanic Whites	Male	40-59	09-10	*	*	16
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Male	60+	09-10	*	*	20
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	12
Non-Hispanic Whites	Female	20-39	09-10	*	*	18
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	19
Non-Hispanic Whites	Female	60+	09-10	*	*	14
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	7
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	6
Non-Hispanic Blacks	Female	40-59	09-10	*	*	7
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	6
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	*	*	7
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	7
Mexican Americans	Female	20-39	09-10	*	*	9
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	5
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	12
All Hispanics	Male	60+	09-10	*	*	7
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	13
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

* 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) (2005 - 2010)†

CAS Number 70362-50-4

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	1.84	0.27	12
Non-Hispanic Whites	Male	40-59	07-08	1.70	0.15	15
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	2.50	0.44	15
Non-Hispanic Whites	Male	60+	07-08	2.77	0.22	23
Non-Hispanic Whites	Male	60+	09-10	*	*	20
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	1.83	0.32	16
Non-Hispanic Whites	Female	20-39	07-08	2.30	0.29	12
Non-Hispanic Whites	Female	20-39	09-10	*	*	18
Non-Hispanic Whites	Female	40-59	05-06	1.83	0.15	13
Non-Hispanic Whites	Female	40-59	07-08	1.77	0.12	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	16
Non-Hispanic Whites	Female	60+	05-06	2.65	0.23	17
Non-Hispanic Whites	Female	60+	07-08	2.75	0.23	19
Non-Hispanic Whites	Female	60+	09-10	*	*	22
Non-Hispanic Blacks	Male	12-19	05-06	1.72	0.16	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	1.84	0.32	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	2.21	0.2	5
Non-Hispanic Blacks	Male	60+	07-08	2.13	0.43	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	1.78	0.35	7
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	1.95	0.35	6
Non-Hispanic Blacks	Female	40-59	09-10	*	*	7
Non-Hispanic Blacks	Female	60+	05-06	2.74	0.26	5
Non-Hispanic Blacks	Female	60+	07-08	3.60	0.62	6
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	2.14	0.29	11
Mexican Americans	Male	12-19	07-08	3.33 **	1.9	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	1.84	0.3	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	1.73	0.31	6
Mexican Americans	Male	40-59	09-10	*	*	7
Mexican Americans	Male	60+	05-06	2.05	0.3	4
Mexican Americans	Male	60+	07-08	1.89	0.22	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	2.39	0.48	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	1.94	0.33	7
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	1.64	0.13	5
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	2.10	0.11	3
Mexican Americans	Female	60+	07-08	1.86	0.12	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	12
All Hispanics	Male	60+	09-10	*	*	7
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.71, 1.6, and 4.95, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 70362-50-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	13.9	2.2	12
Non-Hispanic Whites	Male	40-59	07-08	12.6	1.2	15
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	17.0	3	15
Non-Hispanic Whites	Male	60+	07-08	18.0	1.7	23
Non-Hispanic Whites	Male	60+	09-10	*	*	20
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	11.7	1.8	16
Non-Hispanic Whites	Female	20-39	07-08	13.8	1.8	12
Non-Hispanic Whites	Female	20-39	09-10	*	*	18
Non-Hispanic Whites	Female	40-59	05-06	13.4	1.3	13
Non-Hispanic Whites	Female	40-59	07-08	11.6	0.8	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	16
Non-Hispanic Whites	Female	60+	05-06	19.4	1.6	17
Non-Hispanic Whites	Female	60+	07-08	18.4	1.5	19
Non-Hispanic Whites	Female	60+	09-10	*	*	22
Non-Hispanic Blacks	Male	12-19	05-06	8.67	0.79	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	11.8	2.1	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	13.1	0.9	5
Non-Hispanic Blacks	Male	60+	07-08	12.6	2.4	8
Non-Hispanic Blacks	Male	60+	09-10	*	*	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	9.04	1.8	7
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	11.7	2.3	6
Non-Hispanic Blacks	Female	40-59	09-10	*	*	7
Non-Hispanic Blacks	Female	60+	05-06	18.3	1.6	5
Non-Hispanic Blacks	Female	60+	07-08	21.8	4	6
Non-Hispanic Blacks	Female	60+	09-10	*	*	7
Mexican Americans	Male	12-19	05-06	11.6	1.6	11
Mexican Americans	Male	12-19	07-08	16.6 **	8.8	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	12.4	1.9	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	12.2	2	6
Mexican Americans	Male	40-59	09-10	*	*	7
Mexican Americans	Male	60+	05-06	14.6	1.9	4
Mexican Americans	Male	60+	07-08	13.9	2.2	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	11.7	2.4	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	11.3	1.9	7
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	11.1	0.9	5
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	16.1	2.3	3
Mexican Americans	Female	60+	07-08	12.7	0.8	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	12
All Hispanics	Male	60+	09-10	*	*	7
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 57465-28-8

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	6.23	0.47	9
Non-Hispanic Whites	Male	12-19	07-08	5.53	0.61	6
Non-Hispanic Whites	Male	12-19	09-10	5.67	0.45	10
Non-Hispanic Whites	Male	20-39	05-06	8.12	0.78	12
Non-Hispanic Whites	Male	20-39	07-08	7.73	0.52	15
Non-Hispanic Whites	Male	20-39	09-10	7.68	0.79	17
Non-Hispanic Whites	Male	40-59	05-06	17.6	2.4	12
Non-Hispanic Whites	Male	40-59	07-08	12.3	0.8	15
Non-Hispanic Whites	Male	40-59	09-10	12.8	1.4	17
Non-Hispanic Whites	Male	60+	05-06	26.8	3.3	15
Non-Hispanic Whites	Male	60+	07-08	27.0	2.6	23
Non-Hispanic Whites	Male	60+	09-10	22.7	1.5	20
Non-Hispanic Whites	Female	12-19	05-06	5.62	0.27	10
Non-Hispanic Whites	Female	12-19	07-08	5.61	0.57	7
Non-Hispanic Whites	Female	12-19	09-10	4.80	0.41	8
Non-Hispanic Whites	Female	20-39	05-06	9.55	1.07	16
Non-Hispanic Whites	Female	20-39	07-08	10.2	1.2	12
Non-Hispanic Whites	Female	20-39	09-10	6.76	0.53	18
Non-Hispanic Whites	Female	40-59	05-06	16.4	2	13
Non-Hispanic Whites	Female	40-59	07-08	14.4	1.3	17
Non-Hispanic Whites	Female	40-59	09-10	15.2	1.4	16
Non-Hispanic Whites	Female	60+	05-06	35.6	2.6	17
Non-Hispanic Whites	Female	60+	07-08	31.5	3.2	20
Non-Hispanic Whites	Female	60+	09-10	32.4	4.5	22
Non-Hispanic Blacks	Male	12-19	05-06	5.76	0.42	13
Non-Hispanic Blacks	Male	12-19	07-08	5.26	0.32	6
Non-Hispanic Blacks	Male	12-19	09-10	3.62	0.43	5
Non-Hispanic Blacks	Male	20-39	05-06	6.77	1	6
Non-Hispanic Blacks	Male	20-39	07-08	6.42	0.61	6
Non-Hispanic Blacks	Male	20-39	09-10	8.76 **	2.73	7
Non-Hispanic Blacks	Male	40-59	05-06	15.0	3.4	5
Non-Hispanic Blacks	Male	40-59	07-08	13.4	2	6
Non-Hispanic Blacks	Male	40-59	09-10	27.2	7.7	7
Non-Hispanic Blacks	Male	60+	05-06	30.9	5.4	5
Non-Hispanic Blacks	Male	60+	07-08	25.0	4.2	8
Non-Hispanic Blacks	Male	60+	09-10	26.9	5.5	8
Non-Hispanic Blacks	Female	12-19	05-06	5.64	0.31	14
Non-Hispanic Blacks	Female	12-19	07-08	4.62	0.23	4
Non-Hispanic Blacks	Female	12-19	09-10	3.77	0.29	6
Non-Hispanic Blacks	Female	20-39	05-06	9.74	1.07	7
Non-Hispanic Blacks	Female	20-39	07-08	7.86	0.66	7
Non-Hispanic Blacks	Female	20-39	09-10	8.10	1.52	7
Non-Hispanic Blacks	Female	40-59	05-06	20.2	2.5	7
Non-Hispanic Blacks	Female	40-59	07-08	23.9	6.8	6
Non-Hispanic Blacks	Female	40-59	09-10	30.8	7.7	7
Non-Hispanic Blacks	Female	60+	05-06	83.7 **	31.4	5
Non-Hispanic Blacks	Female	60+	07-08	56.2	4.5	6
Non-Hispanic Blacks	Female	60+	09-10	58.6	5.7	7
Mexican Americans	Male	12-19	05-06	6.00	0.34	11
Mexican Americans	Male	12-19	07-08	6.29	0.84	6
Mexican Americans	Male	12-19	09-10	5.01	0.33	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	8.96	0.46	9
Mexican Americans	Male	20-39	07-08	9.13	0.62	9
Mexican Americans	Male	20-39	09-10	6.58	0.83	8
Mexican Americans	Male	40-59	05-06	15.9	2.2	4
Mexican Americans	Male	40-59	07-08	17.5	3	6
Mexican Americans	Male	40-59	09-10	14.7	1.6	7
Mexican Americans	Male	60+	05-06	26.4	4.8	4
Mexican Americans	Male	60+	07-08	29.4	4.9	5
Mexican Americans	Male	60+	09-10	25.7	2.9	5
Mexican Americans	Female	12-19	05-06	5.86	0.43	16
Mexican Americans	Female	12-19	07-08	5.90	0.49	5
Mexican Americans	Female	12-19	09-10	4.51	0.31	7
Mexican Americans	Female	20-39	05-06	8.20	0.62	9
Mexican Americans	Female	20-39	07-08	8.42	0.58	7
Mexican Americans	Female	20-39	09-10	6.10	0.86	10
Mexican Americans	Female	40-59	05-06	19.2	2.6	6
Mexican Americans	Female	40-59	07-08	16.5	1.8	5
Mexican Americans	Female	40-59	09-10	18.3	2	9
Mexican Americans	Female	60+	05-06	40.2	7.1	3
Mexican Americans	Female	60+	07-08	36.8	5.1	5
Mexican Americans	Female	60+	09-10	39.3	2.7	6
All Hispanics	Male	12-19	09-10	5.30	0.39	11
All Hispanics	Male	20-39	09-10	6.93	0.82	13
All Hispanics	Male	40-59	09-10	15.1	1.4	12
All Hispanics	Male	60+	09-10	26.2	2.4	7
All Hispanics	Female	12-19	09-10	4.49	0.33	10
All Hispanics	Female	20-39	09-10	7.29	0.93	14
All Hispanics	Female	40-59	09-10	17.7	1.8	14
All Hispanics	Female	60+	09-10	39.0	2.7	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 1.05, 1.94, and 3.54, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 57465-28-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	34.3	3.1	9
Non-Hispanic Whites	Male	12-19	07-08	27.5	2.8	6
Non-Hispanic Whites	Male	12-19	09-10	30.4	2.7	10
Non-Hispanic Whites	Male	20-39	05-06	59.8	7.5	12
Non-Hispanic Whites	Male	20-39	07-08	51.2	4	15
Non-Hispanic Whites	Male	20-39	09-10	50.9	6	17
Non-Hispanic Whites	Male	40-59	05-06	134	21	12
Non-Hispanic Whites	Male	40-59	07-08	90.7	5.5	15
Non-Hispanic Whites	Male	40-59	09-10	87.0	9.9	17
Non-Hispanic Whites	Male	60+	05-06	181	19	15
Non-Hispanic Whites	Male	60+	07-08	172	15	23
Non-Hispanic Whites	Male	60+	09-10	138	10	20
Non-Hispanic Whites	Female	12-19	05-06	30.0	1.6	10
Non-Hispanic Whites	Female	12-19	07-08	26.4	2.9	7
Non-Hispanic Whites	Female	12-19	09-10	23.0	2.2	8
Non-Hispanic Whites	Female	20-39	05-06	62.7	8.1	16
Non-Hispanic Whites	Female	20-39	07-08	61.2	8	12
Non-Hispanic Whites	Female	20-39	09-10	36.1	3.3	18
Non-Hispanic Whites	Female	40-59	05-06	123	17	13
Non-Hispanic Whites	Female	40-59	07-08	95.4	9.4	17
Non-Hispanic Whites	Female	40-59	09-10	92.9	8.6	16
Non-Hispanic Whites	Female	60+	05-06	259	18	17
Non-Hispanic Whites	Female	60+	07-08	211	21	20
Non-Hispanic Whites	Female	60+	09-10	194	24	22
Non-Hispanic Blacks	Male	12-19	05-06	29.2	2.3	13
Non-Hispanic Blacks	Male	12-19	07-08	24.9	1.4	6
Non-Hispanic Blacks	Male	12-19	09-10	16.8	2.6	5
Non-Hispanic Blacks	Male	20-39	05-06	40.3	6.6	6
Non-Hispanic Blacks	Male	20-39	07-08	36.5	4.1	6
Non-Hispanic Blacks	Male	20-39	09-10	49.3	14.6	7
Non-Hispanic Blacks	Male	40-59	05-06	96.2	22.6	5
Non-Hispanic Blacks	Male	40-59	07-08	85.7	12.4	6
Non-Hispanic Blacks	Male	40-59	09-10	163	42	7
Non-Hispanic Blacks	Male	60+	05-06	184	31	5
Non-Hispanic Blacks	Male	60+	07-08	150	23	8
Non-Hispanic Blacks	Male	60+	09-10	146	33	8
Non-Hispanic Blacks	Female	12-19	05-06	27.9	1.5	14
Non-Hispanic Blacks	Female	12-19	07-08	22.1	1.7	4
Non-Hispanic Blacks	Female	12-19	09-10	16.6	1.2	6
Non-Hispanic Blacks	Female	20-39	05-06	56.3	6.6	7
Non-Hispanic Blacks	Female	20-39	07-08	39.7	3.4	7
Non-Hispanic Blacks	Female	20-39	09-10	40.3	7.6	7
Non-Hispanic Blacks	Female	40-59	05-06	129	16	7
Non-Hispanic Blacks	Female	40-59	07-08	147 **	45	6
Non-Hispanic Blacks	Female	40-59	09-10	171	40	7
Non-Hispanic Blacks	Female	60+	05-06	558 **	211	5
Non-Hispanic Blacks	Female	60+	07-08	338	25	6
Non-Hispanic Blacks	Female	60+	09-10	335	33	7
Mexican Americans	Male	12-19	05-06	32.6	1.7	11
Mexican Americans	Male	12-19	07-08	33.4	4.4	6
Mexican Americans	Male	12-19	09-10	23.5	1.6	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	63.0	2.2	9
Mexican Americans	Male	20-39	07-08	63.4	7.1	9
Mexican Americans	Male	20-39	09-10	41.1	7.2	8
Mexican Americans	Male	40-59	05-06	131	22	4
Mexican Americans	Male	40-59	07-08	126	22	6
Mexican Americans	Male	40-59	09-10	105	13	7
Mexican Americans	Male	60+	05-06	188	32	4
Mexican Americans	Male	60+	07-08	215	41	5
Mexican Americans	Male	60+	09-10	157	16	5
Mexican Americans	Female	12-19	05-06	32.0	2.3	16
Mexican Americans	Female	12-19	07-08	28.9	2.4	5
Mexican Americans	Female	12-19	09-10	21.1	1.5	7
Mexican Americans	Female	20-39	05-06	54.9	4.8	9
Mexican Americans	Female	20-39	07-08	49.3	4.9	7
Mexican Americans	Female	20-39	09-10	33.0	4.8	10
Mexican Americans	Female	40-59	05-06	143	21	6
Mexican Americans	Female	40-59	07-08	112	14	5
Mexican Americans	Female	40-59	09-10	119	15	9
Mexican Americans	Female	60+	05-06	301	54	3
Mexican Americans	Female	60+	07-08	253	37	5
Mexican Americans	Female	60+	09-10	219	15	6
All Hispanics	Male	12-19	09-10	24.7	1.9	11
All Hispanics	Male	20-39	09-10	46.4	8.5	13
All Hispanics	Male	40-59	09-10	106	11	12
All Hispanics	Male	60+	09-10	158	12	7
All Hispanics	Female	12-19	09-10	20.9	1.6	10
All Hispanics	Female	20-39	09-10	40.2	5.5	14
All Hispanics	Female	40-59	09-10	112	12	14
All Hispanics	Female	60+	09-10	232	16	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 32774-16-6

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	5.13	0.42	9
Non-Hispanic Whites	Male	12-19	07-08	4.59	0.48	6
Non-Hispanic Whites	Male	12-19	09-10	4.17	0.38	10
Non-Hispanic Whites	Male	20-39	05-06	8.17	0.77	12
Non-Hispanic Whites	Male	20-39	07-08	7.16	0.33	15
Non-Hispanic Whites	Male	20-39	09-10	6.94	0.5	17
Non-Hispanic Whites	Male	40-59	05-06	19.9	1.4	12
Non-Hispanic Whites	Male	40-59	07-08	16.6	0.7	15
Non-Hispanic Whites	Male	40-59	09-10	17.0	1.3	17
Non-Hispanic Whites	Male	60+	05-06	35.7	1.8	15
Non-Hispanic Whites	Male	60+	07-08	32.6	1.8	23
Non-Hispanic Whites	Male	60+	09-10	33.9	2.3	20
Non-Hispanic Whites	Female	12-19	05-06	3.68	0.19	10
Non-Hispanic Whites	Female	12-19	07-08	3.16	0.53	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	6.72	0.58	16
Non-Hispanic Whites	Female	20-39	07-08	5.05	0.42	12
Non-Hispanic Whites	Female	20-39	09-10	4.87	0.32	18
Non-Hispanic Whites	Female	40-59	05-06	14.2	0.7	13
Non-Hispanic Whites	Female	40-59	07-08	14.1	0.6	17
Non-Hispanic Whites	Female	40-59	09-10	13.5	1.1	16
Non-Hispanic Whites	Female	60+	05-06	31.4	2.2	17
Non-Hispanic Whites	Female	60+	07-08	28.1	1.6	20
Non-Hispanic Whites	Female	60+	09-10	30.7	2.3	22
Non-Hispanic Blacks	Male	12-19	05-06	5.18	0.31	13
Non-Hispanic Blacks	Male	12-19	07-08	4.09	0.35	6
Non-Hispanic Blacks	Male	12-19	09-10	3.66	0.18	5
Non-Hispanic Blacks	Male	20-39	05-06	7.95	0.57	6
Non-Hispanic Blacks	Male	20-39	07-08	6.68	0.54	6
Non-Hispanic Blacks	Male	20-39	09-10	7.35	0.62	7
Non-Hispanic Blacks	Male	40-59	05-06	17.5	0.7	5
Non-Hispanic Blacks	Male	40-59	07-08	18.8	1.9	6
Non-Hispanic Blacks	Male	40-59	09-10	18.6	2.9	7
Non-Hispanic Blacks	Male	60+	05-06	39.1	3.8	5
Non-Hispanic Blacks	Male	60+	07-08	31.4	3.1	8
Non-Hispanic Blacks	Male	60+	09-10	33.5	3.1	8
Non-Hispanic Blacks	Female	12-19	05-06	3.19	0.11	14
Non-Hispanic Blacks	Female	12-19	07-08	2.26	0.04	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	6.20	0.44	7
Non-Hispanic Blacks	Female	20-39	07-08	4.78	0.24	7
Non-Hispanic Blacks	Female	20-39	09-10	4.62	0.54	7
Non-Hispanic Blacks	Female	40-59	05-06	13.8	1.6	7
Non-Hispanic Blacks	Female	40-59	07-08	14.0	1.4	6
Non-Hispanic Blacks	Female	40-59	09-10	14.9	2.3	7
Non-Hispanic Blacks	Female	60+	05-06	45.0	8.5	5
Non-Hispanic Blacks	Female	60+	07-08	36.8	2.4	6
Non-Hispanic Blacks	Female	60+	09-10	38.9	3.9	7
Mexican Americans	Male	12-19	05-06	3.79	0.46	11
Mexican Americans	Male	12-19	07-08	3.89	0.55	6
Mexican Americans	Male	12-19	09-10	3.96	0.35	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	6.10	0.14	9
Mexican Americans	Male	20-39	07-08	5.79	0.35	9
Mexican Americans	Male	20-39	09-10	5.12	0.4	8
Mexican Americans	Male	40-59	05-06	11.1	0.3	4
Mexican Americans	Male	40-59	07-08	13.2	1.1	6
Mexican Americans	Male	40-59	09-10	14.0	0.6	7
Mexican Americans	Male	60+	05-06	27.2	2.5	4
Mexican Americans	Male	60+	07-08	25.0	1.9	5
Mexican Americans	Male	60+	09-10	28.4	2.7	5
Mexican Americans	Female	12-19	05-06	3.17	0.15	16
Mexican Americans	Female	12-19	07-08	2.00	0.39	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	4.42	0.3	9
Mexican Americans	Female	20-39	07-08	3.90	0.23	7
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	10.2	1.5	6
Mexican Americans	Female	40-59	07-08	10.9	1.5	5
Mexican Americans	Female	40-59	09-10	8.88	0.81	9
Mexican Americans	Female	60+	05-06	18.7	1.8	3
Mexican Americans	Female	60+	07-08	21.7	3	5
Mexican Americans	Female	60+	09-10	23.5	3.3	6
All Hispanics	Male	12-19	09-10	4.25	0.3	10
All Hispanics	Male	20-39	09-10	5.57	0.59	13
All Hispanics	Male	40-59	09-10	14.6	1	12
All Hispanics	Male	60+	09-10	28.1	2	7
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	3.85	0.49	14
All Hispanics	Female	40-59	09-10	9.65	0.77	14
All Hispanics	Female	60+	09-10	22.2	2	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.8, 0.93, and 3.54, 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/DioxinLikeChemicals_BiomonitoringSummary.html

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

Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (whole weight) (2005 - 2010)†

CAS Number 32774-16-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	28.1	2.4	9
Non-Hispanic Whites	Male	12-19	07-08	22.6	2.1	6
Non-Hispanic Whites	Male	12-19	09-10	22.1	1.8	10
Non-Hispanic Whites	Male	20-39	05-06	59.9	7.1	12
Non-Hispanic Whites	Male	20-39	07-08	47.2	2.6	15
Non-Hispanic Whites	Male	20-39	09-10	45.5	3.8	17
Non-Hispanic Whites	Male	40-59	05-06	150	13	12
Non-Hispanic Whites	Male	40-59	07-08	122	6	15
Non-Hispanic Whites	Male	40-59	09-10	115	9	17
Non-Hispanic Whites	Male	60+	05-06	242	10	15
Non-Hispanic Whites	Male	60+	07-08	209	12	23
Non-Hispanic Whites	Male	60+	09-10	205	13	20
Non-Hispanic Whites	Female	12-19	05-06	19.7	1.3	10
Non-Hispanic Whites	Female	12-19	07-08	15.1	2.8	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	44.1	4.5	16
Non-Hispanic Whites	Female	20-39	07-08	30.2	2.7	12
Non-Hispanic Whites	Female	20-39	09-10	25.7	1.6	18
Non-Hispanic Whites	Female	40-59	05-06	106	9	13
Non-Hispanic Whites	Female	40-59	07-08	93.6	5	17
Non-Hispanic Whites	Female	40-59	09-10	82.6	6.9	16
Non-Hispanic Whites	Female	60+	05-06	228	16	17
Non-Hispanic Whites	Female	60+	07-08	188	10	20
Non-Hispanic Whites	Female	60+	09-10	186	13	22
Non-Hispanic Blacks	Male	12-19	05-06	26.0	1.3	13
Non-Hispanic Blacks	Male	12-19	07-08	19.4	1.6	6
Non-Hispanic Blacks	Male	12-19	09-10	16.7	1.2	5
Non-Hispanic Blacks	Male	20-39	05-06	46.9	3.4	6
Non-Hispanic Blacks	Male	20-39	07-08	37.4	2.4	6
Non-Hispanic Blacks	Male	20-39	09-10	41.8	4	7
Non-Hispanic Blacks	Male	40-59	05-06	112	5	5
Non-Hispanic Blacks	Male	40-59	07-08	120	12	6
Non-Hispanic Blacks	Male	40-59	09-10	113	15	7
Non-Hispanic Blacks	Male	60+	05-06	235	26	5
Non-Hispanic Blacks	Male	60+	07-08	189	18	8
Non-Hispanic Blacks	Male	60+	09-10	180	18	8
Non-Hispanic Blacks	Female	12-19	05-06	15.8	0.5	14
Non-Hispanic Blacks	Female	12-19	07-08	10.8	0.4	4
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	35.8	2.8	7
Non-Hispanic Blacks	Female	20-39	07-08	24.1	1.2	7
Non-Hispanic Blacks	Female	20-39	09-10	23.0	2.9	7
Non-Hispanic Blacks	Female	40-59	05-06	88.8	10.6	7
Non-Hispanic Blacks	Female	40-59	07-08	85.2	10.5	6
Non-Hispanic Blacks	Female	40-59	09-10	83.3	11.5	7
Non-Hispanic Blacks	Female	60+	05-06	299	54	5
Non-Hispanic Blacks	Female	60+	07-08	222	15	6
Non-Hispanic Blacks	Female	60+	09-10	222	20	7
Mexican Americans	Male	12-19	05-06	20.2	2.3	11
Mexican Americans	Male	12-19	07-08	21.0	3.8	6
Mexican Americans	Male	12-19	09-10	18.5	1.7	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	43.3	1.7	9
Mexican Americans	Male	20-39	07-08	39.9	3.2	9
Mexican Americans	Male	20-39	09-10	31.6	3.6	8
Mexican Americans	Male	40-59	05-06	90.6	5.2	4
Mexican Americans	Male	40-59	07-08	94.5	9.7	6
Mexican Americans	Male	40-59	09-10	99.4	6.9	7
Mexican Americans	Male	60+	05-06	194	9	4
Mexican Americans	Male	60+	07-08	179	13	5
Mexican Americans	Male	60+	09-10	174	15	5
Mexican Americans	Female	12-19	05-06	17.3	0.8	16
Mexican Americans	Female	12-19	07-08	9.68	1.66	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	29.6	2.4	9
Mexican Americans	Female	20-39	07-08	22.8	1.9	7
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	75.8	11.9	6
Mexican Americans	Female	40-59	07-08	73.3	10.2	5
Mexican Americans	Female	40-59	09-10	57.3	6.1	9
Mexican Americans	Female	60+	05-06	144	23	3
Mexican Americans	Female	60+	07-08	150	23	5
Mexican Americans	Female	60+	09-10	129	16	6
All Hispanics	Male	12-19	09-10	19.8	1.5	10
All Hispanics	Male	20-39	09-10	37.0	6.3	13
All Hispanics	Male	40-59	09-10	101	8	12
All Hispanics	Male	60+	09-10	170	11	7
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	21.2	2.9	14
All Hispanics	Female	40-59	09-10	60.5	5.3	14
All Hispanics	Female	60+	09-10	130	10	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

* 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) (2005 - 2010)†

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	.507	0.097	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	.577	0.044	10
Non-Hispanic Whites	Male	20-39	05-06	.671	0.134	12
Non-Hispanic Whites	Male	20-39	07-08	.808	0.056	15
Non-Hispanic Whites	Male	20-39	09-10	.999	0.202	17
Non-Hispanic Whites	Male	40-59	05-06	1.64 **	0.5	12
Non-Hispanic Whites	Male	40-59	07-08	1.02	0.07	16
Non-Hispanic Whites	Male	40-59	09-10	.870	0.11	17
Non-Hispanic Whites	Male	60+	05-06	2.15	0.26	15
Non-Hispanic Whites	Male	60+	07-08	3.01	0.36	23
Non-Hispanic Whites	Male	60+	09-10	2.54	0.41	20
Non-Hispanic Whites	Female	12-19	05-06	.482	0.041	10
Non-Hispanic Whites	Female	12-19	07-08	.555	0.06	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	.598	0.044	16
Non-Hispanic Whites	Female	20-39	07-08	1.06	0.16	13
Non-Hispanic Whites	Female	20-39	09-10	.654	0.044	19
Non-Hispanic Whites	Female	40-59	05-06	1.29	0.15	13
Non-Hispanic Whites	Female	40-59	07-08	1.36	0.13	17
Non-Hispanic Whites	Female	40-59	09-10	1.82	0.39	17
Non-Hispanic Whites	Female	60+	05-06	3.84	0.41	17
Non-Hispanic Whites	Female	60+	07-08	4.09	0.69	21
Non-Hispanic Whites	Female	60+	09-10	3.34	0.38	22
Non-Hispanic Blacks	Male	12-19	05-06	.524	0.041	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	5
Non-Hispanic Blacks	Male	20-39	05-06	.517	0.083	6
Non-Hispanic Blacks	Male	20-39	07-08	.580	0.106	6
Non-Hispanic Blacks	Male	20-39	09-10	.619	0.126	6
Non-Hispanic Blacks	Male	40-59	05-06	1.31	0.33	5
Non-Hispanic Blacks	Male	40-59	07-08	1.52	0.28	6
Non-Hispanic Blacks	Male	40-59	09-10	2.27	0.44	7
Non-Hispanic Blacks	Male	60+	05-06	3.46	0.76	5
Non-Hispanic Blacks	Male	60+	07-08	3.00	0.3	8
Non-Hispanic Blacks	Male	60+	09-10	3.03	0.4	9
Non-Hispanic Blacks	Female	12-19	05-06	.431	0.026	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	.728	0.102	7
Non-Hispanic Blacks	Female	20-39	07-08	.698	0.121	8
Non-Hispanic Blacks	Female	20-39	09-10	.689	0.099	7
Non-Hispanic Blacks	Female	40-59	05-06	2.19	0.26	7
Non-Hispanic Blacks	Female	40-59	07-08	2.43	0.39	8
Non-Hispanic Blacks	Female	40-59	09-10	3.79	0.62	7
Non-Hispanic Blacks	Female	60+	05-06	8.54 **	3.02	5
Non-Hispanic Blacks	Female	60+	07-08	7.46	1.2	7
Non-Hispanic Blacks	Female	60+	09-10	6.66	0.77	7
Mexican Americans	Male	12-19	05-06	.341	0.032	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	.484	0.031	9
Mexican Americans	Male	20-39	07-08	.745	0.08	9
Mexican Americans	Male	20-39	09-10	.561	0.075	8
Mexican Americans	Male	40-59	05-06	.835	0.076	4
Mexican Americans	Male	40-59	07-08	1.45	0.31	6
Mexican Americans	Male	40-59	09-10	.878	0.108	8
Mexican Americans	Male	60+	05-06	1.34	0.12	4
Mexican Americans	Male	60+	07-08	1.78	0.18	5
Mexican Americans	Male	60+	09-10	2.26	0.24	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	.421	0.043	9
Mexican Americans	Female	20-39	07-08	.669	0.025	8
Mexican Americans	Female	20-39	09-10	*	*	9
Mexican Americans	Female	40-59	05-06	1.32	0.14	6
Mexican Americans	Female	40-59	07-08	1.33	0.14	6
Mexican Americans	Female	40-59	09-10	1.16	0.07	9
Mexican Americans	Female	60+	05-06	2.81	0.51	3
Mexican Americans	Female	60+	07-08	2.89	0.39	5
Mexican Americans	Female	60+	09-10	2.90	0.32	5
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	.663	0.069	13
All Hispanics	Male	40-59	09-10	1.05	0.11	13
All Hispanics	Male	60+	09-10	2.27	0.18	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	.556	0.098	13
All Hispanics	Female	40-59	09-10	1.24	0.13	13
All Hispanics	Female	60+	09-10	3.10	0.28	10

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.28, and 0.52, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (lipid adjusted) (2011 - 2016)†

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.392	0.041	6
Non-Hispanic Whites	Male	12-19	13-14	.519	0.07	8
Non-Hispanic Whites	Male	12-19	15-16	1.12 **	0.6	7
Non-Hispanic Whites	Male	20-39	11-12	.566	0.047	12
Non-Hispanic Whites	Male	20-39	13-14	.826	0.185	14
Non-Hispanic Whites	Male	20-39	15-16	.379	0.049	10
Non-Hispanic Whites	Male	40-59	11-12	.895	0.044	12
Non-Hispanic Whites	Male	40-59	13-14	1.15	0.18	14
Non-Hispanic Whites	Male	40-59	15-16	.673	0.066	10
Non-Hispanic Whites	Male	60+	11-12	1.57	0.11	12
Non-Hispanic Whites	Male	60+	13-14	1.94	0.32	17
Non-Hispanic Whites	Male	60+	15-16	1.79	0.39	14
Non-Hispanic Whites	Female	12-19	11-12	.424	0.047	5
Non-Hispanic Whites	Female	12-19	13-14	1.11	0.31	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.642	0.065	13
Non-Hispanic Whites	Female	20-39	13-14	1.01	0.3	15
Non-Hispanic Whites	Female	20-39	15-16	.408	0.029	11
Non-Hispanic Whites	Female	40-59	11-12	1.75	0.34	11
Non-Hispanic Whites	Female	40-59	13-14	1.21	0.14	16
Non-Hispanic Whites	Female	40-59	15-16	.646	0.059	9
Non-Hispanic Whites	Female	60+	11-12	2.68	0.34	14
Non-Hispanic Whites	Female	60+	13-14	2.99	0.42	20
Non-Hispanic Whites	Female	60+	15-16	2.59	0.34	13
Non-Hispanic Blacks	Male	12-19	11-12	.517	0.096	7
Non-Hispanic Blacks	Male	12-19	13-14	.528 **	0.2	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	.546	0.051	9
Non-Hispanic Blacks	Male	20-39	13-14	.416	0.049	7
Non-Hispanic Blacks	Male	20-39	15-16	.386	0.089	7
Non-Hispanic Blacks	Male	40-59	11-12	1.03	0.29	7
Non-Hispanic Blacks	Male	40-59	13-14	1.10	0.23	7
Non-Hispanic Blacks	Male	40-59	15-16	1.59 **	0.58	7
Non-Hispanic Blacks	Male	60+	11-12	1.77	0.21	9
Non-Hispanic Blacks	Male	60+	13-14	2.08	0.31	8
Non-Hispanic Blacks	Male	60+	15-16	1.29	0.11	7
Non-Hispanic Blacks	Female	12-19	11-12	.331	0.048	6
Non-Hispanic Blacks	Female	12-19	13-14	.702 **	0.238	6
Non-Hispanic Blacks	Female	12-19	15-16	.365	0.065	4
Non-Hispanic Blacks	Female	20-39	11-12	.642	0.092	8
Non-Hispanic Blacks	Female	20-39	13-14	.470	0.034	8
Non-Hispanic Blacks	Female	20-39	15-16	.506	0.056	9
Non-Hispanic Blacks	Female	40-59	11-12	1.80	0.32	8
Non-Hispanic Blacks	Female	40-59	13-14	1.55	0.23	8
Non-Hispanic Blacks	Female	40-59	15-16	1.25	0.15	12
Non-Hispanic Blacks	Female	60+	11-12	4.53	0.39	8
Non-Hispanic Blacks	Female	60+	13-14	4.62	0.77	8
Non-Hispanic Blacks	Female	60+	15-16	3.40	0.44	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.542	0.071	4
Mexican Americans	Male	20-39	13-14	.354	0.042	5
Mexican Americans	Male	20-39	15-16	.347	0.049	7
Mexican Americans	Male	40-59	11-12	.768	0.109	4
Mexican Americans	Male	40-59	13-14	.629	0.066	5
Mexican Americans	Male	40-59	15-16	.650	0.123	4
Mexican Americans	Male	60+	11-12	1.23	0.25	2
Mexican Americans	Male	60+	13-14	2.02	0.49	4
Mexican Americans	Male	60+	15-16	.878	0.099	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.323	0.095	4
Mexican Americans	Female	20-39	13-14	.312	0.026	5
Mexican Americans	Female	20-39	15-16	.399	0.021	6
Mexican Americans	Female	40-59	11-12	1.18	0.23	3
Mexican Americans	Female	40-59	13-14	.757	0.109	6
Mexican Americans	Female	40-59	15-16	.681	0.067	8
Mexican Americans	Female	60+	11-12	2.58	0.37	3
Mexican Americans	Female	60+	13-14	2.59	0.5	5
Mexican Americans	Female	60+	15-16	1.81	0.16	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	.361 **	0.112	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	.519	0.043	8
All Hispanics	Male	20-39	13-14	.435	0.069	8
All Hispanics	Male	20-39	15-16	.399	0.059	11
All Hispanics	Male	40-59	11-12	.800	0.1	7
All Hispanics	Male	40-59	13-14	.710	0.079	9
All Hispanics	Male	40-59	15-16	.767	0.135	9
All Hispanics	Male	60+	11-12	2.38	0.56	6
All Hispanics	Male	60+	13-14	2.01	0.32	7
All Hispanics	Male	60+	15-16	1.12	0.13	9
All Hispanics	Female	12-19	11-12	.316	0.043	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	.374	0.053	8
All Hispanics	Female	20-39	13-14	.500 **	0.192	9
All Hispanics	Female	20-39	15-16	.386	0.025	11
All Hispanics	Female	40-59	11-12	1.12	0.14	7
All Hispanics	Female	40-59	13-14	.776	0.081	10
All Hispanics	Female	40-59	15-16	.782	0.074	13
All Hispanics	Female	60+	11-12	2.82	0.3	7
All Hispanics	Female	60+	13-14	2.53	0.3	9
All Hispanics	Female	60+	15-16	1.68	0.11	13
Asians	Male	12-19	11-12	.877	0.107	3
Asians	Male	12-19	13-14	.384	0.096	3
Asians	Male	12-19	15-16	.610 **	0.263	3
Asians	Male	20-39	11-12	.939	0.16	6
Asians	Male	20-39	13-14	.806	0.112	4
Asians	Male	20-39	15-16	.981	0.175	5
Asians	Male	40-59	11-12	1.77	0.22	6
Asians	Male	40-59	13-14	1.68	0.34	4
Asians	Male	40-59	15-16	1.34	0.32	4
Asians	Male	60+	11-12	1.81	0.43	4
Asians	Male	60+	13-14	2.69	0.31	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	2.89	0.65	3
Asians	Female	12-19	11-12	.533	0.031	4
Asians	Female	12-19	13-14	.630	0.117	3
Asians	Female	12-19	15-16	.453 **	0.194	3
Asians	Female	20-39	11-12	1.26	0.19	6
Asians	Female	20-39	13-14	.843	0.12	5
Asians	Female	20-39	15-16	.697	0.061	4
Asians	Female	40-59	11-12	1.73	0.26	6
Asians	Female	40-59	13-14	1.44	0.16	7
Asians	Female	40-59	15-16	2.73 **	1.11	5
Asians	Female	60+	11-12	3.36	0.5	3
Asians	Female	60+	13-14	2.60	0.49	3
Asians	Female	60+	15-16	3.90 **	1.25	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.27, 0.25, and 0.3, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.003	0.001	9
Non-Hispanic Whites	12-19	Male	07-08	.002	0	6
Non-Hispanic Whites	12-19	Male	09-10	.003	0	10
Non-Hispanic Whites	20-39	Male	05-06	.005	0.001	12
Non-Hispanic Whites	20-39	Male	07-08	.005	0	15
Non-Hispanic Whites	20-39	Male	09-10	.007	0.001	17
Non-Hispanic Whites	40-59	Male	05-06	.013 **	0.004	12
Non-Hispanic Whites	40-59	Male	07-08	.007	0.001	16
Non-Hispanic Whites	40-59	Male	09-10	.006	0.001	17
Non-Hispanic Whites	60+	Male	05-06	.014	0.001	15
Non-Hispanic Whites	60+	Male	07-08	.019	0.002	23
Non-Hispanic Whites	60+	Male	09-10	.016	0.003	20
Non-Hispanic Whites	12-19	Female	05-06	.003	0	10
Non-Hispanic Whites	12-19	Female	07-08	.003	0	7
Non-Hispanic Whites	12-19	Female	09-10	.002	0	8
Non-Hispanic Whites	20-39	Female	05-06	.004	0	16
Non-Hispanic Whites	20-39	Female	07-08	.006	0.001	13
Non-Hispanic Whites	20-39	Female	09-10	.004	0	19
Non-Hispanic Whites	40-59	Female	05-06	.010	0.001	13
Non-Hispanic Whites	40-59	Female	07-08	.009	0.001	17
Non-Hispanic Whites	40-59	Female	09-10	.011	0.002	17
Non-Hispanic Whites	60+	Female	05-06	.028	0.003	17
Non-Hispanic Whites	60+	Female	07-08	.027	0.004	21
Non-Hispanic Whites	60+	Female	09-10	.020	0.002	22
Non-Hispanic Blacks	12-19	Male	05-06	.003	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.002	0	6
Non-Hispanic Blacks	12-19	Male	09-10	.003	0.001	5
Non-Hispanic Blacks	20-39	Male	05-06	.003	0.001	6
Non-Hispanic Blacks	20-39	Male	07-08	.003	0.001	6
Non-Hispanic Blacks	20-39	Male	09-10	.004	0.001	6
Non-Hispanic Blacks	40-59	Male	05-06	.008	0.002	5
Non-Hispanic Blacks	40-59	Male	07-08	.010	0.002	6
Non-Hispanic Blacks	40-59	Male	09-10	.014	0.003	7
Non-Hispanic Blacks	60+	Male	05-06	.020	0.005	5
Non-Hispanic Blacks	60+	Male	07-08	.018	0.002	8
Non-Hispanic Blacks	60+	Male	09-10	.016	0.002	9
Non-Hispanic Blacks	12-19	Female	05-06	.002	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001 **	0	5
Non-Hispanic Blacks	12-19	Female	09-10	.002	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.004	0.001	7
Non-Hispanic Blacks	20-39	Female	07-08	.004	0.001	8
Non-Hispanic Blacks	20-39	Female	09-10	.003	0.001	7
Non-Hispanic Blacks	40-59	Female	05-06	.014	0.002	7
Non-Hispanic Blacks	40-59	Female	07-08	.015	0.003	8
Non-Hispanic Blacks	40-59	Female	09-10	.021	0.003	7
Non-Hispanic Blacks	60+	Female	05-06	.057 **	0.02	5
Non-Hispanic Blacks	60+	Female	07-08	.044	0.006	7
Non-Hispanic Blacks	60+	Female	09-10	.038	0.004	7
Mexican Americans	12-19	Male	05-06	.002	0	11
Mexican Americans	12-19	Male	07-08	.001 **	0	6
Mexican Americans	12-19	Male	09-10	.002	0	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.003	0	9
Mexican Americans	20-39	Male	07-08	.005	0.001	9
Mexican Americans	20-39	Male	09-10	.003	0	8
Mexican Americans	40-59	Male	05-06	.007	0.001	4
Mexican Americans	40-59	Male	07-08	.010	0.002	6
Mexican Americans	40-59	Male	09-10	.006	0.001	8
Mexican Americans	60+	Male	05-06	.010	0.001	4
Mexican Americans	60+	Male	07-08	.013	0.002	5
Mexican Americans	60+	Male	09-10	.014	0.001	5
Mexican Americans	12-19	Female	05-06	.002	0	16
Mexican Americans	12-19	Female	07-08	.002	0	5
Mexican Americans	12-19	Female	09-10	.002	0	7
Mexican Americans	20-39	Female	05-06	.003	0	9
Mexican Americans	20-39	Female	07-08	.004	0	8
Mexican Americans	20-39	Female	09-10	.002	0	9
Mexican Americans	40-59	Female	05-06	.010	0.001	6
Mexican Americans	40-59	Female	07-08	.009	0.001	6
Mexican Americans	40-59	Female	09-10	.008	0.001	9
Mexican Americans	60+	Female	05-06	.021	0.003	3
Mexican Americans	60+	Female	07-08	.020	0.003	5
Mexican Americans	60+	Female	09-10	.016	0.002	5
All Hispanics	12-19	Male	09-10	.002	0	11
All Hispanics	20-39	Male	09-10	.004	0.001	13
All Hispanics	40-59	Male	09-10	.007	0.001	13
All Hispanics	60+	Male	09-10	.014	0.001	8
All Hispanics	12-19	Female	09-10	.002	0	10
All Hispanics	20-39	Female	09-10	.003	0.001	13
All Hispanics	40-59	Female	09-10	.008	0.001	13
All Hispanics	60+	Female	09-10	.018	0.002	10

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 32598-14-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.002	0	6
Non-Hispanic Whites	Male	12-19	13-14	.002	0	8
Non-Hispanic Whites	Male	12-19	15-16	.005 **	0.003	7
Non-Hispanic Whites	Male	20-39	11-12	.003	0	12
Non-Hispanic Whites	Male	20-39	13-14	.004	0.001	14
Non-Hispanic Whites	Male	20-39	15-16	.002	0	10
Non-Hispanic Whites	Male	40-59	11-12	.006	0.001	12
Non-Hispanic Whites	Male	40-59	13-14	.007	0.001	14
Non-Hispanic Whites	Male	40-59	15-16	.005	0	10
Non-Hispanic Whites	Male	60+	11-12	.009	0.001	12
Non-Hispanic Whites	Male	60+	13-14	.011	0.002	17
Non-Hispanic Whites	Male	60+	15-16	.010	0.002	14
Non-Hispanic Whites	Female	12-19	11-12	.002	0	5
Non-Hispanic Whites	Female	12-19	13-14	.006	0.001	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.003	0	13
Non-Hispanic Whites	Female	20-39	13-14	.005	0.001	15
Non-Hispanic Whites	Female	20-39	15-16	.002	0	11
Non-Hispanic Whites	Female	40-59	11-12	.011	0.002	11
Non-Hispanic Whites	Female	40-59	13-14	.007	0.001	16
Non-Hispanic Whites	Female	40-59	15-16	.004	0	9
Non-Hispanic Whites	Female	60+	11-12	.016	0.002	14
Non-Hispanic Whites	Female	60+	13-14	.018	0.002	20
Non-Hispanic Whites	Female	60+	15-16	.016	0.002	13
Non-Hispanic Blacks	Male	12-19	11-12	.002	0	7
Non-Hispanic Blacks	Male	12-19	13-14	.002 **	0.001	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	.003	0	9
Non-Hispanic Blacks	Male	20-39	13-14	.002	0	7
Non-Hispanic Blacks	Male	20-39	15-16	.002	0	7
Non-Hispanic Blacks	Male	40-59	11-12	.006	0.002	7
Non-Hispanic Blacks	Male	40-59	13-14	.006	0.001	7
Non-Hispanic Blacks	Male	40-59	15-16	.010 **	0.003	7
Non-Hispanic Blacks	Male	60+	11-12	.010	0.001	9
Non-Hispanic Blacks	Male	60+	13-14	.011	0.002	8
Non-Hispanic Blacks	Male	60+	15-16	.007	0.001	7
Non-Hispanic Blacks	Female	12-19	11-12	.001	0	6
Non-Hispanic Blacks	Female	12-19	13-14	.003	0.001	6
Non-Hispanic Blacks	Female	12-19	15-16	.002	0	4
Non-Hispanic Blacks	Female	20-39	11-12	.004	0.001	8
Non-Hispanic Blacks	Female	20-39	13-14	.002	0	8
Non-Hispanic Blacks	Female	20-39	15-16	.002	0	9
Non-Hispanic Blacks	Female	40-59	11-12	.011	0.002	8
Non-Hispanic Blacks	Female	40-59	13-14	.008	0.001	8
Non-Hispanic Blacks	Female	40-59	15-16	.007	0.001	12
Non-Hispanic Blacks	Female	60+	11-12	.025	0.002	8
Non-Hispanic Blacks	Female	60+	13-14	.025	0.004	8
Non-Hispanic Blacks	Female	60+	15-16	.020	0.003	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.003	0	4
Mexican Americans	Male	20-39	13-14	.002	0	5
Mexican Americans	Male	20-39	15-16	.003	0	7
Mexican Americans	Male	40-59	11-12	.006	0	4
Mexican Americans	Male	40-59	13-14	.004	0	5
Mexican Americans	Male	40-59	15-16	.004	0.001	4
Mexican Americans	Male	60+	11-12	.007	0.001	2
Mexican Americans	Male	60+	13-14	.011	0.002	4
Mexican Americans	Male	60+	15-16	.005	0.001	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.002	0	4
Mexican Americans	Female	20-39	13-14	.002	0	5
Mexican Americans	Female	20-39	15-16	.002	0	6
Mexican Americans	Female	40-59	11-12	.007	0.002	3
Mexican Americans	Female	40-59	13-14	.004	0.001	6
Mexican Americans	Female	40-59	15-16	.004	0	8
Mexican Americans	Female	60+	11-12	.016	0.002	3
Mexican Americans	Female	60+	13-14	.015	0.002	5
Mexican Americans	Female	60+	15-16	.011	0.001	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	1.80 **	0.58	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	3.15	0.24	8
All Hispanics	Male	20-39	13-14	2.59	0.34	8
All Hispanics	Male	20-39	15-16	2.56	0.35	11
All Hispanics	Male	40-59	11-12	5.83	0.56	7
All Hispanics	Male	40-59	13-14	4.34	0.54	9
All Hispanics	Male	40-59	15-16	4.91	0.84	9
All Hispanics	Male	60+	11-12	13.7	3.1	6
All Hispanics	Male	60+	13-14	10.8	1.6	7
All Hispanics	Male	60+	15-16	6.63	0.81	9
All Hispanics	Female	12-19	11-12	1.58	0.23	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	2.04	0.26	8
All Hispanics	Female	20-39	13-14	2.81 **	1.07	9
All Hispanics	Female	20-39	15-16	2.10	0.15	11
All Hispanics	Female	40-59	11-12	7.04	1.01	7
All Hispanics	Female	40-59	13-14	4.47	0.44	10
All Hispanics	Female	40-59	15-16	5.07	0.57	13
All Hispanics	Female	60+	11-12	17.2	1.5	7
All Hispanics	Female	60+	13-14	14.8	1.5	9
All Hispanics	Female	60+	15-16	10.3	0.7	13
Asians	Male	12-19	11-12	.005	0.001	3
Asians	Male	12-19	13-14	.002	0	3
Asians	Male	12-19	15-16	.003 **	0.001	3
Asians	Male	20-39	11-12	.005	0.001	6
Asians	Male	20-39	13-14	.005	0.001	4
Asians	Male	20-39	15-16	.006	0.001	5
Asians	Male	40-59	11-12	.011	0.001	6
Asians	Male	40-59	13-14	.009	0.002	4
Asians	Male	40-59	15-16	.009	0.002	4
Asians	Male	60+	11-12	.010	0.002	4
Asians	Male	60+	13-14	.016	0.001	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.016	0.003	3
Asians	Female	12-19	11-12	.003	0	4
Asians	Female	12-19	13-14	.003	0	3
Asians	Female	12-19	15-16	.002 **	0.001	3
Asians	Female	20-39	11-12	.007	0.001	6
Asians	Female	20-39	13-14	.004	0.001	5
Asians	Female	20-39	15-16	.004	0	4
Asians	Female	40-59	11-12	.011	0.002	6
Asians	Female	40-59	13-14	.008	0.001	7
Asians	Female	40-59	15-16	.017 **	0.008	5
Asians	Female	60+	11-12	.019	0.003	3
Asians	Female	60+	13-14	.015	0.002	3
Asians	Female	60+	15-16	.024 **	0.008	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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 114) (lipid adjusted) (2005 - 2010)†

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	.597	0.052	12
Non-Hispanic Whites	Male	40-59	07-08	.686	0.06	16
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	1.22	0.09	15
Non-Hispanic Whites	Male	60+	07-08	1.60	0.15	23
Non-Hispanic Whites	Male	60+	09-10	1.28	0.13	19
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	.723	0.058	13
Non-Hispanic Whites	Female	40-59	07-08	.798	0.092	17
Non-Hispanic Whites	Female	40-59	09-10	.959	0.157	17
Non-Hispanic Whites	Female	60+	05-06	1.62	0.13	17
Non-Hispanic Whites	Female	60+	07-08	1.99	0.17	21
Non-Hispanic Whites	Female	60+	09-10	1.84	0.17	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	.458	0.059	5
Non-Hispanic Blacks	Male	40-59	07-08	.572	0.118	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	1.52	0.18	5
Non-Hispanic Blacks	Male	60+	07-08	1.48	0.16	8
Non-Hispanic Blacks	Male	60+	09-10	1.38	0.08	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	.712	0.092	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	09-10	.797	0.136	7
Non-Hispanic Blacks	Female	60+	05-06	2.83	0.57	5
Non-Hispanic Blacks	Female	60+	07-08	2.32	0.19	7
Non-Hispanic Blacks	Female	60+	09-10	2.44	0.26	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	40-59	09-10	*	*	8
Mexican Americans	Male	60+	05-06	.689	0.113	4
Mexican Americans	Male	60+	07-08	.934	0.068	5
Mexican Americans	Male	60+	09-10	.911	0.102	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	.361	0.059	6
Mexican Americans	Female	40-59	07-08	.450	0.114	6
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	.869	0.068	3
Mexican Americans	Female	60+	07-08	.992	0.108	5
Mexican Americans	Female	60+	09-10	1.09	0.2	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	13
All Hispanics	Male	60+	09-10	.946	0.086	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	1.15	0.13	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.28, and 0.62, 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/DioxinLikeChemicals_BiomonitoringSummary.html

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

Serum 2,3,4,4',5-Pentachlorobiphenyl (PCB 114) (lipid adjusted) (2011 - 2016)†

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.567	0.075	12
Non-Hispanic Whites	Male	40-59	13-14	.572	0.06	14
Non-Hispanic Whites	Male	40-59	15-16	.331	0.046	10
Non-Hispanic Whites	Male	60+	11-12	.990	0.071	12
Non-Hispanic Whites	Male	60+	13-14	1.14	0.12	17
Non-Hispanic Whites	Male	60+	15-16	1.04	0.13	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	.828	0.104	11
Non-Hispanic Whites	Female	40-59	13-14	.729	0.059	16
Non-Hispanic Whites	Female	40-59	15-16	.334	0.037	9
Non-Hispanic Whites	Female	60+	11-12	1.54	0.13	14
Non-Hispanic Whites	Female	60+	13-14	1.76	0.13	20
Non-Hispanic Whites	Female	60+	15-16	1.51	0.19	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	20-39	13-14	*	*	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.306	0.028	7
Non-Hispanic Blacks	Male	40-59	13-14	.412	0.048	7
Non-Hispanic Blacks	Male	40-59	15-16	.372	0.043	7
Non-Hispanic Blacks	Male	60+	11-12	.931	0.061	9
Non-Hispanic Blacks	Male	60+	13-14	1.87 **	0.75	9
Non-Hispanic Blacks	Male	60+	15-16	.673	0.057	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.588	0.05	8
Non-Hispanic Blacks	Female	40-59	13-14	.587	0.087	8
Non-Hispanic Blacks	Female	40-59	15-16	.513	0.071	12
Non-Hispanic Blacks	Female	60+	11-12	1.65	0.11	8
Non-Hispanic Blacks	Female	60+	13-14	1.96	0.15	8
Non-Hispanic Blacks	Female	60+	15-16	1.45	0.17	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.323	0.047	4
Mexican Americans	Male	40-59	13-14	.263	0.032	5
Mexican Americans	Male	40-59	15-16	*	*	4
Mexican Americans	Male	60+	11-12	.466	0.057	2
Mexican Americans	Male	60+	13-14	1.09	0.27	4
Mexican Americans	Male	60+	15-16	.604	0.098	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	.421	0.122	3
Mexican Americans	Female	40-59	13-14	.267	0.037	6
Mexican Americans	Female	40-59	15-16	*	*	8
Mexican Americans	Female	60+	11-12	.662	0.046	3
Mexican Americans	Female	60+	13-14	.923	0.127	5
Mexican Americans	Female	60+	15-16	.777	0.056	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	.327	0.036	7
All Hispanics	Male	40-59	13-14	.264	0.036	9
All Hispanics	Male	40-59	15-16	*	*	9
All Hispanics	Male	60+	11-12	.675	0.082	6
All Hispanics	Male	60+	13-14	1.02	0.22	7
All Hispanics	Male	60+	15-16	.632	0.06	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	.357	0.063	7
All Hispanics	Female	40-59	13-14	.288	0.03	10
All Hispanics	Female	40-59	15-16	.265	0.023	13
All Hispanics	Female	60+	11-12	1.08	0.24	7
All Hispanics	Female	60+	13-14	.943	0.085	9
All Hispanics	Female	60+	15-16	.740	0.046	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	*	*	6
Asians	Male	20-39	13-14	*	*	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	.385	0.039	6
Asians	Male	40-59	13-14	.356	0.093	4
Asians	Male	40-59	15-16	*	*	4
Asians	Male	60+	11-12	.613	0.072	4
Asians	Male	60+	13-14	.818	0.1	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.848	0.231	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	*	*	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	*	*	6
Asians	Female	20-39	13-14	*	*	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	.397	0.048	6
Asians	Female	40-59	13-14	.404	0.031	7
Asians	Female	40-59	15-16	.459 **	0.139	5
Asians	Female	60+	11-12	1.03	0.15	3
Asians	Female	60+	13-14	1.17 **	0.45	3
Asians	Female	60+	15-16	.868 **	0.404	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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 114) (whole weight) (2005 - 2010)†

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.001	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	12-19	Male	09-10	.001	0	10
Non-Hispanic Whites	20-39	Male	05-06	.002	0	12
Non-Hispanic Whites	20-39	Male	07-08	.001	0	15
Non-Hispanic Whites	20-39	Male	09-10	.002	0	17
Non-Hispanic Whites	40-59	Male	05-06	.005	0	12
Non-Hispanic Whites	40-59	Male	07-08	.005	0	16
Non-Hispanic Whites	40-59	Male	09-10	.003	0	17
Non-Hispanic Whites	60+	Male	05-06	.008	0.001	15
Non-Hispanic Whites	60+	Male	07-08	.010	0.001	23
Non-Hispanic Whites	60+	Male	09-10	.008	0.001	19
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001	0	7
Non-Hispanic Whites	12-19	Female	09-10	.001	0	8
Non-Hispanic Whites	20-39	Female	05-06	.001	0	16
Non-Hispanic Whites	20-39	Female	07-08	.001	0	13
Non-Hispanic Whites	20-39	Female	09-10	.001	0	19
Non-Hispanic Whites	40-59	Female	05-06	.005	0.001	13
Non-Hispanic Whites	40-59	Female	07-08	.005	0.001	17
Non-Hispanic Whites	40-59	Female	09-10	.006	0.001	17
Non-Hispanic Whites	60+	Female	05-06	.012	0.001	17
Non-Hispanic Whites	60+	Female	07-08	.013	0.001	21
Non-Hispanic Whites	60+	Female	09-10	.011	0.001	22
Non-Hispanic Blacks	12-19	Male	05-06	.001	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	12-19	Male	09-10	.002	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.001	0	6
Non-Hispanic Blacks	20-39	Male	07-08	.001	0	6
Non-Hispanic Blacks	20-39	Male	09-10	.002	0	7
Non-Hispanic Blacks	40-59	Male	05-06	.003	0	5
Non-Hispanic Blacks	40-59	Male	07-08	.004	0.001	6
Non-Hispanic Blacks	40-59	Male	09-10	.004	0	7
Non-Hispanic Blacks	60+	Male	05-06	.009	0.001	5
Non-Hispanic Blacks	60+	Male	07-08	.009	0.001	8
Non-Hispanic Blacks	60+	Male	09-10	.007	0	9
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	12-19	Female	09-10	.001	0	6
Non-Hispanic Blacks	20-39	Female	05-06	.001	0	7
Non-Hispanic Blacks	20-39	Female	07-08	.001	0	8
Non-Hispanic Blacks	20-39	Female	09-10	.001	0	7
Non-Hispanic Blacks	40-59	Female	05-06	.005	0.001	7
Non-Hispanic Blacks	40-59	Female	07-08	.004	0.001	8
Non-Hispanic Blacks	40-59	Female	09-10	.005	0.001	7
Non-Hispanic Blacks	60+	Female	05-06	.019	0.004	5
Non-Hispanic Blacks	60+	Female	07-08	.014	0.001	7
Non-Hispanic Blacks	60+	Female	09-10	.014	0.001	7
Mexican Americans	12-19	Male	05-06	.001	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	12-19	Male	09-10	.001	0	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.001	0	9
Mexican Americans	20-39	Male	07-08	.001	0	9
Mexican Americans	20-39	Male	09-10	.001	0	8
Mexican Americans	40-59	Male	05-06	.002	0	4
Mexican Americans	40-59	Male	07-08	.002	0	6
Mexican Americans	40-59	Male	09-10	.002	0	8
Mexican Americans	60+	Male	05-06	.005	0.001	4
Mexican Americans	60+	Male	07-08	.007	0	5
Mexican Americans	60+	Male	09-10	.006	0.001	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	12-19	Female	09-10	.001	0	7
Mexican Americans	20-39	Female	05-06	.001	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	20-39	Female	09-10	.001	0	10
Mexican Americans	40-59	Female	05-06	.003	0	6
Mexican Americans	40-59	Female	07-08	.003	0.001	6
Mexican Americans	40-59	Female	09-10	.002	0	9
Mexican Americans	60+	Female	05-06	.007	0	3
Mexican Americans	60+	Female	07-08	.007	0.001	5
Mexican Americans	60+	Female	09-10	.006	0.001	6
All Hispanics	12-19	Male	09-10	.001	0	11
All Hispanics	20-39	Male	09-10	.001	0	13
All Hispanics	40-59	Male	09-10	.003	0	13
All Hispanics	60+	Male	09-10	.006	0	8
All Hispanics	12-19	Female	09-10	.001	0	10
All Hispanics	20-39	Female	09-10	.001	0	14
All Hispanics	40-59	Female	09-10	.002	0	14
All Hispanics	60+	Female	09-10	.007	0.001	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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 114) (whole weight) (2011 - 2016)†

CAS Number 74472-37-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.004	0	12
Non-Hispanic Whites	Male	40-59	13-14	.003	0	14
Non-Hispanic Whites	Male	40-59	15-16	.002	0	10
Non-Hispanic Whites	Male	60+	11-12	.005	0	12
Non-Hispanic Whites	Male	60+	13-14	.006	0.001	17
Non-Hispanic Whites	Male	60+	15-16	.006	0.001	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	.005	0.001	11
Non-Hispanic Whites	Female	40-59	13-14	.004	0	16
Non-Hispanic Whites	Female	40-59	15-16	.002	0	9
Non-Hispanic Whites	Female	60+	11-12	.009	0.001	14
Non-Hispanic Whites	Female	60+	13-14	.010	0.001	20
Non-Hispanic Whites	Female	60+	15-16	.009	0.001	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	20-39	13-14	*	*	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.002	0	7
Non-Hispanic Blacks	Male	40-59	13-14	.002	0	7
Non-Hispanic Blacks	Male	40-59	15-16	.002	0	7
Non-Hispanic Blacks	Male	60+	11-12	.005	0	9
Non-Hispanic Blacks	Male	60+	13-14	.010 **	0.004	9
Non-Hispanic Blacks	Male	60+	15-16	.004	0	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.004	0	8
Non-Hispanic Blacks	Female	40-59	13-14	.003	0	8
Non-Hispanic Blacks	Female	40-59	15-16	.003	0	12
Non-Hispanic Blacks	Female	60+	11-12	.009	0.001	8
Non-Hispanic Blacks	Female	60+	13-14	.011	0.001	8
Non-Hispanic Blacks	Female	60+	15-16	.008	0.001	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.002	0	4
Mexican Americans	Male	40-59	13-14	.002	0	5
Mexican Americans	Male	40-59	15-16	*	*	4
Mexican Americans	Male	60+	11-12	.003	0	2
Mexican Americans	Male	60+	13-14	.006	0.001	4
Mexican Americans	Male	60+	15-16	.003	0.001	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	.003	0.001	3
Mexican Americans	Female	40-59	13-14	.002	0	6
Mexican Americans	Female	40-59	15-16	*	*	8
Mexican Americans	Female	60+	11-12	.004	0	3
Mexican Americans	Female	60+	13-14	.005	0.001	5
Mexican Americans	Female	60+	15-16	.005	0	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	2.41	0.22	7
All Hispanics	Male	40-59	13-14	1.62	0.24	9
All Hispanics	Male	40-59	15-16	*	*	9
All Hispanics	Male	60+	11-12	3.95	0.47	6
All Hispanics	Male	60+	13-14	5.48	1.08	7
All Hispanics	Male	60+	15-16	3.71	0.36	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	2.28	0.46	7
All Hispanics	Female	40-59	13-14	1.67	0.17	10
All Hispanics	Female	40-59	15-16	1.71	0.18	13
All Hispanics	Female	60+	11-12	6.54	1.36	7
All Hispanics	Female	60+	13-14	5.58	0.47	9
All Hispanics	Female	60+	15-16	4.51	0.27	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	*	*	6
Asians	Male	20-39	13-14	*	*	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	.002	0	6
Asians	Male	40-59	13-14	.002	0	4
Asians	Male	40-59	15-16	*	*	4
Asians	Male	60+	11-12	.003	0	4
Asians	Male	60+	13-14	.005	0	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.005	0.001	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	*	*	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	*	*	6
Asians	Female	20-39	13-14	*	*	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	.002	0	6
Asians	Female	40-59	13-14	.002	0	7
Asians	Female	40-59	15-16	.003 **	0.001	5
Asians	Female	60+	11-12	.006	0.001	3
Asians	Female	60+	13-14	.007	0.002	3
Asians	Female	60+	15-16	.005 **	0.003	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	2.24	0.31	9
Non-Hispanic Whites	Male	12-19	07-08	2.29	0.3	6
Non-Hispanic Whites	Male	12-19	09-10	2.50	0.17	10
Non-Hispanic Whites	Male	20-39	05-06	3.30	0.67	12
Non-Hispanic Whites	Male	20-39	07-08	3.30	0.21	15
Non-Hispanic Whites	Male	20-39	09-10	4.03	0.64	17
Non-Hispanic Whites	Male	40-59	05-06	7.56	1.56	12
Non-Hispanic Whites	Male	40-59	07-08	5.16	0.22	16
Non-Hispanic Whites	Male	40-59	09-10	4.65	0.53	17
Non-Hispanic Whites	Male	60+	05-06	13.3	1.4	15
Non-Hispanic Whites	Male	60+	07-08	15.5	1.5	23
Non-Hispanic Whites	Male	60+	09-10	13.1	1.2	21
Non-Hispanic Whites	Female	12-19	05-06	2.07	0.15	10
Non-Hispanic Whites	Female	12-19	07-08	2.41	0.21	7
Non-Hispanic Whites	Female	12-19	09-10	2.04	0.17	8
Non-Hispanic Whites	Female	20-39	05-06	2.99	0.19	16
Non-Hispanic Whites	Female	20-39	07-08	4.18	0.56	13
Non-Hispanic Whites	Female	20-39	09-10	2.97	0.17	19
Non-Hispanic Whites	Female	40-59	05-06	7.83	0.8	13
Non-Hispanic Whites	Female	40-59	07-08	7.56	0.71	17
Non-Hispanic Whites	Female	40-59	09-10	10.5	2.4	17
Non-Hispanic Whites	Female	60+	05-06	21.9	2	17
Non-Hispanic Whites	Female	60+	07-08	21.5	2.8	21
Non-Hispanic Whites	Female	60+	09-10	19.6	2	22
Non-Hispanic Blacks	Male	12-19	05-06	2.47	0.24	13
Non-Hispanic Blacks	Male	12-19	07-08	2.04	0.18	6
Non-Hispanic Blacks	Male	12-19	09-10	1.71	0.17	5
Non-Hispanic Blacks	Male	20-39	05-06	2.62	0.49	6
Non-Hispanic Blacks	Male	20-39	07-08	2.85	0.32	6
Non-Hispanic Blacks	Male	20-39	09-10	3.89	0.84	7
Non-Hispanic Blacks	Male	40-59	05-06	7.30	1.8	5
Non-Hispanic Blacks	Male	40-59	07-08	7.31	1.19	6
Non-Hispanic Blacks	Male	40-59	09-10	11.6	2.4	7
Non-Hispanic Blacks	Male	60+	05-06	19.9	3.6	5
Non-Hispanic Blacks	Male	60+	07-08	16.1	1.6	8
Non-Hispanic Blacks	Male	60+	09-10	16.3	2	9
Non-Hispanic Blacks	Female	12-19	05-06	2.02	0.11	14
Non-Hispanic Blacks	Female	12-19	07-08	1.92	0.21	5
Non-Hispanic Blacks	Female	12-19	09-10	1.71	0.28	6
Non-Hispanic Blacks	Female	20-39	05-06	3.70	0.44	7
Non-Hispanic Blacks	Female	20-39	07-08	3.37	0.28	8
Non-Hispanic Blacks	Female	20-39	09-10	2.94	0.42	7
Non-Hispanic Blacks	Female	40-59	05-06	11.7	1.3	7
Non-Hispanic Blacks	Female	40-59	07-08	11.2	1.8	8
Non-Hispanic Blacks	Female	40-59	09-10	16.9	3.2	7
Non-Hispanic Blacks	Female	60+	05-06	45.0	13.5	5
Non-Hispanic Blacks	Female	60+	07-08	35.1	4.6	7
Non-Hispanic Blacks	Female	60+	09-10	34.0	4	7
Mexican Americans	Male	12-19	05-06	1.50	0.11	11
Mexican Americans	Male	12-19	07-08	1.52	0.17	6
Mexican Americans	Male	12-19	09-10	1.91	0.21	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	2.17	0.14	9
Mexican Americans	Male	20-39	07-08	2.66	0.2	9
Mexican Americans	Male	20-39	09-10	2.41	0.23	7
Mexican Americans	Male	40-59	05-06	4.06	0.35	4
Mexican Americans	Male	40-59	07-08	6.03	0.85	6
Mexican Americans	Male	40-59	09-10	4.06	0.42	8
Mexican Americans	Male	60+	05-06	8.12	0.99	4
Mexican Americans	Male	60+	07-08	8.69	0.71	5
Mexican Americans	Male	60+	09-10	10.6	1.3	5
Mexican Americans	Female	12-19	05-06	1.36	0.08	16
Mexican Americans	Female	12-19	07-08	1.21	0.33	5
Mexican Americans	Female	12-19	09-10	1.43	0.29	7
Mexican Americans	Female	20-39	05-06	1.94	0.2	9
Mexican Americans	Female	20-39	07-08	2.50	0.16	8
Mexican Americans	Female	20-39	09-10	2.00	0.18	10
Mexican Americans	Female	40-59	05-06	6.79	0.67	6
Mexican Americans	Female	40-59	07-08	6.11	0.77	6
Mexican Americans	Female	40-59	09-10	5.80	0.42	9
Mexican Americans	Female	60+	05-06	15.3	2.7	3
Mexican Americans	Female	60+	07-08	14.0	2.2	5
Mexican Americans	Female	60+	09-10	15.2	1.9	6
All Hispanics	Male	12-19	09-10	1.96	0.17	10
All Hispanics	Male	20-39	09-10	2.80	0.23	12
All Hispanics	Male	40-59	09-10	4.98	0.48	13
All Hispanics	Male	60+	09-10	11.5	1	8
All Hispanics	Female	12-19	09-10	1.69	0.28	10
All Hispanics	Female	20-39	09-10	2.55	0.32	14
All Hispanics	Female	40-59	09-10	5.88	0.5	14
All Hispanics	Female	60+	09-10	15.9	1.4	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.14, and 0.62, respectively.

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) (2011 - 2016)†

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	1.51	0.1	6
Non-Hispanic Whites	Male	12-19	13-14	2.09	0.27	8
Non-Hispanic Whites	Male	12-19	15-16	4.28 **	2.27	7
Non-Hispanic Whites	Male	20-39	11-12	2.66	0.22	12
Non-Hispanic Whites	Male	20-39	13-14	3.00	0.56	14
Non-Hispanic Whites	Male	20-39	15-16	1.74	0.17	10
Non-Hispanic Whites	Male	40-59	11-12	4.60	0.24	12
Non-Hispanic Whites	Male	40-59	13-14	5.58	0.72	14
Non-Hispanic Whites	Male	40-59	15-16	3.32	0.31	10
Non-Hispanic Whites	Male	60+	11-12	8.83	0.54	12
Non-Hispanic Whites	Male	60+	13-14	10.6	1.5	17
Non-Hispanic Whites	Male	60+	15-16	9.64	1.95	14
Non-Hispanic Whites	Female	12-19	11-12	1.86	0.21	5
Non-Hispanic Whites	Female	12-19	13-14	3.78	0.95	6
Non-Hispanic Whites	Female	12-19	15-16	1.03	0.18	5
Non-Hispanic Whites	Female	20-39	11-12	2.97	0.3	13
Non-Hispanic Whites	Female	20-39	13-14	3.70	0.73	15
Non-Hispanic Whites	Female	20-39	15-16	1.92	0.13	11
Non-Hispanic Whites	Female	40-59	11-12	8.71	1.54	11
Non-Hispanic Whites	Female	40-59	13-14	6.19	0.6	16
Non-Hispanic Whites	Female	40-59	15-16	3.35	0.26	9
Non-Hispanic Whites	Female	60+	11-12	15.5	1.8	14
Non-Hispanic Whites	Female	60+	13-14	17.3	2	20
Non-Hispanic Whites	Female	60+	15-16	15.0	1.8	13
Non-Hispanic Blacks	Male	12-19	11-12	2.15	0.31	7
Non-Hispanic Blacks	Male	12-19	13-14	1.97	0.58	6
Non-Hispanic Blacks	Male	12-19	15-16	1.47	0.17	4
Non-Hispanic Blacks	Male	20-39	11-12	2.59	0.19	9
Non-Hispanic Blacks	Male	20-39	13-14	1.92	0.23	7
Non-Hispanic Blacks	Male	20-39	15-16	1.89	0.38	7
Non-Hispanic Blacks	Male	40-59	11-12	4.96	1.3	7
Non-Hispanic Blacks	Male	40-59	13-14	5.38	1.21	7
Non-Hispanic Blacks	Male	40-59	15-16	8.48 **	3.11	7
Non-Hispanic Blacks	Male	60+	11-12	9.87	1.03	9
Non-Hispanic Blacks	Male	60+	13-14	12.3	1.6	9
Non-Hispanic Blacks	Male	60+	15-16	7.22	0.68	7
Non-Hispanic Blacks	Female	12-19	11-12	1.44	0.21	6
Non-Hispanic Blacks	Female	12-19	13-14	2.54	0.74	6
Non-Hispanic Blacks	Female	12-19	15-16	1.57	0.22	4
Non-Hispanic Blacks	Female	20-39	11-12	2.86	0.42	8
Non-Hispanic Blacks	Female	20-39	13-14	2.12	0.15	8
Non-Hispanic Blacks	Female	20-39	15-16	2.06	0.19	9
Non-Hispanic Blacks	Female	40-59	11-12	8.17	1.1	8
Non-Hispanic Blacks	Female	40-59	13-14	7.91	1.11	8
Non-Hispanic Blacks	Female	40-59	15-16	5.92	0.68	12
Non-Hispanic Blacks	Female	60+	11-12	24.7	2.4	8
Non-Hispanic Blacks	Female	60+	13-14	25.9	3.7	8
Non-Hispanic Blacks	Female	60+	15-16	18.3	2.6	7
Mexican Americans	Male	12-19	11-12	1.19	0.11	5
Mexican Americans	Male	12-19	13-14	1.05	0.12	7
Mexican Americans	Male	12-19	15-16	1.08	0.12	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	1.92	0.25	4
Mexican Americans	Male	20-39	13-14	1.64	0.15	5
Mexican Americans	Male	20-39	15-16	1.62	0.21	7
Mexican Americans	Male	40-59	11-12	3.87	0.41	4
Mexican Americans	Male	40-59	13-14	3.07	0.31	5
Mexican Americans	Male	40-59	15-16	2.96	0.62	4
Mexican Americans	Male	60+	11-12	6.51	1.35	2
Mexican Americans	Male	60+	13-14	10.5	2.4	4
Mexican Americans	Male	60+	15-16	4.94	0.77	4
Mexican Americans	Female	12-19	11-12	.974	0.096	4
Mexican Americans	Female	12-19	13-14	1.20	0.14	7
Mexican Americans	Female	12-19	15-16	.864	0.083	5
Mexican Americans	Female	20-39	11-12	1.56	0.29	4
Mexican Americans	Female	20-39	13-14	1.44	0.11	5
Mexican Americans	Female	20-39	15-16	1.50	0.04	6
Mexican Americans	Female	40-59	11-12	6.00	1.59	3
Mexican Americans	Female	40-59	13-14	3.52	0.47	6
Mexican Americans	Female	40-59	15-16	3.14	0.33	8
Mexican Americans	Female	60+	11-12	11.6	1.2	3
Mexican Americans	Female	60+	13-14	13.1	2	5
Mexican Americans	Female	60+	15-16	9.52	0.74	7
All Hispanics	Male	12-19	11-12	1.31	0.13	7
All Hispanics	Male	12-19	13-14	1.43	0.4	10
All Hispanics	Male	12-19	15-16	1.05	0.11	9
All Hispanics	Male	20-39	11-12	1.99	0.17	8
All Hispanics	Male	20-39	13-14	1.80	0.16	8
All Hispanics	Male	20-39	15-16	1.73	0.19	11
All Hispanics	Male	40-59	11-12	3.81	0.45	7
All Hispanics	Male	40-59	13-14	3.60	0.63	9
All Hispanics	Male	40-59	15-16	3.69	0.8	9
All Hispanics	Male	60+	11-12	11.3	2.2	6
All Hispanics	Male	60+	13-14	10.0	1.7	7
All Hispanics	Male	60+	15-16	6.16	0.7	8
All Hispanics	Female	12-19	11-12	1.26	0.15	7
All Hispanics	Female	12-19	13-14	1.24	0.14	10
All Hispanics	Female	12-19	15-16	.854	0.069	8
All Hispanics	Female	20-39	11-12	1.71	0.16	8
All Hispanics	Female	20-39	13-14	2.62 **	1.22	9
All Hispanics	Female	20-39	15-16	1.59	0.14	11
All Hispanics	Female	40-59	11-12	5.49	0.77	7
All Hispanics	Female	40-59	13-14	4.00	0.43	10
All Hispanics	Female	40-59	15-16	3.74	0.41	13
All Hispanics	Female	60+	11-12	15.9	2.3	7
All Hispanics	Female	60+	13-14	13.1	1.2	9
All Hispanics	Female	60+	15-16	8.79	0.62	13
Asians	Male	12-19	11-12	3.46	0.4	3
Asians	Male	12-19	13-14	1.81	0.3	3
Asians	Male	12-19	15-16	2.28 **	1.03	3
Asians	Male	20-39	11-12	4.06	0.69	6
Asians	Male	20-39	13-14	3.35	0.39	4
Asians	Male	20-39	15-16	4.20	0.84	5
Asians	Male	40-59	11-12	8.98	1.14	6
Asians	Male	40-59	13-14	7.94	1.46	4
Asians	Male	40-59	15-16	6.11	1.66	4
Asians	Male	60+	11-12	9.93	2.67	4
Asians	Male	60+	13-14	14.4	1.6	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	16.6	4	3
Asians	Female	12-19	11-12	2.18	0.18	4
Asians	Female	12-19	13-14	2.94	0.59	3
Asians	Female	12-19	15-16	2.10 **	1.58	3
Asians	Female	20-39	11-12	5.30	0.68	6
Asians	Female	20-39	13-14	3.69	0.49	5
Asians	Female	20-39	15-16	2.93	0.13	4
Asians	Female	40-59	11-12	8.24	1.32	6
Asians	Female	40-59	13-14	7.55	0.78	7
Asians	Female	40-59	15-16	13.7 **	6.1	5
Asians	Female	60+	11-12	17.6	1.7	3
Asians	Female	60+	13-14	13.5	3.2	3
Asians	Female	60+	15-16	19.2 **	7	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.27, 0.25, and 0.38, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.012	0.002	9
Non-Hispanic Whites	12-19	Male	07-08	.011	0.001	6
Non-Hispanic Whites	12-19	Male	09-10	.013	0.001	10
Non-Hispanic Whites	20-39	Male	05-06	.025	0.006	12
Non-Hispanic Whites	20-39	Male	07-08	.022	0.002	15
Non-Hispanic Whites	20-39	Male	09-10	.026	0.004	17
Non-Hispanic Whites	40-59	Male	05-06	.058	0.013	12
Non-Hispanic Whites	40-59	Male	07-08	.038	0.002	16
Non-Hispanic Whites	40-59	Male	09-10	.032	0.004	17
Non-Hispanic Whites	60+	Male	05-06	.090	0.008	15
Non-Hispanic Whites	60+	Male	07-08	.099	0.009	23
Non-Hispanic Whites	60+	Male	09-10	.080	0.008	21
Non-Hispanic Whites	12-19	Female	05-06	.011	0.001	10
Non-Hispanic Whites	12-19	Female	07-08	.011	0.001	7
Non-Hispanic Whites	12-19	Female	09-10	.010	0.001	8
Non-Hispanic Whites	20-39	Female	05-06	.019	0.001	16
Non-Hispanic Whites	20-39	Female	07-08	.025	0.004	13
Non-Hispanic Whites	20-39	Female	09-10	.016	0.001	19
Non-Hispanic Whites	40-59	Female	05-06	.058	0.007	13
Non-Hispanic Whites	40-59	Female	07-08	.050	0.005	17
Non-Hispanic Whites	40-59	Female	09-10	.065	0.014	17
Non-Hispanic Whites	60+	Female	05-06	.158	0.013	17
Non-Hispanic Whites	60+	Female	07-08	.145	0.018	21
Non-Hispanic Whites	60+	Female	09-10	.118	0.012	22
Non-Hispanic Blacks	12-19	Male	05-06	.012	0.001	13
Non-Hispanic Blacks	12-19	Male	07-08	.010	0.001	6
Non-Hispanic Blacks	12-19	Male	09-10	.008	0.001	5
Non-Hispanic Blacks	20-39	Male	05-06	.016	0.003	6
Non-Hispanic Blacks	20-39	Male	07-08	.016	0.002	6
Non-Hispanic Blacks	20-39	Male	09-10	.022	0.005	7
Non-Hispanic Blacks	40-59	Male	05-06	.047	0.012	5
Non-Hispanic Blacks	40-59	Male	07-08	.047	0.008	6
Non-Hispanic Blacks	40-59	Male	09-10	.069	0.012	7
Non-Hispanic Blacks	60+	Male	05-06	.117	0.02	5
Non-Hispanic Blacks	60+	Male	07-08	.098	0.01	8
Non-Hispanic Blacks	60+	Male	09-10	.088	0.012	9
Non-Hispanic Blacks	12-19	Female	05-06	.010	0.001	14
Non-Hispanic Blacks	12-19	Female	07-08	.009	0.001	5
Non-Hispanic Blacks	12-19	Female	09-10	.007	0.001	6
Non-Hispanic Blacks	20-39	Female	05-06	.021	0.003	7
Non-Hispanic Blacks	20-39	Female	07-08	.017	0.001	8
Non-Hispanic Blacks	20-39	Female	09-10	.015	0.002	7
Non-Hispanic Blacks	40-59	Female	05-06	.075	0.01	7
Non-Hispanic Blacks	40-59	Female	07-08	.068	0.012	8
Non-Hispanic Blacks	40-59	Female	09-10	.095	0.017	7
Non-Hispanic Blacks	60+	Female	05-06	.300 **	0.091	5
Non-Hispanic Blacks	60+	Female	07-08	.208	0.023	7
Non-Hispanic Blacks	60+	Female	09-10	.195	0.023	7
Mexican Americans	12-19	Male	05-06	.008	0.001	11
Mexican Americans	12-19	Male	07-08	.008	0.001	6
Mexican Americans	12-19	Male	09-10	.009	0.001	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.015	0.001	9
Mexican Americans	20-39	Male	07-08	.018	0.002	9
Mexican Americans	20-39	Male	09-10	.015	0.002	7
Mexican Americans	40-59	Male	05-06	.033	0.003	4
Mexican Americans	40-59	Male	07-08	.043	0.006	6
Mexican Americans	40-59	Male	09-10	.028	0.003	8
Mexican Americans	60+	Male	05-06	.059	0.007	4
Mexican Americans	60+	Male	07-08	.063	0.006	5
Mexican Americans	60+	Male	09-10	.065	0.007	5
Mexican Americans	12-19	Female	05-06	.007	0	16
Mexican Americans	12-19	Female	07-08	.006	0.002	5
Mexican Americans	12-19	Female	09-10	.007	0.001	7
Mexican Americans	20-39	Female	05-06	.013	0.001	9
Mexican Americans	20-39	Female	07-08	.015	0.001	8
Mexican Americans	20-39	Female	09-10	.011	0.001	10
Mexican Americans	40-59	Female	05-06	.050	0.005	6
Mexican Americans	40-59	Female	07-08	.041	0.005	6
Mexican Americans	40-59	Female	09-10	.038	0.004	9
Mexican Americans	60+	Female	05-06	.114	0.016	3
Mexican Americans	60+	Female	07-08	.096	0.016	5
Mexican Americans	60+	Female	09-10	.084	0.009	6
All Hispanics	12-19	Male	09-10	.009	0.001	10
All Hispanics	20-39	Male	09-10	.018	0.002	12
All Hispanics	40-59	Male	09-10	.034	0.003	13
All Hispanics	60+	Male	09-10	.072	0.006	8
All Hispanics	12-19	Female	09-10	.008	0.001	10
All Hispanics	20-39	Female	09-10	.014	0.002	14
All Hispanics	40-59	Female	09-10	.037	0.004	14
All Hispanics	60+	Female	09-10	.094	0.008	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 31508-00-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.007	0	6
Non-Hispanic Whites	Male	12-19	13-14	.010	0.001	8
Non-Hispanic Whites	Male	12-19	15-16	.021 **	0.011	7
Non-Hispanic Whites	Male	20-39	11-12	.015	0.001	12
Non-Hispanic Whites	Male	20-39	13-14	.016	0.003	14
Non-Hispanic Whites	Male	20-39	15-16	.011	0.001	10
Non-Hispanic Whites	Male	40-59	11-12	.031	0.003	12
Non-Hispanic Whites	Male	40-59	13-14	.033	0.004	14
Non-Hispanic Whites	Male	40-59	15-16	.023	0.002	10
Non-Hispanic Whites	Male	60+	11-12	.049	0.003	12
Non-Hispanic Whites	Male	60+	13-14	.058	0.008	17
Non-Hispanic Whites	Male	60+	15-16	.053	0.011	14
Non-Hispanic Whites	Female	12-19	11-12	.010	0.001	5
Non-Hispanic Whites	Female	12-19	13-14	.019	0.004	6
Non-Hispanic Whites	Female	12-19	15-16	.005	0.001	5
Non-Hispanic Whites	Female	20-39	11-12	.016	0.002	13
Non-Hispanic Whites	Female	20-39	13-14	.019	0.003	15
Non-Hispanic Whites	Female	20-39	15-16	.010	0.001	11
Non-Hispanic Whites	Female	40-59	11-12	.056	0.011	11
Non-Hispanic Whites	Female	40-59	13-14	.037	0.004	16
Non-Hispanic Whites	Female	40-59	15-16	.022	0.002	9
Non-Hispanic Whites	Female	60+	11-12	.094	0.01	14
Non-Hispanic Whites	Female	60+	13-14	.103	0.012	20
Non-Hispanic Whites	Female	60+	15-16	.092	0.01	13
Non-Hispanic Blacks	Male	12-19	11-12	.009	0.001	7
Non-Hispanic Blacks	Male	12-19	13-14	.008	0.002	6
Non-Hispanic Blacks	Male	12-19	15-16	.006	0.001	4
Non-Hispanic Blacks	Male	20-39	11-12	.013	0.001	9
Non-Hispanic Blacks	Male	20-39	13-14	.010	0.001	7
Non-Hispanic Blacks	Male	20-39	15-16	.010	0.002	7
Non-Hispanic Blacks	Male	40-59	11-12	.029	0.008	7
Non-Hispanic Blacks	Male	40-59	13-14	.030	0.007	7
Non-Hispanic Blacks	Male	40-59	15-16	.052 **	0.018	7
Non-Hispanic Blacks	Male	60+	11-12	.053	0.005	9
Non-Hispanic Blacks	Male	60+	13-14	.065	0.009	9
Non-Hispanic Blacks	Male	60+	15-16	.039	0.004	7
Non-Hispanic Blacks	Female	12-19	11-12	.006	0.001	6
Non-Hispanic Blacks	Female	12-19	13-14	.011	0.003	6
Non-Hispanic Blacks	Female	12-19	15-16	.007	0.001	4
Non-Hispanic Blacks	Female	20-39	11-12	.016	0.002	8
Non-Hispanic Blacks	Female	20-39	13-14	.010	0.001	8
Non-Hispanic Blacks	Female	20-39	15-16	.010	0.001	9
Non-Hispanic Blacks	Female	40-59	11-12	.050	0.009	8
Non-Hispanic Blacks	Female	40-59	13-14	.041	0.006	8
Non-Hispanic Blacks	Female	40-59	15-16	.034	0.004	12
Non-Hispanic Blacks	Female	60+	11-12	.138	0.013	8
Non-Hispanic Blacks	Female	60+	13-14	.139	0.019	8
Non-Hispanic Blacks	Female	60+	15-16	.108	0.016	7
Mexican Americans	Male	12-19	11-12	.006	0.001	5
Mexican Americans	Male	12-19	13-14	.005	0.001	7
Mexican Americans	Male	12-19	15-16	.005	0.001	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.012	0.002	4
Mexican Americans	Male	20-39	13-14	.010	0.001	5
Mexican Americans	Male	20-39	15-16	.012	0.003	7
Mexican Americans	Male	40-59	11-12	.030	0.002	4
Mexican Americans	Male	40-59	13-14	.019	0.002	5
Mexican Americans	Male	40-59	15-16	.020	0.004	4
Mexican Americans	Male	60+	11-12	.038	0.007	2
Mexican Americans	Male	60+	13-14	.056	0.012	4
Mexican Americans	Male	60+	15-16	.029	0.004	4
Mexican Americans	Female	12-19	11-12	.005	0.001	4
Mexican Americans	Female	12-19	13-14	.006	0.001	7
Mexican Americans	Female	12-19	15-16	.004	0	5
Mexican Americans	Female	20-39	11-12	.008	0.001	4
Mexican Americans	Female	20-39	13-14	.008	0.001	5
Mexican Americans	Female	20-39	15-16	.008	0	6
Mexican Americans	Female	40-59	11-12	.036 **	0.011	3
Mexican Americans	Female	40-59	13-14	.020	0.002	6
Mexican Americans	Female	40-59	15-16	.020	0.002	8
Mexican Americans	Female	60+	11-12	.071	0.006	3
Mexican Americans	Female	60+	13-14	.075	0.009	5
Mexican Americans	Female	60+	15-16	.060	0.004	7
All Hispanics	Male	12-19	11-12	6.29	0.6	7
All Hispanics	Male	12-19	13-14	7.06	2.08	10
All Hispanics	Male	12-19	15-16	5.37	0.54	9
All Hispanics	Male	20-39	11-12	12.2	1.2	8
All Hispanics	Male	20-39	13-14	10.8	0.8	8
All Hispanics	Male	20-39	15-16	11.4	1.9	11
All Hispanics	Male	40-59	11-12	28.1	2.8	7
All Hispanics	Male	40-59	13-14	22.2	4.4	9
All Hispanics	Male	40-59	15-16	23.5	4.9	9
All Hispanics	Male	60+	11-12	65.1	12.1	6
All Hispanics	Male	60+	13-14	53.9	8.1	7
All Hispanics	Male	60+	15-16	36.7	4.2	8
All Hispanics	Female	12-19	11-12	6.23	0.75	7
All Hispanics	Female	12-19	13-14	5.79	0.64	10
All Hispanics	Female	12-19	15-16	4.06	0.35	8
All Hispanics	Female	20-39	11-12	9.31	0.79	8
All Hispanics	Female	20-39	13-14	14.8 **	6.8	9
All Hispanics	Female	20-39	15-16	8.66	0.82	11
All Hispanics	Female	40-59	11-12	34.5	5.5	7
All Hispanics	Female	40-59	13-14	23.1	2.5	10
All Hispanics	Female	40-59	15-16	24.3	3.1	13
All Hispanics	Female	60+	11-12	96.5	12.1	7
All Hispanics	Female	60+	13-14	77.4	6.8	9
All Hispanics	Female	60+	15-16	53.8	3.9	13
Asians	Male	12-19	11-12	.018	0.003	3
Asians	Male	12-19	13-14	.009	0.001	3
Asians	Male	12-19	15-16	.011 **	0.005	3
Asians	Male	20-39	11-12	.022	0.004	6
Asians	Male	20-39	13-14	.020	0.003	4
Asians	Male	20-39	15-16	.028	0.007	5
Asians	Male	40-59	11-12	.055	0.007	6
Asians	Male	40-59	13-14	.045	0.007	4
Asians	Male	40-59	15-16	.039	0.011	4
Asians	Male	60+	11-12	.054	0.014	4
Asians	Male	60+	13-14	.087	0.009	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.090	0.019	3
Asians	Female	12-19	11-12	.010	0.001	4
Asians	Female	12-19	13-14	.014	0.002	3
Asians	Female	12-19	15-16	.011 **	0.008	3
Asians	Female	20-39	11-12	.029	0.004	6
Asians	Female	20-39	13-14	.019	0.002	5
Asians	Female	20-39	15-16	.017	0.001	4
Asians	Female	40-59	11-12	.051	0.008	6
Asians	Female	40-59	13-14	.044	0.004	7
Asians	Female	40-59	15-16	.086 **	0.042	5
Asians	Female	60+	11-12	.099	0.009	3
Asians	Female	60+	13-14	.079	0.012	3
Asians	Female	60+	15-16	.119 **	0.045	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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 123) (lipid adjusted) (2005 - 2008)†

CAS Number 65510-44-3

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	16
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.28.

* 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 123) (whole weight) (2005 - 2008)†

CAS Number 65510-44-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.001	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	20-39	Male	05-06	.001	0	12
Non-Hispanic Whites	20-39	Male	07-08	.001	0	15
Non-Hispanic Whites	40-59	Male	05-06	.001	0	12
Non-Hispanic Whites	40-59	Male	07-08	.001	0	16
Non-Hispanic Whites	60+	Male	05-06	.001	0	15
Non-Hispanic Whites	60+	Male	07-08	.001 **	0	23
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001	0	7
Non-Hispanic Whites	20-39	Female	05-06	.001	0	16
Non-Hispanic Whites	20-39	Female	07-08	.001	0	13
Non-Hispanic Whites	40-59	Female	05-06	.001	0	13
Non-Hispanic Whites	40-59	Female	07-08	.001	0	17
Non-Hispanic Whites	60+	Female	05-06	.002	0	17
Non-Hispanic Whites	60+	Female	07-08	.001 **	0	21
Non-Hispanic Blacks	12-19	Male	05-06	.001	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.001	0	6
Non-Hispanic Blacks	20-39	Male	07-08	.001	0	6
Non-Hispanic Blacks	40-59	Male	05-06	.001	0	5
Non-Hispanic Blacks	40-59	Male	07-08	.001	0	6
Non-Hispanic Blacks	60+	Male	05-06	.001	0	5
Non-Hispanic Blacks	60+	Male	07-08	.001	0	8
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.001	0	7
Non-Hispanic Blacks	20-39	Female	07-08	.001	0	8
Non-Hispanic Blacks	40-59	Female	05-06	.001	0	7
Non-Hispanic Blacks	40-59	Female	07-08	.001	0	8
Non-Hispanic Blacks	60+	Female	05-06	.003 **	0.001	5
Non-Hispanic Blacks	60+	Female	07-08	.002 **	0.001	7
Mexican Americans	12-19	Male	05-06	.001	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	20-39	Male	05-06	.001	0	9
Mexican Americans	20-39	Male	07-08	.001	0	9
Mexican Americans	40-59	Male	05-06	.001	0	4
Mexican Americans	40-59	Male	07-08	.001	0	6
Mexican Americans	60+	Male	05-06	.001	0	4
Mexican Americans	60+	Male	07-08	.001	0	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	20-39	Female	05-06	.001	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	40-59	Female	05-06	.001	0	6
Mexican Americans	40-59	Female	07-08	.001	0	6
Mexican Americans	60+	Female	05-06	.001	0	3
Mexican Americans	60+	Female	07-08	.002 **	0.001	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	.822	0.123	9
Non-Hispanic Whites	Male	12-19	07-08	.985	0.258	6
Non-Hispanic Whites	Male	12-19	09-10	.827	0.078	10
Non-Hispanic Whites	Male	20-39	05-06	1.61	0.26	12
Non-Hispanic Whites	Male	20-39	07-08	1.73	0.2	15
Non-Hispanic Whites	Male	20-39	09-10	1.60	0.23	17
Non-Hispanic Whites	Male	40-59	05-06	5.40	0.36	12
Non-Hispanic Whites	Male	40-59	07-08	5.41	0.31	16
Non-Hispanic Whites	Male	40-59	09-10	4.41	0.35	17
Non-Hispanic Whites	Male	60+	05-06	8.93	0.48	15
Non-Hispanic Whites	Male	60+	07-08	11.9	1	23
Non-Hispanic Whites	Male	60+	09-10	9.51	0.74	21
Non-Hispanic Whites	Female	12-19	05-06	.614	0.064	10
Non-Hispanic Whites	Female	12-19	07-08	.751	0.126	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	1.08	0.09	16
Non-Hispanic Whites	Female	20-39	07-08	1.50	0.15	13
Non-Hispanic Whites	Female	20-39	09-10	1.16	0.08	19
Non-Hispanic Whites	Female	40-59	05-06	4.72	0.39	13
Non-Hispanic Whites	Female	40-59	07-08	5.33	0.32	17
Non-Hispanic Whites	Female	40-59	09-10	6.03	0.86	17
Non-Hispanic Whites	Female	60+	05-06	9.10	0.84	17
Non-Hispanic Whites	Female	60+	07-08	10.5	0.7	21
Non-Hispanic Whites	Female	60+	09-10	9.79	0.79	22
Non-Hispanic Blacks	Male	12-19	05-06	.659	0.077	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	1.35	0.23	6
Non-Hispanic Blacks	Male	20-39	07-08	1.35	0.17	6
Non-Hispanic Blacks	Male	20-39	09-10	1.36	0.13	6
Non-Hispanic Blacks	Male	40-59	05-06	4.39	0.48	5
Non-Hispanic Blacks	Male	40-59	07-08	5.13	0.44	6
Non-Hispanic Blacks	Male	40-59	09-10	5.19	0.51	7
Non-Hispanic Blacks	Male	60+	05-06	13.5	1.9	5
Non-Hispanic Blacks	Male	60+	07-08	12.5	1.3	8
Non-Hispanic Blacks	Male	60+	09-10	11.5	0.8	9
Non-Hispanic Blacks	Female	12-19	05-06	.383	0.036	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	1.17	0.17	7
Non-Hispanic Blacks	Female	20-39	07-08	1.03	0.14	8
Non-Hispanic Blacks	Female	20-39	09-10	.955	0.145	7
Non-Hispanic Blacks	Female	40-59	05-06	4.73	0.62	7
Non-Hispanic Blacks	Female	40-59	07-08	5.20	0.35	8
Non-Hispanic Blacks	Female	40-59	09-10	4.84	0.45	7
Non-Hispanic Blacks	Female	60+	05-06	17.1	3.9	5
Non-Hispanic Blacks	Female	60+	07-08	13.0	0.7	7
Non-Hispanic Blacks	Female	60+	09-10	13.6	1.4	7
Mexican Americans	Male	12-19	05-06	.435	0.073	11
Mexican Americans	Male	12-19	07-08	.436	0.083	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	.809	0.117	9
Mexican Americans	Male	20-39	07-08	.914	0.138	9
Mexican Americans	Male	20-39	09-10	.633	0.069	8
Mexican Americans	Male	40-59	05-06	2.48	0.24	4
Mexican Americans	Male	40-59	07-08	4.17	0.76	6
Mexican Americans	Male	40-59	09-10	2.37	0.14	8
Mexican Americans	Male	60+	05-06	5.39	1.05	4
Mexican Americans	Male	60+	07-08	5.80	0.35	5
Mexican Americans	Male	60+	09-10	6.66	0.66	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	.524	0.07	9
Mexican Americans	Female	20-39	07-08	.700	0.058	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	2.45	0.26	6
Mexican Americans	Female	40-59	07-08	3.02	0.43	6
Mexican Americans	Female	40-59	09-10	1.98	0.23	9
Mexican Americans	Female	60+	05-06	4.81	0.26	3
Mexican Americans	Female	60+	07-08	5.07	0.58	5
Mexican Americans	Female	60+	09-10	5.71	0.74	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	.783	0.084	13
All Hispanics	Male	40-59	09-10	2.74	0.25	13
All Hispanics	Male	60+	09-10	6.78	0.54	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	.676	0.078	14
All Hispanics	Female	40-59	09-10	2.12	0.2	14
All Hispanics	Female	60+	09-10	5.70	0.5	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.3, 0.28, and 0.62, 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/DioxinLikeChemicals_BiomonitoringSummary.html

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

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (lipid adjusted) (2011 - 2016)†

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.563	0.102	6
Non-Hispanic Whites	Male	12-19	13-14	.709	0.109	8
Non-Hispanic Whites	Male	12-19	15-16	1.17 **	0.53	7
Non-Hispanic Whites	Male	20-39	11-12	1.00	0.08	12
Non-Hispanic Whites	Male	20-39	13-14	1.04	0.17	14
Non-Hispanic Whites	Male	20-39	15-16	.822	0.082	10
Non-Hispanic Whites	Male	40-59	11-12	4.97 **	1.77	12
Non-Hispanic Whites	Male	40-59	13-14	4.72	0.56	14
Non-Hispanic Whites	Male	40-59	15-16	2.76	0.3	10
Non-Hispanic Whites	Male	60+	11-12	7.57	0.49	12
Non-Hispanic Whites	Male	60+	13-14	8.69	0.59	17
Non-Hispanic Whites	Male	60+	15-16	7.21	0.5	14
Non-Hispanic Whites	Female	12-19	11-12	.549	0.11	5
Non-Hispanic Whites	Female	12-19	13-14	.877	0.158	6
Non-Hispanic Whites	Female	12-19	15-16	.299	0.063	5
Non-Hispanic Whites	Female	20-39	11-12	1.12	0.22	13
Non-Hispanic Whites	Female	20-39	13-14	1.03	0.24	15
Non-Hispanic Whites	Female	20-39	15-16	.626	0.039	10
Non-Hispanic Whites	Female	40-59	11-12	4.32	0.45	11
Non-Hispanic Whites	Female	40-59	13-14	4.66	0.51	16
Non-Hispanic Whites	Female	40-59	15-16	2.61	0.16	9
Non-Hispanic Whites	Female	60+	11-12	8.46	0.56	14
Non-Hispanic Whites	Female	60+	13-14	9.63	0.7	20
Non-Hispanic Whites	Female	60+	15-16	8.18	0.99	13
Non-Hispanic Blacks	Male	12-19	11-12	.443	0.075	7
Non-Hispanic Blacks	Male	12-19	13-14	.426	0.062	6
Non-Hispanic Blacks	Male	12-19	15-16	.396	0.076	5
Non-Hispanic Blacks	Male	20-39	11-12	.808	0.076	9
Non-Hispanic Blacks	Male	20-39	13-14	.781	0.088	7
Non-Hispanic Blacks	Male	20-39	15-16	.635	0.025	7
Non-Hispanic Blacks	Male	40-59	11-12	3.17	0.27	7
Non-Hispanic Blacks	Male	40-59	13-14	3.75	0.4	7
Non-Hispanic Blacks	Male	40-59	15-16	3.69	0.53	7
Non-Hispanic Blacks	Male	60+	11-12	8.20	0.43	9
Non-Hispanic Blacks	Male	60+	13-14	9.41	0.66	9
Non-Hispanic Blacks	Male	60+	15-16	6.59	0.44	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	.394	0.047	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.672	0.115	8
Non-Hispanic Blacks	Female	20-39	13-14	.558	0.111	8
Non-Hispanic Blacks	Female	20-39	15-16	.572	0.072	9
Non-Hispanic Blacks	Female	40-59	11-12	3.58	0.36	8
Non-Hispanic Blacks	Female	40-59	13-14	3.37	0.35	8
Non-Hispanic Blacks	Female	40-59	15-16	3.00	0.35	12
Non-Hispanic Blacks	Female	60+	11-12	9.79	0.54	8
Non-Hispanic Blacks	Female	60+	13-14	12.2	0.6	8
Non-Hispanic Blacks	Female	60+	15-16	9.13	1.02	7
Mexican Americans	Male	12-19	11-12	.302	0.039	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.809	0.116	4
Mexican Americans	Male	20-39	13-14	.476	0.048	5
Mexican Americans	Male	20-39	15-16	.487	0.066	7
Mexican Americans	Male	40-59	11-12	2.36	0.27	4
Mexican Americans	Male	40-59	13-14	1.67	0.23	5
Mexican Americans	Male	40-59	15-16	1.31	0.31	4
Mexican Americans	Male	60+	11-12	4.08	0.15	2
Mexican Americans	Male	60+	13-14	7.73	1.6	4
Mexican Americans	Male	60+	15-16	5.53	0.99	5
Mexican Americans	Female	12-19	11-12	.263	0.035	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.499	0.15	4
Mexican Americans	Female	20-39	13-14	.380	0.067	5
Mexican Americans	Female	20-39	15-16	.386	0.027	6
Mexican Americans	Female	40-59	11-12	2.31	0.5	3
Mexican Americans	Female	40-59	13-14	1.68	0.26	6
Mexican Americans	Female	40-59	15-16	1.40	0.11	8
Mexican Americans	Female	60+	11-12	4.87	0.5	3
Mexican Americans	Female	60+	13-14	5.14	0.56	5
Mexican Americans	Female	60+	15-16	4.20	0.22	7
All Hispanics	Male	12-19	11-12	.345	0.052	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	.775	0.073	8
All Hispanics	Male	20-39	13-14	.486	0.037	8
All Hispanics	Male	20-39	15-16	.531	0.063	11
All Hispanics	Male	40-59	11-12	2.18	0.26	7
All Hispanics	Male	40-59	13-14	1.93	0.33	9
All Hispanics	Male	40-59	15-16	1.54	0.38	9
All Hispanics	Male	60+	11-12	5.29	0.51	6
All Hispanics	Male	60+	13-14	6.92	1.14	7
All Hispanics	Male	60+	15-16	5.69	0.59	9
All Hispanics	Female	12-19	11-12	.334	0.06	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	.422	0.082	8
All Hispanics	Female	20-39	13-14	1.09 **	0.72	9
All Hispanics	Female	20-39	15-16	.418	0.037	11
All Hispanics	Female	40-59	11-12	2.13	0.25	7
All Hispanics	Female	40-59	13-14	2.05	0.26	10
All Hispanics	Female	40-59	15-16	1.59	0.15	13
All Hispanics	Female	60+	11-12	6.56	1.18	7
All Hispanics	Female	60+	13-14	5.58	0.4	9
All Hispanics	Female	60+	15-16	4.24	0.17	13
Asians	Male	12-19	11-12	.599	0.023	3
Asians	Male	12-19	13-14	.386	0.035	3
Asians	Male	12-19	15-16	.702 **	0.212	3
Asians	Male	20-39	11-12	1.30	0.26	6
Asians	Male	20-39	13-14	.824	0.036	4
Asians	Male	20-39	15-16	1.22	0.17	5
Asians	Male	40-59	11-12	3.02	0.34	6
Asians	Male	40-59	13-14	2.45	0.43	4
Asians	Male	40-59	15-16	2.05	0.34	4
Asians	Male	60+	11-12	4.52	0.63	4
Asians	Male	60+	13-14	5.76	0.81	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	6.35	1.33	3
Asians	Female	12-19	11-12	.523	0.079	4
Asians	Female	12-19	13-14	1.14 **	0.43	3
Asians	Female	12-19	15-16	.409 **	0.219	3
Asians	Female	20-39	11-12	1.08	0.12	6
Asians	Female	20-39	13-14	.926	0.127	5
Asians	Female	20-39	15-16	.777	0.064	4
Asians	Female	40-59	11-12	2.26	0.35	6
Asians	Female	40-59	13-14	2.24	0.18	7
Asians	Female	40-59	15-16	3.13	0.9	5
Asians	Female	60+	11-12	5.81	1.08	3
Asians	Female	60+	13-14	6.67 **	2.72	3
Asians	Female	60+	15-16	6.52 **	3.5	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.005	0.001	9
Non-Hispanic Whites	12-19	Male	07-08	.005	0.001	6
Non-Hispanic Whites	12-19	Male	09-10	.004	0	10
Non-Hispanic Whites	20-39	Male	05-06	.012	0.002	12
Non-Hispanic Whites	20-39	Male	07-08	.012	0.001	15
Non-Hispanic Whites	20-39	Male	09-10	.010	0.001	17
Non-Hispanic Whites	40-59	Male	05-06	.041	0.003	12
Non-Hispanic Whites	40-59	Male	07-08	.039	0.002	16
Non-Hispanic Whites	40-59	Male	09-10	.030	0.003	17
Non-Hispanic Whites	60+	Male	05-06	.061	0.003	15
Non-Hispanic Whites	60+	Male	07-08	.075	0.006	23
Non-Hispanic Whites	60+	Male	09-10	.057	0.004	21
Non-Hispanic Whites	12-19	Female	05-06	.003	0	10
Non-Hispanic Whites	12-19	Female	07-08	.004	0.001	7
Non-Hispanic Whites	12-19	Female	09-10	*	*	8
Non-Hispanic Whites	20-39	Female	05-06	.007	0.001	16
Non-Hispanic Whites	20-39	Female	07-08	.009	0.001	13
Non-Hispanic Whites	20-39	Female	09-10	.006	0	19
Non-Hispanic Whites	40-59	Female	05-06	.035	0.004	13
Non-Hispanic Whites	40-59	Female	07-08	.035	0.002	17
Non-Hispanic Whites	40-59	Female	09-10	.038	0.005	17
Non-Hispanic Whites	60+	Female	05-06	.066	0.005	17
Non-Hispanic Whites	60+	Female	07-08	.070	0.004	21
Non-Hispanic Whites	60+	Female	09-10	.060	0.005	22
Non-Hispanic Blacks	12-19	Male	05-06	.003	0	13
Non-Hispanic Blacks	12-19	Male	07-08	*	*	6
Non-Hispanic Blacks	12-19	Male	09-10	*	*	6
Non-Hispanic Blacks	20-39	Male	05-06	.008	0.001	6
Non-Hispanic Blacks	20-39	Male	07-08	.008	0.001	6
Non-Hispanic Blacks	20-39	Male	09-10	.007	0.001	6
Non-Hispanic Blacks	40-59	Male	05-06	.028	0.003	5
Non-Hispanic Blacks	40-59	Male	07-08	.033	0.003	6
Non-Hispanic Blacks	40-59	Male	09-10	.032	0.003	7
Non-Hispanic Blacks	60+	Male	05-06	.080	0.012	5
Non-Hispanic Blacks	60+	Male	07-08	.076	0.009	8
Non-Hispanic Blacks	60+	Male	09-10	.062	0.005	9
Non-Hispanic Blacks	12-19	Female	05-06	.002	0	14
Non-Hispanic Blacks	12-19	Female	07-08	*	*	5
Non-Hispanic Blacks	12-19	Female	09-10	*	*	6
Non-Hispanic Blacks	20-39	Female	05-06	.007	0.001	7
Non-Hispanic Blacks	20-39	Female	07-08	.005	0.001	8
Non-Hispanic Blacks	20-39	Female	09-10	.005	0.001	7
Non-Hispanic Blacks	40-59	Female	05-06	.030	0.004	7
Non-Hispanic Blacks	40-59	Female	07-08	.031	0.003	8
Non-Hispanic Blacks	40-59	Female	09-10	.027	0.002	7
Non-Hispanic Blacks	60+	Female	05-06	.114	0.026	5
Non-Hispanic Blacks	60+	Female	07-08	.078	0.004	7
Non-Hispanic Blacks	60+	Female	09-10	.078	0.007	7
Mexican Americans	12-19	Male	05-06	.002	0	11
Mexican Americans	12-19	Male	07-08	.002	0	6
Mexican Americans	12-19	Male	09-10	*	*	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.006	0.001	9
Mexican Americans	20-39	Male	07-08	.006	0.001	9
Mexican Americans	20-39	Male	09-10	.004	0.001	8
Mexican Americans	40-59	Male	05-06	.020	0.002	4
Mexican Americans	40-59	Male	07-08	.030	0.006	6
Mexican Americans	40-59	Male	09-10	.016	0.001	8
Mexican Americans	60+	Male	05-06	.039	0.007	4
Mexican Americans	60+	Male	07-08	.042	0.002	5
Mexican Americans	60+	Male	09-10	.041	0.003	5
Mexican Americans	12-19	Female	05-06	*	*	16
Mexican Americans	12-19	Female	07-08	*	*	5
Mexican Americans	12-19	Female	09-10	*	*	7
Mexican Americans	20-39	Female	05-06	.004	0.001	9
Mexican Americans	20-39	Female	07-08	.004	0	8
Mexican Americans	20-39	Female	09-10	*	*	10
Mexican Americans	40-59	Female	05-06	.018	0.002	6
Mexican Americans	40-59	Female	07-08	.020	0.003	6
Mexican Americans	40-59	Female	09-10	.013	0.002	9
Mexican Americans	60+	Female	05-06	.037	0.004	3
Mexican Americans	60+	Female	07-08	.035	0.004	5
Mexican Americans	60+	Female	09-10	.031	0.004	6
All Hispanics	12-19	Male	09-10	*	*	11
All Hispanics	20-39	Male	09-10	.005	0.001	13
All Hispanics	40-59	Male	09-10	.019	0.002	13
All Hispanics	60+	Male	09-10	.042	0.003	8
All Hispanics	12-19	Female	09-10	*	*	10
All Hispanics	20-39	Female	09-10	.004	0	14
All Hispanics	40-59	Female	09-10	.013	0.001	14
All Hispanics	60+	Female	09-10	.034	0.003	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 38380-08-4

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.003	0.001	6
Non-Hispanic Whites	Male	12-19	13-14	.003	0	8
Non-Hispanic Whites	Male	12-19	15-16	.006 **	0.003	7
Non-Hispanic Whites	Male	20-39	11-12	.006	0.001	12
Non-Hispanic Whites	Male	20-39	13-14	.006	0.001	14
Non-Hispanic Whites	Male	20-39	15-16	.005	0.001	10
Non-Hispanic Whites	Male	40-59	11-12	.032 **	0.011	12
Non-Hispanic Whites	Male	40-59	13-14	.028	0.003	14
Non-Hispanic Whites	Male	40-59	15-16	.019	0.002	10
Non-Hispanic Whites	Male	60+	11-12	.042	0.002	12
Non-Hispanic Whites	Male	60+	13-14	.047	0.004	17
Non-Hispanic Whites	Male	60+	15-16	.039	0.003	14
Non-Hispanic Whites	Female	12-19	11-12	.003	0.001	5
Non-Hispanic Whites	Female	12-19	13-14	.004	0.001	6
Non-Hispanic Whites	Female	12-19	15-16	.001	0	5
Non-Hispanic Whites	Female	20-39	11-12	.006	0.001	13
Non-Hispanic Whites	Female	20-39	13-14	.005	0.001	15
Non-Hispanic Whites	Female	20-39	15-16	.003	0	10
Non-Hispanic Whites	Female	40-59	11-12	.028	0.003	11
Non-Hispanic Whites	Female	40-59	13-14	.027	0.003	16
Non-Hispanic Whites	Female	40-59	15-16	.017	0.001	9
Non-Hispanic Whites	Female	60+	11-12	.052	0.003	14
Non-Hispanic Whites	Female	60+	13-14	.057	0.004	20
Non-Hispanic Whites	Female	60+	15-16	.050	0.006	13
Non-Hispanic Blacks	Male	12-19	11-12	.002	0	7
Non-Hispanic Blacks	Male	12-19	13-14	.002	0	6
Non-Hispanic Blacks	Male	12-19	15-16	.002	0	5
Non-Hispanic Blacks	Male	20-39	11-12	.004	0	9
Non-Hispanic Blacks	Male	20-39	13-14	.004	0	7
Non-Hispanic Blacks	Male	20-39	15-16	.003	0	7
Non-Hispanic Blacks	Male	40-59	11-12	.018	0.002	7
Non-Hispanic Blacks	Male	40-59	13-14	.021	0.002	7
Non-Hispanic Blacks	Male	40-59	15-16	.023	0.003	7
Non-Hispanic Blacks	Male	60+	11-12	.044	0.002	9
Non-Hispanic Blacks	Male	60+	13-14	.049	0.003	9
Non-Hispanic Blacks	Male	60+	15-16	.035	0.002	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	.002	0	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.004	0.001	8
Non-Hispanic Blacks	Female	20-39	13-14	.003	0.001	8
Non-Hispanic Blacks	Female	20-39	15-16	.003	0	9
Non-Hispanic Blacks	Female	40-59	11-12	.022	0.003	8
Non-Hispanic Blacks	Female	40-59	13-14	.018	0.002	8
Non-Hispanic Blacks	Female	40-59	15-16	.017	0.002	12
Non-Hispanic Blacks	Female	60+	11-12	.055	0.003	8
Non-Hispanic Blacks	Female	60+	13-14	.065	0.003	8
Non-Hispanic Blacks	Female	60+	15-16	.053	0.006	7
Mexican Americans	Male	12-19	11-12	.001	0	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.005	0.001	4
Mexican Americans	Male	20-39	13-14	.003	0	5
Mexican Americans	Male	20-39	15-16	.004	0.001	7
Mexican Americans	Male	40-59	11-12	.018	0.001	4
Mexican Americans	Male	40-59	13-14	.010	0.001	5
Mexican Americans	Male	40-59	15-16	.009	0.002	4
Mexican Americans	Male	60+	11-12	.024	0	2
Mexican Americans	Male	60+	13-14	.041	0.008	4
Mexican Americans	Male	60+	15-16	.032	0.006	5
Mexican Americans	Female	12-19	11-12	.001	0	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.003	0.001	4
Mexican Americans	Female	20-39	13-14	.002	0	5
Mexican Americans	Female	20-39	15-16	.002	0	6
Mexican Americans	Female	40-59	11-12	.014	0.004	3
Mexican Americans	Female	40-59	13-14	.010	0.001	6
Mexican Americans	Female	40-59	15-16	.009	0.001	8
Mexican Americans	Female	60+	11-12	.030	0.003	3
Mexican Americans	Female	60+	13-14	.030	0.004	5
Mexican Americans	Female	60+	15-16	.026	0.001	7
All Hispanics	Male	12-19	11-12	1.66	0.24	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	4.80	0.56	8
All Hispanics	Male	20-39	13-14	2.91	0.22	8
All Hispanics	Male	20-39	15-16	3.49	0.56	11
All Hispanics	Male	40-59	11-12	16.2	1.8	7
All Hispanics	Male	40-59	13-14	11.8	2.2	9
All Hispanics	Male	40-59	15-16	9.82	2.36	9
All Hispanics	Male	60+	11-12	31.0	3	6
All Hispanics	Male	60+	13-14	37.2	5.7	7
All Hispanics	Male	60+	15-16	33.5	3.7	9
All Hispanics	Female	12-19	11-12	1.64	0.27	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	2.28	0.41	8
All Hispanics	Female	20-39	13-14	6.20 **	4	9
All Hispanics	Female	20-39	15-16	2.29	0.22	11
All Hispanics	Female	40-59	11-12	13.5	1.9	7
All Hispanics	Female	40-59	13-14	11.8	1.5	10
All Hispanics	Female	40-59	15-16	10.3	1.2	13
All Hispanics	Female	60+	11-12	39.8	6.4	7
All Hispanics	Female	60+	13-14	33.2	2.5	9
All Hispanics	Female	60+	15-16	25.9	1	13
Asians	Male	12-19	11-12	.003	0	3
Asians	Male	12-19	13-14	.002	0	3
Asians	Male	12-19	15-16	.003 **	0.001	3
Asians	Male	20-39	11-12	.007	0.001	6
Asians	Male	20-39	13-14	.005	0	4
Asians	Male	20-39	15-16	.008	0.001	5
Asians	Male	40-59	11-12	.018	0.002	6
Asians	Male	40-59	13-14	.014	0.002	4
Asians	Male	40-59	15-16	.013	0.002	4
Asians	Male	60+	11-12	.024	0.004	4
Asians	Male	60+	13-14	.035	0.004	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.035	0.006	3
Asians	Female	12-19	11-12	.002	0	4
Asians	Female	12-19	13-14	.005 **	0.002	3
Asians	Female	12-19	15-16	.002 **	0.001	3
Asians	Female	20-39	11-12	.006	0.001	6
Asians	Female	20-39	13-14	.005	0.001	5
Asians	Female	20-39	15-16	.004	0.001	4
Asians	Female	40-59	11-12	.014	0.002	6
Asians	Female	40-59	13-14	.013	0.001	7
Asians	Female	40-59	15-16	.019 **	0.006	5
Asians	Female	60+	11-12	.033	0.007	3
Asians	Female	60+	13-14	.038	0.011	3
Asians	Female	60+	15-16	.041 **	0.022	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	.367	0.055	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	1.15	0.07	12
Non-Hispanic Whites	Male	40-59	07-08	1.31	0.09	16
Non-Hispanic Whites	Male	40-59	09-10	.928	0.077	17
Non-Hispanic Whites	Male	60+	05-06	2.03	0.11	15
Non-Hispanic Whites	Male	60+	07-08	2.91	0.27	23
Non-Hispanic Whites	Male	60+	09-10	2.18	0.19	20
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	1.06	0.09	13
Non-Hispanic Whites	Female	40-59	07-08	1.38	0.08	17
Non-Hispanic Whites	Female	40-59	09-10	1.38	0.19	17
Non-Hispanic Whites	Female	60+	05-06	2.15	0.21	17
Non-Hispanic Whites	Female	60+	07-08	2.72	0.19	21
Non-Hispanic Whites	Female	60+	09-10	2.27	0.19	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	.988	0.12	5
Non-Hispanic Blacks	Male	40-59	07-08	1.30	0.11	6
Non-Hispanic Blacks	Male	40-59	09-10	1.26	0.2	7
Non-Hispanic Blacks	Male	60+	05-06	3.25	0.45	5
Non-Hispanic Blacks	Male	60+	07-08	3.26	0.37	8
Non-Hispanic Blacks	Male	60+	09-10	2.56	0.18	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	1.13	0.16	7
Non-Hispanic Blacks	Female	40-59	07-08	1.38	0.1	8
Non-Hispanic Blacks	Female	40-59	09-10	1.19	0.11	7
Non-Hispanic Blacks	Female	60+	05-06	4.31	1.09	5
Non-Hispanic Blacks	Female	60+	07-08	3.41	0.17	7
Non-Hispanic Blacks	Female	60+	09-10	3.29	0.35	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	.561	0.072	4
Mexican Americans	Male	40-59	07-08	.979	0.178	6
Mexican Americans	Male	40-59	09-10	*	*	8
Mexican Americans	Male	60+	05-06	1.13	0.2	4
Mexican Americans	Male	60+	07-08	1.30	0.06	5
Mexican Americans	Male	60+	09-10	1.57	0.16	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	.567	0.057	6
Mexican Americans	Female	40-59	07-08	.756	0.092	6
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	1.08	0.08	3
Mexican Americans	Female	60+	07-08	1.46	0.23	5
Mexican Americans	Female	60+	09-10	1.36	0.19	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	.643	0.061	13
All Hispanics	Male	60+	09-10	1.59	0.13	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	1.37	0.13	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.28, and 0.62, 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/DioxinLikeChemicals_BiomonitoringSummary.html

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

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (lipid adjusted) (2011 - 2016)†

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	1.05 **	0.37	12
Non-Hispanic Whites	Male	40-59	13-14	1.07	0.14	14
Non-Hispanic Whites	Male	40-59	15-16	.588	0.06	10
Non-Hispanic Whites	Male	60+	11-12	1.62	0.1	12
Non-Hispanic Whites	Male	60+	13-14	1.93	0.13	17
Non-Hispanic Whites	Male	60+	15-16	1.56	0.1	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	.252	0.041	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	1.03	0.12	11
Non-Hispanic Whites	Female	40-59	13-14	1.16	0.2	16
Non-Hispanic Whites	Female	40-59	15-16	.490	0.045	8
Non-Hispanic Whites	Female	60+	11-12	1.95	0.12	14
Non-Hispanic Whites	Female	60+	13-14	2.20	0.17	20
Non-Hispanic Whites	Female	60+	15-16	1.81	0.23	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	20-39	13-14	*	*	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.729	0.059	7
Non-Hispanic Blacks	Male	40-59	13-14	.856	0.104	7
Non-Hispanic Blacks	Male	40-59	15-16	.741	0.082	7
Non-Hispanic Blacks	Male	60+	11-12	1.92	0.11	9
Non-Hispanic Blacks	Male	60+	13-14	3.03	0.86	9
Non-Hispanic Blacks	Male	60+	15-16	1.48	0.11	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.866	0.085	8
Non-Hispanic Blacks	Female	40-59	13-14	.807	0.1	8
Non-Hispanic Blacks	Female	40-59	15-16	.687	0.072	12
Non-Hispanic Blacks	Female	60+	11-12	2.41	0.17	8
Non-Hispanic Blacks	Female	60+	13-14	3.16	0.22	8
Non-Hispanic Blacks	Female	60+	15-16	2.05	0.25	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.501	0.055	4
Mexican Americans	Male	40-59	13-14	.358	0.027	5
Mexican Americans	Male	40-59	15-16	.270	0.059	4
Mexican Americans	Male	60+	11-12	.869	0.112	2
Mexican Americans	Male	60+	13-14	1.69	0.37	4
Mexican Americans	Male	60+	15-16	1.12	0.2	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	.519	0.123	3
Mexican Americans	Female	40-59	13-14	.346	0.049	6
Mexican Americans	Female	40-59	15-16	.303	0.026	8
Mexican Americans	Female	60+	11-12	1.10	0.1	3
Mexican Americans	Female	60+	13-14	1.12	0.17	5
Mexican Americans	Female	60+	15-16	.901	0.051	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	.467	0.047	7
All Hispanics	Male	40-59	13-14	.416	0.073	9
All Hispanics	Male	40-59	15-16	.332	0.094	9
All Hispanics	Male	60+	11-12	1.16	0.13	6
All Hispanics	Male	60+	13-14	1.51	0.26	7
All Hispanics	Male	60+	15-16	1.17	0.12	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	.461	0.06	7
All Hispanics	Female	40-59	13-14	.413	0.054	10
All Hispanics	Female	40-59	15-16	.346	0.034	13
All Hispanics	Female	60+	11-12	1.48	0.27	7
All Hispanics	Female	60+	13-14	1.22	0.12	9
All Hispanics	Female	60+	15-16	.925	0.04	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	.341	0.064	6
Asians	Male	20-39	13-14	*	*	4
Asians	Male	20-39	15-16	.292	0.041	5
Asians	Male	40-59	11-12	.789	0.1	6
Asians	Male	40-59	13-14	.614	0.107	4
Asians	Male	40-59	15-16	.482	0.088	4
Asians	Male	60+	11-12	1.15	0.14	4
Asians	Male	60+	13-14	1.41	0.17	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	1.53	0.36	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	*	*	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	.291	0.036	6
Asians	Female	20-39	13-14	*	*	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	.531	0.076	6
Asians	Female	40-59	13-14	.551	0.052	7
Asians	Female	40-59	15-16	.672 **	0.245	5
Asians	Female	60+	11-12	1.45	0.19	3
Asians	Female	60+	13-14	1.66 **	0.63	3
Asians	Female	60+	15-16	1.67 **	0.89	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	*	*	9
Non-Hispanic Whites	12-19	Male	07-08	*	*	6
Non-Hispanic Whites	12-19	Male	09-10	*	*	10
Non-Hispanic Whites	20-39	Male	05-06	.003	0	12
Non-Hispanic Whites	20-39	Male	07-08	*	*	15
Non-Hispanic Whites	20-39	Male	09-10	*	*	17
Non-Hispanic Whites	40-59	Male	05-06	.009	0.001	12
Non-Hispanic Whites	40-59	Male	07-08	.009	0.001	16
Non-Hispanic Whites	40-59	Male	09-10	.006	0.001	17
Non-Hispanic Whites	60+	Male	05-06	.014	0.001	15
Non-Hispanic Whites	60+	Male	07-08	.018	0.001	23
Non-Hispanic Whites	60+	Male	09-10	.013	0.001	20
Non-Hispanic Whites	12-19	Female	05-06	*	*	10
Non-Hispanic Whites	12-19	Female	07-08	*	*	7
Non-Hispanic Whites	12-19	Female	09-10	*	*	8
Non-Hispanic Whites	20-39	Female	05-06	*	*	16
Non-Hispanic Whites	20-39	Female	07-08	*	*	13
Non-Hispanic Whites	20-39	Female	09-10	*	*	19
Non-Hispanic Whites	40-59	Female	05-06	.008	0.001	13
Non-Hispanic Whites	40-59	Female	07-08	.009	0.001	17
Non-Hispanic Whites	40-59	Female	09-10	.009	0.001	17
Non-Hispanic Whites	60+	Female	05-06	.016	0.001	17
Non-Hispanic Whites	60+	Female	07-08	.018	0.001	21
Non-Hispanic Whites	60+	Female	09-10	.014	0.001	22
Non-Hispanic Blacks	12-19	Male	05-06	*	*	13
Non-Hispanic Blacks	12-19	Male	07-08	*	*	6
Non-Hispanic Blacks	12-19	Male	09-10	*	*	6
Non-Hispanic Blacks	20-39	Male	05-06	*	*	6
Non-Hispanic Blacks	20-39	Male	07-08	*	*	6
Non-Hispanic Blacks	20-39	Male	09-10	*	*	7
Non-Hispanic Blacks	40-59	Male	05-06	.006	0.001	5
Non-Hispanic Blacks	40-59	Male	07-08	.008	0.001	6
Non-Hispanic Blacks	40-59	Male	09-10	.008	0.001	7
Non-Hispanic Blacks	60+	Male	05-06	.019	0.003	5
Non-Hispanic Blacks	60+	Male	07-08	.020	0.002	8
Non-Hispanic Blacks	60+	Male	09-10	.014	0.001	9
Non-Hispanic Blacks	12-19	Female	05-06	*	*	14
Non-Hispanic Blacks	12-19	Female	07-08	*	*	5
Non-Hispanic Blacks	12-19	Female	09-10	*	*	6
Non-Hispanic Blacks	20-39	Female	05-06	*	*	7
Non-Hispanic Blacks	20-39	Female	07-08	*	*	8
Non-Hispanic Blacks	20-39	Female	09-10	*	*	7
Non-Hispanic Blacks	40-59	Female	05-06	.007	0.001	7
Non-Hispanic Blacks	40-59	Female	07-08	.008	0.001	8
Non-Hispanic Blacks	40-59	Female	09-10	.007	0.001	7
Non-Hispanic Blacks	60+	Female	05-06	.029	0.007	5
Non-Hispanic Blacks	60+	Female	07-08	.020	0.001	7
Non-Hispanic Blacks	60+	Female	09-10	.019	0.002	7
Mexican Americans	12-19	Male	05-06	*	*	11
Mexican Americans	12-19	Male	07-08	*	*	6
Mexican Americans	12-19	Male	09-10	*	*	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	*	*	9
Mexican Americans	20-39	Male	07-08	*	*	9
Mexican Americans	20-39	Male	09-10	*	*	8
Mexican Americans	40-59	Male	05-06	.005	0	4
Mexican Americans	40-59	Male	07-08	.007	0.001	6
Mexican Americans	40-59	Male	09-10	*	*	8
Mexican Americans	60+	Male	05-06	.008	0.001	4
Mexican Americans	60+	Male	07-08	.009	0	5
Mexican Americans	60+	Male	09-10	.010	0.001	5
Mexican Americans	12-19	Female	05-06	*	*	16
Mexican Americans	12-19	Female	07-08	*	*	5
Mexican Americans	12-19	Female	09-10	*	*	7
Mexican Americans	20-39	Female	05-06	*	*	9
Mexican Americans	20-39	Female	07-08	*	*	8
Mexican Americans	20-39	Female	09-10	*	*	10
Mexican Americans	40-59	Female	05-06	.004	0	6
Mexican Americans	40-59	Female	07-08	.005	0.001	6
Mexican Americans	40-59	Female	09-10	*	*	9
Mexican Americans	60+	Female	05-06	.008	0	3
Mexican Americans	60+	Female	07-08	.010	0.002	5
Mexican Americans	60+	Female	09-10	.007	0.001	6
All Hispanics	12-19	Male	09-10	*	*	11
All Hispanics	20-39	Male	09-10	*	*	13
All Hispanics	40-59	Male	09-10	.004	0	13
All Hispanics	60+	Male	09-10	.010	0.001	8
All Hispanics	12-19	Female	09-10	*	*	10
All Hispanics	20-39	Female	09-10	*	*	14
All Hispanics	40-59	Female	09-10	*	*	14
All Hispanics	60+	Female	09-10	.008	0.001	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 69782-90-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.007 **	0.002	12
Non-Hispanic Whites	Male	40-59	13-14	.006	0.001	14
Non-Hispanic Whites	Male	40-59	15-16	.004	0	10
Non-Hispanic Whites	Male	60+	11-12	.009	0.001	12
Non-Hispanic Whites	Male	60+	13-14	.010	0.001	17
Non-Hispanic Whites	Male	60+	15-16	.009	0.001	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	.001	0	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	.007	0.001	11
Non-Hispanic Whites	Female	40-59	13-14	.007	0.001	16
Non-Hispanic Whites	Female	40-59	15-16	.003	0	8
Non-Hispanic Whites	Female	60+	11-12	.012	0.001	14
Non-Hispanic Whites	Female	60+	13-14	.013	0.001	20
Non-Hispanic Whites	Female	60+	15-16	.011	0.001	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	20-39	13-14	*	*	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.004	0	7
Non-Hispanic Blacks	Male	40-59	13-14	.005	0.001	7
Non-Hispanic Blacks	Male	40-59	15-16	.005	0.001	7
Non-Hispanic Blacks	Male	60+	11-12	.010	0.001	9
Non-Hispanic Blacks	Male	60+	13-14	.016	0.005	9
Non-Hispanic Blacks	Male	60+	15-16	.008	0.001	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.005	0.001	8
Non-Hispanic Blacks	Female	40-59	13-14	.004	0.001	8
Non-Hispanic Blacks	Female	40-59	15-16	.004	0	12
Non-Hispanic Blacks	Female	60+	11-12	.013	0.001	8
Non-Hispanic Blacks	Female	60+	13-14	.017	0.001	8
Non-Hispanic Blacks	Female	60+	15-16	.012	0.001	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.004	0	4
Mexican Americans	Male	40-59	13-14	.002	0	5
Mexican Americans	Male	40-59	15-16	.002	0	4
Mexican Americans	Male	60+	11-12	.005	0.001	2
Mexican Americans	Male	60+	13-14	.009	0.002	4
Mexican Americans	Male	60+	15-16	.006	0.001	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	.003	0.001	3
Mexican Americans	Female	40-59	13-14	.002	0	6
Mexican Americans	Female	40-59	15-16	.002	0	8
Mexican Americans	Female	60+	11-12	.007	0	3
Mexican Americans	Female	60+	13-14	.007	0.001	5
Mexican Americans	Female	60+	15-16	.006	0	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	3.48	0.33	7
All Hispanics	Male	40-59	13-14	2.55	0.49	9
All Hispanics	Male	40-59	15-16	2.12	0.58	9
All Hispanics	Male	60+	11-12	6.83	0.76	6
All Hispanics	Male	60+	13-14	8.10	1.28	7
All Hispanics	Male	60+	15-16	6.90	0.77	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	2.91	0.44	7
All Hispanics	Female	40-59	13-14	2.38	0.3	10
All Hispanics	Female	40-59	15-16	2.24	0.26	13
All Hispanics	Female	60+	11-12	8.96	1.49	7
All Hispanics	Female	60+	13-14	7.25	0.69	9
All Hispanics	Female	60+	15-16	5.64	0.23	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	.002	0	6
Asians	Male	20-39	13-14	*	*	4
Asians	Male	20-39	15-16	.002	0	5
Asians	Male	40-59	11-12	.005	0.001	6
Asians	Male	40-59	13-14	.003	0.001	4
Asians	Male	40-59	15-16	.003	0.001	4
Asians	Male	60+	11-12	.006	0.001	4
Asians	Male	60+	13-14	.008	0.001	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.008	0.002	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	*	*	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	.002	0	6
Asians	Female	20-39	13-14	*	*	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	.003	0	6
Asians	Female	40-59	13-14	.003	0	7
Asians	Female	40-59	15-16	.004 **	0.002	5
Asians	Female	60+	11-12	.008	0.001	3
Asians	Female	60+	13-14	.009	0.003	3
Asians	Female	60+	15-16	.010 **	0.006	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	.397	0.087	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	16
Non-Hispanic Whites	Male	40-59	05-06	1.07	0.12	12
Non-Hispanic Whites	Male	40-59	07-08	.967	0.067	16
Non-Hispanic Whites	Male	40-59	09-10	.772	0.076	17
Non-Hispanic Whites	Male	60+	05-06	2.30	0.16	15
Non-Hispanic Whites	Male	60+	07-08	2.73	0.23	23
Non-Hispanic Whites	Male	60+	09-10	2.27	0.24	20
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	.334	0.026	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	1.19	0.12	13
Non-Hispanic Whites	Female	40-59	07-08	1.30	0.1	17
Non-Hispanic Whites	Female	40-59	09-10	1.49	0.23	16
Non-Hispanic Whites	Female	60+	05-06	2.67	0.23	17
Non-Hispanic Whites	Female	60+	07-08	2.93	0.22	21
Non-Hispanic Whites	Female	60+	09-10	2.77	0.24	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	5
Non-Hispanic Blacks	Male	20-39	05-06	.346	0.065	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	6
Non-Hispanic Blacks	Male	40-59	05-06	1.05	0.16	5
Non-Hispanic Blacks	Male	40-59	07-08	1.28	0.18	6
Non-Hispanic Blacks	Male	40-59	09-10	1.61	0.33	7
Non-Hispanic Blacks	Male	60+	05-06	3.71	0.57	5
Non-Hispanic Blacks	Male	60+	07-08	3.44	0.41	8
Non-Hispanic Blacks	Male	60+	09-10	3.03	0.26	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	.388	0.047	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	1.57	0.19	7
Non-Hispanic Blacks	Female	40-59	07-08	1.60	0.19	8
Non-Hispanic Blacks	Female	40-59	09-10	1.89	0.39	7
Non-Hispanic Blacks	Female	60+	05-06	6.11	1.71	5
Non-Hispanic Blacks	Female	60+	07-08	4.73	0.28	7
Non-Hispanic Blacks	Female	60+	09-10	4.92	0.59	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	.589	0.034	4
Mexican Americans	Male	40-59	07-08	1.08	0.18	6
Mexican Americans	Male	40-59	09-10	*	*	8
Mexican Americans	Male	60+	05-06	1.35	0.26	4
Mexican Americans	Male	60+	07-08	1.55	0.16	5
Mexican Americans	Male	60+	09-10	1.78	0.16	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	.893	0.088	6
Mexican Americans	Female	40-59	07-08	1.00	0.12	6
Mexican Americans	Female	40-59	09-10	*	*	8
Mexican Americans	Female	60+	05-06	1.69	0.17	3
Mexican Americans	Female	60+	07-08	1.92	0.22	5
Mexican Americans	Female	60+	09-10	1.98	0.25	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	.676	0.073	13
All Hispanics	Male	60+	09-10	1.91	0.14	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	.674	0.086	13
All Hispanics	Female	60+	09-10	1.97	0.17	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.28, and 0.62, 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/DioxinLikeChemicals_BiomonitoringSummary.html

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

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (lipid adjusted) (2011 - 2016)†

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	.283	0.031	12
Non-Hispanic Whites	Male	20-39	13-14	.309	0.073	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.819	0.118	12
Non-Hispanic Whites	Male	40-59	13-14	.795	0.089	13
Non-Hispanic Whites	Male	40-59	15-16	.421	0.032	10
Non-Hispanic Whites	Male	60+	11-12	1.60	0.1	12
Non-Hispanic Whites	Male	60+	13-14	1.84	0.19	17
Non-Hispanic Whites	Male	60+	15-16	1.49	0.14	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	.326	0.063	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.288	0.03	13
Non-Hispanic Whites	Female	20-39	13-14	.339	0.092	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	1.05	0.15	11
Non-Hispanic Whites	Female	40-59	13-14	.972	0.12	15
Non-Hispanic Whites	Female	40-59	15-16	.496	0.043	8
Non-Hispanic Whites	Female	60+	11-12	2.25	0.15	14
Non-Hispanic Whites	Female	60+	13-14	2.36	0.19	20
Non-Hispanic Whites	Female	60+	15-16	2.04	0.25	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	.254	0.024	9
Non-Hispanic Blacks	Male	20-39	13-14	*	*	6
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.787	0.182	7
Non-Hispanic Blacks	Male	40-59	13-14	.826	0.158	7
Non-Hispanic Blacks	Male	40-59	15-16	1.09 **	0.37	7
Non-Hispanic Blacks	Male	60+	11-12	1.95	0.11	9
Non-Hispanic Blacks	Male	60+	13-14	3.19 **	1.04	9
Non-Hispanic Blacks	Male	60+	15-16	1.46	0.22	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	1.13	0.11	8
Non-Hispanic Blacks	Female	40-59	13-14	1.09	0.14	8
Non-Hispanic Blacks	Female	40-59	15-16	.829	0.078	11
Non-Hispanic Blacks	Female	60+	11-12	3.43	0.35	8
Non-Hispanic Blacks	Female	60+	13-14	4.11	0.43	8
Non-Hispanic Blacks	Female	60+	15-16	2.72	0.48	6
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.256	0.046	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.489	0.097	4
Mexican Americans	Male	40-59	13-14	.463	0.068	5
Mexican Americans	Male	40-59	15-16	.401	0.083	4
Mexican Americans	Male	60+	11-12	.949	0.151	2
Mexican Americans	Male	60+	13-14	1.85	0.35	4
Mexican Americans	Male	60+	15-16	1.14	0.23	4
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	.616	0.169	3
Mexican Americans	Female	40-59	13-14	.474	0.064	6
Mexican Americans	Female	40-59	15-16	.407	0.045	8
Mexican Americans	Female	60+	11-12	1.71	0.17	3
Mexican Americans	Female	60+	13-14	1.57	0.13	5
Mexican Americans	Female	60+	15-16	1.25	0.06	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	.261	0.026	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	.484	0.081	7
All Hispanics	Male	40-59	13-14	.496	0.128	9
All Hispanics	Male	40-59	15-16	.509	0.134	9
All Hispanics	Male	60+	11-12	1.60	0.24	6
All Hispanics	Male	60+	13-14	1.63	0.26	7
All Hispanics	Male	60+	15-16	1.23	0.13	8
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	.599	0.071	7
All Hispanics	Female	40-59	13-14	.558	0.062	10
All Hispanics	Female	40-59	15-16	.461	0.047	13
All Hispanics	Female	60+	11-12	2.31	0.38	7
All Hispanics	Female	60+	13-14	1.65	0.11	9
All Hispanics	Female	60+	15-16	1.21	0.07	13
Asians	Male	12-19	11-12	.341	0.075	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	.287 **	0.125	3
Asians	Male	20-39	11-12	.596	0.118	6
Asians	Male	20-39	13-14	.330	0.077	4
Asians	Male	20-39	15-16	.426	0.067	5
Asians	Male	40-59	11-12	1.39	0.21	6
Asians	Male	40-59	13-14	1.00	0.17	4
Asians	Male	40-59	15-16	.806	0.18	4
Asians	Male	60+	11-12	1.65	0.32	4
Asians	Male	60+	13-14	2.13	0.4	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	2.54	0.66	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	.423	0.084	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	.607	0.086	6
Asians	Female	20-39	13-14	.447	0.078	5
Asians	Female	20-39	15-16	.354	0.03	4
Asians	Female	40-59	11-12	1.03	0.19	6
Asians	Female	40-59	13-14	.926	0.108	7
Asians	Female	40-59	15-16	1.53 **	0.67	5
Asians	Female	60+	11-12	2.41	0.04	3
Asians	Female	60+	13-14	2.51 **	0.92	3
Asians	Female	60+	15-16	2.80 **	1.31	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.001	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	12-19	Male	09-10	.001	0	10
Non-Hispanic Whites	20-39	Male	05-06	.003	0.001	12
Non-Hispanic Whites	20-39	Male	07-08	.002	0	15
Non-Hispanic Whites	20-39	Male	09-10	.003	0	16
Non-Hispanic Whites	40-59	Male	05-06	.008	0.001	12
Non-Hispanic Whites	40-59	Male	07-08	.007	0	16
Non-Hispanic Whites	40-59	Male	09-10	.005	0.001	17
Non-Hispanic Whites	60+	Male	05-06	.016	0.001	15
Non-Hispanic Whites	60+	Male	07-08	.017	0.001	23
Non-Hispanic Whites	60+	Male	09-10	.014	0.001	20
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001	0	7
Non-Hispanic Whites	12-19	Female	09-10	.001	0	7
Non-Hispanic Whites	20-39	Female	05-06	.002	0	16
Non-Hispanic Whites	20-39	Female	07-08	.002	0	13
Non-Hispanic Whites	20-39	Female	09-10	.002	0	19
Non-Hispanic Whites	40-59	Female	05-06	.009	0.001	13
Non-Hispanic Whites	40-59	Female	07-08	.009	0.001	17
Non-Hispanic Whites	40-59	Female	09-10	.009	0.001	16
Non-Hispanic Whites	60+	Female	05-06	.019	0.001	17
Non-Hispanic Whites	60+	Female	07-08	.020	0.001	21
Non-Hispanic Whites	60+	Female	09-10	.017	0.001	22
Non-Hispanic Blacks	12-19	Male	05-06	.001	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	12-19	Male	09-10	.002	0	5
Non-Hispanic Blacks	20-39	Male	05-06	.002	0	6
Non-Hispanic Blacks	20-39	Male	07-08	.001 **	0	6
Non-Hispanic Blacks	20-39	Male	09-10	.002	0	6
Non-Hispanic Blacks	40-59	Male	05-06	.007	0.001	5
Non-Hispanic Blacks	40-59	Male	07-08	.008	0.001	6
Non-Hispanic Blacks	40-59	Male	09-10	.010	0.002	7
Non-Hispanic Blacks	60+	Male	05-06	.022	0.003	5
Non-Hispanic Blacks	60+	Male	07-08	.021	0.003	8
Non-Hispanic Blacks	60+	Male	09-10	.016	0.002	9
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	12-19	Female	09-10	.001	0	6
Non-Hispanic Blacks	20-39	Female	05-06	.002	0	7
Non-Hispanic Blacks	20-39	Female	07-08	.002	0	8
Non-Hispanic Blacks	20-39	Female	09-10	.002	0	7
Non-Hispanic Blacks	40-59	Female	05-06	.010	0.001	7
Non-Hispanic Blacks	40-59	Female	07-08	.010	0.001	8
Non-Hispanic Blacks	40-59	Female	09-10	.010	0.002	7
Non-Hispanic Blacks	60+	Female	05-06	.041	0.011	5
Non-Hispanic Blacks	60+	Female	07-08	.028	0.001	7
Non-Hispanic Blacks	60+	Female	09-10	.028	0.003	7
Mexican Americans	12-19	Male	05-06	.001	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	12-19	Male	09-10	.001	0	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.002	0	9
Mexican Americans	20-39	Male	07-08	.001 **	0	9
Mexican Americans	20-39	Male	09-10	.001	0	8
Mexican Americans	40-59	Male	05-06	.005	0	4
Mexican Americans	40-59	Male	07-08	.008	0.001	6
Mexican Americans	40-59	Male	09-10	.004	0	8
Mexican Americans	60+	Male	05-06	.010	0.002	4
Mexican Americans	60+	Male	07-08	.011	0.001	5
Mexican Americans	60+	Male	09-10	.011	0.001	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	12-19	Female	09-10	.001	0	7
Mexican Americans	20-39	Female	05-06	.001	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	20-39	Female	09-10	.001	0	10
Mexican Americans	40-59	Female	05-06	.007	0.001	6
Mexican Americans	40-59	Female	07-08	.007	0.001	6
Mexican Americans	40-59	Female	09-10	.004	0.001	8
Mexican Americans	60+	Female	05-06	.013	0	3
Mexican Americans	60+	Female	07-08	.013	0.002	5
Mexican Americans	60+	Female	09-10	.011	0.001	6
All Hispanics	12-19	Male	09-10	.001	0	11
All Hispanics	20-39	Male	09-10	.002	0	13
All Hispanics	40-59	Male	09-10	.005	0	13
All Hispanics	60+	Male	09-10	.012	0.001	8
All Hispanics	12-19	Female	09-10	.001	0	10
All Hispanics	20-39	Female	09-10	.001	0	14
All Hispanics	40-59	Female	09-10	.004	0.001	13
All Hispanics	60+	Female	09-10	.012	0.001	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 52663-72-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	.002	0	12
Non-Hispanic Whites	Male	20-39	13-14	.002	0	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.005	0.001	12
Non-Hispanic Whites	Male	40-59	13-14	.005	0.001	13
Non-Hispanic Whites	Male	40-59	15-16	.003	0	10
Non-Hispanic Whites	Male	60+	11-12	.009	0.001	12
Non-Hispanic Whites	Male	60+	13-14	.010	0.001	17
Non-Hispanic Whites	Male	60+	15-16	.008	0.001	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	.002	0	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.002	0	13
Non-Hispanic Whites	Female	20-39	13-14	.002	0	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	.007	0.001	11
Non-Hispanic Whites	Female	40-59	13-14	.006	0.001	15
Non-Hispanic Whites	Female	40-59	15-16	.003	0	8
Non-Hispanic Whites	Female	60+	11-12	.014	0.001	14
Non-Hispanic Whites	Female	60+	13-14	.014	0.001	20
Non-Hispanic Whites	Female	60+	15-16	.013	0.001	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	.001	0	9
Non-Hispanic Blacks	Male	20-39	13-14	*	*	6
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.004	0.001	7
Non-Hispanic Blacks	Male	40-59	13-14	.005	0.001	7
Non-Hispanic Blacks	Male	40-59	15-16	.007 **	0.002	7
Non-Hispanic Blacks	Male	60+	11-12	.011	0.001	9
Non-Hispanic Blacks	Male	60+	13-14	.017 **	0.006	9
Non-Hispanic Blacks	Male	60+	15-16	.008	0.001	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.007	0.001	8
Non-Hispanic Blacks	Female	40-59	13-14	.006	0.001	8
Non-Hispanic Blacks	Female	40-59	15-16	.005	0	11
Non-Hispanic Blacks	Female	60+	11-12	.019	0.002	8
Non-Hispanic Blacks	Female	60+	13-14	.022	0.002	8
Non-Hispanic Blacks	Female	60+	15-16	.016	0.003	6
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.002	0	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.004	0.001	4
Mexican Americans	Male	40-59	13-14	.003	0	5
Mexican Americans	Male	40-59	15-16	.003	0.001	4
Mexican Americans	Male	60+	11-12	.006	0.001	2
Mexican Americans	Male	60+	13-14	.010	0.002	4
Mexican Americans	Male	60+	15-16	.007	0.001	4
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	.004	0.001	3
Mexican Americans	Female	40-59	13-14	.003	0	6
Mexican Americans	Female	40-59	15-16	.003	0	8
Mexican Americans	Female	60+	11-12	.010	0.001	3
Mexican Americans	Female	60+	13-14	.009	0.001	5
Mexican Americans	Female	60+	15-16	.008	0	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	1.57	0.15	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	3.54	0.53	7
All Hispanics	Male	40-59	13-14	3.08	0.86	9
All Hispanics	Male	40-59	15-16	3.24	0.82	9
All Hispanics	Male	60+	11-12	9.31	1.38	6
All Hispanics	Male	60+	13-14	8.68	1.27	7
All Hispanics	Male	60+	15-16	7.33	0.77	8
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	3.76	0.51	7
All Hispanics	Female	40-59	13-14	3.21	0.35	10
All Hispanics	Female	40-59	15-16	2.97	0.35	13
All Hispanics	Female	60+	11-12	14.0	2.1	7
All Hispanics	Female	60+	13-14	9.75	0.66	9
All Hispanics	Female	60+	15-16	7.42	0.41	13
Asians	Male	12-19	11-12	.002	0	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	.001 **	0.001	3
Asians	Male	20-39	11-12	.003	0.001	6
Asians	Male	20-39	13-14	.002	0	4
Asians	Male	20-39	15-16	.003	0.001	5
Asians	Male	40-59	11-12	.008	0.001	6
Asians	Male	40-59	13-14	.006	0.001	4
Asians	Male	40-59	15-16	.005	0.001	4
Asians	Male	60+	11-12	.009	0.002	4
Asians	Male	60+	13-14	.013	0.002	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.014	0.003	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	.002	0	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	.003	0	6
Asians	Female	20-39	13-14	.002	0	5
Asians	Female	20-39	15-16	.002	0	4
Asians	Female	40-59	11-12	.006	0.001	6
Asians	Female	40-59	13-14	.005	0.001	7
Asians	Female	40-59	15-16	.010 **	0.005	5
Asians	Female	60+	11-12	.014	0.001	3
Asians	Female	60+	13-14	.014	0.004	3
Asians	Female	60+	15-16	.017 **	0.008	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	.474	0.075	12
Non-Hispanic Whites	Male	40-59	07-08	.525	0.04	16
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	.799	0.047	15
Non-Hispanic Whites	Male	60+	07-08	1.04	0.06	23
Non-Hispanic Whites	Male	60+	09-10	.977	0.069	21
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	.386	0.049	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	.615	0.059	17
Non-Hispanic Whites	Female	60+	07-08	.856	0.055	21
Non-Hispanic Whites	Female	60+	09-10	.791	0.058	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	.423	0.022	5
Non-Hispanic Blacks	Male	40-59	07-08	.626	0.051	6
Non-Hispanic Blacks	Male	40-59	09-10	.631	0.054	7
Non-Hispanic Blacks	Male	60+	05-06	1.11	0.05	5
Non-Hispanic Blacks	Male	60+	07-08	1.42	0.17	8
Non-Hispanic Blacks	Male	60+	09-10	1.37	0.11	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	.373	0.073	7
Non-Hispanic Blacks	Female	40-59	07-08	.538	0.039	8
Non-Hispanic Blacks	Female	40-59	09-10	*	*	7
Non-Hispanic Blacks	Female	60+	05-06	1.24	0.24	5
Non-Hispanic Blacks	Female	60+	07-08	1.21	0.1	7
Non-Hispanic Blacks	Female	60+	09-10	1.23	0.16	6
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	.445	0.117	6
Mexican Americans	Male	40-59	09-10	*	*	8
Mexican Americans	Male	60+	05-06	.506	0.146	4
Mexican Americans	Male	60+	07-08	.729	0.061	5
Mexican Americans	Male	60+	09-10	.730	0.067	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	.407	0.015	3
Mexican Americans	Female	60+	07-08	.819 **	0.272	5
Mexican Americans	Female	60+	09-10	*	*	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	13
All Hispanics	Male	60+	09-10	.744	0.056	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	*	*	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.28, and 0.62, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.461	0.121	12
Non-Hispanic Whites	Male	40-59	13-14	.395	0.042	14
Non-Hispanic Whites	Male	40-59	15-16	*	*	10
Non-Hispanic Whites	Male	60+	11-12	.782	0.048	12
Non-Hispanic Whites	Male	60+	13-14	.892	0.061	17
Non-Hispanic Whites	Male	60+	15-16	.640	0.029	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	.309	0.033	11
Non-Hispanic Whites	Female	40-59	13-14	.534 **	0.254	16
Non-Hispanic Whites	Female	40-59	15-16	*	*	9
Non-Hispanic Whites	Female	60+	11-12	.680	0.054	14
Non-Hispanic Whites	Female	60+	13-14	.778	0.073	20
Non-Hispanic Whites	Female	60+	15-16	.598	0.07	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	20-39	13-14	*	*	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.426	0.064	7
Non-Hispanic Blacks	Male	40-59	13-14	.423	0.053	7
Non-Hispanic Blacks	Male	40-59	15-16	.385	0.095	6
Non-Hispanic Blacks	Male	60+	11-12	.964	0.054	9
Non-Hispanic Blacks	Male	60+	13-14	1.84 **	0.69	9
Non-Hispanic Blacks	Male	60+	15-16	.746	0.061	6
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.334	0.039	8
Non-Hispanic Blacks	Female	40-59	13-14	.308	0.037	8
Non-Hispanic Blacks	Female	40-59	15-16	.265	0.03	12
Non-Hispanic Blacks	Female	60+	11-12	.854	0.066	8
Non-Hispanic Blacks	Female	60+	13-14	1.26	0.18	8
Non-Hispanic Blacks	Female	60+	15-16	.791	0.077	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.314	0.05	4
Mexican Americans	Male	40-59	13-14	*	*	5
Mexican Americans	Male	40-59	15-16	*	*	4
Mexican Americans	Male	60+	11-12	.557	0.008	2
Mexican Americans	Male	60+	13-14	.779	0.115	4
Mexican Americans	Male	60+	15-16	.580	0.088	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	*	*	3
Mexican Americans	Female	40-59	13-14	*	*	6
Mexican Americans	Female	40-59	15-16	*	*	8
Mexican Americans	Female	60+	11-12	.420	0.04	3
Mexican Americans	Female	60+	13-14	.492	0.054	5
Mexican Americans	Female	60+	15-16	.385	0.021	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	.275	0.041	7
All Hispanics	Male	40-59	13-14	*	*	9
All Hispanics	Male	40-59	15-16	*	*	9
All Hispanics	Male	60+	11-12	.589	0.026	6
All Hispanics	Male	60+	13-14	.728	0.085	7
All Hispanics	Male	60+	15-16	.585	0.054	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	*	*	7
All Hispanics	Female	40-59	13-14	*	*	10
All Hispanics	Female	40-59	15-16	*	*	13
All Hispanics	Female	60+	11-12	.575	0.093	7
All Hispanics	Female	60+	13-14	.525	0.043	9
All Hispanics	Female	60+	15-16	.387	0.017	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	*	*	6
Asians	Male	20-39	13-14	*	*	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	.394	0.049	6
Asians	Male	40-59	13-14	.371	0.04	4
Asians	Male	40-59	15-16	*	*	4
Asians	Male	60+	11-12	.629	0.085	4
Asians	Male	60+	13-14	.695	0.063	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.829	0.106	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	*	*	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	*	*	6
Asians	Female	20-39	13-14	*	*	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	.272	0.046	6
Asians	Female	40-59	13-14	.279	0.017	7
Asians	Female	40-59	15-16	.339	0.085	5
Asians	Female	60+	11-12	.575	0.108	3
Asians	Female	60+	13-14	.688 **	0.228	3
Asians	Female	60+	15-16	.715 **	0.272	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.001	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	12-19	Male	09-10	.001	0	10
Non-Hispanic Whites	20-39	Male	05-06	.001	0	12
Non-Hispanic Whites	20-39	Male	07-08	.001	0	15
Non-Hispanic Whites	20-39	Male	09-10	.001	0	17
Non-Hispanic Whites	40-59	Male	05-06	.004	0.001	12
Non-Hispanic Whites	40-59	Male	07-08	.004	0	16
Non-Hispanic Whites	40-59	Male	09-10	.003	0	17
Non-Hispanic Whites	60+	Male	05-06	.005	0	15
Non-Hispanic Whites	60+	Male	07-08	.007	0	23
Non-Hispanic Whites	60+	Male	09-10	.006	0	21
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001	0	7
Non-Hispanic Whites	12-19	Female	09-10	.001	0	8
Non-Hispanic Whites	20-39	Female	05-06	.001	0	16
Non-Hispanic Whites	20-39	Female	07-08	.001	0	13
Non-Hispanic Whites	20-39	Female	09-10	.001	0	19
Non-Hispanic Whites	40-59	Female	05-06	.002	0	13
Non-Hispanic Whites	40-59	Female	07-08	.003	0	17
Non-Hispanic Whites	40-59	Female	09-10	.003	0	17
Non-Hispanic Whites	60+	Female	05-06	.004	0	17
Non-Hispanic Whites	60+	Female	07-08	.006	0	21
Non-Hispanic Whites	60+	Female	09-10	.005	0	21
Non-Hispanic Blacks	12-19	Male	05-06	.001	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	12-19	Male	09-10	.002	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.001	0	6
Non-Hispanic Blacks	20-39	Male	07-08	.001	0	6
Non-Hispanic Blacks	20-39	Male	09-10	.002	0	7
Non-Hispanic Blacks	40-59	Male	05-06	.003	0	5
Non-Hispanic Blacks	40-59	Male	07-08	.004	0	6
Non-Hispanic Blacks	40-59	Male	09-10	.004	0	7
Non-Hispanic Blacks	60+	Male	05-06	.007	0	5
Non-Hispanic Blacks	60+	Male	07-08	.009	0.001	8
Non-Hispanic Blacks	60+	Male	09-10	.007	0.001	9
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	12-19	Female	09-10	.001	0	6
Non-Hispanic Blacks	20-39	Female	05-06	.001	0	7
Non-Hispanic Blacks	20-39	Female	07-08	.001	0	8
Non-Hispanic Blacks	20-39	Female	09-10	.001	0	7
Non-Hispanic Blacks	40-59	Female	05-06	.002	0	7
Non-Hispanic Blacks	40-59	Female	07-08	.003	0	8
Non-Hispanic Blacks	40-59	Female	09-10	.003	0	7
Non-Hispanic Blacks	60+	Female	05-06	.008	0.002	5
Non-Hispanic Blacks	60+	Female	07-08	.007	0.001	7
Non-Hispanic Blacks	60+	Female	09-10	.007	0.001	6
Mexican Americans	12-19	Male	05-06	.001	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	12-19	Male	09-10	.001	0	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.001	0	9
Mexican Americans	20-39	Male	07-08	.001	0	9
Mexican Americans	20-39	Male	09-10	.001	0	8
Mexican Americans	40-59	Male	05-06	.002	0	4
Mexican Americans	40-59	Male	07-08	.003	0.001	6
Mexican Americans	40-59	Male	09-10	.002	0	8
Mexican Americans	60+	Male	05-06	.004	0.001	4
Mexican Americans	60+	Male	07-08	.005	0	5
Mexican Americans	60+	Male	09-10	.004	0	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.002 **	0.001	5
Mexican Americans	12-19	Female	09-10	.001	0	7
Mexican Americans	20-39	Female	05-06	.001	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	20-39	Female	09-10	.001	0	10
Mexican Americans	40-59	Female	05-06	.002	0	6
Mexican Americans	40-59	Female	07-08	.002	0.001	6
Mexican Americans	40-59	Female	09-10	.001	0	9
Mexican Americans	60+	Female	05-06	.003	0	3
Mexican Americans	60+	Female	07-08	.006 **	0.002	5
Mexican Americans	60+	Female	09-10	.003	0	6
All Hispanics	12-19	Male	09-10	.001	0	11
All Hispanics	20-39	Male	09-10	.001	0	13
All Hispanics	40-59	Male	09-10	.002	0	13
All Hispanics	60+	Male	09-10	.005	0	8
All Hispanics	12-19	Female	09-10	.001	0	10
All Hispanics	20-39	Female	09-10	.001	0	14
All Hispanics	40-59	Female	09-10	.001	0	14
All Hispanics	60+	Female	09-10	.003	0	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 39635-31-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.003	0.001	12
Non-Hispanic Whites	Male	40-59	13-14	.002	0	14
Non-Hispanic Whites	Male	40-59	15-16	*	*	10
Non-Hispanic Whites	Male	60+	11-12	.004	0	12
Non-Hispanic Whites	Male	60+	13-14	.005	0	17
Non-Hispanic Whites	Male	60+	15-16	.003	0	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	.002	0	11
Non-Hispanic Whites	Female	40-59	13-14	.003 **	0.001	16
Non-Hispanic Whites	Female	40-59	15-16	*	*	9
Non-Hispanic Whites	Female	60+	11-12	.004	0	14
Non-Hispanic Whites	Female	60+	13-14	.005	0	20
Non-Hispanic Whites	Female	60+	15-16	.004	0	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	20-39	13-14	*	*	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.002	0	7
Non-Hispanic Blacks	Male	40-59	13-14	.002	0	7
Non-Hispanic Blacks	Male	40-59	15-16	.002	0.001	6
Non-Hispanic Blacks	Male	60+	11-12	.005	0	9
Non-Hispanic Blacks	Male	60+	13-14	.010 **	0.004	9
Non-Hispanic Blacks	Male	60+	15-16	.004	0	6
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.002	0	8
Non-Hispanic Blacks	Female	40-59	13-14	.002	0	8
Non-Hispanic Blacks	Female	40-59	15-16	.002	0	12
Non-Hispanic Blacks	Female	60+	11-12	.005	0	8
Non-Hispanic Blacks	Female	60+	13-14	.007	0.001	8
Non-Hispanic Blacks	Female	60+	15-16	.005	0	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.002	0	4
Mexican Americans	Male	40-59	13-14	*	*	5
Mexican Americans	Male	40-59	15-16	*	*	4
Mexican Americans	Male	60+	11-12	.003	0	2
Mexican Americans	Male	60+	13-14	.004	0.001	4
Mexican Americans	Male	60+	15-16	.003	0	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	*	*	3
Mexican Americans	Female	40-59	13-14	*	*	6
Mexican Americans	Female	40-59	15-16	*	*	8
Mexican Americans	Female	60+	11-12	.003	0	3
Mexican Americans	Female	60+	13-14	.003	0	5
Mexican Americans	Female	60+	15-16	.002	0	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	2.04	0.28	7
All Hispanics	Male	40-59	13-14	*	*	9
All Hispanics	Male	40-59	15-16	*	*	9
All Hispanics	Male	60+	11-12	3.47	0.19	6
All Hispanics	Male	60+	13-14	3.91	0.41	7
All Hispanics	Male	60+	15-16	3.44	0.33	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	*	*	7
All Hispanics	Female	40-59	13-14	*	*	10
All Hispanics	Female	40-59	15-16	*	*	13
All Hispanics	Female	60+	11-12	3.49	0.5	7
All Hispanics	Female	60+	13-14	3.12	0.26	9
All Hispanics	Female	60+	15-16	2.37	0.11	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	*	*	6
Asians	Male	20-39	13-14	*	*	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	.002	0	6
Asians	Male	40-59	13-14	.002	0	4
Asians	Male	40-59	15-16	*	*	4
Asians	Male	60+	11-12	.003	0.001	4
Asians	Male	60+	13-14	.004	0	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.005	0	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	*	*	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	*	*	6
Asians	Female	20-39	13-14	*	*	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	.002	0	6
Asians	Female	40-59	13-14	.002	0	7
Asians	Female	40-59	15-16	.002	0.001	5
Asians	Female	60+	11-12	.003	0.001	3
Asians	Female	60+	13-14	.004	0.001	3
Asians	Female	60+	15-16	.004 **	0.002	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	.726	0.063	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	1.05	0.17	16
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	1.73	0.15	23
Non-Hispanic Whites	Male	60+	09-10	1.66	0.16	20
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	1.36	0.35	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	.942	0.091	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	1.12	0.1	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	2.93	0.33	17
Non-Hispanic Whites	Female	60+	07-08	2.64	0.31	21
Non-Hispanic Whites	Female	60+	09-10	2.69	0.35	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	.865	0.082	6
Non-Hispanic Blacks	Male	40-59	09-10	*	*	7
Non-Hispanic Blacks	Male	60+	05-06	2.74	0.55	5
Non-Hispanic Blacks	Male	60+	07-08	1.40	0.18	8
Non-Hispanic Blacks	Male	60+	09-10	1.92	0.33	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	.832	0.107	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	1.38	0.16	8
Non-Hispanic Blacks	Female	40-59	09-10	1.71	0.21	7
Non-Hispanic Blacks	Female	60+	05-06	3.81	0.59	5
Non-Hispanic Blacks	Female	60+	07-08	5.42 **	2.83	7
Non-Hispanic Blacks	Female	60+	09-10	2.01	0.17	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	.715	0.085	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	.988	0.099	6
Mexican Americans	Male	40-59	09-10	*	*	8
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	1.26	0.13	5
Mexican Americans	Male	60+	09-10	1.36	0.18	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	1.13	0.22	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	1.04	0.06	6
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	1.69	0.17	5
Mexican Americans	Female	60+	09-10	1.93	0.32	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	13
All Hispanics	Male	60+	09-10	1.31	0.14	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	1.85	0.22	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 2.55, 0.71, and 1.3, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (lipid adjusted) (2011 - 2016)†

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	.437	0.05	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	.596	0.062	13
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.900	0.157	12
Non-Hispanic Whites	Male	40-59	13-14	1.11	0.21	14
Non-Hispanic Whites	Male	40-59	15-16	*	*	10
Non-Hispanic Whites	Male	60+	11-12	1.92	0.22	12
Non-Hispanic Whites	Male	60+	13-14	2.20	0.47	17
Non-Hispanic Whites	Male	60+	15-16	1.39	0.41	14
Non-Hispanic Whites	Female	12-19	11-12	.747	0.134	5
Non-Hispanic Whites	Female	12-19	13-14	.572	0.116	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	.752	0.067	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	1.99	0.54	11
Non-Hispanic Whites	Female	40-59	13-14	1.08	0.2	16
Non-Hispanic Whites	Female	40-59	15-16	*	*	9
Non-Hispanic Whites	Female	60+	11-12	4.35	1.17	14
Non-Hispanic Whites	Female	60+	13-14	2.72	0.58	20
Non-Hispanic Whites	Female	60+	15-16	1.52	0.19	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	.459	0.057	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	20-39	13-14	.492	0.051	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.816	0.157	7
Non-Hispanic Blacks	Male	40-59	13-14	.817	0.098	7
Non-Hispanic Blacks	Male	40-59	15-16	*	*	7
Non-Hispanic Blacks	Male	60+	11-12	1.42	0.15	9
Non-Hispanic Blacks	Male	60+	13-14	3.31 **	1.35	9
Non-Hispanic Blacks	Male	60+	15-16	1.15 **	0.52	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	.649	0.081	5
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.941	0.165	8
Non-Hispanic Blacks	Female	20-39	13-14	.601	0.071	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	1.24	0.11	8
Non-Hispanic Blacks	Female	40-59	13-14	.991	0.097	8
Non-Hispanic Blacks	Female	40-59	15-16	*	*	12
Non-Hispanic Blacks	Female	60+	11-12	1.75	0.19	8
Non-Hispanic Blacks	Female	60+	13-14	2.26	0.39	8
Non-Hispanic Blacks	Female	60+	15-16	1.25	0.17	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	.515	0.063	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.947	0.249	4
Mexican Americans	Male	40-59	13-14	.672	0.087	5
Mexican Americans	Male	40-59	15-16	*	*	4
Mexican Americans	Male	60+	11-12	*	*	2
Mexican Americans	Male	60+	13-14	.974	0.24	4
Mexican Americans	Male	60+	15-16	*	*	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	.529	0.069	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	.579	0.024	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	1.17	0.06	3
Mexican Americans	Female	40-59	13-14	.983	0.236	6
Mexican Americans	Female	40-59	15-16	*	*	8
Mexican Americans	Female	60+	11-12	1.06	0.05	3
Mexican Americans	Female	60+	13-14	1.12	0.13	5
Mexican Americans	Female	60+	15-16	1.10	0.2	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	.341	0.046	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	.566	0.057	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	.753	0.159	7
All Hispanics	Male	40-59	13-14	.669	0.06	8
All Hispanics	Male	40-59	15-16	*	*	9
All Hispanics	Male	60+	11-12	.904	0.092	6
All Hispanics	Male	60+	13-14	1.87 **	0.94	7
All Hispanics	Male	60+	15-16	*	*	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	.552	0.054	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	.519	0.028	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	.937	0.132	7
All Hispanics	Female	40-59	13-14	.902	0.144	10
All Hispanics	Female	40-59	15-16	*	*	13
All Hispanics	Female	60+	11-12	1.56	0.23	7
All Hispanics	Female	60+	13-14	1.13	0.09	9
All Hispanics	Female	60+	15-16	1.03	0.13	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	.511 **	0.214	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	.813	0.048	6
Asians	Male	20-39	13-14	1.01	0.19	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	.996	0.158	6
Asians	Male	40-59	13-14	1.13	0.2	4
Asians	Male	40-59	15-16	*	*	4
Asians	Male	60+	11-12	1.48	0.12	4
Asians	Male	60+	13-14	1.39	0.02	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	*	*	3
Asians	Female	12-19	11-12	.714	0.077	4
Asians	Female	12-19	13-14	.572	0.075	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	.855	0.082	6
Asians	Female	20-39	13-14	1.02	0.05	4
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	1.20	0.11	6
Asians	Female	40-59	13-14	1.08	0.1	7
Asians	Female	40-59	15-16	1.93 **	0.91	5
Asians	Female	60+	11-12	1.82	0.15	3
Asians	Female	60+	13-14	1.38	0.2	3
Asians	Female	60+	15-16	1.40	0.26	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.71, 0.27, and 0.86, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (whole weight) (2005 - 2010)†

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	*	*	9
Non-Hispanic Whites	12-19	Male	07-08	*	*	6
Non-Hispanic Whites	12-19	Male	09-10	*	*	10
Non-Hispanic Whites	20-39	Male	05-06	*	*	12
Non-Hispanic Whites	20-39	Male	07-08	.005	0	15
Non-Hispanic Whites	20-39	Male	09-10	*	*	17
Non-Hispanic Whites	40-59	Male	05-06	*	*	12
Non-Hispanic Whites	40-59	Male	07-08	.008	0.001	16
Non-Hispanic Whites	40-59	Male	09-10	*	*	17
Non-Hispanic Whites	60+	Male	05-06	*	*	15
Non-Hispanic Whites	60+	Male	07-08	.011	0.001	23
Non-Hispanic Whites	60+	Male	09-10	.010	0.001	20
Non-Hispanic Whites	12-19	Female	05-06	*	*	10
Non-Hispanic Whites	12-19	Female	07-08	.006	0.001	7
Non-Hispanic Whites	12-19	Female	09-10	*	*	8
Non-Hispanic Whites	20-39	Female	05-06	*	*	16
Non-Hispanic Whites	20-39	Female	07-08	.006	0.001	13
Non-Hispanic Whites	20-39	Female	09-10	*	*	19
Non-Hispanic Whites	40-59	Female	05-06	*	*	13
Non-Hispanic Whites	40-59	Female	07-08	.007	0.001	17
Non-Hispanic Whites	40-59	Female	09-10	*	*	17
Non-Hispanic Whites	60+	Female	05-06	.021	0.002	17
Non-Hispanic Whites	60+	Female	07-08	.018	0.002	21
Non-Hispanic Whites	60+	Female	09-10	.016	0.002	22
Non-Hispanic Blacks	12-19	Male	05-06	*	*	13
Non-Hispanic Blacks	12-19	Male	07-08	*	*	6
Non-Hispanic Blacks	12-19	Male	09-10	*	*	6
Non-Hispanic Blacks	20-39	Male	05-06	*	*	6
Non-Hispanic Blacks	20-39	Male	07-08	*	*	6
Non-Hispanic Blacks	20-39	Male	09-10	*	*	7
Non-Hispanic Blacks	40-59	Male	05-06	*	*	5
Non-Hispanic Blacks	40-59	Male	07-08	.005	0.001	6
Non-Hispanic Blacks	40-59	Male	09-10	*	*	7
Non-Hispanic Blacks	60+	Male	05-06	.016	0.003	5
Non-Hispanic Blacks	60+	Male	07-08	.008	0.001	8
Non-Hispanic Blacks	60+	Male	09-10	.010	0.002	9
Non-Hispanic Blacks	12-19	Female	05-06	*	*	14
Non-Hispanic Blacks	12-19	Female	07-08	*	*	5
Non-Hispanic Blacks	12-19	Female	09-10	*	*	6
Non-Hispanic Blacks	20-39	Female	05-06	*	*	7
Non-Hispanic Blacks	20-39	Female	07-08	.004	0.001	8
Non-Hispanic Blacks	20-39	Female	09-10	*	*	7
Non-Hispanic Blacks	40-59	Female	05-06	*	*	7
Non-Hispanic Blacks	40-59	Female	07-08	.008	0.001	8
Non-Hispanic Blacks	40-59	Female	09-10	.010	0.001	7
Non-Hispanic Blacks	60+	Female	05-06	.025	0.004	5
Non-Hispanic Blacks	60+	Female	07-08	.033 **	0.018	7
Non-Hispanic Blacks	60+	Female	09-10	.011	0.001	7
Mexican Americans	12-19	Male	05-06	*	*	11
Mexican Americans	12-19	Male	07-08	*	*	6
Mexican Americans	12-19	Male	09-10	*	*	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	*	*	9
Mexican Americans	20-39	Male	07-08	.005	0.001	9
Mexican Americans	20-39	Male	09-10	*	*	8
Mexican Americans	40-59	Male	05-06	*	*	4
Mexican Americans	40-59	Male	07-08	.007	0.001	6
Mexican Americans	40-59	Male	09-10	*	*	8
Mexican Americans	60+	Male	05-06	*	*	4
Mexican Americans	60+	Male	07-08	.009	0.001	5
Mexican Americans	60+	Male	09-10	.009	0.001	5
Mexican Americans	12-19	Female	05-06	*	*	16
Mexican Americans	12-19	Female	07-08	*	*	5
Mexican Americans	12-19	Female	09-10	*	*	7
Mexican Americans	20-39	Female	05-06	*	*	9
Mexican Americans	20-39	Female	07-08	.006	0.001	8
Mexican Americans	20-39	Female	09-10	*	*	10
Mexican Americans	40-59	Female	05-06	*	*	6
Mexican Americans	40-59	Female	07-08	.007	0	6
Mexican Americans	40-59	Female	09-10	*	*	9
Mexican Americans	60+	Female	05-06	*	*	3
Mexican Americans	60+	Female	07-08	.012	0.001	5
Mexican Americans	60+	Female	09-10	.011	0.002	6
All Hispanics	12-19	Male	09-10	*	*	11
All Hispanics	20-39	Male	09-10	*	*	13
All Hispanics	40-59	Male	09-10	*	*	13
All Hispanics	60+	Male	09-10	.008	0.001	8
All Hispanics	12-19	Female	09-10	*	*	10
All Hispanics	20-39	Female	09-10	*	*	14
All Hispanics	40-59	Female	09-10	*	*	14
All Hispanics	60+	Female	09-10	.011	0.001	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (whole weight) (2011 - 2016)†

CAS Number 7012-37-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	.002	0	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	.003	0	13
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.006	0.001	12
Non-Hispanic Whites	Male	40-59	13-14	.007	0.001	14
Non-Hispanic Whites	Male	40-59	15-16	*	*	10
Non-Hispanic Whites	Male	60+	11-12	.011	0.001	12
Non-Hispanic Whites	Male	60+	13-14	.012	0.003	17
Non-Hispanic Whites	Male	60+	15-16	.007	0.002	14
Non-Hispanic Whites	Female	12-19	11-12	.004	0	5
Non-Hispanic Whites	Female	12-19	13-14	.003	0.001	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	.004	0	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	.012	0.003	11
Non-Hispanic Whites	Female	40-59	13-14	.006	0.001	16
Non-Hispanic Whites	Female	40-59	15-16	*	*	9
Non-Hispanic Whites	Female	60+	11-12	.027	0.007	14
Non-Hispanic Whites	Female	60+	13-14	.016	0.003	20
Non-Hispanic Whites	Female	60+	15-16	.009	0.001	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	.002	0	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	20-39	13-14	.002	0	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.005	0.001	7
Non-Hispanic Blacks	Male	40-59	13-14	.005	0.001	7
Non-Hispanic Blacks	Male	40-59	15-16	*	*	7
Non-Hispanic Blacks	Male	60+	11-12	.008	0.001	9
Non-Hispanic Blacks	Male	60+	13-14	.017 **	0.007	9
Non-Hispanic Blacks	Male	60+	15-16	.006 **	0.003	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	.003	0	5
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.005	0.001	8
Non-Hispanic Blacks	Female	20-39	13-14	.003	0	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.007	0.001	8
Non-Hispanic Blacks	Female	40-59	13-14	.005	0.001	8
Non-Hispanic Blacks	Female	40-59	15-16	*	*	12
Non-Hispanic Blacks	Female	60+	11-12	.010	0.001	8
Non-Hispanic Blacks	Female	60+	13-14	.012	0.002	8
Non-Hispanic Blacks	Female	60+	15-16	.007	0.001	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	.003	0	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.007	0.001	4
Mexican Americans	Male	40-59	13-14	.004	0	5
Mexican Americans	Male	40-59	15-16	*	*	4
Mexican Americans	Male	60+	11-12	*	*	2
Mexican Americans	Male	60+	13-14	.005	0.001	4
Mexican Americans	Male	60+	15-16	*	*	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	.002	0	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	.003	0	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	.007	0	3
Mexican Americans	Female	40-59	13-14	.006	0.001	6
Mexican Americans	Female	40-59	15-16	*	*	8
Mexican Americans	Female	60+	11-12	.006	0	3
Mexican Americans	Female	60+	13-14	.006	0.001	5
Mexican Americans	Female	60+	15-16	.007	0.001	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	1.66	0.24	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	3.35	0.26	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	5.51	1.01	7
All Hispanics	Male	40-59	13-14	4.12	0.36	8
All Hispanics	Male	40-59	15-16	*	*	9
All Hispanics	Male	60+	11-12	5.27	0.49	6
All Hispanics	Male	60+	13-14	10.7 **	5.3	7
All Hispanics	Male	60+	15-16	*	*	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	2.57	0.24	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	2.84	0.18	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	5.90	0.84	7
All Hispanics	Female	40-59	13-14	5.22	0.79	10
All Hispanics	Female	40-59	15-16	*	*	13
All Hispanics	Female	60+	11-12	9.59	1.44	7
All Hispanics	Female	60+	13-14	6.64	0.49	9
All Hispanics	Female	60+	15-16	6.33	0.83	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	.002 **	0.001	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	.005	0	6
Asians	Male	20-39	13-14	.006	0.001	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	.006	0.001	6
Asians	Male	40-59	13-14	.006	0.001	4
Asians	Male	40-59	15-16	*	*	4
Asians	Male	60+	11-12	.008	0.001	4
Asians	Male	60+	13-14	.008	0.001	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	*	*	3
Asians	Female	12-19	11-12	.003	0	4
Asians	Female	12-19	13-14	.003	0	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	.005	0	6
Asians	Female	20-39	13-14	.005	0	4
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	.007	0.001	6
Asians	Female	40-59	13-14	.006	0.001	7
Asians	Female	40-59	15-16	.012 **	0.006	5
Asians	Female	60+	11-12	.010	0.001	3
Asians	Female	60+	13-14	.008	0.001	3
Asians	Female	60+	15-16	.009	0.002	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5'-Tetrachlorobiphenyl (PCB 44) (lipid adjusted) (2005 - 2008)†

CAS Number 41464-39-5

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	16
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.36 and 0.3.

* 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) (whole weight) (2005 - 2008)†

CAS Number 41464-39-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	*	*	9
Non-Hispanic Whites	12-19	Male	07-08	*	*	6
Non-Hispanic Whites	20-39	Male	05-06	*	*	12
Non-Hispanic Whites	20-39	Male	07-08	*	*	15
Non-Hispanic Whites	40-59	Male	05-06	*	*	12
Non-Hispanic Whites	40-59	Male	07-08	*	*	16
Non-Hispanic Whites	60+	Male	05-06	*	*	15
Non-Hispanic Whites	60+	Male	07-08	*	*	23
Non-Hispanic Whites	12-19	Female	05-06	*	*	10
Non-Hispanic Whites	12-19	Female	07-08	*	*	7
Non-Hispanic Whites	20-39	Female	05-06	*	*	16
Non-Hispanic Whites	20-39	Female	07-08	*	*	13
Non-Hispanic Whites	40-59	Female	05-06	*	*	13
Non-Hispanic Whites	40-59	Female	07-08	*	*	17
Non-Hispanic Whites	60+	Female	05-06	*	*	17
Non-Hispanic Whites	60+	Female	07-08	*	*	21
Non-Hispanic Blacks	12-19	Male	05-06	*	*	13
Non-Hispanic Blacks	12-19	Male	07-08	*	*	6
Non-Hispanic Blacks	20-39	Male	05-06	*	*	6
Non-Hispanic Blacks	20-39	Male	07-08	*	*	6
Non-Hispanic Blacks	40-59	Male	05-06	*	*	5
Non-Hispanic Blacks	40-59	Male	07-08	*	*	6
Non-Hispanic Blacks	60+	Male	05-06	*	*	5
Non-Hispanic Blacks	60+	Male	07-08	*	*	8
Non-Hispanic Blacks	12-19	Female	05-06	*	*	14
Non-Hispanic Blacks	12-19	Female	07-08	*	*	5
Non-Hispanic Blacks	20-39	Female	05-06	*	*	7
Non-Hispanic Blacks	20-39	Female	07-08	*	*	8
Non-Hispanic Blacks	40-59	Female	05-06	*	*	7
Non-Hispanic Blacks	40-59	Female	07-08	*	*	8
Non-Hispanic Blacks	60+	Female	05-06	*	*	5
Non-Hispanic Blacks	60+	Female	07-08	*	*	7
Mexican Americans	12-19	Male	05-06	*	*	11
Mexican Americans	12-19	Male	07-08	*	*	6
Mexican Americans	20-39	Male	05-06	*	*	9
Mexican Americans	20-39	Male	07-08	*	*	9
Mexican Americans	40-59	Male	05-06	*	*	4
Mexican Americans	40-59	Male	07-08	*	*	6
Mexican Americans	60+	Male	05-06	*	*	4
Mexican Americans	60+	Male	07-08	*	*	5
Mexican Americans	12-19	Female	05-06	*	*	16
Mexican Americans	12-19	Female	07-08	*	*	5
Mexican Americans	20-39	Female	05-06	*	*	9
Mexican Americans	20-39	Female	07-08	*	*	8
Mexican Americans	40-59	Female	05-06	*	*	6
Mexican Americans	40-59	Female	07-08	*	*	6
Mexican Americans	60+	Female	05-06	*	*	3
Mexican Americans	60+	Female	07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5'-Tetrachlorobiphenyl (PCB 49) (lipid adjusted) (2005 - 2008)†

CAS Number 41464-40-8

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	16
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.28.

* 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'-Tetrachlorobiphenyl (PCB 49) (whole weight) (2005 - 2008)†

CAS Number 41464-40-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.001	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	20-39	Male	05-06	.001	0	12
Non-Hispanic Whites	20-39	Male	07-08	.001	0	15
Non-Hispanic Whites	40-59	Male	05-06	.001	0	12
Non-Hispanic Whites	40-59	Male	07-08	.001	0	16
Non-Hispanic Whites	60+	Male	05-06	.001	0	15
Non-Hispanic Whites	60+	Male	07-08	.001	0	23
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001	0	7
Non-Hispanic Whites	20-39	Female	05-06	.001	0	16
Non-Hispanic Whites	20-39	Female	07-08	.001	0	13
Non-Hispanic Whites	40-59	Female	05-06	.001	0	13
Non-Hispanic Whites	40-59	Female	07-08	.001	0	17
Non-Hispanic Whites	60+	Female	05-06	.001	0	17
Non-Hispanic Whites	60+	Female	07-08	.001	0	21
Non-Hispanic Blacks	12-19	Male	05-06	.001	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.001	0	6
Non-Hispanic Blacks	20-39	Male	07-08	.001	0	6
Non-Hispanic Blacks	40-59	Male	05-06	.001	0	5
Non-Hispanic Blacks	40-59	Male	07-08	.001	0	6
Non-Hispanic Blacks	60+	Male	05-06	.001	0	5
Non-Hispanic Blacks	60+	Male	07-08	.001	0	8
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.001	0	7
Non-Hispanic Blacks	20-39	Female	07-08	.001	0	8
Non-Hispanic Blacks	40-59	Female	05-06	.001	0	7
Non-Hispanic Blacks	40-59	Female	07-08	.001	0	8
Non-Hispanic Blacks	60+	Female	05-06	.001	0	5
Non-Hispanic Blacks	60+	Female	07-08	.001 **	0	7
Mexican Americans	12-19	Male	05-06	.001	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	20-39	Male	05-06	.001	0	9
Mexican Americans	20-39	Male	07-08	.001	0	9
Mexican Americans	40-59	Male	05-06	.001	0	4
Mexican Americans	40-59	Male	07-08	.001	0	6
Mexican Americans	60+	Male	05-06	.001	0	4
Mexican Americans	60+	Male	07-08	.001	0	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	20-39	Female	05-06	.001	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	40-59	Female	05-06	.001	0	6
Mexican Americans	40-59	Female	07-08	.001	0	6
Mexican Americans	60+	Female	05-06	.001	0	3
Mexican Americans	60+	Female	07-08	.001	0	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) (lipid adjusted) (2005 - 2008)†

CAS Number 35693-99-3

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	16
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	60+	05-06	.348	0.071	17
Non-Hispanic Whites	Female	60+	07-08	*	*	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	60+	05-06	.562	0.135	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	60+	05-06	.807	0.149	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.33 and 0.28.

* 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) (2005 - 2008)†

CAS Number 35693-99-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.001	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001 **	0	6
Non-Hispanic Whites	20-39	Male	05-06	.001	0	12
Non-Hispanic Whites	20-39	Male	07-08	.001	0	15
Non-Hispanic Whites	40-59	Male	05-06	.002	0	12
Non-Hispanic Whites	40-59	Male	07-08	.001 **	0	16
Non-Hispanic Whites	60+	Male	05-06	.002	0.001	15
Non-Hispanic Whites	60+	Male	07-08	.001	0	23
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001 **	0	7
Non-Hispanic Whites	20-39	Female	05-06	.001	0	16
Non-Hispanic Whites	20-39	Female	07-08	.001	0	13
Non-Hispanic Whites	40-59	Female	05-06	.001	0	13
Non-Hispanic Whites	40-59	Female	07-08	.001	0	17
Non-Hispanic Whites	60+	Female	05-06	.003	0	17
Non-Hispanic Whites	60+	Female	07-08	.002	0	21
Non-Hispanic Blacks	12-19	Male	05-06	.002	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.001	0	6
Non-Hispanic Blacks	20-39	Male	07-08	.001	0	6
Non-Hispanic Blacks	40-59	Male	05-06	.002	0	5
Non-Hispanic Blacks	40-59	Male	07-08	.001	0	6
Non-Hispanic Blacks	60+	Male	05-06	.003	0.001	5
Non-Hispanic Blacks	60+	Male	07-08	.002	0.001	8
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.001	0	7
Non-Hispanic Blacks	20-39	Female	07-08	.001	0	8
Non-Hispanic Blacks	40-59	Female	05-06	.001	0	7
Non-Hispanic Blacks	40-59	Female	07-08	.001	0	8
Non-Hispanic Blacks	60+	Female	05-06	.005	0.001	5
Non-Hispanic Blacks	60+	Female	07-08	.003	0.001	7
Mexican Americans	12-19	Male	05-06	.001	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	20-39	Male	05-06	.001	0	9
Mexican Americans	20-39	Male	07-08	.001	0	9
Mexican Americans	40-59	Male	05-06	.001	0	4
Mexican Americans	40-59	Male	07-08	.001	0	6
Mexican Americans	60+	Male	05-06	.002	0	4
Mexican Americans	60+	Male	07-08	.001	0	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	20-39	Female	05-06	.001	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	40-59	Female	05-06	.001	0	6
Mexican Americans	40-59	Female	07-08	.001	0	6
Mexican Americans	60+	Female	05-06	.001	0	3
Mexican Americans	60+	Female	07-08	.001	0	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (lipid adjusted) (2005 - 2010)†

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	.415	0.061	12
Non-Hispanic Whites	Male	20-39	07-08	.389	0.061	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	.827	0.138	12
Non-Hispanic Whites	Male	40-59	07-08	.657	0.064	16
Non-Hispanic Whites	Male	40-59	09-10	*	*	17
Non-Hispanic Whites	Male	60+	05-06	1.42 **	0.44	15
Non-Hispanic Whites	Male	60+	07-08	1.27	0.18	23
Non-Hispanic Whites	Male	60+	09-10	1.24	0.12	21
Non-Hispanic Whites	Female	12-19	05-06	.421	0.04	10
Non-Hispanic Whites	Female	12-19	07-08	.605	0.135	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	.471	0.054	16
Non-Hispanic Whites	Female	20-39	07-08	.629	0.15	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	.671	0.091	13
Non-Hispanic Whites	Female	40-59	07-08	.750	0.064	17
Non-Hispanic Whites	Female	40-59	09-10	*	*	17
Non-Hispanic Whites	Female	60+	05-06	1.91	0.21	17
Non-Hispanic Whites	Female	60+	07-08	1.84	0.21	21
Non-Hispanic Whites	Female	60+	09-10	1.68	0.22	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	5
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	7
Non-Hispanic Blacks	Male	40-59	05-06	.784	0.154	5
Non-Hispanic Blacks	Male	40-59	07-08	.645	0.142	6
Non-Hispanic Blacks	Male	40-59	09-10	1.25	0.28	7
Non-Hispanic Blacks	Male	60+	05-06	1.49	0.23	5
Non-Hispanic Blacks	Male	60+	07-08	1.29	0.17	8
Non-Hispanic Blacks	Male	60+	09-10	1.86	0.3	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	.677	0.112	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	1.09	0.1	7
Non-Hispanic Blacks	Female	40-59	07-08	1.13	0.2	8
Non-Hispanic Blacks	Female	40-59	09-10	1.79	0.4	7
Non-Hispanic Blacks	Female	60+	05-06	3.40	0.95	5
Non-Hispanic Blacks	Female	60+	07-08	2.49	0.58	7
Non-Hispanic Blacks	Female	60+	09-10	2.16	0.15	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	.459	0.074	9
Mexican Americans	Male	20-39	07-08	.414	0.083	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	.585	0.103	4
Mexican Americans	Male	40-59	07-08	.713	0.204	6
Mexican Americans	Male	40-59	09-10	*	*	8
Mexican Americans	Male	60+	05-06	.702	0.057	4
Mexican Americans	Male	60+	07-08	.869	0.045	5
Mexican Americans	Male	60+	09-10	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	.597	0.066	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	.751	0.095	6
Mexican Americans	Female	40-59	07-08	.684	0.066	6
Mexican Americans	Female	40-59	09-10	*	*	9
Mexican Americans	Female	60+	05-06	1.32	0.36	3
Mexican Americans	Female	60+	07-08	1.18	0.13	5
Mexican Americans	Female	60+	09-10	1.11	0.12	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	*	*	13
All Hispanics	Male	60+	09-10	*	*	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	*	*	14
All Hispanics	Female	60+	09-10	1.13	0.1	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.4, 0.28, and 0.98, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (lipid adjusted) (2011 - 2016)†

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	.260	0.036	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	.429	0.065	12
Non-Hispanic Whites	Male	20-39	13-14	.423	0.058	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.473	0.059	12
Non-Hispanic Whites	Male	40-59	13-14	.633	0.104	14
Non-Hispanic Whites	Male	40-59	15-16	*	*	10
Non-Hispanic Whites	Male	60+	11-12	1.19	0.15	12
Non-Hispanic Whites	Male	60+	13-14	1.34	0.26	17
Non-Hispanic Whites	Male	60+	15-16	.762	0.123	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	.458	0.053	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.416	0.044	13
Non-Hispanic Whites	Female	20-39	13-14	.483	0.048	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	1.00	0.23	11
Non-Hispanic Whites	Female	40-59	13-14	.638	0.096	16
Non-Hispanic Whites	Female	40-59	15-16	*	*	9
Non-Hispanic Whites	Female	60+	11-12	2.81	0.72	14
Non-Hispanic Whites	Female	60+	13-14	1.37	0.18	20
Non-Hispanic Whites	Female	60+	15-16	.916	0.137	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	.496	0.103	9
Non-Hispanic Blacks	Male	20-39	13-14	.285	0.039	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.613	0.168	7
Non-Hispanic Blacks	Male	40-59	13-14	.641	0.156	7
Non-Hispanic Blacks	Male	40-59	15-16	*	*	7
Non-Hispanic Blacks	Male	60+	11-12	.870	0.113	9
Non-Hispanic Blacks	Male	60+	13-14	1.96 **	0.89	9
Non-Hispanic Blacks	Male	60+	15-16	.672	0.144	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	.324	0.038	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.498	0.084	8
Non-Hispanic Blacks	Female	20-39	13-14	.317	0.037	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.788	0.115	8
Non-Hispanic Blacks	Female	40-59	13-14	.691	0.083	8
Non-Hispanic Blacks	Female	40-59	15-16	*	*	12
Non-Hispanic Blacks	Female	60+	11-12	1.61	0.22	8
Non-Hispanic Blacks	Female	60+	13-14	1.93	0.37	8
Non-Hispanic Blacks	Female	60+	15-16	.964	0.172	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	.252	0.018	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.433	0.086	4
Mexican Americans	Male	40-59	13-14	.322	0.029	5
Mexican Americans	Male	40-59	15-16	*	*	4
Mexican Americans	Male	60+	11-12	.508	0.102	2
Mexican Americans	Male	60+	13-14	.646	0.134	4
Mexican Americans	Male	60+	15-16	*	*	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	.276	0.029	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	.579	0.122	3
Mexican Americans	Female	40-59	13-14	.454	0.053	6
Mexican Americans	Female	40-59	15-16	*	*	8
Mexican Americans	Female	60+	11-12	.753	0.074	3
Mexican Americans	Female	60+	13-14	.865	0.254	5
Mexican Americans	Female	60+	15-16	*	*	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	.291	0.027	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	.398	0.065	7
All Hispanics	Male	40-59	13-14	.375	0.031	9
All Hispanics	Male	40-59	15-16	*	*	9
All Hispanics	Male	60+	11-12	.757	0.173	6
All Hispanics	Male	60+	13-14	.994	0.245	7
All Hispanics	Male	60+	15-16	*	*	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	.258	0.029	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	.513	0.065	7
All Hispanics	Female	40-59	13-14	.424	0.05	10
All Hispanics	Female	40-59	15-16	*	*	13
All Hispanics	Female	60+	11-12	1.21	0.19	7
All Hispanics	Female	60+	13-14	.804	0.141	9
All Hispanics	Female	60+	15-16	*	*	13
Asians	Male	12-19	11-12	.581	0.079	3
Asians	Male	12-19	13-14	.325 **	0.106	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	.657	0.085	6
Asians	Male	20-39	13-14	.617	0.07	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	.945	0.117	6
Asians	Male	40-59	13-14	1.18	0.2	4
Asians	Male	40-59	15-16	.691 **	0.22	4
Asians	Male	60+	11-12	.953	0.107	4
Asians	Male	60+	13-14	1.41	0.1	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	1.60 **	0.63	3
Asians	Female	12-19	11-12	.381	0.034	4
Asians	Female	12-19	13-14	.313	0.026	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	.744	0.095	6
Asians	Female	20-39	13-14	.756	0.048	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	1.29	0.25	6
Asians	Female	40-59	13-14	.931	0.129	7
Asians	Female	40-59	15-16	2.22 **	0.89	5
Asians	Female	60+	11-12	1.75	0.28	3
Asians	Female	60+	13-14	1.23	0.15	3
Asians	Female	60+	15-16	1.86 **	0.56	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.37, 0.25, and 0.65, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (whole weight) (2005 - 2010)†

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.002	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001 **	0	6
Non-Hispanic Whites	12-19	Male	09-10	.002	0	10
Non-Hispanic Whites	20-39	Male	05-06	.003	0.001	12
Non-Hispanic Whites	20-39	Male	07-08	.003	0	15
Non-Hispanic Whites	20-39	Male	09-10	.003	0.001	17
Non-Hispanic Whites	40-59	Male	05-06	.006	0.001	12
Non-Hispanic Whites	40-59	Male	07-08	.005	0.001	16
Non-Hispanic Whites	40-59	Male	09-10	.003	0.001	17
Non-Hispanic Whites	60+	Male	05-06	.010	0.003	15
Non-Hispanic Whites	60+	Male	07-08	.008	0.001	23
Non-Hispanic Whites	60+	Male	09-10	.008	0.001	21
Non-Hispanic Whites	12-19	Female	05-06	.002	0	10
Non-Hispanic Whites	12-19	Female	07-08	.003	0.001	7
Non-Hispanic Whites	12-19	Female	09-10	.001	0	8
Non-Hispanic Whites	20-39	Female	05-06	.003	0	16
Non-Hispanic Whites	20-39	Female	07-08	.004	0.001	13
Non-Hispanic Whites	20-39	Female	09-10	.003	0	19
Non-Hispanic Whites	40-59	Female	05-06	.005	0.001	13
Non-Hispanic Whites	40-59	Female	07-08	.005	0	17
Non-Hispanic Whites	40-59	Female	09-10	.005	0.001	17
Non-Hispanic Whites	60+	Female	05-06	.014	0.001	17
Non-Hispanic Whites	60+	Female	07-08	.012	0.001	21
Non-Hispanic Whites	60+	Female	09-10	.010	0.001	22
Non-Hispanic Blacks	12-19	Male	05-06	.002	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	12-19	Male	09-10	.003	0	5
Non-Hispanic Blacks	20-39	Male	05-06	.002	0	6
Non-Hispanic Blacks	20-39	Male	07-08	.001 **	0	6
Non-Hispanic Blacks	20-39	Male	09-10	.005	0.001	7
Non-Hispanic Blacks	40-59	Male	05-06	.005	0.001	5
Non-Hispanic Blacks	40-59	Male	07-08	.004	0.001	6
Non-Hispanic Blacks	40-59	Male	09-10	.008	0.002	7
Non-Hispanic Blacks	60+	Male	05-06	.009	0.001	5
Non-Hispanic Blacks	60+	Male	07-08	.008	0.001	8
Non-Hispanic Blacks	60+	Male	09-10	.010	0.002	9
Non-Hispanic Blacks	12-19	Female	05-06	.002	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001 **	0	5
Non-Hispanic Blacks	12-19	Female	09-10	.001	0	6
Non-Hispanic Blacks	20-39	Female	05-06	.004	0.001	7
Non-Hispanic Blacks	20-39	Female	07-08	.002	0	8
Non-Hispanic Blacks	20-39	Female	09-10	.002	0	7
Non-Hispanic Blacks	40-59	Female	05-06	.007	0.001	7
Non-Hispanic Blacks	40-59	Female	07-08	.007	0.001	8
Non-Hispanic Blacks	40-59	Female	09-10	.010	0.002	7
Non-Hispanic Blacks	60+	Female	05-06	.023	0.006	5
Non-Hispanic Blacks	60+	Female	07-08	.015	0.004	7
Non-Hispanic Blacks	60+	Female	09-10	.012	0.001	7
Mexican Americans	12-19	Male	05-06	.002	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	12-19	Male	09-10	.001	0	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.003	0.001	9
Mexican Americans	20-39	Male	07-08	.003	0.001	9
Mexican Americans	20-39	Male	09-10	.002	0	8
Mexican Americans	40-59	Male	05-06	.005	0.001	4
Mexican Americans	40-59	Male	07-08	.005	0.001	6
Mexican Americans	40-59	Male	09-10	.003	0	8
Mexican Americans	60+	Male	05-06	.005	0.001	4
Mexican Americans	60+	Male	07-08	.006	0	5
Mexican Americans	60+	Male	09-10	.006	0.001	5
Mexican Americans	12-19	Female	05-06	.002	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	12-19	Female	09-10	.003 **	0.001	7
Mexican Americans	20-39	Female	05-06	.003	0	9
Mexican Americans	20-39	Female	07-08	.003	0	8
Mexican Americans	20-39	Female	09-10	.002	0	10
Mexican Americans	40-59	Female	05-06	.006	0.001	6
Mexican Americans	40-59	Female	07-08	.005	0	6
Mexican Americans	40-59	Female	09-10	.004	0	9
Mexican Americans	60+	Female	05-06	.010	0.002	3
Mexican Americans	60+	Female	07-08	.008	0.001	5
Mexican Americans	60+	Female	09-10	.006	0.001	6
All Hispanics	12-19	Male	09-10	.002	0	11
All Hispanics	20-39	Male	09-10	.003	0	13
All Hispanics	40-59	Male	09-10	.004	0.001	13
All Hispanics	60+	Male	09-10	.006	0.001	8
All Hispanics	12-19	Female	09-10	.002 **	0.001	10
All Hispanics	20-39	Female	09-10	.002	0	14
All Hispanics	40-59	Female	09-10	.004	0	14
All Hispanics	60+	Female	09-10	.007	0.001	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (whole weight) (2011 - 2016)†

CAS Number 33025-41-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	.001	0	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	.002	0	12
Non-Hispanic Whites	Male	20-39	13-14	.002	0	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.003	0	12
Non-Hispanic Whites	Male	40-59	13-14	.004	0.001	14
Non-Hispanic Whites	Male	40-59	15-16	*	*	10
Non-Hispanic Whites	Male	60+	11-12	.007	0.001	12
Non-Hispanic Whites	Male	60+	13-14	.007	0.001	17
Non-Hispanic Whites	Male	60+	15-16	.004	0.001	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	.002	0	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.002	0	13
Non-Hispanic Whites	Female	20-39	13-14	.003	0	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	.006	0.001	11
Non-Hispanic Whites	Female	40-59	13-14	.004	0.001	16
Non-Hispanic Whites	Female	40-59	15-16	*	*	9
Non-Hispanic Whites	Female	60+	11-12	.017	0.005	14
Non-Hispanic Whites	Female	60+	13-14	.008	0.001	20
Non-Hispanic Whites	Female	60+	15-16	.006	0.001	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	.003	0.001	9
Non-Hispanic Blacks	Male	20-39	13-14	.001	0	7
Non-Hispanic Blacks	Male	20-39	15-16	*	*	7
Non-Hispanic Blacks	Male	40-59	11-12	.004	0.001	7
Non-Hispanic Blacks	Male	40-59	13-14	.004	0.001	7
Non-Hispanic Blacks	Male	40-59	15-16	*	*	7
Non-Hispanic Blacks	Male	60+	11-12	.005	0.001	9
Non-Hispanic Blacks	Male	60+	13-14	.011 **	0.005	9
Non-Hispanic Blacks	Male	60+	15-16	.004	0.001	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	.001	0	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.003	0	8
Non-Hispanic Blacks	Female	20-39	13-14	.002	0	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.005	0.001	8
Non-Hispanic Blacks	Female	40-59	13-14	.004	0	8
Non-Hispanic Blacks	Female	40-59	15-16	*	*	12
Non-Hispanic Blacks	Female	60+	11-12	.009	0.001	8
Non-Hispanic Blacks	Female	60+	13-14	.010	0.002	8
Non-Hispanic Blacks	Female	60+	15-16	.006	0.001	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	.002	0	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.003	0	4
Mexican Americans	Male	40-59	13-14	.002	0	5
Mexican Americans	Male	40-59	15-16	*	*	4
Mexican Americans	Male	60+	11-12	.003	0.001	2
Mexican Americans	Male	60+	13-14	.003	0.001	4
Mexican Americans	Male	60+	15-16	*	*	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	.001	0	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	.003	0.001	3
Mexican Americans	Female	40-59	13-14	.003	0	6
Mexican Americans	Female	40-59	15-16	*	*	8
Mexican Americans	Female	60+	11-12	.005	0	3
Mexican Americans	Female	60+	13-14	.005	0.001	5
Mexican Americans	Female	60+	15-16	*	*	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	1.72	0.11	8
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	2.88	0.4	7
All Hispanics	Male	40-59	13-14	2.28	0.2	9
All Hispanics	Male	40-59	15-16	*	*	9
All Hispanics	Male	60+	11-12	4.39	0.98	6
All Hispanics	Male	60+	13-14	5.48	1.39	7
All Hispanics	Male	60+	15-16	*	*	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	1.19	0.12	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	3.20	0.4	7
All Hispanics	Female	40-59	13-14	2.46	0.28	10
All Hispanics	Female	40-59	15-16	*	*	13
All Hispanics	Female	60+	11-12	7.41	1.15	7
All Hispanics	Female	60+	13-14	4.67	0.67	9
All Hispanics	Female	60+	15-16	*	*	13
Asians	Male	12-19	11-12	.003	0.001	3
Asians	Male	12-19	13-14	.002	0	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	.004	0.001	6
Asians	Male	20-39	13-14	.004	0.001	4
Asians	Male	20-39	15-16	*	*	5
Asians	Male	40-59	11-12	.006	0.001	6
Asians	Male	40-59	13-14	.007	0.001	4
Asians	Male	40-59	15-16	.004 **	0.001	4
Asians	Male	60+	11-12	.005	0.001	4
Asians	Male	60+	13-14	.009	0.001	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.009 **	0.003	3
Asians	Female	12-19	11-12	.002	0	4
Asians	Female	12-19	13-14	.001	0	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	.004	0.001	6
Asians	Female	20-39	13-14	.004	0	5
Asians	Female	20-39	15-16	*	*	4
Asians	Female	40-59	11-12	.008	0.002	6
Asians	Female	40-59	13-14	.005	0.001	7
Asians	Female	40-59	15-16	.014 **	0.006	5
Asians	Female	60+	11-12	.010	0.001	3
Asians	Female	60+	13-14	.007	0.001	3
Asians	Female	60+	15-16	.012 **	0.004	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (lipid adjusted) (2005 - 2010)†

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	1.84	0.15	9
Non-Hispanic Whites	Male	12-19	07-08	1.75	0.24	6
Non-Hispanic Whites	Male	12-19	09-10	1.68	0.09	10
Non-Hispanic Whites	Male	20-39	05-06	2.63	0.45	12
Non-Hispanic Whites	Male	20-39	07-08	2.22	0.08	15
Non-Hispanic Whites	Male	20-39	09-10	2.16	0.19	17
Non-Hispanic Whites	Male	40-59	05-06	5.30	0.32	12
Non-Hispanic Whites	Male	40-59	07-08	4.09	0.24	16
Non-Hispanic Whites	Male	40-59	09-10	3.71	0.54	17
Non-Hispanic Whites	Male	60+	05-06	11.7	1.1	15
Non-Hispanic Whites	Male	60+	07-08	10.5	0.8	23
Non-Hispanic Whites	Male	60+	09-10	8.72	0.61	21
Non-Hispanic Whites	Female	12-19	05-06	1.82	0.15	10
Non-Hispanic Whites	Female	12-19	07-08	1.65	0.11	7
Non-Hispanic Whites	Female	12-19	09-10	1.34	0.1	8
Non-Hispanic Whites	Female	20-39	05-06	2.64	0.17	16
Non-Hispanic Whites	Female	20-39	07-08	2.45	0.29	13
Non-Hispanic Whites	Female	20-39	09-10	1.97	0.09	19
Non-Hispanic Whites	Female	40-59	05-06	7.21	0.59	13
Non-Hispanic Whites	Female	40-59	07-08	6.25	0.5	17
Non-Hispanic Whites	Female	40-59	09-10	7.47	1.03	17
Non-Hispanic Whites	Female	60+	05-06	17.8	1.7	17
Non-Hispanic Whites	Female	60+	07-08	15.8	1	21
Non-Hispanic Whites	Female	60+	09-10	15.5	1.2	22
Non-Hispanic Blacks	Male	12-19	05-06	2.03	0.16	13
Non-Hispanic Blacks	Male	12-19	07-08	1.37	0.18	6
Non-Hispanic Blacks	Male	12-19	09-10	1.40	0.16	6
Non-Hispanic Blacks	Male	20-39	05-06	2.30	0.31	6
Non-Hispanic Blacks	Male	20-39	07-08	1.82	0.16	6
Non-Hispanic Blacks	Male	20-39	09-10	1.99	0.14	6
Non-Hispanic Blacks	Male	40-59	05-06	4.49	0.6	5
Non-Hispanic Blacks	Male	40-59	07-08	4.41	0.67	6
Non-Hispanic Blacks	Male	40-59	09-10	4.48	0.56	7
Non-Hispanic Blacks	Male	60+	05-06	16.5	2.4	5
Non-Hispanic Blacks	Male	60+	07-08	11.5	1.3	8
Non-Hispanic Blacks	Male	60+	09-10	10.3	0.7	9
Non-Hispanic Blacks	Female	12-19	05-06	1.34	0.17	14
Non-Hispanic Blacks	Female	12-19	07-08	1.03	0.13	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	2.89	0.34	7
Non-Hispanic Blacks	Female	20-39	07-08	1.83	0.15	8
Non-Hispanic Blacks	Female	20-39	09-10	1.69	0.2	7
Non-Hispanic Blacks	Female	40-59	05-06	8.74	1.02	7
Non-Hispanic Blacks	Female	40-59	07-08	8.01	1.19	8
Non-Hispanic Blacks	Female	40-59	09-10	8.42	0.94	7
Non-Hispanic Blacks	Female	60+	05-06	36.0	9.3	5
Non-Hispanic Blacks	Female	60+	07-08	21.5	2	7
Non-Hispanic Blacks	Female	60+	09-10	23.2	2.2	7
Mexican Americans	Male	12-19	05-06	1.22	0.17	11
Mexican Americans	Male	12-19	07-08	.992	0.113	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	1.57	0.1	9
Mexican Americans	Male	20-39	07-08	1.55	0.13	9
Mexican Americans	Male	20-39	09-10	1.16	0.12	8
Mexican Americans	Male	40-59	05-06	2.94	0.34	4
Mexican Americans	Male	40-59	07-08	3.13	0.26	6
Mexican Americans	Male	40-59	09-10	2.20	0.15	8
Mexican Americans	Male	60+	05-06	6.38	0.49	4
Mexican Americans	Male	60+	07-08	6.54	0.53	5
Mexican Americans	Male	60+	09-10	6.84	0.47	5
Mexican Americans	Female	12-19	05-06	1.08	0.12	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	1.46	0.17	9
Mexican Americans	Female	20-39	07-08	1.60	0.13	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	4.28	0.43	6
Mexican Americans	Female	40-59	07-08	4.65	0.75	6
Mexican Americans	Female	40-59	09-10	3.21	0.31	9
Mexican Americans	Female	60+	05-06	11.9	2.1	3
Mexican Americans	Female	60+	07-08	9.71	2.03	5
Mexican Americans	Female	60+	09-10	10.0	1.6	6
All Hispanics	Male	12-19	09-10	1.17	0.17	11
All Hispanics	Male	20-39	09-10	1.29	0.09	13
All Hispanics	Male	40-59	09-10	2.63	0.25	13
All Hispanics	Male	60+	09-10	6.92	0.36	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	1.24	0.11	14
All Hispanics	Female	40-59	09-10	3.13	0.25	14
All Hispanics	Female	60+	09-10	10.5	1.1	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.28, 0.85, and 1.1, 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/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (lipid adjusted) (2011 - 2016)†

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.981	0.105	6
Non-Hispanic Whites	Male	12-19	13-14	1.17	0.07	8
Non-Hispanic Whites	Male	12-19	15-16	1.01	0.13	7
Non-Hispanic Whites	Male	20-39	11-12	1.52	0.09	12
Non-Hispanic Whites	Male	20-39	13-14	1.44	0.14	14
Non-Hispanic Whites	Male	20-39	15-16	1.03	0.09	10
Non-Hispanic Whites	Male	40-59	11-12	3.13	0.16	12
Non-Hispanic Whites	Male	40-59	13-14	3.73	0.37	14
Non-Hispanic Whites	Male	40-59	15-16	2.03	0.16	10
Non-Hispanic Whites	Male	60+	11-12	8.57	0.61	12
Non-Hispanic Whites	Male	60+	13-14	8.05	0.81	17
Non-Hispanic Whites	Male	60+	15-16	6.79	0.56	14
Non-Hispanic Whites	Female	12-19	11-12	1.25	0.16	5
Non-Hispanic Whites	Female	12-19	13-14	1.23	0.14	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	1.67	0.15	13
Non-Hispanic Whites	Female	20-39	13-14	1.59	0.11	15
Non-Hispanic Whites	Female	20-39	15-16	1.14	0.09	11
Non-Hispanic Whites	Female	40-59	11-12	5.59	0.62	11
Non-Hispanic Whites	Female	40-59	13-14	5.22	0.64	16
Non-Hispanic Whites	Female	40-59	15-16	2.66	0.18	9
Non-Hispanic Whites	Female	60+	11-12	15.7	1.2	14
Non-Hispanic Whites	Female	60+	13-14	12.9	1	20
Non-Hispanic Whites	Female	60+	15-16	10.6	1	13
Non-Hispanic Blacks	Male	12-19	11-12	1.28	0.14	7
Non-Hispanic Blacks	Male	12-19	13-14	.998	0.19	6
Non-Hispanic Blacks	Male	12-19	15-16	.723	0.118	5
Non-Hispanic Blacks	Male	20-39	11-12	1.61	0.18	9
Non-Hispanic Blacks	Male	20-39	13-14	1.00	0.16	7
Non-Hispanic Blacks	Male	20-39	15-16	.851	0.057	7
Non-Hispanic Blacks	Male	40-59	11-12	2.49	0.39	7
Non-Hispanic Blacks	Male	40-59	13-14	2.95	0.33	7
Non-Hispanic Blacks	Male	40-59	15-16	2.60	0.43	7
Non-Hispanic Blacks	Male	60+	11-12	6.32	0.39	9
Non-Hispanic Blacks	Male	60+	13-14	7.73	0.95	9
Non-Hispanic Blacks	Male	60+	15-16	4.83	0.67	7
Non-Hispanic Blacks	Female	12-19	11-12	.705	0.079	6
Non-Hispanic Blacks	Female	12-19	13-14	.818	0.072	6
Non-Hispanic Blacks	Female	12-19	15-16	.705	0.104	4
Non-Hispanic Blacks	Female	20-39	11-12	1.52	0.17	8
Non-Hispanic Blacks	Female	20-39	13-14	1.06	0.08	8
Non-Hispanic Blacks	Female	20-39	15-16	1.17	0.12	9
Non-Hispanic Blacks	Female	40-59	11-12	5.52	0.57	8
Non-Hispanic Blacks	Female	40-59	13-14	5.67	0.69	8
Non-Hispanic Blacks	Female	40-59	15-16	4.49	0.62	12
Non-Hispanic Blacks	Female	60+	11-12	17.9	2.1	8
Non-Hispanic Blacks	Female	60+	13-14	17.7	1.6	8
Non-Hispanic Blacks	Female	60+	15-16	13.1	1.7	7
Mexican Americans	Male	12-19	11-12	.772	0.092	5
Mexican Americans	Male	12-19	13-14	.574	0.048	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.882	0.131	4
Mexican Americans	Male	20-39	13-14	.791	0.031	5
Mexican Americans	Male	20-39	15-16	1.02	0.2	7
Mexican Americans	Male	40-59	11-12	2.35	0.33	4
Mexican Americans	Male	40-59	13-14	1.68	0.16	5
Mexican Americans	Male	40-59	15-16	1.38	0.28	4
Mexican Americans	Male	60+	11-12	5.46	1.44	2
Mexican Americans	Male	60+	13-14	6.35	1.31	4
Mexican Americans	Male	60+	15-16	3.68	0.49	5
Mexican Americans	Female	12-19	11-12	.526	0.042	4
Mexican Americans	Female	12-19	13-14	.598	0.075	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.885	0.225	4
Mexican Americans	Female	20-39	13-14	.743	0.069	5
Mexican Americans	Female	20-39	15-16	.661	0.085	6
Mexican Americans	Female	40-59	11-12	4.15	1.24	3
Mexican Americans	Female	40-59	13-14	2.03	0.44	6
Mexican Americans	Female	40-59	15-16	2.00	0.23	8
Mexican Americans	Female	60+	11-12	7.55	0.7	3
Mexican Americans	Female	60+	13-14	7.97	1.29	5
Mexican Americans	Female	60+	15-16	6.33	0.65	7
All Hispanics	Male	12-19	11-12	.856	0.102	7
All Hispanics	Male	12-19	13-14	.646	0.077	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	.923	0.095	8
All Hispanics	Male	20-39	13-14	.894	0.068	8
All Hispanics	Male	20-39	15-16	.942	0.13	11
All Hispanics	Male	40-59	11-12	2.17	0.24	7
All Hispanics	Male	40-59	13-14	1.79	0.17	9
All Hispanics	Male	40-59	15-16	1.84	0.47	9
All Hispanics	Male	60+	11-12	5.70	0.63	6
All Hispanics	Male	60+	13-14	7.01	1.05	7
All Hispanics	Male	60+	15-16	4.12	0.38	9
All Hispanics	Female	12-19	11-12	.657	0.077	7
All Hispanics	Female	12-19	13-14	.625	0.059	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	.886	0.121	8
All Hispanics	Female	20-39	13-14	.982	0.288	9
All Hispanics	Female	20-39	15-16	.730	0.061	11
All Hispanics	Female	40-59	11-12	3.23	0.73	7
All Hispanics	Female	40-59	13-14	2.29	0.3	10
All Hispanics	Female	40-59	15-16	2.15	0.19	13
All Hispanics	Female	60+	11-12	11.7	2.7	7
All Hispanics	Female	60+	13-14	8.03	0.85	9
All Hispanics	Female	60+	15-16	5.78	0.46	13
Asians	Male	12-19	11-12	1.54	0.08	3
Asians	Male	12-19	13-14	1.07	0.25	3
Asians	Male	12-19	15-16	.933	0.237	3
Asians	Male	20-39	11-12	2.18	0.23	6
Asians	Male	20-39	13-14	1.72	0.31	4
Asians	Male	20-39	15-16	2.04	0.34	5
Asians	Male	40-59	11-12	3.70	0.46	6
Asians	Male	40-59	13-14	2.95	0.53	4
Asians	Male	40-59	15-16	2.47	0.58	4
Asians	Male	60+	11-12	5.53	0.76	4
Asians	Male	60+	13-14	5.69	0.73	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	7.03	1.36	3
Asians	Female	12-19	11-12	1.12	0.06	4
Asians	Female	12-19	13-14	1.20	0.13	3
Asians	Female	12-19	15-16	.903 **	0.436	3
Asians	Female	20-39	11-12	2.09	0.22	6
Asians	Female	20-39	13-14	1.96	0.09	5
Asians	Female	20-39	15-16	1.54	0.18	4
Asians	Female	40-59	11-12	4.61	0.71	6
Asians	Female	40-59	13-14	3.46	0.32	7
Asians	Female	40-59	15-16	4.66 **	1.58	5
Asians	Female	60+	11-12	8.14	0.8	3
Asians	Female	60+	13-14	8.39 **	2.91	3
Asians	Female	60+	15-16	8.11	2.39	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.37, 0.27, and 0.62, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (whole weight) (2005 - 2010)†

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.010	0.001	9
Non-Hispanic Whites	12-19	Male	07-08	.009	0.001	6
Non-Hispanic Whites	12-19	Male	09-10	.009	0.001	10
Non-Hispanic Whites	20-39	Male	05-06	.020	0.004	12
Non-Hispanic Whites	20-39	Male	07-08	.015	0.001	15
Non-Hispanic Whites	20-39	Male	09-10	.014	0.001	17
Non-Hispanic Whites	40-59	Male	05-06	.040	0.003	12
Non-Hispanic Whites	40-59	Male	07-08	.030	0.002	16
Non-Hispanic Whites	40-59	Male	09-10	.025	0.004	17
Non-Hispanic Whites	60+	Male	05-06	.079	0.007	15
Non-Hispanic Whites	60+	Male	07-08	.066	0.005	23
Non-Hispanic Whites	60+	Male	09-10	.052	0.003	21
Non-Hispanic Whites	12-19	Female	05-06	.010	0.001	10
Non-Hispanic Whites	12-19	Female	07-08	.008	0	7
Non-Hispanic Whites	12-19	Female	09-10	.006	0.001	8
Non-Hispanic Whites	20-39	Female	05-06	.017	0.001	16
Non-Hispanic Whites	20-39	Female	07-08	.015	0.002	13
Non-Hispanic Whites	20-39	Female	09-10	.010	0.001	19
Non-Hispanic Whites	40-59	Female	05-06	.054	0.006	13
Non-Hispanic Whites	40-59	Female	07-08	.041	0.003	17
Non-Hispanic Whites	40-59	Female	09-10	.047	0.006	17
Non-Hispanic Whites	60+	Female	05-06	.129	0.011	17
Non-Hispanic Whites	60+	Female	07-08	.106	0.007	21
Non-Hispanic Whites	60+	Female	09-10	.094	0.007	22
Non-Hispanic Blacks	12-19	Male	05-06	.010	0.001	13
Non-Hispanic Blacks	12-19	Male	07-08	.006	0.001	6
Non-Hispanic Blacks	12-19	Male	09-10	.007	0.001	6
Non-Hispanic Blacks	20-39	Male	05-06	.014	0.002	6
Non-Hispanic Blacks	20-39	Male	07-08	.010	0.001	6
Non-Hispanic Blacks	20-39	Male	09-10	.011	0.001	6
Non-Hispanic Blacks	40-59	Male	05-06	.029	0.004	5
Non-Hispanic Blacks	40-59	Male	07-08	.028	0.004	6
Non-Hispanic Blacks	40-59	Male	09-10	.027	0.003	7
Non-Hispanic Blacks	60+	Male	05-06	.098	0.013	5
Non-Hispanic Blacks	60+	Male	07-08	.070	0.008	8
Non-Hispanic Blacks	60+	Male	09-10	.055	0.004	9
Non-Hispanic Blacks	12-19	Female	05-06	.007	0.001	14
Non-Hispanic Blacks	12-19	Female	07-08	.005	0.001	5
Non-Hispanic Blacks	12-19	Female	09-10	.004	0	6
Non-Hispanic Blacks	20-39	Female	05-06	.017	0.002	7
Non-Hispanic Blacks	20-39	Female	07-08	.009	0.001	8
Non-Hispanic Blacks	20-39	Female	09-10	.008	0.001	7
Non-Hispanic Blacks	40-59	Female	05-06	.057	0.008	7
Non-Hispanic Blacks	40-59	Female	07-08	.049	0.008	8
Non-Hispanic Blacks	40-59	Female	09-10	.048	0.005	7
Non-Hispanic Blacks	60+	Female	05-06	.239	0.062	5
Non-Hispanic Blacks	60+	Female	07-08	.128	0.009	7
Non-Hispanic Blacks	60+	Female	09-10	.132	0.012	7
Mexican Americans	12-19	Male	05-06	.007	0.001	11
Mexican Americans	12-19	Male	07-08	.005	0.001	6
Mexican Americans	12-19	Male	09-10	.005	0.001	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.011	0.001	9
Mexican Americans	20-39	Male	07-08	.011	0.001	9
Mexican Americans	20-39	Male	09-10	.007	0.001	8
Mexican Americans	40-59	Male	05-06	.024	0.003	4
Mexican Americans	40-59	Male	07-08	.022	0.002	6
Mexican Americans	40-59	Male	09-10	.015	0.001	8
Mexican Americans	60+	Male	05-06	.046	0.005	4
Mexican Americans	60+	Male	07-08	.046	0.001	5
Mexican Americans	60+	Male	09-10	.042	0.004	5
Mexican Americans	12-19	Female	05-06	.006	0.001	16
Mexican Americans	12-19	Female	07-08	.004	0	5
Mexican Americans	12-19	Female	09-10	.005	0.001	7
Mexican Americans	20-39	Female	05-06	.010	0.001	9
Mexican Americans	20-39	Female	07-08	.009	0.001	8
Mexican Americans	20-39	Female	09-10	.006	0.001	10
Mexican Americans	40-59	Female	05-06	.031	0.003	6
Mexican Americans	40-59	Female	07-08	.031	0.005	6
Mexican Americans	40-59	Female	09-10	.021	0.002	9
Mexican Americans	60+	Female	05-06	.088	0.008	3
Mexican Americans	60+	Female	07-08	.067	0.014	5
Mexican Americans	60+	Female	09-10	.055	0.008	6
All Hispanics	12-19	Male	09-10	.005	0.001	11
All Hispanics	20-39	Male	09-10	.008	0.001	13
All Hispanics	40-59	Male	09-10	.018	0.002	13
All Hispanics	60+	Male	09-10	.044	0.002	8
All Hispanics	12-19	Female	09-10	.005	0.001	10
All Hispanics	20-39	Female	09-10	.007	0.001	14
All Hispanics	40-59	Female	09-10	.020	0.002	14
All Hispanics	60+	Female	09-10	.062	0.007	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (whole weight) (2011 - 2016)†

CAS Number 32690-93-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.005	0.001	6
Non-Hispanic Whites	Male	12-19	13-14	.006	0	8
Non-Hispanic Whites	Male	12-19	15-16	.005	0.001	7
Non-Hispanic Whites	Male	20-39	11-12	.009	0.001	12
Non-Hispanic Whites	Male	20-39	13-14	.008	0.001	14
Non-Hispanic Whites	Male	20-39	15-16	.007	0.001	10
Non-Hispanic Whites	Male	40-59	11-12	.021	0.001	12
Non-Hispanic Whites	Male	40-59	13-14	.022	0.003	14
Non-Hispanic Whites	Male	40-59	15-16	.014	0.001	10
Non-Hispanic Whites	Male	60+	11-12	.047	0.002	12
Non-Hispanic Whites	Male	60+	13-14	.043	0.004	17
Non-Hispanic Whites	Male	60+	15-16	.037	0.003	14
Non-Hispanic Whites	Female	12-19	11-12	.007	0.001	5
Non-Hispanic Whites	Female	12-19	13-14	.006	0.001	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.009	0.001	13
Non-Hispanic Whites	Female	20-39	13-14	.008	0.001	15
Non-Hispanic Whites	Female	20-39	15-16	.006	0	11
Non-Hispanic Whites	Female	40-59	11-12	.036	0.004	11
Non-Hispanic Whites	Female	40-59	13-14	.032	0.004	16
Non-Hispanic Whites	Female	40-59	15-16	.017	0.001	9
Non-Hispanic Whites	Female	60+	11-12	.096	0.007	14
Non-Hispanic Whites	Female	60+	13-14	.077	0.007	20
Non-Hispanic Whites	Female	60+	15-16	.065	0.006	13
Non-Hispanic Blacks	Male	12-19	11-12	.006	0	7
Non-Hispanic Blacks	Male	12-19	13-14	.004	0.001	6
Non-Hispanic Blacks	Male	12-19	15-16	.003	0.001	5
Non-Hispanic Blacks	Male	20-39	11-12	.008	0.001	9
Non-Hispanic Blacks	Male	20-39	13-14	.005	0.001	7
Non-Hispanic Blacks	Male	20-39	15-16	.004	0	7
Non-Hispanic Blacks	Male	40-59	11-12	.014	0.003	7
Non-Hispanic Blacks	Male	40-59	13-14	.017	0.002	7
Non-Hispanic Blacks	Male	40-59	15-16	.016	0.002	7
Non-Hispanic Blacks	Male	60+	11-12	.034	0.002	9
Non-Hispanic Blacks	Male	60+	13-14	.041	0.005	9
Non-Hispanic Blacks	Male	60+	15-16	.026	0.003	7
Non-Hispanic Blacks	Female	12-19	11-12	.003	0	6
Non-Hispanic Blacks	Female	12-19	13-14	.004	0	6
Non-Hispanic Blacks	Female	12-19	15-16	.003	0.001	4
Non-Hispanic Blacks	Female	20-39	11-12	.008	0.001	8
Non-Hispanic Blacks	Female	20-39	13-14	.005	0	8
Non-Hispanic Blacks	Female	20-39	15-16	.006	0.001	9
Non-Hispanic Blacks	Female	40-59	11-12	.033	0.004	8
Non-Hispanic Blacks	Female	40-59	13-14	.030	0.004	8
Non-Hispanic Blacks	Female	40-59	15-16	.026	0.004	12
Non-Hispanic Blacks	Female	60+	11-12	.099	0.011	8
Non-Hispanic Blacks	Female	60+	13-14	.095	0.008	8
Non-Hispanic Blacks	Female	60+	15-16	.076	0.01	7
Mexican Americans	Male	12-19	11-12	.004	0	5
Mexican Americans	Male	12-19	13-14	.003	0	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.006	0.001	4
Mexican Americans	Male	20-39	13-14	.005	0	5
Mexican Americans	Male	20-39	15-16	.007	0.002	7
Mexican Americans	Male	40-59	11-12	.018	0.001	4
Mexican Americans	Male	40-59	13-14	.010	0.001	5
Mexican Americans	Male	40-59	15-16	.009	0.002	4
Mexican Americans	Male	60+	11-12	.032	0.008	2
Mexican Americans	Male	60+	13-14	.034	0.006	4
Mexican Americans	Male	60+	15-16	.021	0.003	5
Mexican Americans	Female	12-19	11-12	.003	0	4
Mexican Americans	Female	12-19	13-14	.003	0	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.005	0.001	4
Mexican Americans	Female	20-39	13-14	.004	0	5
Mexican Americans	Female	20-39	15-16	.004	0	6
Mexican Americans	Female	40-59	11-12	.025 **	0.009	3
Mexican Americans	Female	40-59	13-14	.012	0.002	6
Mexican Americans	Female	40-59	15-16	.013	0.001	8
Mexican Americans	Female	60+	11-12	.046	0.003	3
Mexican Americans	Female	60+	13-14	.047	0.007	5
Mexican Americans	Female	60+	15-16	.039	0.003	7
All Hispanics	Male	12-19	11-12	4.13	0.48	7
All Hispanics	Male	12-19	13-14	3.10	0.37	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	5.77	0.77	8
All Hispanics	Male	20-39	13-14	5.30	0.26	8
All Hispanics	Male	20-39	15-16	6.27	1.09	11
All Hispanics	Male	40-59	11-12	16.0	1.4	7
All Hispanics	Male	40-59	13-14	11.0	1.3	9
All Hispanics	Male	40-59	15-16	11.7	2.9	9
All Hispanics	Male	60+	11-12	33.2	3.4	6
All Hispanics	Male	60+	13-14	38.0	5.5	7
All Hispanics	Male	60+	15-16	24.3	2.5	9
All Hispanics	Female	12-19	11-12	3.24	0.39	7
All Hispanics	Female	12-19	13-14	2.90	0.26	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	4.84	0.62	8
All Hispanics	Female	20-39	13-14	5.47	1.62	9
All Hispanics	Female	20-39	15-16	3.96	0.34	11
All Hispanics	Female	40-59	11-12	20.6	5	7
All Hispanics	Female	40-59	13-14	13.2	1.7	10
All Hispanics	Female	40-59	15-16	13.8	1.4	13
All Hispanics	Female	60+	11-12	70.4	15	7
All Hispanics	Female	60+	13-14	47.2	4.4	9
All Hispanics	Female	60+	15-16	35.2	2.7	13
Asians	Male	12-19	11-12	.008	0.001	3
Asians	Male	12-19	13-14	.005	0.001	3
Asians	Male	12-19	15-16	.004	0.001	3
Asians	Male	20-39	11-12	.012	0.001	6
Asians	Male	20-39	13-14	.010	0.002	4
Asians	Male	20-39	15-16	.013	0.003	5
Asians	Male	40-59	11-12	.023	0.003	6
Asians	Male	40-59	13-14	.017	0.003	4
Asians	Male	40-59	15-16	.016	0.004	4
Asians	Male	60+	11-12	.030	0.004	4
Asians	Male	60+	13-14	.034	0.003	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.038	0.006	3
Asians	Female	12-19	11-12	.005	0	4
Asians	Female	12-19	13-14	.006	0	3
Asians	Female	12-19	15-16	.005 **	0.002	3
Asians	Female	20-39	11-12	.012	0.001	6
Asians	Female	20-39	13-14	.010	0	5
Asians	Female	20-39	15-16	.009	0.001	4
Asians	Female	40-59	11-12	.028	0.004	6
Asians	Female	40-59	13-14	.020	0.002	7
Asians	Female	40-59	15-16	.029 **	0.011	5
Asians	Female	60+	11-12	.046	0.006	3
Asians	Female	60+	13-14	.048	0.012	3
Asians	Female	60+	15-16	.050 **	0.015	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87) (lipid adjusted) (2005 - 2008)†

CAS Number 41464-51-1

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	16
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	60+	05-06	.416	0.073	17
Non-Hispanic Whites	Female	60+	07-08	*	*	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	.847	0.245	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

* 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) (2005 - 2008)†

CAS Number 41464-51-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.001	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	20-39	Male	05-06	.001	0	12
Non-Hispanic Whites	20-39	Male	07-08	.001	0	15
Non-Hispanic Whites	40-59	Male	05-06	.002	0	12
Non-Hispanic Whites	40-59	Male	07-08	.001	0	16
Non-Hispanic Whites	60+	Male	05-06	.002	0	15
Non-Hispanic Whites	60+	Male	07-08	.002	0	23
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001	0	7
Non-Hispanic Whites	20-39	Female	05-06	.001	0	16
Non-Hispanic Whites	20-39	Female	07-08	.001	0	13
Non-Hispanic Whites	40-59	Female	05-06	.001	0	13
Non-Hispanic Whites	40-59	Female	07-08	.001	0	17
Non-Hispanic Whites	60+	Female	05-06	.003	0	17
Non-Hispanic Whites	60+	Female	07-08	.002 **	0.001	21
Non-Hispanic Blacks	12-19	Male	05-06	.001	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.001	0	6
Non-Hispanic Blacks	20-39	Male	07-08	.001	0	6
Non-Hispanic Blacks	40-59	Male	05-06	.001	0	5
Non-Hispanic Blacks	40-59	Male	07-08	.001 **	0	6
Non-Hispanic Blacks	60+	Male	05-06	.003	0.001	5
Non-Hispanic Blacks	60+	Male	07-08	.002	0	8
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.001	0	7
Non-Hispanic Blacks	20-39	Female	07-08	.001	0	8
Non-Hispanic Blacks	40-59	Female	05-06	.001	0	7
Non-Hispanic Blacks	40-59	Female	07-08	.001	0	8
Non-Hispanic Blacks	60+	Female	05-06	.002 **	0.001	5
Non-Hispanic Blacks	60+	Female	07-08	.005	0.001	7
Mexican Americans	12-19	Male	05-06	.001	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	20-39	Male	05-06	.001	0	9
Mexican Americans	20-39	Male	07-08	.001	0	9
Mexican Americans	40-59	Male	05-06	.001	0	4
Mexican Americans	40-59	Male	07-08	.001 **	0	6
Mexican Americans	60+	Male	05-06	.001	0	4
Mexican Americans	60+	Male	07-08	.001	0	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	20-39	Female	05-06	.001	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	40-59	Female	05-06	.001	0	6
Mexican Americans	40-59	Female	07-08	.001	0	6
Mexican Americans	60+	Female	05-06	.001	0	3
Mexican Americans	60+	Female	07-08	.002	0.001	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (lipid adjusted) (2005 - 2010)†

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	1.51	0.17	9
Non-Hispanic Whites	Male	12-19	07-08	1.47	0.14	6
Non-Hispanic Whites	Male	12-19	09-10	1.64	0.1	10
Non-Hispanic Whites	Male	20-39	05-06	2.60	0.41	12
Non-Hispanic Whites	Male	20-39	07-08	2.29	0.18	15
Non-Hispanic Whites	Male	20-39	09-10	2.58	0.28	17
Non-Hispanic Whites	Male	40-59	05-06	4.29	0.4	12
Non-Hispanic Whites	Male	40-59	07-08	3.80	0.31	16
Non-Hispanic Whites	Male	40-59	09-10	3.58	0.47	17
Non-Hispanic Whites	Male	60+	05-06	8.00	0.53	15
Non-Hispanic Whites	Male	60+	07-08	8.46	0.77	23
Non-Hispanic Whites	Male	60+	09-10	6.63	0.57	21
Non-Hispanic Whites	Female	12-19	05-06	1.30	0.07	10
Non-Hispanic Whites	Female	12-19	07-08	.931	0.191	7
Non-Hispanic Whites	Female	12-19	09-10	1.23	0.11	8
Non-Hispanic Whites	Female	20-39	05-06	1.86	0.1	16
Non-Hispanic Whites	Female	20-39	07-08	2.06	0.3	13
Non-Hispanic Whites	Female	20-39	09-10	1.83	0.11	19
Non-Hispanic Whites	Female	40-59	05-06	4.50	0.3	13
Non-Hispanic Whites	Female	40-59	07-08	3.93	0.28	17
Non-Hispanic Whites	Female	40-59	09-10	5.11	0.93	17
Non-Hispanic Whites	Female	60+	05-06	10.0	1	17
Non-Hispanic Whites	Female	60+	07-08	8.84	0.84	21
Non-Hispanic Whites	Female	60+	09-10	8.72	0.73	22
Non-Hispanic Blacks	Male	12-19	05-06	2.09	0.22	13
Non-Hispanic Blacks	Male	12-19	07-08	1.43	0.12	6
Non-Hispanic Blacks	Male	12-19	09-10	1.63	0.16	6
Non-Hispanic Blacks	Male	20-39	05-06	2.46	0.25	6
Non-Hispanic Blacks	Male	20-39	07-08	2.18	0.18	6
Non-Hispanic Blacks	Male	20-39	09-10	3.45 **	1.09	6
Non-Hispanic Blacks	Male	40-59	05-06	5.47	0.79	5
Non-Hispanic Blacks	Male	40-59	07-08	6.22	1.11	6
Non-Hispanic Blacks	Male	40-59	09-10	8.73	1.4	7
Non-Hispanic Blacks	Male	60+	05-06	14.2	1.8	5
Non-Hispanic Blacks	Male	60+	07-08	11.5	1.1	8
Non-Hispanic Blacks	Male	60+	09-10	12.8	1.5	9
Non-Hispanic Blacks	Female	12-19	05-06	1.37	0.09	14
Non-Hispanic Blacks	Female	12-19	07-08	1.20	0.14	5
Non-Hispanic Blacks	Female	12-19	09-10	1.05	0.12	5
Non-Hispanic Blacks	Female	20-39	05-06	2.39	0.25	7
Non-Hispanic Blacks	Female	20-39	07-08	1.94	0.24	8
Non-Hispanic Blacks	Female	20-39	09-10	2.07	0.26	7
Non-Hispanic Blacks	Female	40-59	05-06	7.60	0.79	7
Non-Hispanic Blacks	Female	40-59	07-08	6.43	0.7	8
Non-Hispanic Blacks	Female	40-59	09-10	9.98	1.47	7
Non-Hispanic Blacks	Female	60+	05-06	21.5	5.7	5
Non-Hispanic Blacks	Female	60+	07-08	17.9	2.7	7
Non-Hispanic Blacks	Female	60+	09-10	15.2	2.2	7
Mexican Americans	Male	12-19	05-06	.912	0.089	11
Mexican Americans	Male	12-19	07-08	.810	0.13	6
Mexican Americans	Male	12-19	09-10	1.19	0.16	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	1.46	0.09	9
Mexican Americans	Male	20-39	07-08	1.52	0.12	9
Mexican Americans	Male	20-39	09-10	1.38	0.11	8
Mexican Americans	Male	40-59	05-06	2.39	0.15	4
Mexican Americans	Male	40-59	07-08	3.19	0.47	6
Mexican Americans	Male	40-59	09-10	2.61	0.31	8
Mexican Americans	Male	60+	05-06	4.19	0.31	4
Mexican Americans	Male	60+	07-08	4.50	0.4	5
Mexican Americans	Male	60+	09-10	5.40	0.48	5
Mexican Americans	Female	12-19	05-06	.816	0.043	16
Mexican Americans	Female	12-19	07-08	.722	0.067	5
Mexican Americans	Female	12-19	09-10	.666	0.147	6
Mexican Americans	Female	20-39	05-06	1.13	0.12	9
Mexican Americans	Female	20-39	07-08	1.27	0.07	8
Mexican Americans	Female	20-39	09-10	.936	0.055	9
Mexican Americans	Female	40-59	05-06	3.32	0.33	6
Mexican Americans	Female	40-59	07-08	2.74	0.24	6
Mexican Americans	Female	40-59	09-10	2.60	0.19	9
Mexican Americans	Female	60+	05-06	5.65	0.74	3
Mexican Americans	Female	60+	07-08	5.21	0.9	5
Mexican Americans	Female	60+	09-10	5.52	0.8	6
All Hispanics	Male	12-19	09-10	1.24	0.12	11
All Hispanics	Male	20-39	09-10	1.64	0.14	13
All Hispanics	Male	40-59	09-10	3.14	0.35	13
All Hispanics	Male	60+	09-10	5.71	0.52	8
All Hispanics	Female	12-19	09-10	.858	0.16	9
All Hispanics	Female	20-39	09-10	1.24	0.16	13
All Hispanics	Female	40-59	09-10	2.71	0.21	14
All Hispanics	Female	60+	09-10	5.79	0.51	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.25, 0.28, and 0.62, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (lipid adjusted) (2011 - 2016)†

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.977	0.072	6
Non-Hispanic Whites	Male	12-19	13-14	1.32	0.14	7
Non-Hispanic Whites	Male	12-19	15-16	1.79 **	0.72	7
Non-Hispanic Whites	Male	20-39	11-12	1.59	0.08	12
Non-Hispanic Whites	Male	20-39	13-14	1.56	0.19	14
Non-Hispanic Whites	Male	20-39	15-16	1.16	0.15	10
Non-Hispanic Whites	Male	40-59	11-12	2.94	0.2	12
Non-Hispanic Whites	Male	40-59	13-14	3.97	0.47	14
Non-Hispanic Whites	Male	40-59	15-16	2.06	0.18	10
Non-Hispanic Whites	Male	60+	11-12	5.51	0.36	12
Non-Hispanic Whites	Male	60+	13-14	5.56	0.66	17
Non-Hispanic Whites	Male	60+	15-16	5.36	0.59	14
Non-Hispanic Whites	Female	12-19	11-12	.955	0.089	5
Non-Hispanic Whites	Female	12-19	13-14	1.64	0.38	6
Non-Hispanic Whites	Female	12-19	15-16	.537	0.072	5
Non-Hispanic Whites	Female	20-39	11-12	1.60	0.2	13
Non-Hispanic Whites	Female	20-39	13-14	1.63	0.19	15
Non-Hispanic Whites	Female	20-39	15-16	1.08	0.11	11
Non-Hispanic Whites	Female	40-59	11-12	4.21	0.64	11
Non-Hispanic Whites	Female	40-59	13-14	3.49	0.49	16
Non-Hispanic Whites	Female	40-59	15-16	2.06	0.15	9
Non-Hispanic Whites	Female	60+	11-12	6.65	0.67	14
Non-Hispanic Whites	Female	60+	13-14	7.34	0.73	20
Non-Hispanic Whites	Female	60+	15-16	5.99	0.72	13
Non-Hispanic Blacks	Male	12-19	11-12	1.51	0.19	7
Non-Hispanic Blacks	Male	12-19	13-14	1.37	0.37	6
Non-Hispanic Blacks	Male	12-19	15-16	.814	0.14	5
Non-Hispanic Blacks	Male	20-39	11-12	2.10	0.19	9
Non-Hispanic Blacks	Male	20-39	13-14	1.54	0.17	7
Non-Hispanic Blacks	Male	20-39	15-16	1.28	0.17	7
Non-Hispanic Blacks	Male	40-59	11-12	3.69	0.87	7
Non-Hispanic Blacks	Male	40-59	13-14	4.11	0.78	7
Non-Hispanic Blacks	Male	40-59	15-16	5.67	1.53	7
Non-Hispanic Blacks	Male	60+	11-12	7.98	0.86	9
Non-Hispanic Blacks	Male	60+	13-14	8.46	1.17	9
Non-Hispanic Blacks	Male	60+	15-16	6.16	0.87	7
Non-Hispanic Blacks	Female	12-19	11-12	.825	0.128	6
Non-Hispanic Blacks	Female	12-19	13-14	1.12	0.15	6
Non-Hispanic Blacks	Female	12-19	15-16	.961	0.134	4
Non-Hispanic Blacks	Female	20-39	11-12	1.64	0.2	8
Non-Hispanic Blacks	Female	20-39	13-14	1.29	0.11	7
Non-Hispanic Blacks	Female	20-39	15-16	1.40	0.16	9
Non-Hispanic Blacks	Female	40-59	11-12	5.16	0.71	8
Non-Hispanic Blacks	Female	40-59	13-14	5.17	0.55	8
Non-Hispanic Blacks	Female	40-59	15-16	4.14	0.55	12
Non-Hispanic Blacks	Female	60+	11-12	14.4	1.6	8
Non-Hispanic Blacks	Female	60+	13-14	12.9	1.6	8
Non-Hispanic Blacks	Female	60+	15-16	12.2	1.1	7
Mexican Americans	Male	12-19	11-12	.645	0.042	5
Mexican Americans	Male	12-19	13-14	.595	0.072	7
Mexican Americans	Male	12-19	15-16	.685	0.069	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	1.21	0.12	4
Mexican Americans	Male	20-39	13-14	.939	0.092	5
Mexican Americans	Male	20-39	15-16	.925	0.105	7
Mexican Americans	Male	40-59	11-12	2.25	0.17	4
Mexican Americans	Male	40-59	13-14	1.70	0.17	5
Mexican Americans	Male	40-59	15-16	1.75	0.23	4
Mexican Americans	Male	60+	11-12	3.66	0.63	2
Mexican Americans	Male	60+	13-14	4.81	0.63	4
Mexican Americans	Male	60+	15-16	2.56	0.34	5
Mexican Americans	Female	12-19	11-12	.486	0.057	4
Mexican Americans	Female	12-19	13-14	.561	0.042	7
Mexican Americans	Female	12-19	15-16	.479	0.051	5
Mexican Americans	Female	20-39	11-12	.903	0.205	4
Mexican Americans	Female	20-39	13-14	.674	0.036	5
Mexican Americans	Female	20-39	15-16	.780	0.044	6
Mexican Americans	Female	40-59	11-12	3.35	0.51	3
Mexican Americans	Female	40-59	13-14	1.86	0.45	6
Mexican Americans	Female	40-59	15-16	1.56	0.26	8
Mexican Americans	Female	60+	11-12	5.82	0.58	3
Mexican Americans	Female	60+	13-14	4.80	0.64	5
Mexican Americans	Female	60+	15-16	3.73	0.16	7
All Hispanics	Male	12-19	11-12	.776	0.123	7
All Hispanics	Male	12-19	13-14	.721	0.134	10
All Hispanics	Male	12-19	15-16	.731	0.113	9
All Hispanics	Male	20-39	11-12	1.30	0.11	8
All Hispanics	Male	20-39	13-14	1.02	0.08	8
All Hispanics	Male	20-39	15-16	1.00	0.09	11
All Hispanics	Male	40-59	11-12	2.47	0.27	7
All Hispanics	Male	40-59	13-14	2.09	0.38	9
All Hispanics	Male	40-59	15-16	2.36	0.58	9
All Hispanics	Male	60+	11-12	5.44	1.05	6
All Hispanics	Male	60+	13-14	5.13	0.57	7
All Hispanics	Male	60+	15-16	2.99	0.3	9
All Hispanics	Female	12-19	11-12	.626	0.078	7
All Hispanics	Female	12-19	13-14	.620	0.083	10
All Hispanics	Female	12-19	15-16	.553	0.053	8
All Hispanics	Female	20-39	11-12	.960	0.109	8
All Hispanics	Female	20-39	13-14	1.28 **	0.54	9
All Hispanics	Female	20-39	15-16	.800	0.057	11
All Hispanics	Female	40-59	11-12	3.24	0.41	7
All Hispanics	Female	40-59	13-14	2.13	0.35	10
All Hispanics	Female	40-59	15-16	1.74	0.2	13
All Hispanics	Female	60+	11-12	6.73	0.65	7
All Hispanics	Female	60+	13-14	5.23	0.47	9
All Hispanics	Female	60+	15-16	3.72	0.16	13
Asians	Male	12-19	11-12	1.90	0.21	3
Asians	Male	12-19	13-14	1.33	0.31	3
Asians	Male	12-19	15-16	1.47 **	0.7	3
Asians	Male	20-39	11-12	3.01	0.68	6
Asians	Male	20-39	13-14	2.21	0.3	4
Asians	Male	20-39	15-16	2.95	0.5	5
Asians	Male	40-59	11-12	5.51	0.68	6
Asians	Male	40-59	13-14	4.77	1.13	4
Asians	Male	40-59	15-16	4.14	1.05	4
Asians	Male	60+	11-12	5.78	1.67	4
Asians	Male	60+	13-14	6.38	0.27	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	9.49	2.21	3
Asians	Female	12-19	11-12	1.13	0.08	4
Asians	Female	12-19	13-14	1.78	0.25	3
Asians	Female	12-19	15-16	1.47 **	1.18	3
Asians	Female	20-39	11-12	3.03	0.46	6
Asians	Female	20-39	13-14	2.24	0.25	5
Asians	Female	20-39	15-16	1.78	0.08	4
Asians	Female	40-59	11-12	4.56	0.83	6
Asians	Female	40-59	13-14	3.83	0.43	7
Asians	Female	40-59	15-16	7.82 **	3.36	5
Asians	Female	60+	11-12	7.94	0.76	3
Asians	Female	60+	13-14	7.59 **	2.88	3
Asians	Female	60+	15-16	11.9 **	4.1	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (whole weight) (2005 - 2010)†

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.008	0.001	9
Non-Hispanic Whites	12-19	Male	07-08	.007	0.001	6
Non-Hispanic Whites	12-19	Male	09-10	.009	0.001	10
Non-Hispanic Whites	20-39	Male	05-06	.019	0.004	12
Non-Hispanic Whites	20-39	Male	07-08	.015	0.001	15
Non-Hispanic Whites	20-39	Male	09-10	.017	0.002	17
Non-Hispanic Whites	40-59	Male	05-06	.032	0.003	12
Non-Hispanic Whites	40-59	Male	07-08	.028	0.002	16
Non-Hispanic Whites	40-59	Male	09-10	.024	0.003	17
Non-Hispanic Whites	60+	Male	05-06	.054	0.003	15
Non-Hispanic Whites	60+	Male	07-08	.054	0.005	23
Non-Hispanic Whites	60+	Male	09-10	.040	0.004	21
Non-Hispanic Whites	12-19	Female	05-06	.007	0	10
Non-Hispanic Whites	12-19	Female	07-08	.004	0.001	7
Non-Hispanic Whites	12-19	Female	09-10	.006	0.001	8
Non-Hispanic Whites	20-39	Female	05-06	.012	0.001	16
Non-Hispanic Whites	20-39	Female	07-08	.012	0.002	13
Non-Hispanic Whites	20-39	Female	09-10	.010	0.001	19
Non-Hispanic Whites	40-59	Female	05-06	.033	0.003	13
Non-Hispanic Whites	40-59	Female	07-08	.026	0.002	17
Non-Hispanic Whites	40-59	Female	09-10	.032	0.006	17
Non-Hispanic Whites	60+	Female	05-06	.072	0.007	17
Non-Hispanic Whites	60+	Female	07-08	.059	0.006	21
Non-Hispanic Whites	60+	Female	09-10	.053	0.004	22
Non-Hispanic Blacks	12-19	Male	05-06	.010	0.001	13
Non-Hispanic Blacks	12-19	Male	07-08	.007	0	6
Non-Hispanic Blacks	12-19	Male	09-10	.008	0.001	6
Non-Hispanic Blacks	20-39	Male	05-06	.015	0.002	6
Non-Hispanic Blacks	20-39	Male	07-08	.012	0.001	6
Non-Hispanic Blacks	20-39	Male	09-10	.020	0.006	6
Non-Hispanic Blacks	40-59	Male	05-06	.035	0.005	5
Non-Hispanic Blacks	40-59	Male	07-08	.040	0.007	6
Non-Hispanic Blacks	40-59	Male	09-10	.053	0.008	7
Non-Hispanic Blacks	60+	Male	05-06	.084	0.009	5
Non-Hispanic Blacks	60+	Male	07-08	.070	0.007	8
Non-Hispanic Blacks	60+	Male	09-10	.069	0.009	9
Non-Hispanic Blacks	12-19	Female	05-06	.007	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.006	0.001	5
Non-Hispanic Blacks	12-19	Female	09-10	.005	0.001	5
Non-Hispanic Blacks	20-39	Female	05-06	.014	0.002	7
Non-Hispanic Blacks	20-39	Female	07-08	.010	0.001	8
Non-Hispanic Blacks	20-39	Female	09-10	.010	0.001	7
Non-Hispanic Blacks	40-59	Female	05-06	.049	0.006	7
Non-Hispanic Blacks	40-59	Female	07-08	.039	0.005	8
Non-Hispanic Blacks	40-59	Female	09-10	.056	0.008	7
Non-Hispanic Blacks	60+	Female	05-06	.144	0.039	5
Non-Hispanic Blacks	60+	Female	07-08	.106	0.013	7
Non-Hispanic Blacks	60+	Female	09-10	.088	0.013	7
Mexican Americans	12-19	Male	05-06	.005	0	11
Mexican Americans	12-19	Male	07-08	.004	0.001	6
Mexican Americans	12-19	Male	09-10	.006	0.001	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.010	0.001	9
Mexican Americans	20-39	Male	07-08	.010	0.001	9
Mexican Americans	20-39	Male	09-10	.008	0.001	8
Mexican Americans	40-59	Male	05-06	.019	0.002	4
Mexican Americans	40-59	Male	07-08	.023	0.004	6
Mexican Americans	40-59	Male	09-10	.018	0.003	8
Mexican Americans	60+	Male	05-06	.031	0.004	4
Mexican Americans	60+	Male	07-08	.032	0.003	5
Mexican Americans	60+	Male	09-10	.033	0.002	5
Mexican Americans	12-19	Female	05-06	.004	0	16
Mexican Americans	12-19	Female	07-08	.003	0	5
Mexican Americans	12-19	Female	09-10	.003	0.001	6
Mexican Americans	20-39	Female	05-06	.008	0.001	9
Mexican Americans	20-39	Female	07-08	.007	0.001	8
Mexican Americans	20-39	Female	09-10	.005	0	9
Mexican Americans	40-59	Female	05-06	.024	0.002	6
Mexican Americans	40-59	Female	07-08	.019	0.002	6
Mexican Americans	40-59	Female	09-10	.017	0.002	9
Mexican Americans	60+	Female	05-06	.042	0.005	3
Mexican Americans	60+	Female	07-08	.036	0.006	5
Mexican Americans	60+	Female	09-10	.030	0.004	6
All Hispanics	12-19	Male	09-10	.006	0.001	11
All Hispanics	20-39	Male	09-10	.010	0.001	13
All Hispanics	40-59	Male	09-10	.021	0.002	13
All Hispanics	60+	Male	09-10	.036	0.002	8
All Hispanics	12-19	Female	09-10	.004	0.001	9
All Hispanics	20-39	Female	09-10	.007	0.001	13
All Hispanics	40-59	Female	09-10	.017	0.001	14
All Hispanics	60+	Female	09-10	.034	0.003	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (whole weight) (2011 - 2016)†

CAS Number 38380-02-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.005	0	6
Non-Hispanic Whites	Male	12-19	13-14	.006	0	7
Non-Hispanic Whites	Male	12-19	15-16	.009 **	0.004	7
Non-Hispanic Whites	Male	20-39	11-12	.009	0	12
Non-Hispanic Whites	Male	20-39	13-14	.008	0.001	14
Non-Hispanic Whites	Male	20-39	15-16	.007	0.001	10
Non-Hispanic Whites	Male	40-59	11-12	.019	0.001	12
Non-Hispanic Whites	Male	40-59	13-14	.024	0.003	14
Non-Hispanic Whites	Male	40-59	15-16	.014	0.001	10
Non-Hispanic Whites	Male	60+	11-12	.030	0.002	12
Non-Hispanic Whites	Male	60+	13-14	.030	0.003	17
Non-Hispanic Whites	Male	60+	15-16	.029	0.003	14
Non-Hispanic Whites	Female	12-19	11-12	.005	0	5
Non-Hispanic Whites	Female	12-19	13-14	.008	0.002	6
Non-Hispanic Whites	Female	12-19	15-16	.003	0	5
Non-Hispanic Whites	Female	20-39	11-12	.009	0.001	13
Non-Hispanic Whites	Female	20-39	13-14	.009	0.001	15
Non-Hispanic Whites	Female	20-39	15-16	.006	0.001	11
Non-Hispanic Whites	Female	40-59	11-12	.027	0.005	11
Non-Hispanic Whites	Female	40-59	13-14	.021	0.003	16
Non-Hispanic Whites	Female	40-59	15-16	.013	0.001	9
Non-Hispanic Whites	Female	60+	11-12	.040	0.004	14
Non-Hispanic Whites	Female	60+	13-14	.043	0.004	20
Non-Hispanic Whites	Female	60+	15-16	.037	0.004	13
Non-Hispanic Blacks	Male	12-19	11-12	.007	0.001	7
Non-Hispanic Blacks	Male	12-19	13-14	.006	0.001	6
Non-Hispanic Blacks	Male	12-19	15-16	.004	0.001	5
Non-Hispanic Blacks	Male	20-39	11-12	.011	0.001	9
Non-Hispanic Blacks	Male	20-39	13-14	.008	0.001	7
Non-Hispanic Blacks	Male	20-39	15-16	.007	0.001	7
Non-Hispanic Blacks	Male	40-59	11-12	.021	0.005	7
Non-Hispanic Blacks	Male	40-59	13-14	.023	0.004	7
Non-Hispanic Blacks	Male	40-59	15-16	.035	0.009	7
Non-Hispanic Blacks	Male	60+	11-12	.044	0.005	9
Non-Hispanic Blacks	Male	60+	13-14	.045	0.007	9
Non-Hispanic Blacks	Male	60+	15-16	.033	0.005	7
Non-Hispanic Blacks	Female	12-19	11-12	.004	0.001	6
Non-Hispanic Blacks	Female	12-19	13-14	.005	0.001	6
Non-Hispanic Blacks	Female	12-19	15-16	.004	0.001	4
Non-Hispanic Blacks	Female	20-39	11-12	.009	0.001	8
Non-Hispanic Blacks	Female	20-39	13-14	.006	0.001	7
Non-Hispanic Blacks	Female	20-39	15-16	.007	0.001	9
Non-Hispanic Blacks	Female	40-59	11-12	.032	0.006	8
Non-Hispanic Blacks	Female	40-59	13-14	.027	0.003	8
Non-Hispanic Blacks	Female	40-59	15-16	.024	0.004	12
Non-Hispanic Blacks	Female	60+	11-12	.080	0.008	8
Non-Hispanic Blacks	Female	60+	13-14	.069	0.009	8
Non-Hispanic Blacks	Female	60+	15-16	.072	0.007	7
Mexican Americans	Male	12-19	11-12	.003	0	5
Mexican Americans	Male	12-19	13-14	.003	0	7
Mexican Americans	Male	12-19	15-16	.003	0	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.008	0.001	4
Mexican Americans	Male	20-39	13-14	.006	0	5
Mexican Americans	Male	20-39	15-16	.007	0.001	7
Mexican Americans	Male	40-59	11-12	.018	0.001	4
Mexican Americans	Male	40-59	13-14	.010	0.001	5
Mexican Americans	Male	40-59	15-16	.012	0.001	4
Mexican Americans	Male	60+	11-12	.022	0.003	2
Mexican Americans	Male	60+	13-14	.026	0.003	4
Mexican Americans	Male	60+	15-16	.015	0.002	5
Mexican Americans	Female	12-19	11-12	.002	0	4
Mexican Americans	Female	12-19	13-14	.003	0	7
Mexican Americans	Female	12-19	15-16	.002	0	5
Mexican Americans	Female	20-39	11-12	.005	0.001	4
Mexican Americans	Female	20-39	13-14	.004	0	5
Mexican Americans	Female	20-39	15-16	.004	0	6
Mexican Americans	Female	40-59	11-12	.020	0.003	3
Mexican Americans	Female	40-59	13-14	.011	0.002	6
Mexican Americans	Female	40-59	15-16	.010	0.002	8
Mexican Americans	Female	60+	11-12	.036	0.003	3
Mexican Americans	Female	60+	13-14	.028	0.004	5
Mexican Americans	Female	60+	15-16	.023	0.001	7
All Hispanics	Male	12-19	11-12	3.75	0.59	7
All Hispanics	Male	12-19	13-14	3.50	0.68	10
All Hispanics	Male	12-19	15-16	3.72	0.55	9
All Hispanics	Male	20-39	11-12	8.06	0.92	8
All Hispanics	Male	20-39	13-14	6.05	0.38	8
All Hispanics	Male	20-39	15-16	6.70	0.99	11
All Hispanics	Male	40-59	11-12	18.4	1.9	7
All Hispanics	Male	40-59	13-14	12.9	2.6	9
All Hispanics	Male	40-59	15-16	15.0	3.5	9
All Hispanics	Male	60+	11-12	31.4	5.5	6
All Hispanics	Male	60+	13-14	27.5	2.6	7
All Hispanics	Male	60+	15-16	17.5	1.7	9
All Hispanics	Female	12-19	11-12	3.09	0.39	7
All Hispanics	Female	12-19	13-14	2.91	0.42	10
All Hispanics	Female	12-19	15-16	2.58	0.2	8
All Hispanics	Female	20-39	11-12	5.22	0.54	8
All Hispanics	Female	20-39	13-14	7.20 **	3.01	9
All Hispanics	Female	20-39	15-16	4.36	0.34	11
All Hispanics	Female	40-59	11-12	20.3	3	7
All Hispanics	Female	40-59	13-14	12.4	2	10
All Hispanics	Female	40-59	15-16	11.3	1.4	13
All Hispanics	Female	60+	11-12	41.1	3.3	7
All Hispanics	Female	60+	13-14	30.9	2.6	9
All Hispanics	Female	60+	15-16	22.7	0.8	13
Asians	Male	12-19	11-12	.010	0.001	3
Asians	Male	12-19	13-14	.006	0.001	3
Asians	Male	12-19	15-16	.007 **	0.003	3
Asians	Male	20-39	11-12	.017	0.004	6
Asians	Male	20-39	13-14	.013	0.002	4
Asians	Male	20-39	15-16	.020	0.004	5
Asians	Male	40-59	11-12	.033	0.004	6
Asians	Male	40-59	13-14	.027	0.006	4
Asians	Male	40-59	15-16	.026	0.007	4
Asians	Male	60+	11-12	.031	0.009	4
Asians	Male	60+	13-14	.039	0.003	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.052	0.011	3
Asians	Female	12-19	11-12	.005	0	4
Asians	Female	12-19	13-14	.008	0.001	3
Asians	Female	12-19	15-16	.008 **	0.006	3
Asians	Female	20-39	11-12	.017	0.003	6
Asians	Female	20-39	13-14	.011	0.001	5
Asians	Female	20-39	15-16	.010	0	4
Asians	Female	40-59	11-12	.028	0.005	6
Asians	Female	40-59	13-14	.022	0.002	7
Asians	Female	40-59	15-16	.049 **	0.023	5
Asians	Female	60+	11-12	.045	0.004	3
Asians	Female	60+	13-14	.043	0.012	3
Asians	Female	60+	15-16	.074 **	0.026	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (lipid adjusted) (2005 - 2008)†

CAS Number 37680-73-2

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	16
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	60+	05-06	.632	0.15	17
Non-Hispanic Whites	Female	60+	07-08	*	*	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	.608	0.175	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	60+	05-06	*	*	5
Non-Hispanic Blacks	Female	60+	07-08	.954 **	0.321	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.59 and 0.28.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (whole weight) (2005 - 2008)†

CAS Number 37680-73-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.002	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	20-39	Male	05-06	.002	0	12
Non-Hispanic Whites	20-39	Male	07-08	.001	0	15
Non-Hispanic Whites	40-59	Male	05-06	.003	0.001	12
Non-Hispanic Whites	40-59	Male	07-08	.001	0	16
Non-Hispanic Whites	60+	Male	05-06	.003	0	15
Non-Hispanic Whites	60+	Male	07-08	.003	0.001	23
Non-Hispanic Whites	12-19	Female	05-06	.002	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001	0	7
Non-Hispanic Whites	20-39	Female	05-06	.002	0	16
Non-Hispanic Whites	20-39	Female	07-08	.001 **	0	13
Non-Hispanic Whites	40-59	Female	05-06	.002	0	13
Non-Hispanic Whites	40-59	Female	07-08	.001	0	17
Non-Hispanic Whites	60+	Female	05-06	.005	0.001	17
Non-Hispanic Whites	60+	Female	07-08	.003 **	0.001	21
Non-Hispanic Blacks	12-19	Male	05-06	.002	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001 **	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.002	0	6
Non-Hispanic Blacks	20-39	Male	07-08	.001	0	6
Non-Hispanic Blacks	40-59	Male	05-06	.003	0.001	5
Non-Hispanic Blacks	40-59	Male	07-08	.002	0.001	6
Non-Hispanic Blacks	60+	Male	05-06	.004	0.001	5
Non-Hispanic Blacks	60+	Male	07-08	.004	0.001	8
Non-Hispanic Blacks	12-19	Female	05-06	.002	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.002	0	7
Non-Hispanic Blacks	20-39	Female	07-08	.001	0	8
Non-Hispanic Blacks	40-59	Female	05-06	.002	0	7
Non-Hispanic Blacks	40-59	Female	07-08	.001 **	0	8
Non-Hispanic Blacks	60+	Female	05-06	.002	0	5
Non-Hispanic Blacks	60+	Female	07-08	.006 **	0.002	7
Mexican Americans	12-19	Male	05-06	.002	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	20-39	Male	05-06	.002	0	9
Mexican Americans	20-39	Male	07-08	.001	0	9
Mexican Americans	40-59	Male	05-06	.002	0	4
Mexican Americans	40-59	Male	07-08	.002 **	0.001	6
Mexican Americans	60+	Male	05-06	.002	0	4
Mexican Americans	60+	Male	07-08	.001	0	5
Mexican Americans	12-19	Female	05-06	.002	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	20-39	Female	05-06	.002	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	40-59	Female	05-06	.002	0	6
Mexican Americans	40-59	Female	07-08	.001	0	6
Mexican Americans	60+	Female	05-06	.002	0	3
Mexican Americans	60+	Female	07-08	.001	0	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3,3',4',6-Pentachlorobiphenyl (PCB 110) (lipid adjusted) (2005 - 2008)†

CAS Number 38380-03-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	16
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	60+	05-06	.374	0.077	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	60+	05-06	.315	0.082	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.28.

* 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) (2005 - 2008)†

CAS Number 38380-03-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.001	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	20-39	Male	05-06	.001	0	12
Non-Hispanic Whites	20-39	Male	07-08	.001	0	15
Non-Hispanic Whites	40-59	Male	05-06	.001 **	0	12
Non-Hispanic Whites	40-59	Male	07-08	.001	0	16
Non-Hispanic Whites	60+	Male	05-06	.001	0	15
Non-Hispanic Whites	60+	Male	07-08	.001 **	0	23
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001	0	7
Non-Hispanic Whites	20-39	Female	05-06	.001	0	16
Non-Hispanic Whites	20-39	Female	07-08	.001	0	13
Non-Hispanic Whites	40-59	Female	05-06	.001	0	13
Non-Hispanic Whites	40-59	Female	07-08	.001	0	17
Non-Hispanic Whites	60+	Female	05-06	.002	0	17
Non-Hispanic Whites	60+	Female	07-08	.002 **	0.001	21
Non-Hispanic Blacks	12-19	Male	05-06	.001	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.001	0	6
Non-Hispanic Blacks	20-39	Male	07-08	.001	0	6
Non-Hispanic Blacks	40-59	Male	05-06	.001	0	5
Non-Hispanic Blacks	40-59	Male	07-08	.001 **	0	6
Non-Hispanic Blacks	60+	Male	05-06	.002	0	5
Non-Hispanic Blacks	60+	Male	07-08	.002	0	8
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.001	0	7
Non-Hispanic Blacks	20-39	Female	07-08	.001	0	8
Non-Hispanic Blacks	40-59	Female	05-06	.001	0	7
Non-Hispanic Blacks	40-59	Female	07-08	.001	0	8
Non-Hispanic Blacks	60+	Female	05-06	.002	0	5
Non-Hispanic Blacks	60+	Female	07-08	.003	0.001	7
Mexican Americans	12-19	Male	05-06	.001	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	20-39	Male	05-06	.001	0	9
Mexican Americans	20-39	Male	07-08	.001	0	9
Mexican Americans	40-59	Male	05-06	.001	0	4
Mexican Americans	40-59	Male	07-08	.001	0	6
Mexican Americans	60+	Male	05-06	.001	0	4
Mexican Americans	60+	Male	07-08	.001	0	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	20-39	Female	05-06	.001	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	40-59	Female	05-06	.001	0	6
Mexican Americans	40-59	Female	07-08	.001	0	6
Mexican Americans	60+	Female	05-06	.001	0	3
Mexican Americans	60+	Female	07-08	.001	0	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (lipid adjusted) (2005 - 2008)†

CAS Number 38380-07-3

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	16
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	60+	05-06	.410	0.103	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	60+	05-06	.367 **	0.133	5
Non-Hispanic Blacks	Female	60+	07-08	.822	0.239	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.28.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (whole weight) (2005 - 2008)†

CAS Number 38380-07-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.001	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	20-39	Male	05-06	.001	0	12
Non-Hispanic Whites	20-39	Male	07-08	.001	0	15
Non-Hispanic Whites	40-59	Male	05-06	.001	0	12
Non-Hispanic Whites	40-59	Male	07-08	.001	0	16
Non-Hispanic Whites	60+	Male	05-06	.001	0	15
Non-Hispanic Whites	60+	Male	07-08	.002 **	0.001	23
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001	0	7
Non-Hispanic Whites	20-39	Female	05-06	.001	0	16
Non-Hispanic Whites	20-39	Female	07-08	.001 **	0	13
Non-Hispanic Whites	40-59	Female	05-06	.001	0	13
Non-Hispanic Whites	40-59	Female	07-08	.001	0	17
Non-Hispanic Whites	60+	Female	05-06	.001	0	17
Non-Hispanic Whites	60+	Female	07-08	.001 **	0	21
Non-Hispanic Blacks	12-19	Male	05-06	.001 **	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.001	0	6
Non-Hispanic Blacks	20-39	Male	07-08	.001	0	6
Non-Hispanic Blacks	40-59	Male	05-06	.001 **	0	5
Non-Hispanic Blacks	40-59	Male	07-08	.002 **	0.001	6
Non-Hispanic Blacks	60+	Male	05-06	.003	0.001	5
Non-Hispanic Blacks	60+	Male	07-08	.002	0.001	8
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.001	0	7
Non-Hispanic Blacks	20-39	Female	07-08	.001	0	8
Non-Hispanic Blacks	40-59	Female	05-06	.002	0	7
Non-Hispanic Blacks	40-59	Female	07-08	.001	0	8
Non-Hispanic Blacks	60+	Female	05-06	.002 **	0.001	5
Non-Hispanic Blacks	60+	Female	07-08	.005	0.001	7
Mexican Americans	12-19	Male	05-06	.001	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	20-39	Male	05-06	.001	0	9
Mexican Americans	20-39	Male	07-08	.001	0	9
Mexican Americans	40-59	Male	05-06	.001	0	4
Mexican Americans	40-59	Male	07-08	.002 **	0.001	6
Mexican Americans	60+	Male	05-06	.001	0	4
Mexican Americans	60+	Male	07-08	.001	0	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	20-39	Female	05-06	.001	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	40-59	Female	05-06	.001	0	6
Mexican Americans	40-59	Female	07-08	.001	0	6
Mexican Americans	60+	Female	05-06	.001	0	3
Mexican Americans	60+	Female	07-08	.001	0	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' and 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (lipid adjusted) (2005 - 2010)†

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	4.13	0.65	9
Non-Hispanic Whites	Male	12-19	07-08	4.81	0.81	6
Non-Hispanic Whites	Male	12-19	09-10	4.60	0.4	10
Non-Hispanic Whites	Male	20-39	05-06	7.98	1.5	12
Non-Hispanic Whites	Male	20-39	07-08	8.74	0.81	15
Non-Hispanic Whites	Male	20-39	09-10	7.79	0.99	17
Non-Hispanic Whites	Male	40-59	05-06	19.6	2.5	12
Non-Hispanic Whites	Male	40-59	07-08	20.7	1.5	16
Non-Hispanic Whites	Male	40-59	09-10	20.0	2.4	17
Non-Hispanic Whites	Male	60+	05-06	32.6	1.5	15
Non-Hispanic Whites	Male	60+	07-08	47.5	3.8	23
Non-Hispanic Whites	Male	60+	09-10	36.4	3.2	21
Non-Hispanic Whites	Female	12-19	05-06	3.24	0.3	10
Non-Hispanic Whites	Female	12-19	07-08	3.53	0.67	7
Non-Hispanic Whites	Female	12-19	09-10	3.72	0.65	8
Non-Hispanic Whites	Female	20-39	05-06	5.23	0.28	16
Non-Hispanic Whites	Female	20-39	07-08	7.85	1.23	13
Non-Hispanic Whites	Female	20-39	09-10	6.31	0.39	19
Non-Hispanic Whites	Female	40-59	05-06	16.5	1.2	13
Non-Hispanic Whites	Female	40-59	07-08	21.5	1.2	17
Non-Hispanic Whites	Female	40-59	09-10	21.5	3.1	17
Non-Hispanic Whites	Female	60+	05-06	33.5	3.1	17
Non-Hispanic Whites	Female	60+	07-08	45.0	3.2	21
Non-Hispanic Whites	Female	60+	09-10	38.1	2.9	22
Non-Hispanic Blacks	Male	12-19	05-06	4.83	0.62	13
Non-Hispanic Blacks	Male	12-19	07-08	4.63	0.59	6
Non-Hispanic Blacks	Male	12-19	09-10	4.55	0.65	5
Non-Hispanic Blacks	Male	20-39	05-06	7.69	1.17	6
Non-Hispanic Blacks	Male	20-39	07-08	7.95	0.71	6
Non-Hispanic Blacks	Male	20-39	09-10	10.8	2.4	6
Non-Hispanic Blacks	Male	40-59	05-06	20.9	2.4	5
Non-Hispanic Blacks	Male	40-59	07-08	28.6	4.1	6
Non-Hispanic Blacks	Male	40-59	09-10	29.8	3.9	7
Non-Hispanic Blacks	Male	60+	05-06	56.5	7.5	5
Non-Hispanic Blacks	Male	60+	07-08	68.2	7.5	8
Non-Hispanic Blacks	Male	60+	09-10	56.5	5.8	9
Non-Hispanic Blacks	Female	12-19	05-06	2.97	0.19	14
Non-Hispanic Blacks	Female	12-19	07-08	3.25	0.45	5
Non-Hispanic Blacks	Female	12-19	09-10	2.68	0.22	5
Non-Hispanic Blacks	Female	20-39	05-06	6.94	0.87	7
Non-Hispanic Blacks	Female	20-39	07-08	7.16	0.87	8
Non-Hispanic Blacks	Female	20-39	09-10	6.56	0.85	7
Non-Hispanic Blacks	Female	40-59	05-06	25.5	2.5	7
Non-Hispanic Blacks	Female	40-59	07-08	28.2	2.7	8
Non-Hispanic Blacks	Female	40-59	09-10	31.7	4.4	7
Non-Hispanic Blacks	Female	60+	05-06	81.1	23.7	5
Non-Hispanic Blacks	Female	60+	07-08	79.9	6.6	7
Non-Hispanic Blacks	Female	60+	09-10	66.3	9.3	7
Mexican Americans	Male	12-19	05-06	2.68	0.35	11
Mexican Americans	Male	12-19	07-08	2.58	0.5	6
Mexican Americans	Male	12-19	09-10	3.09	0.39	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	4.46	0.27	9
Mexican Americans	Male	20-39	07-08	5.67	0.51	9
Mexican Americans	Male	20-39	09-10	4.11	0.5	8
Mexican Americans	Male	40-59	05-06	9.75	0.58	4
Mexican Americans	Male	40-59	07-08	15.2	1.8	6
Mexican Americans	Male	40-59	09-10	11.1	0.8	8
Mexican Americans	Male	60+	05-06	19.6	3	4
Mexican Americans	Male	60+	07-08	23.9	3	5
Mexican Americans	Male	60+	09-10	26.3	2.8	5
Mexican Americans	Female	12-19	05-06	1.92	0.19	16
Mexican Americans	Female	12-19	07-08	1.84	0.47	5
Mexican Americans	Female	12-19	09-10	2.31	0.36	7
Mexican Americans	Female	20-39	05-06	3.22	0.4	9
Mexican Americans	Female	20-39	07-08	4.41	0.21	8
Mexican Americans	Female	20-39	09-10	4.02	0.31	10
Mexican Americans	Female	40-59	05-06	12.5	1	6
Mexican Americans	Female	40-59	07-08	14.6	1.7	6
Mexican Americans	Female	40-59	09-10	12.4	1	9
Mexican Americans	Female	60+	05-06	21.7	2.3	3
Mexican Americans	Female	60+	07-08	25.6	3.5	5
Mexican Americans	Female	60+	09-10	32.2	4.2	6
All Hispanics	Male	12-19	09-10	3.17	0.29	11
All Hispanics	Male	20-39	09-10	5.09	0.53	13
All Hispanics	Male	40-59	09-10	13.8	1.5	13
All Hispanics	Male	60+	09-10	30.2	3.4	8
All Hispanics	Female	12-19	09-10	2.53	0.32	10
All Hispanics	Female	20-39	09-10	4.45	0.37	14
All Hispanics	Female	40-59	09-10	12.5	1	14
All Hispanics	Female	60+	09-10	29.8	2.6	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.25, 0.14, and 0.62, respectively.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' and 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (lipid adjusted) (2011 - 2016)†

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	2.94	0.23	6
Non-Hispanic Whites	Male	12-19	13-14	3.60	0.53	8
Non-Hispanic Whites	Male	12-19	15-16	7.18 **	3.59	7
Non-Hispanic Whites	Male	20-39	11-12	5.15	0.29	12
Non-Hispanic Whites	Male	20-39	13-14	4.93	0.83	14
Non-Hispanic Whites	Male	20-39	15-16	3.48	0.4	10
Non-Hispanic Whites	Male	40-59	11-12	16.6	3.3	12
Non-Hispanic Whites	Male	40-59	13-14	14.7	1.7	14
Non-Hispanic Whites	Male	40-59	15-16	8.80	0.73	10
Non-Hispanic Whites	Male	60+	11-12	25.0	1.5	12
Non-Hispanic Whites	Male	60+	13-14	29.1	2.6	17
Non-Hispanic Whites	Male	60+	15-16	22.7	1.9	14
Non-Hispanic Whites	Female	12-19	11-12	3.25	0.39	5
Non-Hispanic Whites	Female	12-19	13-14	4.39	0.9	6
Non-Hispanic Whites	Female	12-19	15-16	1.57	0.24	5
Non-Hispanic Whites	Female	20-39	11-12	5.74	0.84	13
Non-Hispanic Whites	Female	20-39	13-14	5.35	1.12	15
Non-Hispanic Whites	Female	20-39	15-16	2.69	0.13	11
Non-Hispanic Whites	Female	40-59	11-12	19.1	2.7	11
Non-Hispanic Whites	Female	40-59	13-14	14.2	1.6	16
Non-Hispanic Whites	Female	40-59	15-16	9.23	0.75	9
Non-Hispanic Whites	Female	60+	11-12	28.9	2.2	14
Non-Hispanic Whites	Female	60+	13-14	31.6	2.5	20
Non-Hispanic Whites	Female	60+	15-16	26.2	2.7	13
Non-Hispanic Blacks	Male	12-19	11-12	3.64	0.41	7
Non-Hispanic Blacks	Male	12-19	13-14	3.21	0.57	6
Non-Hispanic Blacks	Male	12-19	15-16	2.25	0.32	5
Non-Hispanic Blacks	Male	20-39	11-12	5.67	0.37	9
Non-Hispanic Blacks	Male	20-39	13-14	4.62	0.53	7
Non-Hispanic Blacks	Male	20-39	15-16	3.87	0.21	7
Non-Hispanic Blacks	Male	40-59	11-12	15.4	3	7
Non-Hispanic Blacks	Male	40-59	13-14	16.7	3.1	7
Non-Hispanic Blacks	Male	40-59	15-16	20.5	4.7	7
Non-Hispanic Blacks	Male	60+	11-12	41.5	3.5	9
Non-Hispanic Blacks	Male	60+	13-14	34.0	3.1	9
Non-Hispanic Blacks	Male	60+	15-16	26.5	3.2	7
Non-Hispanic Blacks	Female	12-19	11-12	1.88	0.3	6
Non-Hispanic Blacks	Female	12-19	13-14	2.58	0.35	6
Non-Hispanic Blacks	Female	12-19	15-16	2.12	0.54	4
Non-Hispanic Blacks	Female	20-39	11-12	4.87	0.73	8
Non-Hispanic Blacks	Female	20-39	13-14	3.45	0.43	8
Non-Hispanic Blacks	Female	20-39	15-16	3.65	0.36	9
Non-Hispanic Blacks	Female	40-59	11-12	20.1	2.5	8
Non-Hispanic Blacks	Female	40-59	13-14	18.8	2	8
Non-Hispanic Blacks	Female	40-59	15-16	14.8	1.6	12
Non-Hispanic Blacks	Female	60+	11-12	54.7	4.6	8
Non-Hispanic Blacks	Female	60+	13-14	58.6	5	8
Non-Hispanic Blacks	Female	60+	15-16	46.2	5	7
Mexican Americans	Male	12-19	11-12	2.12	0.24	5
Mexican Americans	Male	12-19	13-14	1.65	0.14	7
Mexican Americans	Male	12-19	15-16	1.63	0.1	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	4.78	0.71	4
Mexican Americans	Male	20-39	13-14	2.82	0.26	5
Mexican Americans	Male	20-39	15-16	3.13	0.35	7
Mexican Americans	Male	40-59	11-12	9.84	0.96	4
Mexican Americans	Male	40-59	13-14	7.15	0.79	5
Mexican Americans	Male	40-59	15-16	6.04	1.19	4
Mexican Americans	Male	60+	11-12	16.8	2.4	2
Mexican Americans	Male	60+	13-14	24.6	3.7	4
Mexican Americans	Male	60+	15-16	17.2	2.6	5
Mexican Americans	Female	12-19	11-12	1.33	0.16	4
Mexican Americans	Female	12-19	13-14	1.49	0.14	7
Mexican Americans	Female	12-19	15-16	1.27	0.14	5
Mexican Americans	Female	20-39	11-12	3.17	0.8	4
Mexican Americans	Female	20-39	13-14	2.31	0.26	5
Mexican Americans	Female	20-39	15-16	2.37	0.19	6
Mexican Americans	Female	40-59	11-12	11.9	2	3
Mexican Americans	Female	40-59	13-14	7.65	1.25	6
Mexican Americans	Female	40-59	15-16	6.61	0.69	8
Mexican Americans	Female	60+	11-12	25.3	2.1	3
Mexican Americans	Female	60+	13-14	21.5	3.5	5
Mexican Americans	Female	60+	15-16	17.6	0.6	7
All Hispanics	Male	12-19	11-12	2.48	0.37	7
All Hispanics	Male	12-19	13-14	2.26	0.56	10
All Hispanics	Male	12-19	15-16	1.97	0.45	9
All Hispanics	Male	20-39	11-12	4.83	0.44	8
All Hispanics	Male	20-39	13-14	3.03	0.23	8
All Hispanics	Male	20-39	15-16	3.28	0.29	11
All Hispanics	Male	40-59	11-12	9.71	0.92	7
All Hispanics	Male	40-59	13-14	8.23	1.34	9
All Hispanics	Male	40-59	15-16	7.97	1.91	9
All Hispanics	Male	60+	11-12	23.3	3.3	6
All Hispanics	Male	60+	13-14	23.8	3	7
All Hispanics	Male	60+	15-16	18.1	1.6	9
All Hispanics	Female	12-19	11-12	1.91	0.33	7
All Hispanics	Female	12-19	13-14	1.57	0.23	10
All Hispanics	Female	12-19	15-16	1.21	0.15	8
All Hispanics	Female	20-39	11-12	2.95	0.42	8
All Hispanics	Female	20-39	13-14	7.54 **	5.17	9
All Hispanics	Female	20-39	15-16	2.47	0.19	11
All Hispanics	Female	40-59	11-12	11.8	1.1	7
All Hispanics	Female	40-59	13-14	8.84	1.23	10
All Hispanics	Female	40-59	15-16	7.38	0.67	13
All Hispanics	Female	60+	11-12	27.6	2.9	7
All Hispanics	Female	60+	13-14	24.2	2.5	9
All Hispanics	Female	60+	15-16	17.4	0.7	13
Asians	Male	12-19	11-12	5.18	0.11	3
Asians	Male	12-19	13-14	3.72	0.71	3
Asians	Male	12-19	15-16	4.63 **	1.85	3
Asians	Male	20-39	11-12	9.47	2.18	6
Asians	Male	20-39	13-14	6.31	0.73	4
Asians	Male	20-39	15-16	7.87	1.15	5
Asians	Male	40-59	11-12	21.6	2.6	6
Asians	Male	40-59	13-14	17.2	4.2	4
Asians	Male	40-59	15-16	13.0	2.7	4
Asians	Male	60+	11-12	24.4	5.2	4
Asians	Male	60+	13-14	26.9	1.7	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	36.0	7.5	3
Asians	Female	12-19	11-12	3.64	0.44	4
Asians	Female	12-19	13-14	5.92	1.15	3
Asians	Female	12-19	15-16	3.12 **	2.05	3
Asians	Female	20-39	11-12	9.61	1.17	6
Asians	Female	20-39	13-14	6.62	0.66	5
Asians	Female	20-39	15-16	5.32	0.16	4
Asians	Female	40-59	11-12	16.6	3	6
Asians	Female	40-59	13-14	14.1	1.2	7
Asians	Female	40-59	15-16	22.0 **	6.7	5
Asians	Female	60+	11-12	40.2	3.5	3
Asians	Female	60+	13-14	36.9 **	15.1	3
Asians	Female	60+	15-16	41.0 **	15.1	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' and 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (whole weight) (2005 - 2010)†

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.023	0.003	9
Non-Hispanic Whites	12-19	Male	07-08	.024	0.004	6
Non-Hispanic Whites	12-19	Male	09-10	.025	0.002	10
Non-Hispanic Whites	20-39	Male	05-06	.060	0.013	12
Non-Hispanic Whites	20-39	Male	07-08	.058	0.006	15
Non-Hispanic Whites	20-39	Male	09-10	.050	0.006	17
Non-Hispanic Whites	40-59	Male	05-06	.150	0.022	12
Non-Hispanic Whites	40-59	Male	07-08	.150	0.01	16
Non-Hispanic Whites	40-59	Male	09-10	.136	0.017	17
Non-Hispanic Whites	60+	Male	05-06	.221	0.008	15
Non-Hispanic Whites	60+	Male	07-08	.303	0.022	23
Non-Hispanic Whites	60+	Male	09-10	.222	0.02	21
Non-Hispanic Whites	12-19	Female	05-06	.017	0.002	10
Non-Hispanic Whites	12-19	Female	07-08	.017	0.004	7
Non-Hispanic Whites	12-19	Female	09-10	.018	0.003	8
Non-Hispanic Whites	20-39	Female	05-06	.034	0.002	16
Non-Hispanic Whites	20-39	Female	07-08	.047	0.008	13
Non-Hispanic Whites	20-39	Female	09-10	.034	0.002	19
Non-Hispanic Whites	40-59	Female	05-06	.123	0.011	13
Non-Hispanic Whites	40-59	Female	07-08	.143	0.009	17
Non-Hispanic Whites	40-59	Female	09-10	.133	0.019	17
Non-Hispanic Whites	60+	Female	05-06	.242	0.02	17
Non-Hispanic Whites	60+	Female	07-08	.302	0.021	21
Non-Hispanic Whites	60+	Female	09-10	.232	0.018	22
Non-Hispanic Blacks	12-19	Male	05-06	.024	0.003	13
Non-Hispanic Blacks	12-19	Male	07-08	.022	0.002	6
Non-Hispanic Blacks	12-19	Male	09-10	.021	0.003	5
Non-Hispanic Blacks	20-39	Male	05-06	.046	0.007	6
Non-Hispanic Blacks	20-39	Male	07-08	.045	0.005	6
Non-Hispanic Blacks	20-39	Male	09-10	.060	0.012	6
Non-Hispanic Blacks	40-59	Male	05-06	.133	0.016	5
Non-Hispanic Blacks	40-59	Male	07-08	.183	0.026	6
Non-Hispanic Blacks	40-59	Male	09-10	.182	0.022	7
Non-Hispanic Blacks	60+	Male	05-06	.335	0.042	5
Non-Hispanic Blacks	60+	Male	07-08	.416	0.05	8
Non-Hispanic Blacks	60+	Male	09-10	.305	0.034	9
Non-Hispanic Blacks	12-19	Female	05-06	.015	0.001	14
Non-Hispanic Blacks	12-19	Female	07-08	.016	0.002	5
Non-Hispanic Blacks	12-19	Female	09-10	.012	0.001	5
Non-Hispanic Blacks	20-39	Female	05-06	.040	0.005	7
Non-Hispanic Blacks	20-39	Female	07-08	.036	0.004	8
Non-Hispanic Blacks	20-39	Female	09-10	.033	0.005	7
Non-Hispanic Blacks	40-59	Female	05-06	.165	0.019	7
Non-Hispanic Blacks	40-59	Female	07-08	.171	0.019	8
Non-Hispanic Blacks	40-59	Female	09-10	.177	0.022	7
Non-Hispanic Blacks	60+	Female	05-06	.541	0.16	5
Non-Hispanic Blacks	60+	Female	07-08	.477	0.033	7
Non-Hispanic Blacks	60+	Female	09-10	.380	0.054	7
Mexican Americans	12-19	Male	05-06	.014	0.002	11
Mexican Americans	12-19	Male	07-08	.014	0.003	6
Mexican Americans	12-19	Male	09-10	.015	0.002	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.032	0.003	9
Mexican Americans	20-39	Male	07-08	.039	0.004	9
Mexican Americans	20-39	Male	09-10	.025	0.004	8
Mexican Americans	40-59	Male	05-06	.079	0.004	4
Mexican Americans	40-59	Male	07-08	.108	0.014	6
Mexican Americans	40-59	Male	09-10	.076	0.007	8
Mexican Americans	60+	Male	05-06	.142	0.023	4
Mexican Americans	60+	Male	07-08	.174	0.022	5
Mexican Americans	60+	Male	09-10	.161	0.014	5
Mexican Americans	12-19	Female	05-06	.010	0.001	16
Mexican Americans	12-19	Female	07-08	.009	0.002	5
Mexican Americans	12-19	Female	09-10	.011	0.002	7
Mexican Americans	20-39	Female	05-06	.022	0.003	9
Mexican Americans	20-39	Female	07-08	.026	0.001	8
Mexican Americans	20-39	Female	09-10	.022	0.002	10
Mexican Americans	40-59	Female	05-06	.091	0.007	6
Mexican Americans	40-59	Female	07-08	.099	0.012	6
Mexican Americans	40-59	Female	09-10	.080	0.008	9
Mexican Americans	60+	Female	05-06	.162	0.011	3
Mexican Americans	60+	Female	07-08	.177	0.026	5
Mexican Americans	60+	Female	09-10	.177	0.021	6
All Hispanics	12-19	Male	09-10	.015	0.001	11
All Hispanics	20-39	Male	09-10	.033	0.004	13
All Hispanics	40-59	Male	09-10	.094	0.01	13
All Hispanics	60+	Male	09-10	.189	0.018	8
All Hispanics	12-19	Female	09-10	.012	0.001	10
All Hispanics	20-39	Female	09-10	.025	0.002	14
All Hispanics	40-59	Female	09-10	.079	0.007	14
All Hispanics	60+	Female	09-10	.175	0.013	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5' and 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158) (whole weight) (2011 - 2016)†

CAS Number 52712-04-6 and 74472-42-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.014	0.001	6
Non-Hispanic Whites	Male	12-19	13-14	.017	0.002	8
Non-Hispanic Whites	Male	12-19	15-16	.035 **	0.018	7
Non-Hispanic Whites	Male	20-39	11-12	.030	0.002	12
Non-Hispanic Whites	Male	20-39	13-14	.026	0.004	14
Non-Hispanic Whites	Male	20-39	15-16	.022	0.003	10
Non-Hispanic Whites	Male	40-59	11-12	.110	0.02	12
Non-Hispanic Whites	Male	40-59	13-14	.089	0.012	14
Non-Hispanic Whites	Male	40-59	15-16	.060	0.006	10
Non-Hispanic Whites	Male	60+	11-12	.138	0.007	12
Non-Hispanic Whites	Male	60+	13-14	.158	0.015	17
Non-Hispanic Whites	Male	60+	15-16	.124	0.01	14
Non-Hispanic Whites	Female	12-19	11-12	.018	0.002	5
Non-Hispanic Whites	Female	12-19	13-14	.022	0.004	6
Non-Hispanic Whites	Female	12-19	15-16	.008	0.001	5
Non-Hispanic Whites	Female	20-39	11-12	.031	0.005	13
Non-Hispanic Whites	Female	20-39	13-14	.027	0.005	15
Non-Hispanic Whites	Female	20-39	15-16	.015	0.001	11
Non-Hispanic Whites	Female	40-59	11-12	.124	0.02	11
Non-Hispanic Whites	Female	40-59	13-14	.084	0.009	16
Non-Hispanic Whites	Female	40-59	15-16	.059	0.005	9
Non-Hispanic Whites	Female	60+	11-12	.177	0.013	14
Non-Hispanic Whites	Female	60+	13-14	.186	0.015	20
Non-Hispanic Whites	Female	60+	15-16	.161	0.015	13
Non-Hispanic Blacks	Male	12-19	11-12	.016	0.002	7
Non-Hispanic Blacks	Male	12-19	13-14	.014	0.002	6
Non-Hispanic Blacks	Male	12-19	15-16	.010	0.001	5
Non-Hispanic Blacks	Male	20-39	11-12	.029	0.002	9
Non-Hispanic Blacks	Male	20-39	13-14	.023	0.003	7
Non-Hispanic Blacks	Male	20-39	15-16	.020	0.001	7
Non-Hispanic Blacks	Male	40-59	11-12	.087	0.019	7
Non-Hispanic Blacks	Male	40-59	13-14	.094	0.017	7
Non-Hispanic Blacks	Male	40-59	15-16	.128	0.028	7
Non-Hispanic Blacks	Male	60+	11-12	.225	0.02	9
Non-Hispanic Blacks	Male	60+	13-14	.177	0.017	9
Non-Hispanic Blacks	Male	60+	15-16	.144	0.019	7
Non-Hispanic Blacks	Female	12-19	11-12	.008	0.001	6
Non-Hispanic Blacks	Female	12-19	13-14	.011	0.001	6
Non-Hispanic Blacks	Female	12-19	15-16	.010	0.003	4
Non-Hispanic Blacks	Female	20-39	11-12	.027	0.004	8
Non-Hispanic Blacks	Female	20-39	13-14	.017	0.002	8
Non-Hispanic Blacks	Female	20-39	15-16	.018	0.002	9
Non-Hispanic Blacks	Female	40-59	11-12	.124	0.019	8
Non-Hispanic Blacks	Female	40-59	13-14	.099	0.011	8
Non-Hispanic Blacks	Female	40-59	15-16	.086	0.011	12
Non-Hispanic Blacks	Female	60+	11-12	.305	0.023	8
Non-Hispanic Blacks	Female	60+	13-14	.313	0.024	8
Non-Hispanic Blacks	Female	60+	15-16	.271	0.031	7
Mexican Americans	Male	12-19	11-12	.010	0.001	5
Mexican Americans	Male	12-19	13-14	.008	0.001	7
Mexican Americans	Male	12-19	15-16	.008	0	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.029	0.004	4
Mexican Americans	Male	20-39	13-14	.018	0.002	5
Mexican Americans	Male	20-39	15-16	.023	0.005	7
Mexican Americans	Male	40-59	11-12	.077	0.005	4
Mexican Americans	Male	40-59	13-14	.044	0.004	5
Mexican Americans	Male	40-59	15-16	.040	0.007	4
Mexican Americans	Male	60+	11-12	.099	0.012	2
Mexican Americans	Male	60+	13-14	.133	0.019	4
Mexican Americans	Male	60+	15-16	.098	0.015	5
Mexican Americans	Female	12-19	11-12	.007	0.001	4
Mexican Americans	Female	12-19	13-14	.007	0	7
Mexican Americans	Female	12-19	15-16	.006	0.001	5
Mexican Americans	Female	20-39	11-12	.017	0.004	4
Mexican Americans	Female	20-39	13-14	.012	0.001	5
Mexican Americans	Female	20-39	15-16	.013	0.001	6
Mexican Americans	Female	40-59	11-12	.071	0.014	3
Mexican Americans	Female	40-59	13-14	.044	0.006	6
Mexican Americans	Female	40-59	15-16	.042	0.005	8
Mexican Americans	Female	60+	11-12	.156	0.013	3
Mexican Americans	Female	60+	13-14	.127	0.021	5
Mexican Americans	Female	60+	15-16	.111	0.004	7
All Hispanics	Male	12-19	11-12	12.0	1.8	7
All Hispanics	Male	12-19	13-14	11.1	2.9	10
All Hispanics	Male	12-19	15-16	10.0	2.2	9
All Hispanics	Male	20-39	11-12	29.6	3	8
All Hispanics	Male	20-39	13-14	18.1	1.2	8
All Hispanics	Male	20-39	15-16	21.7	3.1	11
All Hispanics	Male	40-59	11-12	72.2	6.3	7
All Hispanics	Male	40-59	13-14	50.5	9.1	9
All Hispanics	Male	40-59	15-16	50.7	11.7	9
All Hispanics	Male	60+	11-12	135	17	6
All Hispanics	Male	60+	13-14	128	15	7
All Hispanics	Male	60+	15-16	106	10	9
All Hispanics	Female	12-19	11-12	9.35	1.52	7
All Hispanics	Female	12-19	13-14	7.38	1.17	10
All Hispanics	Female	12-19	15-16	5.71	0.68	8
All Hispanics	Female	20-39	11-12	16.0	2.1	8
All Hispanics	Female	20-39	13-14	43.1 **	28.6	9
All Hispanics	Female	20-39	15-16	13.6	1.2	11
All Hispanics	Female	40-59	11-12	73.8	7.9	7
All Hispanics	Female	40-59	13-14	51.0	6.8	10
All Hispanics	Female	40-59	15-16	47.7	5	13
All Hispanics	Female	60+	11-12	169	15	7
All Hispanics	Female	60+	13-14	144	15	9
All Hispanics	Female	60+	15-16	106	4	13
Asians	Male	12-19	11-12	.027	0.001	3
Asians	Male	12-19	13-14	.017	0.003	3
Asians	Male	12-19	15-16	.022 **	0.009	3
Asians	Male	20-39	11-12	.052	0.012	6
Asians	Male	20-39	13-14	.038	0.005	4
Asians	Male	20-39	15-16	.052	0.01	5
Asians	Male	40-59	11-12	.131	0.016	6
Asians	Male	40-59	13-14	.098	0.021	4
Asians	Male	40-59	15-16	.083	0.018	4
Asians	Male	60+	11-12	.133	0.029	4
Asians	Male	60+	13-14	.164	0.013	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.196	0.033	3
Asians	Female	12-19	11-12	.017	0.002	4
Asians	Female	12-19	13-14	.028	0.004	3
Asians	Female	12-19	15-16	.016 **	0.01	3
Asians	Female	20-39	11-12	.053	0.006	6
Asians	Female	20-39	13-14	.034	0.003	5
Asians	Female	20-39	15-16	.030	0.001	4
Asians	Female	40-59	11-12	.102	0.02	6
Asians	Female	40-59	13-14	.082	0.006	7
Asians	Female	40-59	15-16	.137 **	0.046	5
Asians	Female	60+	11-12	.229	0.025	3
Asians	Female	60+	13-14	.211	0.063	3
Asians	Female	60+	15-16	.256 **	0.097	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (lipid adjusted) (2005 - 2010)†

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	.633	0.079	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	.760	0.102	9
Non-Hispanic Whites	Male	20-39	05-06	1.41	0.24	12
Non-Hispanic Whites	Male	20-39	07-08	1.21	0.11	15
Non-Hispanic Whites	Male	20-39	09-10	1.21	0.15	16
Non-Hispanic Whites	Male	40-59	05-06	3.69	0.22	12
Non-Hispanic Whites	Male	40-59	07-08	3.32	0.2	16
Non-Hispanic Whites	Male	40-59	09-10	3.12	0.36	17
Non-Hispanic Whites	Male	60+	05-06	7.11	0.38	15
Non-Hispanic Whites	Male	60+	07-08	7.67	0.72	23
Non-Hispanic Whites	Male	60+	09-10	6.47	0.63	19
Non-Hispanic Whites	Female	12-19	05-06	.514	0.05	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	.908	0.06	16
Non-Hispanic Whites	Female	20-39	07-08	1.09	0.24	13
Non-Hispanic Whites	Female	20-39	09-10	.938	0.057	18
Non-Hispanic Whites	Female	40-59	05-06	3.13	0.19	13
Non-Hispanic Whites	Female	40-59	07-08	3.20	0.16	17
Non-Hispanic Whites	Female	40-59	09-10	3.74	0.38	17
Non-Hispanic Whites	Female	60+	05-06	7.04	0.65	17
Non-Hispanic Whites	Female	60+	07-08	7.10	0.51	21
Non-Hispanic Whites	Female	60+	09-10	7.54	0.69	22
Non-Hispanic Blacks	Male	12-19	05-06	.890	0.147	13
Non-Hispanic Blacks	Male	12-19	07-08	.694	0.166	6
Non-Hispanic Blacks	Male	12-19	09-10	.687	0.169	6
Non-Hispanic Blacks	Male	20-39	05-06	1.73	0.33	6
Non-Hispanic Blacks	Male	20-39	07-08	1.26	0.14	6
Non-Hispanic Blacks	Male	20-39	09-10	2.25	0.57	6
Non-Hispanic Blacks	Male	40-59	05-06	5.46	0.74	5
Non-Hispanic Blacks	Male	40-59	07-08	5.79	0.88	6
Non-Hispanic Blacks	Male	40-59	09-10	8.20	1.55	7
Non-Hispanic Blacks	Male	60+	05-06	14.3	1.5	5
Non-Hispanic Blacks	Male	60+	07-08	14.7	1.9	8
Non-Hispanic Blacks	Male	60+	09-10	14.1	1.3	9
Non-Hispanic Blacks	Female	12-19	05-06	.517	0.047	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	4
Non-Hispanic Blacks	Female	20-39	05-06	1.36	0.19	7
Non-Hispanic Blacks	Female	20-39	07-08	1.17	0.12	8
Non-Hispanic Blacks	Female	20-39	09-10	1.23	0.22	7
Non-Hispanic Blacks	Female	40-59	05-06	5.30	0.61	7
Non-Hispanic Blacks	Female	40-59	07-08	4.78	0.49	8
Non-Hispanic Blacks	Female	40-59	09-10	7.16	1.63	7
Non-Hispanic Blacks	Female	60+	05-06	21.0	5.7	5
Non-Hispanic Blacks	Female	60+	07-08	15.5	1.4	7
Non-Hispanic Blacks	Female	60+	09-10	16.6	2.3	7
Mexican Americans	Male	12-19	05-06	.358	0.042	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	.828	0.059	9
Mexican Americans	Male	20-39	07-08	.841	0.075	9
Mexican Americans	Male	20-39	09-10	.662	0.059	8
Mexican Americans	Male	40-59	05-06	1.94	0.1	4
Mexican Americans	Male	40-59	07-08	3.10	0.39	6
Mexican Americans	Male	40-59	09-10	2.04	0.17	8
Mexican Americans	Male	60+	05-06	4.17	0.84	4
Mexican Americans	Male	60+	07-08	4.91	0.38	5
Mexican Americans	Male	60+	09-10	5.26	0.37	5
Mexican Americans	Female	12-19	05-06	.309	0.024	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	.538	0.075	9
Mexican Americans	Female	20-39	07-08	.610	0.086	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	2.21	0.19	6
Mexican Americans	Female	40-59	07-08	2.49	0.28	6
Mexican Americans	Female	40-59	09-10	1.65	0.15	9
Mexican Americans	Female	60+	05-06	4.29	0.14	3
Mexican Americans	Female	60+	07-08	4.67	0.73	5
Mexican Americans	Female	60+	09-10	4.82	0.54	6
All Hispanics	Male	12-19	09-10	*	*	10
All Hispanics	Male	20-39	09-10	.878	0.104	12
All Hispanics	Male	40-59	09-10	2.73	0.37	13
All Hispanics	Male	60+	09-10	6.22	0.75	8
All Hispanics	Female	12-19	09-10	*	*	9
All Hispanics	Female	20-39	09-10	.626	0.096	14
All Hispanics	Female	40-59	09-10	2.02	0.23	13
All Hispanics	Female	60+	09-10	5.18	0.39	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.27, 0.28, and 0.62, 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/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (lipid adjusted) (2011 - 2016)†

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.491	0.102	6
Non-Hispanic Whites	Male	12-19	13-14	.577	0.073	8
Non-Hispanic Whites	Male	12-19	15-16	.805 **	0.333	7
Non-Hispanic Whites	Male	20-39	11-12	.803	0.058	12
Non-Hispanic Whites	Male	20-39	13-14	.782	0.084	14
Non-Hispanic Whites	Male	20-39	15-16	.550	0.063	10
Non-Hispanic Whites	Male	40-59	11-12	3.13	0.85	12
Non-Hispanic Whites	Male	40-59	13-14	2.85	0.31	14
Non-Hispanic Whites	Male	40-59	15-16	1.68	0.17	10
Non-Hispanic Whites	Male	60+	11-12	5.29	0.32	12
Non-Hispanic Whites	Male	60+	13-14	6.07	0.52	17
Non-Hispanic Whites	Male	60+	15-16	4.47	0.32	14
Non-Hispanic Whites	Female	12-19	11-12	.418	0.072	5
Non-Hispanic Whites	Female	12-19	13-14	.594	0.061	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.784	0.114	13
Non-Hispanic Whites	Female	20-39	13-14	.704	0.099	15
Non-Hispanic Whites	Female	20-39	15-16	.400	0.025	11
Non-Hispanic Whites	Female	40-59	11-12	2.97	0.3	11
Non-Hispanic Whites	Female	40-59	13-14	2.53	0.23	16
Non-Hispanic Whites	Female	40-59	15-16	1.75	0.14	9
Non-Hispanic Whites	Female	60+	11-12	5.85	0.44	14
Non-Hispanic Whites	Female	60+	13-14	6.45	0.5	20
Non-Hispanic Whites	Female	60+	15-16	5.42	0.55	13
Non-Hispanic Blacks	Male	12-19	11-12	.587	0.041	7
Non-Hispanic Blacks	Male	12-19	13-14	.519	0.093	6
Non-Hispanic Blacks	Male	12-19	15-16	.380	0.059	5
Non-Hispanic Blacks	Male	20-39	11-12	1.19	0.07	9
Non-Hispanic Blacks	Male	20-39	13-14	.942	0.133	7
Non-Hispanic Blacks	Male	20-39	15-16	.789	0.073	7
Non-Hispanic Blacks	Male	40-59	11-12	4.19	1.02	7
Non-Hispanic Blacks	Male	40-59	13-14	4.14	0.83	7
Non-Hispanic Blacks	Male	40-59	15-16	5.77 **	1.84	7
Non-Hispanic Blacks	Male	60+	11-12	8.81	0.41	9
Non-Hispanic Blacks	Male	60+	13-14	10.1	1.1	9
Non-Hispanic Blacks	Male	60+	15-16	7.04	0.58	7
Non-Hispanic Blacks	Female	12-19	11-12	.406	0.092	6
Non-Hispanic Blacks	Female	12-19	13-14	.378	0.037	6
Non-Hispanic Blacks	Female	12-19	15-16	.500 **	0.185	4
Non-Hispanic Blacks	Female	20-39	11-12	.864	0.167	8
Non-Hispanic Blacks	Female	20-39	13-14	.668	0.091	8
Non-Hispanic Blacks	Female	20-39	15-16	.766	0.128	9
Non-Hispanic Blacks	Female	40-59	11-12	4.09	0.5	8
Non-Hispanic Blacks	Female	40-59	13-14	3.78	0.55	8
Non-Hispanic Blacks	Female	40-59	15-16	3.19	0.3	12
Non-Hispanic Blacks	Female	60+	11-12	12.1	1.3	8
Non-Hispanic Blacks	Female	60+	13-14	14.7	1.4	8
Non-Hispanic Blacks	Female	60+	15-16	9.66	1.2	7
Mexican Americans	Male	12-19	11-12	.286	0.027	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.786	0.136	4
Mexican Americans	Male	20-39	13-14	.447	0.043	5
Mexican Americans	Male	20-39	15-16	.462	0.09	7
Mexican Americans	Male	40-59	11-12	1.77	0.25	4
Mexican Americans	Male	40-59	13-14	1.44	0.2	5
Mexican Americans	Male	40-59	15-16	1.16	0.24	4
Mexican Americans	Male	60+	11-12	3.20	0.23	2
Mexican Americans	Male	60+	13-14	5.24	0.78	4
Mexican Americans	Male	60+	15-16	3.99	0.59	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.477	0.117	4
Mexican Americans	Female	20-39	13-14	.372	0.048	5
Mexican Americans	Female	20-39	15-16	.369	0.028	6
Mexican Americans	Female	40-59	11-12	1.68	0.32	3
Mexican Americans	Female	40-59	13-14	1.29	0.22	6
Mexican Americans	Female	40-59	15-16	1.30	0.14	7
Mexican Americans	Female	60+	11-12	4.17	0.37	3
Mexican Americans	Female	60+	13-14	4.02	0.46	5
Mexican Americans	Female	60+	15-16	3.32	0.12	7
All Hispanics	Male	12-19	11-12	.313	0.034	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	.853	0.081	8
All Hispanics	Male	20-39	13-14	.539	0.074	8
All Hispanics	Male	20-39	15-16	.549	0.079	11
All Hispanics	Male	40-59	11-12	1.83	0.23	7
All Hispanics	Male	40-59	13-14	2.08 **	0.81	9
All Hispanics	Male	40-59	15-16	1.76	0.51	9
All Hispanics	Male	60+	11-12	4.99	0.75	6
All Hispanics	Male	60+	13-14	5.21	0.56	7
All Hispanics	Male	60+	15-16	4.15	0.35	9
All Hispanics	Female	12-19	11-12	.276	0.041	7
All Hispanics	Female	12-19	13-14	.259	0.048	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	.512	0.076	8
All Hispanics	Female	20-39	13-14	1.47 **	1.05	9
All Hispanics	Female	20-39	15-16	.410	0.026	11
All Hispanics	Female	40-59	11-12	2.01	0.24	7
All Hispanics	Female	40-59	13-14	1.80	0.33	10
All Hispanics	Female	40-59	15-16	1.38	0.1	12
All Hispanics	Female	60+	11-12	6.25	1.07	7
All Hispanics	Female	60+	13-14	4.74	0.55	9
All Hispanics	Female	60+	15-16	3.45	0.14	13
Asians	Male	12-19	11-12	1.23	0.23	3
Asians	Male	12-19	13-14	.968 **	0.298	3
Asians	Male	12-19	15-16	1.22 **	0.52	3
Asians	Male	20-39	11-12	2.67 **	0.91	6
Asians	Male	20-39	13-14	1.70	0.11	4
Asians	Male	20-39	15-16	2.02	0.46	5
Asians	Male	40-59	11-12	6.50	1.02	6
Asians	Male	40-59	13-14	4.75	1.26	4
Asians	Male	40-59	15-16	4.24	1.04	4
Asians	Male	60+	11-12	7.62	1.43	4
Asians	Male	60+	13-14	9.26	1.46	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	14.8	4	3
Asians	Female	12-19	11-12	.758	0.099	4
Asians	Female	12-19	13-14	1.11	0.13	3
Asians	Female	12-19	15-16	.853 **	0.816	3
Asians	Female	20-39	11-12	2.78	0.53	6
Asians	Female	20-39	13-14	1.81	0.17	5
Asians	Female	20-39	15-16	1.48	0.06	4
Asians	Female	40-59	11-12	4.58	0.97	6
Asians	Female	40-59	13-14	3.64	0.44	7
Asians	Female	40-59	15-16	6.75 **	2.34	5
Asians	Female	60+	11-12	10.1	0.4	3
Asians	Female	60+	13-14	10.7 **	4.6	3
Asians	Female	60+	15-16	13.8 **	5.9	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (whole weight) (2005 - 2010)†

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.004	0	9
Non-Hispanic Whites	12-19	Male	07-08	.002 **	0.001	6
Non-Hispanic Whites	12-19	Male	09-10	.004	0.001	9
Non-Hispanic Whites	20-39	Male	05-06	.010	0.002	12
Non-Hispanic Whites	20-39	Male	07-08	.008	0.001	15
Non-Hispanic Whites	20-39	Male	09-10	.008	0.001	16
Non-Hispanic Whites	40-59	Male	05-06	.028	0.002	12
Non-Hispanic Whites	40-59	Male	07-08	.024	0.001	16
Non-Hispanic Whites	40-59	Male	09-10	.021	0.003	17
Non-Hispanic Whites	60+	Male	05-06	.048	0.002	15
Non-Hispanic Whites	60+	Male	07-08	.049	0.004	23
Non-Hispanic Whites	60+	Male	09-10	.039	0.004	19
Non-Hispanic Whites	12-19	Female	05-06	.003	0	10
Non-Hispanic Whites	12-19	Female	07-08	.002 **	0.001	7
Non-Hispanic Whites	12-19	Female	09-10	.003	0.001	7
Non-Hispanic Whites	20-39	Female	05-06	.006	0	16
Non-Hispanic Whites	20-39	Female	07-08	.007	0.002	13
Non-Hispanic Whites	20-39	Female	09-10	.005	0	18
Non-Hispanic Whites	40-59	Female	05-06	.023	0.002	13
Non-Hispanic Whites	40-59	Female	07-08	.021	0.001	17
Non-Hispanic Whites	40-59	Female	09-10	.023	0.002	17
Non-Hispanic Whites	60+	Female	05-06	.051	0.004	17
Non-Hispanic Whites	60+	Female	07-08	.048	0.003	21
Non-Hispanic Whites	60+	Female	09-10	.046	0.004	22
Non-Hispanic Blacks	12-19	Male	05-06	.004	0.001	13
Non-Hispanic Blacks	12-19	Male	07-08	.003	0.001	6
Non-Hispanic Blacks	12-19	Male	09-10	.003 **	0.001	6
Non-Hispanic Blacks	20-39	Male	05-06	.010	0.002	6
Non-Hispanic Blacks	20-39	Male	07-08	.007	0.001	6
Non-Hispanic Blacks	20-39	Male	09-10	.013	0.003	6
Non-Hispanic Blacks	40-59	Male	05-06	.035	0.005	5
Non-Hispanic Blacks	40-59	Male	07-08	.037	0.006	6
Non-Hispanic Blacks	40-59	Male	09-10	.049	0.008	7
Non-Hispanic Blacks	60+	Male	05-06	.086	0.009	5
Non-Hispanic Blacks	60+	Male	07-08	.090	0.012	8
Non-Hispanic Blacks	60+	Male	09-10	.076	0.008	9
Non-Hispanic Blacks	12-19	Female	05-06	.003	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.002 **	0.001	5
Non-Hispanic Blacks	12-19	Female	09-10	.001	0	4
Non-Hispanic Blacks	20-39	Female	05-06	.008	0.001	7
Non-Hispanic Blacks	20-39	Female	07-08	.006	0.001	8
Non-Hispanic Blacks	20-39	Female	09-10	.006	0.001	7
Non-Hispanic Blacks	40-59	Female	05-06	.034	0.004	7
Non-Hispanic Blacks	40-59	Female	07-08	.029	0.004	8
Non-Hispanic Blacks	40-59	Female	09-10	.040	0.008	7
Non-Hispanic Blacks	60+	Female	05-06	.140	0.038	5
Non-Hispanic Blacks	60+	Female	07-08	.093	0.008	7
Non-Hispanic Blacks	60+	Female	09-10	.095	0.013	7
Mexican Americans	12-19	Male	05-06	.002	0	11
Mexican Americans	12-19	Male	07-08	.001 **	0	6
Mexican Americans	12-19	Male	09-10	.003	0.001	7

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.006	0.001	9
Mexican Americans	20-39	Male	07-08	.006	0.001	9
Mexican Americans	20-39	Male	09-10	.004	0	8
Mexican Americans	40-59	Male	05-06	.016	0.001	4
Mexican Americans	40-59	Male	07-08	.022	0.003	6
Mexican Americans	40-59	Male	09-10	.014	0.001	8
Mexican Americans	60+	Male	05-06	.030	0.006	4
Mexican Americans	60+	Male	07-08	.035	0.002	5
Mexican Americans	60+	Male	09-10	.032	0.002	5
Mexican Americans	12-19	Female	05-06	.002	0	16
Mexican Americans	12-19	Female	07-08	.002 **	0.001	5
Mexican Americans	12-19	Female	09-10	.001	0	7
Mexican Americans	20-39	Female	05-06	.004	0.001	9
Mexican Americans	20-39	Female	07-08	.004	0.001	8
Mexican Americans	20-39	Female	09-10	.003	0	10
Mexican Americans	40-59	Female	05-06	.016	0.001	6
Mexican Americans	40-59	Female	07-08	.017	0.002	6
Mexican Americans	40-59	Female	09-10	.011	0.001	9
Mexican Americans	60+	Female	05-06	.033	0.003	3
Mexican Americans	60+	Female	07-08	.032	0.005	5
Mexican Americans	60+	Female	09-10	.027	0.003	6
All Hispanics	12-19	Male	09-10	.003	0	10
All Hispanics	20-39	Male	09-10	.006	0.001	12
All Hispanics	40-59	Male	09-10	.019	0.003	13
All Hispanics	60+	Male	09-10	.039	0.004	8
All Hispanics	12-19	Female	09-10	.001	0	9
All Hispanics	20-39	Female	09-10	.004	0.001	14
All Hispanics	40-59	Female	09-10	.013	0.001	13
All Hispanics	60+	Female	09-10	.031	0.002	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (whole weight) (2011 - 2016)†

CAS Number 51908-16-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.002	0.001	6
Non-Hispanic Whites	Male	12-19	13-14	.003	0	8
Non-Hispanic Whites	Male	12-19	15-16	.004 **	0.002	7
Non-Hispanic Whites	Male	20-39	11-12	.005	0	12
Non-Hispanic Whites	Male	20-39	13-14	.004	0	14
Non-Hispanic Whites	Male	20-39	15-16	.003	0	10
Non-Hispanic Whites	Male	40-59	11-12	.020	0.005	12
Non-Hispanic Whites	Male	40-59	13-14	.017	0.002	14
Non-Hispanic Whites	Male	40-59	15-16	.011	0.001	10
Non-Hispanic Whites	Male	60+	11-12	.029	0.002	12
Non-Hispanic Whites	Male	60+	13-14	.033	0.003	17
Non-Hispanic Whites	Male	60+	15-16	.024	0.002	14
Non-Hispanic Whites	Female	12-19	11-12	.002	0	5
Non-Hispanic Whites	Female	12-19	13-14	.003	0	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.004	0.001	13
Non-Hispanic Whites	Female	20-39	13-14	.004	0	15
Non-Hispanic Whites	Female	20-39	15-16	.002	0	11
Non-Hispanic Whites	Female	40-59	11-12	.019	0.002	11
Non-Hispanic Whites	Female	40-59	13-14	.015	0.001	16
Non-Hispanic Whites	Female	40-59	15-16	.011	0.001	9
Non-Hispanic Whites	Female	60+	11-12	.036	0.003	14
Non-Hispanic Whites	Female	60+	13-14	.038	0.003	20
Non-Hispanic Whites	Female	60+	15-16	.033	0.003	13
Non-Hispanic Blacks	Male	12-19	11-12	.003	0	7
Non-Hispanic Blacks	Male	12-19	13-14	.002	0	6
Non-Hispanic Blacks	Male	12-19	15-16	.002	0	5
Non-Hispanic Blacks	Male	20-39	11-12	.006	0	9
Non-Hispanic Blacks	Male	20-39	13-14	.005	0.001	7
Non-Hispanic Blacks	Male	20-39	15-16	.004	0	7
Non-Hispanic Blacks	Male	40-59	11-12	.024	0.006	7
Non-Hispanic Blacks	Male	40-59	13-14	.023	0.004	7
Non-Hispanic Blacks	Male	40-59	15-16	.036	0.011	7
Non-Hispanic Blacks	Male	60+	11-12	.048	0.002	9
Non-Hispanic Blacks	Male	60+	13-14	.053	0.006	9
Non-Hispanic Blacks	Male	60+	15-16	.038	0.003	7
Non-Hispanic Blacks	Female	12-19	11-12	.002	0	6
Non-Hispanic Blacks	Female	12-19	13-14	.002	0	6
Non-Hispanic Blacks	Female	12-19	15-16	.002 **	0.001	4
Non-Hispanic Blacks	Female	20-39	11-12	.005	0.001	8
Non-Hispanic Blacks	Female	20-39	13-14	.003	0	8
Non-Hispanic Blacks	Female	20-39	15-16	.004	0.001	9
Non-Hispanic Blacks	Female	40-59	11-12	.025	0.004	8
Non-Hispanic Blacks	Female	40-59	13-14	.020	0.003	8
Non-Hispanic Blacks	Female	40-59	15-16	.018	0.002	12
Non-Hispanic Blacks	Female	60+	11-12	.068	0.007	8
Non-Hispanic Blacks	Female	60+	13-14	.079	0.007	8
Non-Hispanic Blacks	Female	60+	15-16	.057	0.007	7
Mexican Americans	Male	12-19	11-12	.001	0	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.005	0.001	4
Mexican Americans	Male	20-39	13-14	.003	0	5
Mexican Americans	Male	20-39	15-16	.004	0.001	7
Mexican Americans	Male	40-59	11-12	.014	0.001	4
Mexican Americans	Male	40-59	13-14	.009	0.001	5
Mexican Americans	Male	40-59	15-16	.008	0.002	4
Mexican Americans	Male	60+	11-12	.019	0.001	2
Mexican Americans	Male	60+	13-14	.028	0.003	4
Mexican Americans	Male	60+	15-16	.023	0.003	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.003	0.001	4
Mexican Americans	Female	20-39	13-14	.002	0	5
Mexican Americans	Female	20-39	15-16	.002	0	6
Mexican Americans	Female	40-59	11-12	.010	0.002	3
Mexican Americans	Female	40-59	13-14	.007	0.001	6
Mexican Americans	Female	40-59	15-16	.008	0.001	7
Mexican Americans	Female	60+	11-12	.026	0.002	3
Mexican Americans	Female	60+	13-14	.024	0.003	5
Mexican Americans	Female	60+	15-16	.021	0.001	7
All Hispanics	Male	12-19	11-12	1.51	0.16	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	5.19	0.54	8
All Hispanics	Male	20-39	13-14	3.20	0.35	8
All Hispanics	Male	20-39	15-16	3.64	0.67	11
All Hispanics	Male	40-59	11-12	13.4	1.4	7
All Hispanics	Male	40-59	13-14	13.1 **	5.5	9
All Hispanics	Male	40-59	15-16	11.2	3.1	9
All Hispanics	Male	60+	11-12	29.0	4.1	6
All Hispanics	Male	60+	13-14	27.8	2.3	7
All Hispanics	Male	60+	15-16	24.4	2.1	9
All Hispanics	Female	12-19	11-12	1.35	0.19	7
All Hispanics	Female	12-19	13-14	1.22	0.24	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	2.76	0.36	8
All Hispanics	Female	20-39	13-14	8.43 **	5.8	9
All Hispanics	Female	20-39	15-16	2.23	0.15	11
All Hispanics	Female	40-59	11-12	12.8	1.9	7
All Hispanics	Female	40-59	13-14	10.5	1.9	10
All Hispanics	Female	40-59	15-16	8.90	0.76	12
All Hispanics	Female	60+	11-12	37.9	5.8	7
All Hispanics	Female	60+	13-14	28.0	2.9	9
All Hispanics	Female	60+	15-16	21.1	0.8	13
Asians	Male	12-19	11-12	.006	0.001	3
Asians	Male	12-19	13-14	.005	0.001	3
Asians	Male	12-19	15-16	.006 **	0.003	3
Asians	Male	20-39	11-12	.015 **	0.005	6
Asians	Male	20-39	13-14	.010	0.001	4
Asians	Male	20-39	15-16	.013	0.004	5
Asians	Male	40-59	11-12	.039	0.006	6
Asians	Male	40-59	13-14	.027	0.006	4
Asians	Male	40-59	15-16	.027	0.007	4
Asians	Male	60+	11-12	.041	0.008	4
Asians	Male	60+	13-14	.057	0.01	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.080	0.019	3
Asians	Female	12-19	11-12	.004	0	4
Asians	Female	12-19	13-14	.005	0	3
Asians	Female	12-19	15-16	.004 **	0.004	3
Asians	Female	20-39	11-12	.015	0.003	6
Asians	Female	20-39	13-14	.009	0.001	5
Asians	Female	20-39	15-16	.008	0	4
Asians	Female	40-59	11-12	.028	0.006	6
Asians	Female	40-59	13-14	.021	0.002	7
Asians	Female	40-59	15-16	.042 **	0.016	5
Asians	Female	60+	11-12	.057	0.003	3
Asians	Female	60+	13-14	.061 **	0.02	3
Asians	Female	60+	15-16	.086 **	0.037	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149) (lipid adjusted) (2005 - 2008)†

CAS Number 38380-04-0

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	16
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	60+	05-06	*	*	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	60+	05-06	.373	0.106	5
Non-Hispanic Blacks	Female	60+	07-08	*	*	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.28.

* 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) (2005 - 2008)†

CAS Number 38380-04-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.001	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	20-39	Male	05-06	.001	0	12
Non-Hispanic Whites	20-39	Male	07-08	.001	0	15
Non-Hispanic Whites	40-59	Male	05-06	.001	0	12
Non-Hispanic Whites	40-59	Male	07-08	.001	0	16
Non-Hispanic Whites	60+	Male	05-06	.001	0	15
Non-Hispanic Whites	60+	Male	07-08	.001	0	23
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001	0	7
Non-Hispanic Whites	20-39	Female	05-06	.001	0	16
Non-Hispanic Whites	20-39	Female	07-08	.001	0	13
Non-Hispanic Whites	40-59	Female	05-06	.001	0	13
Non-Hispanic Whites	40-59	Female	07-08	.001	0	17
Non-Hispanic Whites	60+	Female	05-06	.001	0	17
Non-Hispanic Whites	60+	Female	07-08	.001	0	21
Non-Hispanic Blacks	12-19	Male	05-06	.001	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.001	0	6
Non-Hispanic Blacks	20-39	Male	07-08	.001	0	6
Non-Hispanic Blacks	40-59	Male	05-06	.001	0	5
Non-Hispanic Blacks	40-59	Male	07-08	.001 **	0	6
Non-Hispanic Blacks	60+	Male	05-06	.002	0	5
Non-Hispanic Blacks	60+	Male	07-08	.002	0	8
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.001	0	7
Non-Hispanic Blacks	20-39	Female	07-08	.001	0	8
Non-Hispanic Blacks	40-59	Female	05-06	.001	0	7
Non-Hispanic Blacks	40-59	Female	07-08	.001	0	8
Non-Hispanic Blacks	60+	Female	05-06	.002 **	0.001	5
Non-Hispanic Blacks	60+	Female	07-08	.004 **	0.002	7
Mexican Americans	12-19	Male	05-06	.001	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	20-39	Male	05-06	.001	0	9
Mexican Americans	20-39	Male	07-08	.001	0	9
Mexican Americans	40-59	Male	05-06	.001	0	4
Mexican Americans	40-59	Male	07-08	.002	0	6
Mexican Americans	60+	Male	05-06	.001	0	4
Mexican Americans	60+	Male	07-08	.001	0	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	20-39	Female	05-06	.001	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	40-59	Female	05-06	.001	0	6
Mexican Americans	40-59	Female	07-08	.001	0	6
Mexican Americans	60+	Female	05-06	.001	0	3
Mexican Americans	60+	Female	07-08	.001	0	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151) (lipid adjusted) (2005 - 2008)†

CAS Number 52663-63-5

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	20-39	05-06	*	*	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	05-06	*	*	12
Non-Hispanic Whites	Male	40-59	07-08	*	*	16
Non-Hispanic Whites	Male	60+	05-06	*	*	15
Non-Hispanic Whites	Male	60+	07-08	*	*	23
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	40-59	05-06	*	*	13
Non-Hispanic Whites	Female	40-59	07-08	*	*	17
Non-Hispanic Whites	Female	60+	05-06	*	*	17
Non-Hispanic Whites	Female	60+	07-08	*	*	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	*	*	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	05-06	*	*	5
Non-Hispanic Blacks	Male	40-59	07-08	*	*	6
Non-Hispanic Blacks	Male	60+	05-06	.439	0.048	5
Non-Hispanic Blacks	Male	60+	07-08	*	*	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	05-06	*	*	7
Non-Hispanic Blacks	Female	40-59	07-08	*	*	8
Non-Hispanic Blacks	Female	60+	05-06	.468	0.07	5
Non-Hispanic Blacks	Female	60+	07-08	.580	0.137	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	40-59	05-06	*	*	4
Mexican Americans	Male	40-59	07-08	*	*	6
Mexican Americans	Male	60+	05-06	*	*	4
Mexican Americans	Male	60+	07-08	*	*	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	40-59	05-06	*	*	6
Mexican Americans	Female	40-59	07-08	*	*	6
Mexican Americans	Female	60+	05-06	*	*	3
Mexican Americans	Female	60+	07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.28.

* 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) (2005 - 2008)†

CAS Number 52663-63-5

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.001	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	20-39	Male	05-06	.001	0	12
Non-Hispanic Whites	20-39	Male	07-08	.001	0	15
Non-Hispanic Whites	40-59	Male	05-06	.001	0	12
Non-Hispanic Whites	40-59	Male	07-08	.001	0	16
Non-Hispanic Whites	60+	Male	05-06	.001	0	15
Non-Hispanic Whites	60+	Male	07-08	.001 **	0	23
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001	0	7
Non-Hispanic Whites	20-39	Female	05-06	.001	0	16
Non-Hispanic Whites	20-39	Female	07-08	.001 **	0.001	13
Non-Hispanic Whites	40-59	Female	05-06	.001	0	13
Non-Hispanic Whites	40-59	Female	07-08	.001	0	17
Non-Hispanic Whites	60+	Female	05-06	.001	0	17
Non-Hispanic Whites	60+	Female	07-08	.001	0	21
Non-Hispanic Blacks	12-19	Male	05-06	.001	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.001	0	6
Non-Hispanic Blacks	20-39	Male	07-08	.001	0	6
Non-Hispanic Blacks	40-59	Male	05-06	.002	0.001	5
Non-Hispanic Blacks	40-59	Male	07-08	.002	0	6
Non-Hispanic Blacks	60+	Male	05-06	.003	0	5
Non-Hispanic Blacks	60+	Male	07-08	.002	0.001	8
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.001	0	7
Non-Hispanic Blacks	20-39	Female	07-08	.001	0	8
Non-Hispanic Blacks	40-59	Female	05-06	.001	0	7
Non-Hispanic Blacks	40-59	Female	07-08	.001	0	8
Non-Hispanic Blacks	60+	Female	05-06	.003	0	5
Non-Hispanic Blacks	60+	Female	07-08	.004	0.001	7
Mexican Americans	12-19	Male	05-06	.001	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	20-39	Male	05-06	.001	0	9
Mexican Americans	20-39	Male	07-08	.001	0	9
Mexican Americans	40-59	Male	05-06	.001	0	4
Mexican Americans	40-59	Male	07-08	.002 **	0.001	6
Mexican Americans	60+	Male	05-06	.001	0	4
Mexican Americans	60+	Male	07-08	.001	0	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	20-39	Female	05-06	.001	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	40-59	Female	05-06	.001	0	6
Mexican Americans	40-59	Female	07-08	.001	0	6
Mexican Americans	60+	Female	05-06	.001	0	3
Mexican Americans	60+	Female	07-08	.001 **	0	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (lipid adjusted) (2005 - 2010)†

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	6.27	1.11	9
Non-Hispanic Whites	Male	12-19	07-08	5.80	0.95	6
Non-Hispanic Whites	Male	12-19	09-10	7.32	0.72	10
Non-Hispanic Whites	Male	20-39	05-06	13.2	2.6	12
Non-Hispanic Whites	Male	20-39	07-08	11.0	1	15
Non-Hispanic Whites	Male	20-39	09-10	11.3	1.1	17
Non-Hispanic Whites	Male	40-59	05-06	36.4	5.1	12
Non-Hispanic Whites	Male	40-59	07-08	28.2	1.5	16
Non-Hispanic Whites	Male	40-59	09-10	29.4	3.5	17
Non-Hispanic Whites	Male	60+	05-06	60.4	2.7	15
Non-Hispanic Whites	Male	60+	07-08	63.9	4.7	23
Non-Hispanic Whites	Male	60+	09-10	57.7	4.7	21
Non-Hispanic Whites	Female	12-19	05-06	4.59	0.49	10
Non-Hispanic Whites	Female	12-19	07-08	4.34	0.92	7
Non-Hispanic Whites	Female	12-19	09-10	4.76	0.93	8
Non-Hispanic Whites	Female	20-39	05-06	8.47	0.59	16
Non-Hispanic Whites	Female	20-39	07-08	9.36	1.34	13
Non-Hispanic Whites	Female	20-39	09-10	8.59	0.55	19
Non-Hispanic Whites	Female	40-59	05-06	27.8	1.4	13
Non-Hispanic Whites	Female	40-59	07-08	27.7	1.3	17
Non-Hispanic Whites	Female	40-59	09-10	35.1	4.7	17
Non-Hispanic Whites	Female	60+	05-06	58.0	5.1	17
Non-Hispanic Whites	Female	60+	07-08	56.4	3.7	21
Non-Hispanic Whites	Female	60+	09-10	63.1	4.9	22
Non-Hispanic Blacks	Male	12-19	05-06	7.42	1	13
Non-Hispanic Blacks	Male	12-19	07-08	5.74	0.74	6
Non-Hispanic Blacks	Male	12-19	09-10	5.86	0.56	5
Non-Hispanic Blacks	Male	20-39	05-06	13.8	2.1	6
Non-Hispanic Blacks	Male	20-39	07-08	10.3	0.8	6
Non-Hispanic Blacks	Male	20-39	09-10	15.3	3.7	6
Non-Hispanic Blacks	Male	40-59	05-06	38.8	4.2	5
Non-Hispanic Blacks	Male	40-59	07-08	41.0	5.1	6
Non-Hispanic Blacks	Male	40-59	09-10	53.2	7.8	7
Non-Hispanic Blacks	Male	60+	05-06	103	13	5
Non-Hispanic Blacks	Male	60+	07-08	94.5	10.2	8
Non-Hispanic Blacks	Male	60+	09-10	97.9	8	9
Non-Hispanic Blacks	Female	12-19	05-06	4.20	0.29	14
Non-Hispanic Blacks	Female	12-19	07-08	3.76	0.47	5
Non-Hispanic Blacks	Female	12-19	09-10	3.36	0.24	6
Non-Hispanic Blacks	Female	20-39	05-06	10.8	1.4	7
Non-Hispanic Blacks	Female	20-39	07-08	8.99	1.1	8
Non-Hispanic Blacks	Female	20-39	09-10	8.93	1.37	7
Non-Hispanic Blacks	Female	40-59	05-06	41.2	4	7
Non-Hispanic Blacks	Female	40-59	07-08	35.7	3	8
Non-Hispanic Blacks	Female	40-59	09-10	48.6	9.2	7
Non-Hispanic Blacks	Female	60+	05-06	130	33	5
Non-Hispanic Blacks	Female	60+	07-08	102	7	7
Non-Hispanic Blacks	Female	60+	09-10	118	16	7
Mexican Americans	Male	12-19	05-06	3.70	0.45	11
Mexican Americans	Male	12-19	07-08	3.32	0.63	6
Mexican Americans	Male	12-19	09-10	4.63	0.65	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	6.93	0.31	9
Mexican Americans	Male	20-39	07-08	6.85	0.6	9
Mexican Americans	Male	20-39	09-10	6.00	0.6	8
Mexican Americans	Male	40-59	05-06	16.5	0.8	4
Mexican Americans	Male	40-59	07-08	22.4	2.3	6
Mexican Americans	Male	40-59	09-10	18.2	1.2	8
Mexican Americans	Male	60+	05-06	37.3	6.8	4
Mexican Americans	Male	60+	07-08	39.5	3.7	5
Mexican Americans	Male	60+	09-10	46.6	3.7	5
Mexican Americans	Female	12-19	05-06	2.83	0.2	16
Mexican Americans	Female	12-19	07-08	2.88 **	1.16	5
Mexican Americans	Female	12-19	09-10	2.46	0.36	7
Mexican Americans	Female	20-39	05-06	4.75	0.67	9
Mexican Americans	Female	20-39	07-08	5.58	0.39	8
Mexican Americans	Female	20-39	09-10	4.64	0.35	10
Mexican Americans	Female	40-59	05-06	19.1	1.5	6
Mexican Americans	Female	40-59	07-08	20.9	2.5	6
Mexican Americans	Female	40-59	09-10	15.1	1.5	9
Mexican Americans	Female	60+	05-06	36.2	1.6	3
Mexican Americans	Female	60+	07-08	40.9	7.6	5
Mexican Americans	Female	60+	09-10	41.2	4.8	6
All Hispanics	Male	12-19	09-10	4.74	0.48	11
All Hispanics	Male	20-39	09-10	7.57	0.8	13
All Hispanics	Male	40-59	09-10	21.7	2.2	13
All Hispanics	Male	60+	09-10	49.8	4.2	8
All Hispanics	Female	12-19	09-10	2.93	0.42	10
All Hispanics	Female	20-39	09-10	5.70	0.61	14
All Hispanics	Female	40-59	09-10	17.0	1.7	14
All Hispanics	Female	60+	09-10	42.3	3.2	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.14, and 0.83, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (lipid adjusted) (2011 - 2016)†

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	4.47	0.38	6
Non-Hispanic Whites	Male	12-19	13-14	5.06	0.59	8
Non-Hispanic Whites	Male	12-19	15-16	6.98 **	2.58	7
Non-Hispanic Whites	Male	20-39	11-12	7.72	0.48	12
Non-Hispanic Whites	Male	20-39	13-14	6.85	0.74	14
Non-Hispanic Whites	Male	20-39	15-16	5.80	0.56	10
Non-Hispanic Whites	Male	40-59	11-12	26.5	5.6	12
Non-Hispanic Whites	Male	40-59	13-14	25.3	2.4	14
Non-Hispanic Whites	Male	40-59	15-16	15.4	1.4	10
Non-Hispanic Whites	Male	60+	11-12	46.7	2.6	12
Non-Hispanic Whites	Male	60+	13-14	54.4	4.1	17
Non-Hispanic Whites	Male	60+	15-16	41.6	2.3	14
Non-Hispanic Whites	Female	12-19	11-12	4.19	0.62	5
Non-Hispanic Whites	Female	12-19	13-14	4.52	0.41	6
Non-Hispanic Whites	Female	12-19	15-16	2.48	0.48	4
Non-Hispanic Whites	Female	20-39	11-12	7.82	1.08	13
Non-Hispanic Whites	Female	20-39	13-14	6.92	0.78	15
Non-Hispanic Whites	Female	20-39	15-16	4.24	0.21	11
Non-Hispanic Whites	Female	40-59	11-12	26.9	2.6	11
Non-Hispanic Whites	Female	40-59	13-14	24.4	2.1	16
Non-Hispanic Whites	Female	40-59	15-16	17.2	1.5	9
Non-Hispanic Whites	Female	60+	11-12	51.5	3.4	14
Non-Hispanic Whites	Female	60+	13-14	56.6	3.7	20
Non-Hispanic Whites	Female	60+	15-16	47.4	4.6	13
Non-Hispanic Blacks	Male	12-19	11-12	4.93	0.4	7
Non-Hispanic Blacks	Male	12-19	13-14	4.13	0.55	6
Non-Hispanic Blacks	Male	12-19	15-16	3.53	0.4	5
Non-Hispanic Blacks	Male	20-39	11-12	9.12	0.45	9
Non-Hispanic Blacks	Male	20-39	13-14	7.60	0.98	7
Non-Hispanic Blacks	Male	20-39	15-16	6.33	0.32	7
Non-Hispanic Blacks	Male	40-59	11-12	31.9	6	7
Non-Hispanic Blacks	Male	40-59	13-14	30.4	4.8	7
Non-Hispanic Blacks	Male	40-59	15-16	43.2	12.3	7
Non-Hispanic Blacks	Male	60+	11-12	66.8	2.4	9
Non-Hispanic Blacks	Male	60+	13-14	65.6	6.6	9
Non-Hispanic Blacks	Male	60+	15-16	52.3	5.2	7
Non-Hispanic Blacks	Female	12-19	11-12	2.95	0.6	6
Non-Hispanic Blacks	Female	12-19	13-14	3.02	0.18	6
Non-Hispanic Blacks	Female	12-19	15-16	3.36 **	1.11	4
Non-Hispanic Blacks	Female	20-39	11-12	6.95	1.09	8
Non-Hispanic Blacks	Female	20-39	13-14	5.30	0.52	8
Non-Hispanic Blacks	Female	20-39	15-16	5.73	0.77	9
Non-Hispanic Blacks	Female	40-59	11-12	32.6	3.9	8
Non-Hispanic Blacks	Female	40-59	13-14	30.4	3.4	8
Non-Hispanic Blacks	Female	40-59	15-16	24.6	2.4	12
Non-Hispanic Blacks	Female	60+	11-12	88.2	7.6	8
Non-Hispanic Blacks	Female	60+	13-14	103	9	8
Non-Hispanic Blacks	Female	60+	15-16	76.6	8.6	7
Mexican Americans	Male	12-19	11-12	2.77	0.3	5
Mexican Americans	Male	12-19	13-14	2.25	0.22	7
Mexican Americans	Male	12-19	15-16	2.16	0.16	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	6.69	0.88	4
Mexican Americans	Male	20-39	13-14	4.13	0.39	5
Mexican Americans	Male	20-39	15-16	4.81	0.68	7
Mexican Americans	Male	40-59	11-12	15.9	1.7	4
Mexican Americans	Male	40-59	13-14	13.2	1.9	5
Mexican Americans	Male	40-59	15-16	9.61	2.09	4
Mexican Americans	Male	60+	11-12	28.9	3.6	2
Mexican Americans	Male	60+	13-14	46.1	5.5	4
Mexican Americans	Male	60+	15-16	34.0	4.7	5
Mexican Americans	Female	12-19	11-12	1.87	0.17	4
Mexican Americans	Female	12-19	13-14	1.98	0.21	7
Mexican Americans	Female	12-19	15-16	1.57	0.1	5
Mexican Americans	Female	20-39	11-12	4.78	1.08	4
Mexican Americans	Female	20-39	13-14	3.30	0.25	5
Mexican Americans	Female	20-39	15-16	3.29	0.25	5
Mexican Americans	Female	40-59	11-12	16.9	3	3
Mexican Americans	Female	40-59	13-14	12.4	2.3	6
Mexican Americans	Female	40-59	15-16	10.8	1	8
Mexican Americans	Female	60+	11-12	39.2	3.1	3
Mexican Americans	Female	60+	13-14	35.6	3.9	5
Mexican Americans	Female	60+	15-16	29.0	0.7	7
All Hispanics	Male	12-19	11-12	3.11	0.39	7
All Hispanics	Male	12-19	13-14	2.93	0.66	10
All Hispanics	Male	12-19	15-16	2.57	0.57	9
All Hispanics	Male	20-39	11-12	6.86	0.51	8
All Hispanics	Male	20-39	13-14	4.72	0.51	8
All Hispanics	Male	20-39	15-16	5.16	0.52	11
All Hispanics	Male	40-59	11-12	15.7	1.6	7
All Hispanics	Male	40-59	13-14	16.3	4.2	9
All Hispanics	Male	40-59	15-16	13.5	3	9
All Hispanics	Male	60+	11-12	39.3	4.7	6
All Hispanics	Male	60+	13-14	43.3	4.8	7
All Hispanics	Male	60+	15-16	35.1	2.8	9
All Hispanics	Female	12-19	11-12	2.46	0.31	7
All Hispanics	Female	12-19	13-14	2.22	0.34	10
All Hispanics	Female	12-19	15-16	1.63	0.2	8
All Hispanics	Female	20-39	11-12	4.54	0.57	8
All Hispanics	Female	20-39	13-14	10.6 **	7.1	9
All Hispanics	Female	20-39	15-16	3.57	0.26	10
All Hispanics	Female	40-59	11-12	17.7	1.6	7
All Hispanics	Female	40-59	13-14	16.3	2.5	10
All Hispanics	Female	40-59	15-16	11.9	1	13
All Hispanics	Female	60+	11-12	50.1	7.3	7
All Hispanics	Female	60+	13-14	41.2	4.1	9
All Hispanics	Female	60+	15-16	29.9	1	13
Asians	Male	12-19	11-12	7.63	0.65	3
Asians	Male	12-19	13-14	5.54	1.41	3
Asians	Male	12-19	15-16	8.06 **	3.06	3
Asians	Male	20-39	11-12	16.1	4.3	6
Asians	Male	20-39	13-14	11.3	0.7	4
Asians	Male	20-39	15-16	12.7	2.4	5
Asians	Male	40-59	11-12	39.5	5.6	6
Asians	Male	40-59	13-14	30.0	6.7	4
Asians	Male	40-59	15-16	25.8	5.5	4
Asians	Male	60+	11-12	45.8	8.8	4
Asians	Male	60+	13-14	55.7	6.8	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	80.0	20.1	3
Asians	Female	12-19	11-12	5.49	0.74	4
Asians	Female	12-19	13-14	7.47	0.81	3
Asians	Female	12-19	15-16	6.07 **	4.67	3
Asians	Female	20-39	11-12	16.0	2.5	6
Asians	Female	20-39	13-14	11.5	1.2	5
Asians	Female	20-39	15-16	9.02	0.28	4
Asians	Female	40-59	11-12	29.6	6.3	6
Asians	Female	40-59	13-14	24.2	2.7	7
Asians	Female	40-59	15-16	43.9 **	13.9	5
Asians	Female	60+	11-12	61.0	3	3
Asians	Female	60+	13-14	69.2 **	29.7	3
Asians	Female	60+	15-16	85.1 **	35.9	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.3, 0.25, and 0.25, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (whole weight) (2005 - 2010)†

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.034	0.006	9
Non-Hispanic Whites	12-19	Male	07-08	.028	0.004	6
Non-Hispanic Whites	12-19	Male	09-10	.039	0.004	10
Non-Hispanic Whites	20-39	Male	05-06	.099	0.023	12
Non-Hispanic Whites	20-39	Male	07-08	.074	0.008	15
Non-Hispanic Whites	20-39	Male	09-10	.073	0.007	17
Non-Hispanic Whites	40-59	Male	05-06	.279	0.045	12
Non-Hispanic Whites	40-59	Male	07-08	.205	0.01	16
Non-Hispanic Whites	40-59	Male	09-10	.201	0.025	17
Non-Hispanic Whites	60+	Male	05-06	.409	0.015	15
Non-Hispanic Whites	60+	Male	07-08	.407	0.027	23
Non-Hispanic Whites	60+	Male	09-10	.349	0.029	21
Non-Hispanic Whites	12-19	Female	05-06	.025	0.003	10
Non-Hispanic Whites	12-19	Female	07-08	.021	0.005	7
Non-Hispanic Whites	12-19	Female	09-10	.023	0.005	8
Non-Hispanic Whites	20-39	Female	05-06	.055	0.004	16
Non-Hispanic Whites	20-39	Female	07-08	.057	0.009	13
Non-Hispanic Whites	20-39	Female	09-10	.046	0.003	19
Non-Hispanic Whites	40-59	Female	05-06	.207	0.016	13
Non-Hispanic Whites	40-59	Female	07-08	.184	0.01	17
Non-Hispanic Whites	40-59	Female	09-10	.219	0.028	17
Non-Hispanic Whites	60+	Female	05-06	.420	0.033	17
Non-Hispanic Whites	60+	Female	07-08	.378	0.024	21
Non-Hispanic Whites	60+	Female	09-10	.385	0.031	22
Non-Hispanic Blacks	12-19	Male	05-06	.037	0.005	13
Non-Hispanic Blacks	12-19	Male	07-08	.027	0.003	6
Non-Hispanic Blacks	12-19	Male	09-10	.026	0.003	5
Non-Hispanic Blacks	20-39	Male	05-06	.082	0.013	6
Non-Hispanic Blacks	20-39	Male	07-08	.058	0.005	6
Non-Hispanic Blacks	20-39	Male	09-10	.087	0.019	6
Non-Hispanic Blacks	40-59	Male	05-06	.247	0.027	5
Non-Hispanic Blacks	40-59	Male	07-08	.263	0.034	6
Non-Hispanic Blacks	40-59	Male	09-10	.323	0.041	7
Non-Hispanic Blacks	60+	Male	05-06	.614	0.073	5
Non-Hispanic Blacks	60+	Male	07-08	.576	0.068	8
Non-Hispanic Blacks	60+	Male	09-10	.527	0.049	9
Non-Hispanic Blacks	12-19	Female	05-06	.021	0.002	14
Non-Hispanic Blacks	12-19	Female	07-08	.018	0.003	5
Non-Hispanic Blacks	12-19	Female	09-10	.015	0.001	6
Non-Hispanic Blacks	20-39	Female	05-06	.062	0.009	7
Non-Hispanic Blacks	20-39	Female	07-08	.045	0.006	8
Non-Hispanic Blacks	20-39	Female	09-10	.045	0.007	7
Non-Hispanic Blacks	40-59	Female	05-06	.264	0.029	7
Non-Hispanic Blacks	40-59	Female	07-08	.216	0.022	8
Non-Hispanic Blacks	40-59	Female	09-10	.270	0.046	7
Non-Hispanic Blacks	60+	Female	05-06	.865	0.218	5
Non-Hispanic Blacks	60+	Female	07-08	.614	0.042	7
Non-Hispanic Blacks	60+	Female	09-10	.675	0.092	7
Mexican Americans	12-19	Male	05-06	.020	0.002	11
Mexican Americans	12-19	Male	07-08	.018	0.004	6
Mexican Americans	12-19	Male	09-10	.022	0.003	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.049	0.003	9
Mexican Americans	20-39	Male	07-08	.047	0.005	9
Mexican Americans	20-39	Male	09-10	.037	0.005	8
Mexican Americans	40-59	Male	05-06	.134	0.01	4
Mexican Americans	40-59	Male	07-08	.160	0.018	6
Mexican Americans	40-59	Male	09-10	.126	0.012	8
Mexican Americans	60+	Male	05-06	.268	0.045	4
Mexican Americans	60+	Male	07-08	.281	0.019	5
Mexican Americans	60+	Male	09-10	.286	0.02	5
Mexican Americans	12-19	Female	05-06	.015	0.001	16
Mexican Americans	12-19	Female	07-08	.014 **	0.005	5
Mexican Americans	12-19	Female	09-10	.011	0.002	7
Mexican Americans	20-39	Female	05-06	.032	0.005	9
Mexican Americans	20-39	Female	07-08	.033	0.003	8
Mexican Americans	20-39	Female	09-10	.026	0.002	10
Mexican Americans	40-59	Female	05-06	.140	0.01	6
Mexican Americans	40-59	Female	07-08	.141	0.017	6
Mexican Americans	40-59	Female	09-10	.099	0.012	9
Mexican Americans	60+	Female	05-06	.274	0.023	3
Mexican Americans	60+	Female	07-08	.283	0.055	5
Mexican Americans	60+	Female	09-10	.227	0.024	6
All Hispanics	12-19	Male	09-10	.022	0.002	11
All Hispanics	20-39	Male	09-10	.050	0.008	13
All Hispanics	40-59	Male	09-10	.148	0.015	13
All Hispanics	60+	Male	09-10	.311	0.02	8
All Hispanics	12-19	Female	09-10	.014	0.002	10
All Hispanics	20-39	Female	09-10	.032	0.004	14
All Hispanics	40-59	Female	09-10	.107	0.012	14
All Hispanics	60+	Female	09-10	.251	0.019	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (whole weight) (2011 - 2016)†

CAS Number 35065-27-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.021	0.002	6
Non-Hispanic Whites	Male	12-19	13-14	.024	0.002	8
Non-Hispanic Whites	Male	12-19	15-16	.034 **	0.013	7
Non-Hispanic Whites	Male	20-39	11-12	.045	0.003	12
Non-Hispanic Whites	Male	20-39	13-14	.037	0.004	14
Non-Hispanic Whites	Male	20-39	15-16	.036	0.004	10
Non-Hispanic Whites	Male	40-59	11-12	.173	0.034	12
Non-Hispanic Whites	Male	40-59	13-14	.150	0.016	14
Non-Hispanic Whites	Male	40-59	15-16	.105	0.011	10
Non-Hispanic Whites	Male	60+	11-12	.257	0.011	12
Non-Hispanic Whites	Male	60+	13-14	.293	0.022	17
Non-Hispanic Whites	Male	60+	15-16	.227	0.013	14
Non-Hispanic Whites	Female	12-19	11-12	.023	0.003	5
Non-Hispanic Whites	Female	12-19	13-14	.022	0.002	6
Non-Hispanic Whites	Female	12-19	15-16	.012	0.002	4
Non-Hispanic Whites	Female	20-39	11-12	.042	0.006	13
Non-Hispanic Whites	Female	20-39	13-14	.036	0.003	15
Non-Hispanic Whites	Female	20-39	15-16	.023	0.001	11
Non-Hispanic Whites	Female	40-59	11-12	.173	0.02	11
Non-Hispanic Whites	Female	40-59	13-14	.143	0.011	16
Non-Hispanic Whites	Female	40-59	15-16	.110	0.01	9
Non-Hispanic Whites	Female	60+	11-12	.316	0.02	14
Non-Hispanic Whites	Female	60+	13-14	.333	0.023	20
Non-Hispanic Whites	Female	60+	15-16	.292	0.026	13
Non-Hispanic Blacks	Male	12-19	11-12	.022	0.002	7
Non-Hispanic Blacks	Male	12-19	13-14	.018	0.002	6
Non-Hispanic Blacks	Male	12-19	15-16	.015	0.002	5
Non-Hispanic Blacks	Male	20-39	11-12	.047	0.002	9
Non-Hispanic Blacks	Male	20-39	13-14	.038	0.005	7
Non-Hispanic Blacks	Male	20-39	15-16	.033	0.002	7
Non-Hispanic Blacks	Male	40-59	11-12	.181	0.037	7
Non-Hispanic Blacks	Male	40-59	13-14	.171	0.026	7
Non-Hispanic Blacks	Male	40-59	15-16	.268	0.071	7
Non-Hispanic Blacks	Male	60+	11-12	.362	0.014	9
Non-Hispanic Blacks	Male	60+	13-14	.339	0.034	9
Non-Hispanic Blacks	Male	60+	15-16	.283	0.03	7
Non-Hispanic Blacks	Female	12-19	11-12	.013	0.003	6
Non-Hispanic Blacks	Female	12-19	13-14	.013	0.001	6
Non-Hispanic Blacks	Female	12-19	15-16	.016 **	0.006	4
Non-Hispanic Blacks	Female	20-39	11-12	.038	0.006	8
Non-Hispanic Blacks	Female	20-39	13-14	.026	0.002	8
Non-Hispanic Blacks	Female	20-39	15-16	.028	0.004	9
Non-Hispanic Blacks	Female	40-59	11-12	.201	0.03	8
Non-Hispanic Blacks	Female	40-59	13-14	.160	0.018	8
Non-Hispanic Blacks	Female	40-59	15-16	.142	0.017	12
Non-Hispanic Blacks	Female	60+	11-12	.492	0.039	8
Non-Hispanic Blacks	Female	60+	13-14	.547	0.042	8
Non-Hispanic Blacks	Female	60+	15-16	.449	0.052	7
Mexican Americans	Male	12-19	11-12	.013	0.001	5
Mexican Americans	Male	12-19	13-14	.011	0.001	7
Mexican Americans	Male	12-19	15-16	.011	0.001	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.041	0.006	4
Mexican Americans	Male	20-39	13-14	.026	0.002	5
Mexican Americans	Male	20-39	15-16	.036	0.009	7
Mexican Americans	Male	40-59	11-12	.124	0.007	4
Mexican Americans	Male	40-59	13-14	.081	0.01	5
Mexican Americans	Male	40-59	15-16	.063	0.013	4
Mexican Americans	Male	60+	11-12	.171	0.018	2
Mexican Americans	Male	60+	13-14	.245	0.022	4
Mexican Americans	Male	60+	15-16	.194	0.027	5
Mexican Americans	Female	12-19	11-12	.009	0.001	4
Mexican Americans	Female	12-19	13-14	.009	0.001	7
Mexican Americans	Female	12-19	15-16	.008	0.001	5
Mexican Americans	Female	20-39	11-12	.026	0.005	4
Mexican Americans	Female	20-39	13-14	.017	0.001	5
Mexican Americans	Female	20-39	15-16	.018	0.002	5
Mexican Americans	Female	40-59	11-12	.101	0.02	3
Mexican Americans	Female	40-59	13-14	.071	0.011	6
Mexican Americans	Female	40-59	15-16	.069	0.007	8
Mexican Americans	Female	60+	11-12	.241	0.018	3
Mexican Americans	Female	60+	13-14	.209	0.025	5
Mexican Americans	Female	60+	15-16	.182	0.005	7
All Hispanics	Male	12-19	11-12	15.0	1.8	7
All Hispanics	Male	12-19	13-14	14.3	3.3	10
All Hispanics	Male	12-19	15-16	13.1	2.8	9
All Hispanics	Male	20-39	11-12	42.0	3.6	8
All Hispanics	Male	20-39	13-14	28.0	2.4	8
All Hispanics	Male	20-39	15-16	34.5	5.7	11
All Hispanics	Male	40-59	11-12	116	10	7
All Hispanics	Male	40-59	13-14	101	28	9
All Hispanics	Male	40-59	15-16	85.8	18.6	9
All Hispanics	Male	60+	11-12	229	26	6
All Hispanics	Male	60+	13-14	232	21	7
All Hispanics	Male	60+	15-16	206	18	9
All Hispanics	Female	12-19	11-12	12.1	1.5	7
All Hispanics	Female	12-19	13-14	10.4	1.7	10
All Hispanics	Female	12-19	15-16	7.70	0.83	8
All Hispanics	Female	20-39	11-12	24.6	2.7	8
All Hispanics	Female	20-39	13-14	60.5 **	39.4	9
All Hispanics	Female	20-39	15-16	19.6	1.7	10
All Hispanics	Female	40-59	11-12	111	13	7
All Hispanics	Female	40-59	13-14	94.2	14.3	10
All Hispanics	Female	40-59	15-16	77.1	7.6	13
All Hispanics	Female	60+	11-12	305	39	7
All Hispanics	Female	60+	13-14	244	22	9
All Hispanics	Female	60+	15-16	182	6	13
Asians	Male	12-19	11-12	.040	0.005	3
Asians	Male	12-19	13-14	.026	0.005	3
Asians	Male	12-19	15-16	.038 **	0.015	3
Asians	Male	20-39	11-12	.089	0.024	6
Asians	Male	20-39	13-14	.067	0.006	4
Asians	Male	20-39	15-16	.084	0.019	5
Asians	Male	40-59	11-12	.240	0.034	6
Asians	Male	40-59	13-14	.171	0.034	4
Asians	Male	40-59	15-16	.164	0.036	4
Asians	Male	60+	11-12	.248	0.048	4
Asians	Male	60+	13-14	.341	0.045	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.433	0.091	3
Asians	Female	12-19	11-12	.026	0.003	4
Asians	Female	12-19	13-14	.035	0.003	3
Asians	Female	12-19	15-16	.032 **	0.024	3
Asians	Female	20-39	11-12	.088	0.014	6
Asians	Female	20-39	13-14	.059	0.006	5
Asians	Female	20-39	15-16	.050	0.001	4
Asians	Female	40-59	11-12	.182	0.038	6
Asians	Female	40-59	13-14	.141	0.014	7
Asians	Female	40-59	15-16	.273 **	0.096	5
Asians	Female	60+	11-12	.346	0.025	3
Asians	Female	60+	13-14	.394 **	0.125	3
Asians	Female	60+	15-16	.530 **	0.23	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (lipid adjusted) (2005 - 2010)†

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	1.41	0.32	9
Non-Hispanic Whites	Male	12-19	07-08	1.52	0.27	6
Non-Hispanic Whites	Male	12-19	09-10	1.54	0.17	10
Non-Hispanic Whites	Male	20-39	05-06	3.93	0.94	12
Non-Hispanic Whites	Male	20-39	07-08	3.36	0.27	15
Non-Hispanic Whites	Male	20-39	09-10	2.80	0.3	17
Non-Hispanic Whites	Male	40-59	05-06	13.7	2.6	12
Non-Hispanic Whites	Male	40-59	07-08	10.3	0.4	16
Non-Hispanic Whites	Male	40-59	09-10	9.16	1.14	17
Non-Hispanic Whites	Male	60+	05-06	20.5	1.3	15
Non-Hispanic Whites	Male	60+	07-08	22.4	1.3	23
Non-Hispanic Whites	Male	60+	09-10	18.0	1.2	21
Non-Hispanic Whites	Female	12-19	05-06	.896	0.155	10
Non-Hispanic Whites	Female	12-19	07-08	1.14	0.3	7
Non-Hispanic Whites	Female	12-19	09-10	1.00	0.21	8
Non-Hispanic Whites	Female	20-39	05-06	2.28	0.35	16
Non-Hispanic Whites	Female	20-39	07-08	2.75	0.39	13
Non-Hispanic Whites	Female	20-39	09-10	2.02	0.12	19
Non-Hispanic Whites	Female	40-59	05-06	8.44	0.46	13
Non-Hispanic Whites	Female	40-59	07-08	9.09	0.43	17
Non-Hispanic Whites	Female	40-59	09-10	9.44	0.93	17
Non-Hispanic Whites	Female	60+	05-06	17.2	1.4	17
Non-Hispanic Whites	Female	60+	07-08	18.1	0.9	21
Non-Hispanic Whites	Female	60+	09-10	17.1	1.1	22
Non-Hispanic Blacks	Male	12-19	05-06	1.44	0.28	13
Non-Hispanic Blacks	Male	12-19	07-08	1.12	0.26	6
Non-Hispanic Blacks	Male	12-19	09-10	1.07	0.09	5
Non-Hispanic Blacks	Male	20-39	05-06	3.71	0.52	6
Non-Hispanic Blacks	Male	20-39	07-08	2.82	0.28	6
Non-Hispanic Blacks	Male	20-39	09-10	3.03	0.46	6
Non-Hispanic Blacks	Male	40-59	05-06	11.4	1	5
Non-Hispanic Blacks	Male	40-59	07-08	13.1	1.4	6
Non-Hispanic Blacks	Male	40-59	09-10	12.7	1.1	7
Non-Hispanic Blacks	Male	60+	05-06	30.9	3.4	5
Non-Hispanic Blacks	Male	60+	07-08	30.6	3.2	8
Non-Hispanic Blacks	Male	60+	09-10	26.5	2	9
Non-Hispanic Blacks	Female	12-19	05-06	.589	0.099	14
Non-Hispanic Blacks	Female	12-19	07-08	.828	0.094	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	2.15	0.52	7
Non-Hispanic Blacks	Female	20-39	07-08	2.29	0.33	8
Non-Hispanic Blacks	Female	20-39	09-10	2.08	0.39	6
Non-Hispanic Blacks	Female	40-59	05-06	11.1	1.2	7
Non-Hispanic Blacks	Female	40-59	07-08	10.8	0.9	8
Non-Hispanic Blacks	Female	40-59	09-10	10.5	1.7	7
Non-Hispanic Blacks	Female	60+	05-06	33.3	6.7	5
Non-Hispanic Blacks	Female	60+	07-08	29.0	1.5	7
Non-Hispanic Blacks	Female	60+	09-10	29.0	2.9	7
Mexican Americans	Male	12-19	05-06	.575	0.138	11
Mexican Americans	Male	12-19	07-08	.891	0.155	6
Mexican Americans	Male	12-19	09-10	1.07	0.17	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	2.01	0.11	9
Mexican Americans	Male	20-39	07-08	2.19	0.23	9
Mexican Americans	Male	20-39	09-10	1.48	0.16	8
Mexican Americans	Male	40-59	05-06	6.41	0.43	4
Mexican Americans	Male	40-59	07-08	8.71	0.83	6
Mexican Americans	Male	40-59	09-10	5.80	0.35	8
Mexican Americans	Male	60+	05-06	14.0	3.2	4
Mexican Americans	Male	60+	07-08	16.1	1.7	5
Mexican Americans	Male	60+	09-10	15.7	1.1	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	1.39	0.21	9
Mexican Americans	Female	20-39	07-08	1.62	0.1	8
Mexican Americans	Female	20-39	09-10	1.33	0.19	9
Mexican Americans	Female	40-59	05-06	5.93	0.46	6
Mexican Americans	Female	40-59	07-08	7.50	0.98	6
Mexican Americans	Female	40-59	09-10	4.21	0.52	9
Mexican Americans	Female	60+	05-06	11.7	0.1	3
Mexican Americans	Female	60+	07-08	13.5	2.2	5
Mexican Americans	Female	60+	09-10	12.5	1.6	6
All Hispanics	Male	12-19	09-10	1.05	0.13	11
All Hispanics	Male	20-39	09-10	1.88	0.22	13
All Hispanics	Male	40-59	09-10	6.69	0.65	13
All Hispanics	Male	60+	09-10	15.9	1	8
All Hispanics	Female	12-19	09-10	.622	0.083	10
All Hispanics	Female	20-39	09-10	1.57	0.19	13
All Hispanics	Female	40-59	09-10	4.77	0.55	14
All Hispanics	Female	60+	09-10	12.2	1	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.28, and 0.62, 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/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (lipid adjusted) (2011 - 2016)†

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	1.11	0.13	6
Non-Hispanic Whites	Male	12-19	13-14	1.04	0.1	7
Non-Hispanic Whites	Male	12-19	15-16	1.44 **	0.46	7
Non-Hispanic Whites	Male	20-39	11-12	1.96	0.2	12
Non-Hispanic Whites	Male	20-39	13-14	1.82	0.16	14
Non-Hispanic Whites	Male	20-39	15-16	1.59	0.09	10
Non-Hispanic Whites	Male	40-59	11-12	8.87	2.15	12
Non-Hispanic Whites	Male	40-59	13-14	7.71	0.69	14
Non-Hispanic Whites	Male	40-59	15-16	5.36	0.52	10
Non-Hispanic Whites	Male	60+	11-12	15.9	0.9	12
Non-Hispanic Whites	Male	60+	13-14	17.8	0.9	17
Non-Hispanic Whites	Male	60+	15-16	13.3	0.5	14
Non-Hispanic Whites	Female	12-19	11-12	.974	0.172	5
Non-Hispanic Whites	Female	12-19	13-14	.926	0.116	6
Non-Hispanic Whites	Female	12-19	15-16	.536	0.115	5
Non-Hispanic Whites	Female	20-39	11-12	1.86	0.25	13
Non-Hispanic Whites	Female	20-39	13-14	1.74	0.24	15
Non-Hispanic Whites	Female	20-39	15-16	1.07	0.05	11
Non-Hispanic Whites	Female	40-59	11-12	7.56	0.77	11
Non-Hispanic Whites	Female	40-59	13-14	7.34	0.75	16
Non-Hispanic Whites	Female	40-59	15-16	5.35	0.38	9
Non-Hispanic Whites	Female	60+	11-12	15.4	1.2	14
Non-Hispanic Whites	Female	60+	13-14	16.8	0.9	20
Non-Hispanic Whites	Female	60+	15-16	14.0	1.3	13
Non-Hispanic Blacks	Male	12-19	11-12	.865	0.097	7
Non-Hispanic Blacks	Male	12-19	13-14	.777	0.06	6
Non-Hispanic Blacks	Male	12-19	15-16	.714	0.108	5
Non-Hispanic Blacks	Male	20-39	11-12	1.89	0.09	9
Non-Hispanic Blacks	Male	20-39	13-14	1.94	0.32	7
Non-Hispanic Blacks	Male	20-39	15-16	1.44	0.11	7
Non-Hispanic Blacks	Male	40-59	11-12	9.80	2.04	7
Non-Hispanic Blacks	Male	40-59	13-14	8.98	1.03	7
Non-Hispanic Blacks	Male	40-59	15-16	9.78	1.87	7
Non-Hispanic Blacks	Male	60+	11-12	20.3	1	9
Non-Hispanic Blacks	Male	60+	13-14	22.1	1.3	9
Non-Hispanic Blacks	Male	60+	15-16	15.6	1.1	7
Non-Hispanic Blacks	Female	12-19	11-12	.508	0.095	6
Non-Hispanic Blacks	Female	12-19	13-14	.522	0.054	6
Non-Hispanic Blacks	Female	12-19	15-16	.520 **	0.227	4
Non-Hispanic Blacks	Female	20-39	11-12	1.55	0.27	8
Non-Hispanic Blacks	Female	20-39	13-14	1.16	0.14	8
Non-Hispanic Blacks	Female	20-39	15-16	1.09	0.11	9
Non-Hispanic Blacks	Female	40-59	11-12	8.00	0.75	8
Non-Hispanic Blacks	Female	40-59	13-14	7.22	0.65	8
Non-Hispanic Blacks	Female	40-59	15-16	6.22	0.57	12
Non-Hispanic Blacks	Female	60+	11-12	21.1	1.5	8
Non-Hispanic Blacks	Female	60+	13-14	27.4	2	8
Non-Hispanic Blacks	Female	60+	15-16	18.3	1.7	7
Mexican Americans	Male	12-19	11-12	.589	0.123	5
Mexican Americans	Male	12-19	13-14	.496	0.039	7
Mexican Americans	Male	12-19	15-16	.497	0.048	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	1.77	0.26	4
Mexican Americans	Male	20-39	13-14	1.08	0.13	5
Mexican Americans	Male	20-39	15-16	1.22	0.16	7
Mexican Americans	Male	40-59	11-12	4.94	0.74	4
Mexican Americans	Male	40-59	13-14	4.61	0.8	5
Mexican Americans	Male	40-59	15-16	3.06	0.63	4
Mexican Americans	Male	60+	11-12	10.1	1.1	2
Mexican Americans	Male	60+	13-14	15.8	1.8	4
Mexican Americans	Male	60+	15-16	13.2	1.7	5
Mexican Americans	Female	12-19	11-12	.392	0.086	4
Mexican Americans	Female	12-19	13-14	.461	0.059	7
Mexican Americans	Female	12-19	15-16	.367	0.033	5
Mexican Americans	Female	20-39	11-12	1.14	0.29	4
Mexican Americans	Female	20-39	13-14	.987	0.111	5
Mexican Americans	Female	20-39	15-16	.906	0.122	5
Mexican Americans	Female	40-59	11-12	4.53	0.62	3
Mexican Americans	Female	40-59	13-14	3.70	0.72	6
Mexican Americans	Female	40-59	15-16	3.40	0.27	8
Mexican Americans	Female	60+	11-12	11.3	1	3
Mexican Americans	Female	60+	13-14	11.4	1.3	5
Mexican Americans	Female	60+	15-16	9.51	0.28	7
All Hispanics	Male	12-19	11-12	.644	0.108	7
All Hispanics	Male	12-19	13-14	.639	0.137	10
All Hispanics	Male	12-19	15-16	.565	0.116	9
All Hispanics	Male	20-39	11-12	1.69	0.18	8
All Hispanics	Male	20-39	13-14	1.23	0.14	8
All Hispanics	Male	20-39	15-16	1.30	0.13	11
All Hispanics	Male	40-59	11-12	4.77	0.52	7
All Hispanics	Male	40-59	13-14	5.20	1.05	9
All Hispanics	Male	40-59	15-16	3.90	0.86	9
All Hispanics	Male	60+	11-12	11.6	0.9	6
All Hispanics	Male	60+	13-14	14.6	1.5	7
All Hispanics	Male	60+	15-16	12.7	1.1	9
All Hispanics	Female	12-19	11-12	.506	0.084	7
All Hispanics	Female	12-19	13-14	.506	0.061	10
All Hispanics	Female	12-19	15-16	.379	0.047	8
All Hispanics	Female	20-39	11-12	1.07	0.15	8
All Hispanics	Female	20-39	13-14	3.19 **	2.2	9
All Hispanics	Female	20-39	15-16	.954	0.093	10
All Hispanics	Female	40-59	11-12	4.56	0.31	7
All Hispanics	Female	40-59	13-14	4.95	0.79	10
All Hispanics	Female	40-59	15-16	3.67	0.31	13
All Hispanics	Female	60+	11-12	13.8	2	7
All Hispanics	Female	60+	13-14	12.4	1	9
All Hispanics	Female	60+	15-16	9.55	0.3	13
Asians	Male	12-19	11-12	1.27	0.08	3
Asians	Male	12-19	13-14	1.01	0.15	3
Asians	Male	12-19	15-16	1.56 **	0.51	3
Asians	Male	20-39	11-12	3.29 **	1	6
Asians	Male	20-39	13-14	2.34	0.21	4
Asians	Male	20-39	15-16	2.61	0.48	5
Asians	Male	40-59	11-12	8.13	0.81	6
Asians	Male	40-59	13-14	7.02	1.13	4
Asians	Male	40-59	15-16	5.91	1	4
Asians	Male	60+	11-12	11.9	1.6	4
Asians	Male	60+	13-14	13.6	1.4	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	18.3	3.4	3
Asians	Female	12-19	11-12	1.05	0.15	4
Asians	Female	12-19	13-14	1.37	0.2	3
Asians	Female	12-19	15-16	.878 **	0.284	3
Asians	Female	20-39	11-12	3.02	0.52	6
Asians	Female	20-39	13-14	2.40	0.24	5
Asians	Female	20-39	15-16	1.97	0.16	4
Asians	Female	40-59	11-12	6.50	1.34	6
Asians	Female	40-59	13-14	5.62	0.44	7
Asians	Female	40-59	15-16	8.30	1.64	5
Asians	Female	60+	11-12	15.0	2.3	3
Asians	Female	60+	13-14	17.2 **	7.5	3
Asians	Female	60+	15-16	17.1 **	6.9	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (whole weight) (2005 - 2010)†

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.008	0.002	9
Non-Hispanic Whites	12-19	Male	07-08	.007	0.001	6
Non-Hispanic Whites	12-19	Male	09-10	.008	0.001	10
Non-Hispanic Whites	20-39	Male	05-06	.030	0.008	12
Non-Hispanic Whites	20-39	Male	07-08	.022	0.002	15
Non-Hispanic Whites	20-39	Male	09-10	.018	0.002	17
Non-Hispanic Whites	40-59	Male	05-06	.105	0.022	12
Non-Hispanic Whites	40-59	Male	07-08	.075	0.003	16
Non-Hispanic Whites	40-59	Male	09-10	.062	0.008	17
Non-Hispanic Whites	60+	Male	05-06	.139	0.008	15
Non-Hispanic Whites	60+	Male	07-08	.143	0.008	23
Non-Hispanic Whites	60+	Male	09-10	.109	0.007	21
Non-Hispanic Whites	12-19	Female	05-06	.005	0.001	10
Non-Hispanic Whites	12-19	Female	07-08	.006	0.002	7
Non-Hispanic Whites	12-19	Female	09-10	.005	0.001	8
Non-Hispanic Whites	20-39	Female	05-06	.015	0.002	16
Non-Hispanic Whites	20-39	Female	07-08	.017	0.003	13
Non-Hispanic Whites	20-39	Female	09-10	.011	0.001	19
Non-Hispanic Whites	40-59	Female	05-06	.063	0.005	13
Non-Hispanic Whites	40-59	Female	07-08	.060	0.003	17
Non-Hispanic Whites	40-59	Female	09-10	.059	0.006	17
Non-Hispanic Whites	60+	Female	05-06	.125	0.009	17
Non-Hispanic Whites	60+	Female	07-08	.122	0.006	21
Non-Hispanic Whites	60+	Female	09-10	.105	0.007	22
Non-Hispanic Blacks	12-19	Male	05-06	.007	0.001	13
Non-Hispanic Blacks	12-19	Male	07-08	.005	0.001	6
Non-Hispanic Blacks	12-19	Male	09-10	.005	0.001	5
Non-Hispanic Blacks	20-39	Male	05-06	.022	0.003	6
Non-Hispanic Blacks	20-39	Male	07-08	.016	0.001	6
Non-Hispanic Blacks	20-39	Male	09-10	.017	0.003	6
Non-Hispanic Blacks	40-59	Male	05-06	.072	0.007	5
Non-Hispanic Blacks	40-59	Male	07-08	.084	0.009	6
Non-Hispanic Blacks	40-59	Male	09-10	.079	0.007	7
Non-Hispanic Blacks	60+	Male	05-06	.185	0.021	5
Non-Hispanic Blacks	60+	Male	07-08	.186	0.02	8
Non-Hispanic Blacks	60+	Male	09-10	.142	0.012	9
Non-Hispanic Blacks	12-19	Female	05-06	.003	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.004	0	5
Non-Hispanic Blacks	12-19	Female	09-10	.002	0	6
Non-Hispanic Blacks	20-39	Female	05-06	.012	0.003	7
Non-Hispanic Blacks	20-39	Female	07-08	.011	0.002	8
Non-Hispanic Blacks	20-39	Female	09-10	.010	0.002	6
Non-Hispanic Blacks	40-59	Female	05-06	.071	0.008	7
Non-Hispanic Blacks	40-59	Female	07-08	.066	0.007	8
Non-Hispanic Blacks	40-59	Female	09-10	.059	0.008	7
Non-Hispanic Blacks	60+	Female	05-06	.222	0.044	5
Non-Hispanic Blacks	60+	Female	07-08	.175	0.01	7
Non-Hispanic Blacks	60+	Female	09-10	.166	0.016	7
Mexican Americans	12-19	Male	05-06	.003	0.001	11
Mexican Americans	12-19	Male	07-08	.005	0.001	6
Mexican Americans	12-19	Male	09-10	.005	0.001	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.014	0.001	9
Mexican Americans	20-39	Male	07-08	.015	0.002	9
Mexican Americans	20-39	Male	09-10	.009	0.001	8
Mexican Americans	40-59	Male	05-06	.052	0.005	4
Mexican Americans	40-59	Male	07-08	.062	0.006	6
Mexican Americans	40-59	Male	09-10	.040	0.003	8
Mexican Americans	60+	Male	05-06	.100	0.021	4
Mexican Americans	60+	Male	07-08	.115	0.009	5
Mexican Americans	60+	Male	09-10	.097	0.006	5
Mexican Americans	12-19	Female	05-06	.002	0	16
Mexican Americans	12-19	Female	07-08	.004 **	0.003	5
Mexican Americans	12-19	Female	09-10	.003	0	7
Mexican Americans	20-39	Female	05-06	.009	0.001	9
Mexican Americans	20-39	Female	07-08	.010	0.001	8
Mexican Americans	20-39	Female	09-10	.007	0.001	9
Mexican Americans	40-59	Female	05-06	.043	0.003	6
Mexican Americans	40-59	Female	07-08	.050	0.007	6
Mexican Americans	40-59	Female	09-10	.027	0.004	9
Mexican Americans	60+	Female	05-06	.089	0.009	3
Mexican Americans	60+	Female	07-08	.094	0.016	5
Mexican Americans	60+	Female	09-10	.069	0.008	6
All Hispanics	12-19	Male	09-10	.005	0.001	11
All Hispanics	20-39	Male	09-10	.013	0.002	13
All Hispanics	40-59	Male	09-10	.046	0.005	13
All Hispanics	60+	Male	09-10	.100	0.004	8
All Hispanics	12-19	Female	09-10	.003	0	10
All Hispanics	20-39	Female	09-10	.009	0.001	13
All Hispanics	40-59	Female	09-10	.030	0.004	14
All Hispanics	60+	Female	09-10	.072	0.005	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (whole weight) (2011 - 2016)†

CAS Number 35065-30-6

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.005	0.001	6
Non-Hispanic Whites	Male	12-19	13-14	.005	0	7
Non-Hispanic Whites	Male	12-19	15-16	.007 **	0.002	7
Non-Hispanic Whites	Male	20-39	11-12	.011	0.001	12
Non-Hispanic Whites	Male	20-39	13-14	.010	0.001	14
Non-Hispanic Whites	Male	20-39	15-16	.010	0.001	10
Non-Hispanic Whites	Male	40-59	11-12	.058	0.013	12
Non-Hispanic Whites	Male	40-59	13-14	.045	0.004	14
Non-Hispanic Whites	Male	40-59	15-16	.036	0.004	10
Non-Hispanic Whites	Male	60+	11-12	.088	0.005	12
Non-Hispanic Whites	Male	60+	13-14	.096	0.006	17
Non-Hispanic Whites	Male	60+	15-16	.073	0.003	14
Non-Hispanic Whites	Female	12-19	11-12	.005	0.001	5
Non-Hispanic Whites	Female	12-19	13-14	.005	0.001	6
Non-Hispanic Whites	Female	12-19	15-16	.003	0	5
Non-Hispanic Whites	Female	20-39	11-12	.010	0.001	13
Non-Hispanic Whites	Female	20-39	13-14	.009	0.001	15
Non-Hispanic Whites	Female	20-39	15-16	.006	0	11
Non-Hispanic Whites	Female	40-59	11-12	.049	0.006	11
Non-Hispanic Whites	Female	40-59	13-14	.043	0.004	16
Non-Hispanic Whites	Female	40-59	15-16	.034	0.003	9
Non-Hispanic Whites	Female	60+	11-12	.095	0.007	14
Non-Hispanic Whites	Female	60+	13-14	.099	0.006	20
Non-Hispanic Whites	Female	60+	15-16	.086	0.007	13
Non-Hispanic Blacks	Male	12-19	11-12	.004	0	7
Non-Hispanic Blacks	Male	12-19	13-14	.003	0	6
Non-Hispanic Blacks	Male	12-19	15-16	.003	0	5
Non-Hispanic Blacks	Male	20-39	11-12	.010	0.001	9
Non-Hispanic Blacks	Male	20-39	13-14	.010	0.002	7
Non-Hispanic Blacks	Male	20-39	15-16	.008	0.001	7
Non-Hispanic Blacks	Male	40-59	11-12	.055	0.012	7
Non-Hispanic Blacks	Male	40-59	13-14	.050	0.006	7
Non-Hispanic Blacks	Male	40-59	15-16	.061	0.011	7
Non-Hispanic Blacks	Male	60+	11-12	.110	0.005	9
Non-Hispanic Blacks	Male	60+	13-14	.114	0.005	9
Non-Hispanic Blacks	Male	60+	15-16	.084	0.006	7
Non-Hispanic Blacks	Female	12-19	11-12	.002	0	6
Non-Hispanic Blacks	Female	12-19	13-14	.002	0	6
Non-Hispanic Blacks	Female	12-19	15-16	.002 **	0.001	4
Non-Hispanic Blacks	Female	20-39	11-12	.009	0.002	8
Non-Hispanic Blacks	Female	20-39	13-14	.006	0.001	8
Non-Hispanic Blacks	Female	20-39	15-16	.005	0.001	9
Non-Hispanic Blacks	Female	40-59	11-12	.049	0.006	8
Non-Hispanic Blacks	Female	40-59	13-14	.038	0.004	8
Non-Hispanic Blacks	Female	40-59	15-16	.036	0.004	12
Non-Hispanic Blacks	Female	60+	11-12	.118	0.008	8
Non-Hispanic Blacks	Female	60+	13-14	.146	0.009	8
Non-Hispanic Blacks	Female	60+	15-16	.107	0.01	7
Mexican Americans	Male	12-19	11-12	.003	0.001	5
Mexican Americans	Male	12-19	13-14	.002	0	7
Mexican Americans	Male	12-19	15-16	.002	0	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.011	0.001	4
Mexican Americans	Male	20-39	13-14	.007	0.001	5
Mexican Americans	Male	20-39	15-16	.009	0.002	7
Mexican Americans	Male	40-59	11-12	.038	0.003	4
Mexican Americans	Male	40-59	13-14	.028	0.004	5
Mexican Americans	Male	40-59	15-16	.020	0.004	4
Mexican Americans	Male	60+	11-12	.060	0.005	2
Mexican Americans	Male	60+	13-14	.084	0.008	4
Mexican Americans	Male	60+	15-16	.075	0.01	5
Mexican Americans	Female	12-19	11-12	.002	0	4
Mexican Americans	Female	12-19	13-14	.002	0	7
Mexican Americans	Female	12-19	15-16	.002	0	5
Mexican Americans	Female	20-39	11-12	.006	0.001	4
Mexican Americans	Female	20-39	13-14	.005	0.001	5
Mexican Americans	Female	20-39	15-16	.005	0.001	5
Mexican Americans	Female	40-59	11-12	.027	0.004	3
Mexican Americans	Female	40-59	13-14	.021	0.004	6
Mexican Americans	Female	40-59	15-16	.022	0.002	8
Mexican Americans	Female	60+	11-12	.069	0.006	3
Mexican Americans	Female	60+	13-14	.067	0.008	5
Mexican Americans	Female	60+	15-16	.060	0.002	7
All Hispanics	Male	12-19	11-12	3.09	0.49	7
All Hispanics	Male	12-19	13-14	3.08	0.66	10
All Hispanics	Male	12-19	15-16	2.87	0.57	9
All Hispanics	Male	20-39	11-12	10.3	1.1	8
All Hispanics	Male	20-39	13-14	7.34	0.71	8
All Hispanics	Male	20-39	15-16	8.63	1.32	11
All Hispanics	Male	40-59	11-12	34.9	2.9	7
All Hispanics	Male	40-59	13-14	31.9	7	9
All Hispanics	Male	40-59	15-16	24.9	5.4	9
All Hispanics	Male	60+	11-12	68.3	5.6	6
All Hispanics	Male	60+	13-14	78.1	6.8	7
All Hispanics	Male	60+	15-16	74.6	6.3	9
All Hispanics	Female	12-19	11-12	2.48	0.38	7
All Hispanics	Female	12-19	13-14	2.37	0.3	10
All Hispanics	Female	12-19	15-16	1.77	0.18	8
All Hispanics	Female	20-39	11-12	5.81	0.74	8
All Hispanics	Female	20-39	13-14	18.2 **	12.1	9
All Hispanics	Female	20-39	15-16	5.24	0.56	10
All Hispanics	Female	40-59	11-12	28.7	2.7	7
All Hispanics	Female	40-59	13-14	28.6	4.6	10
All Hispanics	Female	40-59	15-16	23.8	2.4	13
All Hispanics	Female	60+	11-12	84.2	10.6	7
All Hispanics	Female	60+	13-14	73.8	6	9
All Hispanics	Female	60+	15-16	58.4	2	13
Asians	Male	12-19	11-12	.007	0.001	3
Asians	Male	12-19	13-14	.005	0.001	3
Asians	Male	12-19	15-16	.007 **	0.002	3
Asians	Male	20-39	11-12	.018 **	0.006	6
Asians	Male	20-39	13-14	.014	0.001	4
Asians	Male	20-39	15-16	.017	0.004	5
Asians	Male	40-59	11-12	.049	0.005	6
Asians	Male	40-59	13-14	.040	0.005	4
Asians	Male	40-59	15-16	.038	0.007	4
Asians	Male	60+	11-12	.065	0.01	4
Asians	Male	60+	13-14	.083	0.009	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.100	0.014	3
Asians	Female	12-19	11-12	.005	0.001	4
Asians	Female	12-19	13-14	.006	0.001	3
Asians	Female	12-19	15-16	.005	0.001	3
Asians	Female	20-39	11-12	.016	0.003	6
Asians	Female	20-39	13-14	.012	0.001	5
Asians	Female	20-39	15-16	.011	0.001	4
Asians	Female	40-59	11-12	.040	0.008	6
Asians	Female	40-59	13-14	.033	0.003	7
Asians	Female	40-59	15-16	.051	0.011	5
Asians	Female	60+	11-12	.086	0.015	3
Asians	Female	60+	13-14	.098 **	0.032	3
Asians	Female	60+	15-16	.106 **	0.044	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172) (lipid adjusted) (2005 - 2008)†

CAS Number 52663-74-8

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	20-39	05-06	.480	0.126	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	05-06	1.57	0.18	12
Non-Hispanic Whites	Male	40-59	07-08	1.29	0.07	16
Non-Hispanic Whites	Male	60+	05-06	2.61	0.16	15
Non-Hispanic Whites	Male	60+	07-08	2.98	0.19	23
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	40-59	05-06	1.03	0.06	13
Non-Hispanic Whites	Female	40-59	07-08	1.13	0.06	17
Non-Hispanic Whites	Female	60+	05-06	2.19	0.17	17
Non-Hispanic Whites	Female	60+	07-08	2.31	0.13	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	.404	0.074	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	05-06	1.57	0.11	5
Non-Hispanic Blacks	Male	40-59	07-08	1.85	0.22	6
Non-Hispanic Blacks	Male	60+	05-06	4.16	0.33	5
Non-Hispanic Blacks	Male	60+	07-08	4.64	0.57	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	*	*	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	05-06	1.48	0.16	7
Non-Hispanic Blacks	Female	40-59	07-08	1.48	0.14	8
Non-Hispanic Blacks	Female	60+	05-06	4.61	0.95	5
Non-Hispanic Blacks	Female	60+	07-08	4.09	0.28	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	40-59	05-06	.808	0.073	4
Mexican Americans	Male	40-59	07-08	1.32	0.17	6
Mexican Americans	Male	60+	05-06	1.86	0.45	4
Mexican Americans	Male	60+	07-08	2.34	0.26	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	40-59	05-06	.789	0.059	6
Mexican Americans	Female	40-59	07-08	.967	0.108	6
Mexican Americans	Female	60+	05-06	1.50	0.09	3
Mexican Americans	Female	60+	07-08	1.90	0.33	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.28.

* 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) (2005 - 2008)†

CAS Number 52663-74-8

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.001	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	20-39	Male	05-06	.004	0.001	12
Non-Hispanic Whites	20-39	Male	07-08	.002	0	15
Non-Hispanic Whites	40-59	Male	05-06	.012	0.002	12
Non-Hispanic Whites	40-59	Male	07-08	.009	0	16
Non-Hispanic Whites	60+	Male	05-06	.018	0.001	15
Non-Hispanic Whites	60+	Male	07-08	.019	0.001	23
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001	0	7
Non-Hispanic Whites	20-39	Female	05-06	.002	0	16
Non-Hispanic Whites	20-39	Female	07-08	.001 **	0	13
Non-Hispanic Whites	40-59	Female	05-06	.008	0.001	13
Non-Hispanic Whites	40-59	Female	07-08	.007	0	17
Non-Hispanic Whites	60+	Female	05-06	.016	0.001	17
Non-Hispanic Whites	60+	Female	07-08	.015	0.001	21
Non-Hispanic Blacks	12-19	Male	05-06	.001	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.002	0	6
Non-Hispanic Blacks	20-39	Male	07-08	.001 **	0	6
Non-Hispanic Blacks	40-59	Male	05-06	.010	0.001	5
Non-Hispanic Blacks	40-59	Male	07-08	.012	0.001	6
Non-Hispanic Blacks	60+	Male	05-06	.025	0.002	5
Non-Hispanic Blacks	60+	Male	07-08	.028	0.004	8
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.002	0	7
Non-Hispanic Blacks	20-39	Female	07-08	.001	0	8
Non-Hispanic Blacks	40-59	Female	05-06	.009	0.001	7
Non-Hispanic Blacks	40-59	Female	07-08	.009	0.001	8
Non-Hispanic Blacks	60+	Female	05-06	.031	0.006	5
Non-Hispanic Blacks	60+	Female	07-08	.025	0.002	7
Mexican Americans	12-19	Male	05-06	.001	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	20-39	Male	05-06	.002	0	9
Mexican Americans	20-39	Male	07-08	.001 **	0	9
Mexican Americans	40-59	Male	05-06	.007	0.001	4
Mexican Americans	40-59	Male	07-08	.009	0.001	6
Mexican Americans	60+	Male	05-06	.013	0.003	4
Mexican Americans	60+	Male	07-08	.017	0.001	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	20-39	Female	05-06	.001	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	40-59	Female	05-06	.006	0	6
Mexican Americans	40-59	Female	07-08	.007	0.001	6
Mexican Americans	60+	Female	05-06	.011	0.002	3
Mexican Americans	60+	Female	07-08	.013	0.002	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177) (lipid adjusted) (2005 - 2008)†

CAS Number 40186-70-7

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	20-39	05-06	.606	0.123	12
Non-Hispanic Whites	Male	20-39	07-08	.469	0.063	15
Non-Hispanic Whites	Male	40-59	05-06	1.59	0.2	12
Non-Hispanic Whites	Male	40-59	07-08	1.26	0.07	16
Non-Hispanic Whites	Male	60+	05-06	2.92	0.19	15
Non-Hispanic Whites	Male	60+	07-08	3.26	0.36	23
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	.369	0.022	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	40-59	05-06	1.24	0.1	13
Non-Hispanic Whites	Female	40-59	07-08	1.16	0.07	17
Non-Hispanic Whites	Female	60+	05-06	2.65	0.21	17
Non-Hispanic Whites	Female	60+	07-08	2.81	0.2	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	.684	0.098	6
Non-Hispanic Blacks	Male	20-39	07-08	.553	0.059	6
Non-Hispanic Blacks	Male	40-59	05-06	2.09	0.29	5
Non-Hispanic Blacks	Male	40-59	07-08	2.36	0.3	6
Non-Hispanic Blacks	Male	60+	05-06	5.62	0.59	5
Non-Hispanic Blacks	Male	60+	07-08	5.17	0.59	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	.556	0.07	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	05-06	2.36	0.22	7
Non-Hispanic Blacks	Female	40-59	07-08	2.18	0.29	8
Non-Hispanic Blacks	Female	60+	05-06	7.31	1.57	5
Non-Hispanic Blacks	Female	60+	07-08	6.47	0.53	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	20-39	05-06	.420	0.032	9
Mexican Americans	Male	20-39	07-08	.360	0.064	9
Mexican Americans	Male	40-59	05-06	1.02	0.13	4
Mexican Americans	Male	40-59	07-08	1.48	0.2	6
Mexican Americans	Male	60+	05-06	2.10	0.4	4
Mexican Americans	Male	60+	07-08	2.34	0.24	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	40-59	05-06	1.20	0.08	6
Mexican Americans	Female	40-59	07-08	1.23	0.13	6
Mexican Americans	Female	60+	05-06	2.48	0.21	3
Mexican Americans	Female	60+	07-08	2.64	0.48	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.28.

* 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) (2005 - 2008)†

CAS Number 40186-70-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.001	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	20-39	Male	05-06	.005	0.001	12
Non-Hispanic Whites	20-39	Male	07-08	.003	0	15
Non-Hispanic Whites	40-59	Male	05-06	.012	0.002	12
Non-Hispanic Whites	40-59	Male	07-08	.009	0.001	16
Non-Hispanic Whites	60+	Male	05-06	.020	0.001	15
Non-Hispanic Whites	60+	Male	07-08	.021	0.002	23
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001 **	0	7
Non-Hispanic Whites	20-39	Female	05-06	.002	0	16
Non-Hispanic Whites	20-39	Female	07-08	.003 **	0.001	13
Non-Hispanic Whites	40-59	Female	05-06	.009	0.001	13
Non-Hispanic Whites	40-59	Female	07-08	.008	0.001	17
Non-Hispanic Whites	60+	Female	05-06	.019	0.001	17
Non-Hispanic Whites	60+	Female	07-08	.019	0.001	21
Non-Hispanic Blacks	12-19	Male	05-06	.002	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.004	0.001	6
Non-Hispanic Blacks	20-39	Male	07-08	.003	0	6
Non-Hispanic Blacks	40-59	Male	05-06	.013	0.002	5
Non-Hispanic Blacks	40-59	Male	07-08	.015	0.002	6
Non-Hispanic Blacks	60+	Male	05-06	.033	0.003	5
Non-Hispanic Blacks	60+	Male	07-08	.032	0.004	8
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.003	0	7
Non-Hispanic Blacks	20-39	Female	07-08	.002	0	8
Non-Hispanic Blacks	40-59	Female	05-06	.015	0.001	7
Non-Hispanic Blacks	40-59	Female	07-08	.013	0.002	8
Non-Hispanic Blacks	60+	Female	05-06	.049	0.011	5
Non-Hispanic Blacks	60+	Female	07-08	.039	0.003	7
Mexican Americans	12-19	Male	05-06	.001	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	20-39	Male	05-06	.003	0	9
Mexican Americans	20-39	Male	07-08	.002	0	9
Mexican Americans	40-59	Male	05-06	.008	0.001	4
Mexican Americans	40-59	Male	07-08	.010	0.002	6
Mexican Americans	60+	Male	05-06	.015	0.003	4
Mexican Americans	60+	Male	07-08	.016	0.001	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	20-39	Female	05-06	.002	0	9
Mexican Americans	20-39	Female	07-08	.002	0	8
Mexican Americans	40-59	Female	05-06	.009	0	6
Mexican Americans	40-59	Female	07-08	.008	0.001	6
Mexican Americans	60+	Female	05-06	.019	0.003	3
Mexican Americans	60+	Female	07-08	.018	0.003	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (lipid adjusted) (2005 - 2010)†

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	9
Non-Hispanic Whites	Male	20-39	05-06	.735	0.151	12
Non-Hispanic Whites	Male	20-39	07-08	.591	0.065	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	15
Non-Hispanic Whites	Male	40-59	05-06	2.39	0.22	12
Non-Hispanic Whites	Male	40-59	07-08	1.81	0.09	16
Non-Hispanic Whites	Male	40-59	09-10	2.14	0.29	14
Non-Hispanic Whites	Male	60+	05-06	4.18	0.26	15
Non-Hispanic Whites	Male	60+	07-08	4.07	0.29	23
Non-Hispanic Whites	Male	60+	09-10	4.06	0.3	19
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	.460	0.036	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	17
Non-Hispanic Whites	Female	40-59	05-06	1.59	0.12	13
Non-Hispanic Whites	Female	40-59	07-08	1.49	0.08	17
Non-Hispanic Whites	Female	40-59	09-10	1.69	0.14	16
Non-Hispanic Whites	Female	60+	05-06	3.55	0.29	17
Non-Hispanic Whites	Female	60+	07-08	3.44	0.17	21
Non-Hispanic Whites	Female	60+	09-10	3.67	0.31	22
Non-Hispanic Blacks	Male	12-19	05-06	.351	0.049	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	5
Non-Hispanic Blacks	Male	20-39	05-06	.854	0.136	6
Non-Hispanic Blacks	Male	20-39	07-08	.564	0.089	6
Non-Hispanic Blacks	Male	20-39	09-10	*	*	6
Non-Hispanic Blacks	Male	40-59	05-06	2.78	0.15	5
Non-Hispanic Blacks	Male	40-59	07-08	2.85	0.27	6
Non-Hispanic Blacks	Male	40-59	09-10	3.30	0.43	7
Non-Hispanic Blacks	Male	60+	05-06	7.22	0.75	5
Non-Hispanic Blacks	Male	60+	07-08	6.82	0.72	8
Non-Hispanic Blacks	Male	60+	09-10	7.03	0.63	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	.545	0.092	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	6
Non-Hispanic Blacks	Female	40-59	05-06	2.39	0.27	7
Non-Hispanic Blacks	Female	40-59	07-08	2.11	0.22	8
Non-Hispanic Blacks	Female	40-59	09-10	2.58	0.67	6
Non-Hispanic Blacks	Female	60+	05-06	7.83	1.63	5
Non-Hispanic Blacks	Female	60+	07-08	6.33	0.52	7
Non-Hispanic Blacks	Female	60+	09-10	6.41	0.98	6
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	.382	0.039	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	20-39	09-10	*	*	7
Mexican Americans	Male	40-59	05-06	1.14	0.08	4
Mexican Americans	Male	40-59	07-08	1.58	0.19	6
Mexican Americans	Male	40-59	09-10	1.24	0.11	8
Mexican Americans	Male	60+	05-06	2.79	0.67	4
Mexican Americans	Male	60+	07-08	3.23	0.4	5
Mexican Americans	Male	60+	09-10	3.58	0.2	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	1.12	0.08	6
Mexican Americans	Female	40-59	07-08	1.37	0.21	6
Mexican Americans	Female	40-59	09-10	.746	0.123	9
Mexican Americans	Female	60+	05-06	2.42	0.2	3
Mexican Americans	Female	60+	07-08	3.00	0.53	5
Mexican Americans	Female	60+	09-10	2.40	0.32	6
All Hispanics	Male	12-19	09-10	*	*	9
All Hispanics	Male	20-39	09-10	*	*	12
All Hispanics	Male	40-59	09-10	1.57	0.22	12
All Hispanics	Male	60+	09-10	3.71	0.28	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	.917	0.129	14
All Hispanics	Female	60+	09-10	2.51	0.21	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.28, and 0.62, 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/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (lipid adjusted) (2011 - 2016)†

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.255	0.038	5
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	.348	0.017	12
Non-Hispanic Whites	Male	20-39	13-14	.331	0.03	14
Non-Hispanic Whites	Male	20-39	15-16	.283	0.03	10
Non-Hispanic Whites	Male	40-59	11-12	1.62	0.26	12
Non-Hispanic Whites	Male	40-59	13-14	1.43	0.11	14
Non-Hispanic Whites	Male	40-59	15-16	1.08	0.15	10
Non-Hispanic Whites	Male	60+	11-12	3.28	0.2	12
Non-Hispanic Whites	Male	60+	13-14	3.46	0.24	17
Non-Hispanic Whites	Male	60+	15-16	2.64	0.12	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.354	0.044	12
Non-Hispanic Whites	Female	20-39	13-14	.301	0.032	15
Non-Hispanic Whites	Female	20-39	15-16	.274	0.046	11
Non-Hispanic Whites	Female	40-59	11-12	1.46	0.12	11
Non-Hispanic Whites	Female	40-59	13-14	1.26	0.12	16
Non-Hispanic Whites	Female	40-59	15-16	1.10	0.13	9
Non-Hispanic Whites	Female	60+	11-12	3.27	0.28	14
Non-Hispanic Whites	Female	60+	13-14	3.54	0.26	20
Non-Hispanic Whites	Female	60+	15-16	2.78	0.25	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	.529	0.057	9
Non-Hispanic Blacks	Male	20-39	13-14	.392	0.074	7
Non-Hispanic Blacks	Male	20-39	15-16	.359	0.023	7
Non-Hispanic Blacks	Male	40-59	11-12	2.80	0.72	7
Non-Hispanic Blacks	Male	40-59	13-14	2.08	0.29	7
Non-Hispanic Blacks	Male	40-59	15-16	2.63	0.59	7
Non-Hispanic Blacks	Male	60+	11-12	4.78	0.25	9
Non-Hispanic Blacks	Male	60+	13-14	6.03	0.71	9
Non-Hispanic Blacks	Male	60+	15-16	3.82	0.32	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.275	0.049	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	1.82	0.17	8
Non-Hispanic Blacks	Female	40-59	13-14	1.57	0.19	8
Non-Hispanic Blacks	Female	40-59	15-16	1.18	0.13	12
Non-Hispanic Blacks	Female	60+	11-12	5.02	0.41	8
Non-Hispanic Blacks	Female	60+	13-14	6.38	0.46	8
Non-Hispanic Blacks	Female	60+	15-16	4.02	0.52	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.361	0.076	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	.287	0.074	7
Mexican Americans	Male	40-59	11-12	.881	0.205	4
Mexican Americans	Male	40-59	13-14	.902	0.191	5
Mexican Americans	Male	40-59	15-16	.517	0.145	4
Mexican Americans	Male	60+	11-12	2.04	0.34	2
Mexican Americans	Male	60+	13-14	3.00	0.35	4
Mexican Americans	Male	60+	15-16	2.77	0.33	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	.758	0.115	3
Mexican Americans	Female	40-59	13-14	.668	0.136	6
Mexican Americans	Female	40-59	15-16	.590	0.056	8
Mexican Americans	Female	60+	11-12	2.35	0.14	3
Mexican Americans	Female	60+	13-14	2.16	0.26	5
Mexican Americans	Female	60+	15-16	1.90	0.07	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	.370	0.042	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	.285	0.051	11
All Hispanics	Male	40-59	11-12	.908	0.137	7
All Hispanics	Male	40-59	13-14	1.07 **	0.34	9
All Hispanics	Male	40-59	15-16	.834 **	0.261	8
All Hispanics	Male	60+	11-12	2.45	0.24	6
All Hispanics	Male	60+	13-14	2.92	0.28	7
All Hispanics	Male	60+	15-16	2.66	0.2	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	.530 **	0.325	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	.846	0.126	7
All Hispanics	Female	40-59	13-14	.849	0.142	10
All Hispanics	Female	40-59	15-16	.662	0.065	13
All Hispanics	Female	60+	11-12	3.12	0.52	7
All Hispanics	Female	60+	13-14	2.35	0.21	9
All Hispanics	Female	60+	15-16	1.89	0.08	13
Asians	Male	12-19	11-12	.430	0.077	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	.412 **	0.193	3
Asians	Male	20-39	11-12	.779 **	0.272	6
Asians	Male	20-39	13-14	.642	0.091	4
Asians	Male	20-39	15-16	.644	0.176	5
Asians	Male	40-59	11-12	2.80	0.43	6
Asians	Male	40-59	13-14	1.84	0.4	4
Asians	Male	40-59	15-16	1.78	0.27	4
Asians	Male	60+	11-12	3.58	0.44	4
Asians	Male	60+	13-14	4.31	0.67	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	5.77	1.4	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	.260	0.03	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	.904	0.173	6
Asians	Female	20-39	13-14	.726	0.09	4
Asians	Female	20-39	15-16	.493	0.032	4
Asians	Female	40-59	11-12	1.86	0.46	6
Asians	Female	40-59	13-14	1.52	0.17	7
Asians	Female	40-59	15-16	3.03	0.77	5
Asians	Female	60+	11-12	4.53	0.41	3
Asians	Female	60+	13-14	4.94 **	2.38	3
Asians	Female	60+	15-16	6.07 **	3.15	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (whole weight) (2005 - 2010)†

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.002	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	12-19	Male	09-10	.001	0	9
Non-Hispanic Whites	20-39	Male	05-06	.006	0.001	12
Non-Hispanic Whites	20-39	Male	07-08	.004	0	15
Non-Hispanic Whites	20-39	Male	09-10	.003	0	15
Non-Hispanic Whites	40-59	Male	05-06	.018	0.002	12
Non-Hispanic Whites	40-59	Male	07-08	.013	0.001	16
Non-Hispanic Whites	40-59	Male	09-10	.015	0.002	14
Non-Hispanic Whites	60+	Male	05-06	.028	0.002	15
Non-Hispanic Whites	60+	Male	07-08	.026	0.002	23
Non-Hispanic Whites	60+	Male	09-10	.025	0.002	19
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001	0	7
Non-Hispanic Whites	12-19	Female	09-10	.001	0	8
Non-Hispanic Whites	20-39	Female	05-06	.003	0	16
Non-Hispanic Whites	20-39	Female	07-08	.002 **	0.001	13
Non-Hispanic Whites	20-39	Female	09-10	.002	0	17
Non-Hispanic Whites	40-59	Female	05-06	.012	0.001	13
Non-Hispanic Whites	40-59	Female	07-08	.010	0.001	17
Non-Hispanic Whites	40-59	Female	09-10	.011	0.001	16
Non-Hispanic Whites	60+	Female	05-06	.026	0.002	17
Non-Hispanic Whites	60+	Female	07-08	.023	0.001	21
Non-Hispanic Whites	60+	Female	09-10	.022	0.002	22
Non-Hispanic Blacks	12-19	Male	05-06	.002	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.002	0	6
Non-Hispanic Blacks	12-19	Male	09-10	.002	0	5
Non-Hispanic Blacks	20-39	Male	05-06	.005	0.001	6
Non-Hispanic Blacks	20-39	Male	07-08	.003	0	6
Non-Hispanic Blacks	20-39	Male	09-10	.003	0	6
Non-Hispanic Blacks	40-59	Male	05-06	.018	0.001	5
Non-Hispanic Blacks	40-59	Male	07-08	.018	0.002	6
Non-Hispanic Blacks	40-59	Male	09-10	.020	0.002	7
Non-Hispanic Blacks	60+	Male	05-06	.043	0.005	5
Non-Hispanic Blacks	60+	Male	07-08	.041	0.005	8
Non-Hispanic Blacks	60+	Male	09-10	.038	0.004	9
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	12-19	Female	09-10	.001	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.003	0.001	7
Non-Hispanic Blacks	20-39	Female	07-08	.002	0	8
Non-Hispanic Blacks	20-39	Female	09-10	.002	0.001	6
Non-Hispanic Blacks	40-59	Female	05-06	.015	0.002	7
Non-Hispanic Blacks	40-59	Female	07-08	.013	0.002	8
Non-Hispanic Blacks	40-59	Female	09-10	.014	0.003	6
Non-Hispanic Blacks	60+	Female	05-06	.052	0.011	5
Non-Hispanic Blacks	60+	Female	07-08	.038	0.003	7
Non-Hispanic Blacks	60+	Female	09-10	.037	0.006	6
Mexican Americans	12-19	Male	05-06	.001	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	12-19	Male	09-10	.001	0	7

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.003	0	9
Mexican Americans	20-39	Male	07-08	.003	0.001	9
Mexican Americans	20-39	Male	09-10	.002	0	7
Mexican Americans	40-59	Male	05-06	.009	0.001	4
Mexican Americans	40-59	Male	07-08	.011	0.001	6
Mexican Americans	40-59	Male	09-10	.009	0.001	8
Mexican Americans	60+	Male	05-06	.020	0.004	4
Mexican Americans	60+	Male	07-08	.023	0.002	5
Mexican Americans	60+	Male	09-10	.022	0.001	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	12-19	Female	09-10	.001	0	7
Mexican Americans	20-39	Female	05-06	.002	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	20-39	Female	09-10	.001	0	10
Mexican Americans	40-59	Female	05-06	.008	0	6
Mexican Americans	40-59	Female	07-08	.009	0.001	6
Mexican Americans	40-59	Female	09-10	.005	0.001	9
Mexican Americans	60+	Female	05-06	.019	0.003	3
Mexican Americans	60+	Female	07-08	.021	0.004	5
Mexican Americans	60+	Female	09-10	.013	0.002	6
All Hispanics	12-19	Male	09-10	.001	0	9
All Hispanics	20-39	Male	09-10	.003	0.001	12
All Hispanics	40-59	Male	09-10	.011	0.002	12
All Hispanics	60+	Male	09-10	.023	0.001	8
All Hispanics	12-19	Female	09-10	.001	0	10
All Hispanics	20-39	Female	09-10	.002	0	14
All Hispanics	40-59	Female	09-10	.006	0.001	14
All Hispanics	60+	Female	09-10	.015	0.001	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (whole weight) (2011 - 2016)†

CAS Number 52663-67-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.001	0	5
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	.002	0	12
Non-Hispanic Whites	Male	20-39	13-14	.002	0	14
Non-Hispanic Whites	Male	20-39	15-16	.002	0	10
Non-Hispanic Whites	Male	40-59	11-12	.011	0.002	12
Non-Hispanic Whites	Male	40-59	13-14	.008	0.001	14
Non-Hispanic Whites	Male	40-59	15-16	.007	0.001	10
Non-Hispanic Whites	Male	60+	11-12	.018	0.001	12
Non-Hispanic Whites	Male	60+	13-14	.019	0.001	17
Non-Hispanic Whites	Male	60+	15-16	.014	0.001	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.002	0	12
Non-Hispanic Whites	Female	20-39	13-14	.002	0	15
Non-Hispanic Whites	Female	20-39	15-16	.001	0	11
Non-Hispanic Whites	Female	40-59	11-12	.009	0.001	11
Non-Hispanic Whites	Female	40-59	13-14	.007	0.001	16
Non-Hispanic Whites	Female	40-59	15-16	.007	0.001	9
Non-Hispanic Whites	Female	60+	11-12	.020	0.002	14
Non-Hispanic Whites	Female	60+	13-14	.021	0.002	20
Non-Hispanic Whites	Female	60+	15-16	.017	0.001	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	.003	0	9
Non-Hispanic Blacks	Male	20-39	13-14	.002	0	7
Non-Hispanic Blacks	Male	20-39	15-16	.002	0	7
Non-Hispanic Blacks	Male	40-59	11-12	.016	0.004	7
Non-Hispanic Blacks	Male	40-59	13-14	.012	0.002	7
Non-Hispanic Blacks	Male	40-59	15-16	.016	0.003	7
Non-Hispanic Blacks	Male	60+	11-12	.026	0.001	9
Non-Hispanic Blacks	Male	60+	13-14	.031	0.004	9
Non-Hispanic Blacks	Male	60+	15-16	.020	0.001	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.002	0	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.011	0.001	8
Non-Hispanic Blacks	Female	40-59	13-14	.008	0.001	8
Non-Hispanic Blacks	Female	40-59	15-16	.007	0.001	12
Non-Hispanic Blacks	Female	60+	11-12	.028	0.002	8
Non-Hispanic Blacks	Female	60+	13-14	.034	0.002	8
Non-Hispanic Blacks	Female	60+	15-16	.024	0.003	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.002	0	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	.002 **	0.001	7
Mexican Americans	Male	40-59	11-12	.007	0.001	4
Mexican Americans	Male	40-59	13-14	.006	0.001	5
Mexican Americans	Male	40-59	15-16	.003 **	0.001	4
Mexican Americans	Male	60+	11-12	.012	0.002	2
Mexican Americans	Male	60+	13-14	.016	0.002	4
Mexican Americans	Male	60+	15-16	.016	0.002	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	.004	0.001	3
Mexican Americans	Female	40-59	13-14	.004	0.001	6
Mexican Americans	Female	40-59	15-16	.004	0	8
Mexican Americans	Female	60+	11-12	.014	0.001	3
Mexican Americans	Female	60+	13-14	.013	0.002	5
Mexican Americans	Female	60+	15-16	.012	0.001	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	2.20	0.2	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	1.96	0.53	11
All Hispanics	Male	40-59	11-12	6.52	0.81	7
All Hispanics	Male	40-59	13-14	6.66 **	2.3	9
All Hispanics	Male	40-59	15-16	5.29 **	1.62	8
All Hispanics	Male	60+	11-12	14.3	1.3	6
All Hispanics	Male	60+	13-14	15.7	1.2	7
All Hispanics	Male	60+	15-16	15.6	1.1	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	3.01 **	1.8	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	5.45	1.01	7
All Hispanics	Female	40-59	13-14	4.90	0.82	10
All Hispanics	Female	40-59	15-16	4.30	0.5	13
All Hispanics	Female	60+	11-12	19.0	2.8	7
All Hispanics	Female	60+	13-14	13.9	1.2	9
All Hispanics	Female	60+	15-16	11.5	0.5	13
Asians	Male	12-19	11-12	.002	0	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	.002 **	0.001	3
Asians	Male	20-39	11-12	.004 **	0.002	6
Asians	Male	20-39	13-14	.004	0.001	4
Asians	Male	20-39	15-16	.004 **	0.001	5
Asians	Male	40-59	11-12	.017	0.003	6
Asians	Male	40-59	13-14	.011	0.002	4
Asians	Male	40-59	15-16	.011	0.002	4
Asians	Male	60+	11-12	.019	0.003	4
Asians	Male	60+	13-14	.027	0.004	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.031	0.006	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	.001	0	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	.005	0.001	6
Asians	Female	20-39	13-14	.004	0.001	4
Asians	Female	20-39	15-16	.003	0	4
Asians	Female	40-59	11-12	.011	0.003	6
Asians	Female	40-59	13-14	.009	0.001	7
Asians	Female	40-59	15-16	.018	0.005	5
Asians	Female	60+	11-12	.026	0.003	3
Asians	Female	60+	13-14	.028 **	0.01	3
Asians	Female	60+	15-16	.038 **	0.02	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (lipid adjusted) (2005 - 2010)†

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	4.20	0.71	9
Non-Hispanic Whites	Male	12-19	07-08	3.50	0.59	6
Non-Hispanic Whites	Male	12-19	09-10	3.75	0.4	10
Non-Hispanic Whites	Male	20-39	05-06	10.7	2.6	12
Non-Hispanic Whites	Male	20-39	07-08	8.43	0.62	15
Non-Hispanic Whites	Male	20-39	09-10	7.12	0.73	17
Non-Hispanic Whites	Male	40-59	05-06	37.8	6.8	12
Non-Hispanic Whites	Male	40-59	07-08	25.8	1	16
Non-Hispanic Whites	Male	40-59	09-10	25.4	3	17
Non-Hispanic Whites	Male	60+	05-06	58.6	3.4	15
Non-Hispanic Whites	Male	60+	07-08	57.6	3.3	23
Non-Hispanic Whites	Male	60+	09-10	51.3	3.4	21
Non-Hispanic Whites	Female	12-19	05-06	2.70	0.27	10
Non-Hispanic Whites	Female	12-19	07-08	2.82	0.76	7
Non-Hispanic Whites	Female	12-19	09-10	2.51	0.51	8
Non-Hispanic Whites	Female	20-39	05-06	6.45	0.74	16
Non-Hispanic Whites	Female	20-39	07-08	6.65	0.89	13
Non-Hispanic Whites	Female	20-39	09-10	5.24	0.33	19
Non-Hispanic Whites	Female	40-59	05-06	22.4	1.2	13
Non-Hispanic Whites	Female	40-59	07-08	22.3	1.1	17
Non-Hispanic Whites	Female	40-59	09-10	23.2	2.1	17
Non-Hispanic Whites	Female	60+	05-06	48.3	3.7	17
Non-Hispanic Whites	Female	60+	07-08	45.7	2.2	21
Non-Hispanic Whites	Female	60+	09-10	46.0	3.1	22
Non-Hispanic Blacks	Male	12-19	05-06	4.06	0.56	13
Non-Hispanic Blacks	Male	12-19	07-08	3.54	0.63	6
Non-Hispanic Blacks	Male	12-19	09-10	3.08	0.19	6
Non-Hispanic Blacks	Male	20-39	05-06	10.5	1.3	6
Non-Hispanic Blacks	Male	20-39	07-08	7.36	0.75	6
Non-Hispanic Blacks	Male	20-39	09-10	7.98	1.03	7
Non-Hispanic Blacks	Male	40-59	05-06	32.8	2.3	5
Non-Hispanic Blacks	Male	40-59	07-08	34.2	3.5	6
Non-Hispanic Blacks	Male	40-59	09-10	35.0	3	7
Non-Hispanic Blacks	Male	60+	05-06	88.0	8.6	5
Non-Hispanic Blacks	Male	60+	07-08	82.5	9.3	8
Non-Hispanic Blacks	Male	60+	09-10	78.4	5.8	9
Non-Hispanic Blacks	Female	12-19	05-06	2.10	0.16	14
Non-Hispanic Blacks	Female	12-19	07-08	2.02	0.27	5
Non-Hispanic Blacks	Female	12-19	09-10	1.45	0.09	6
Non-Hispanic Blacks	Female	20-39	05-06	6.93	1.06	7
Non-Hispanic Blacks	Female	20-39	07-08	5.69	0.83	8
Non-Hispanic Blacks	Female	20-39	09-10	4.76	0.75	7
Non-Hispanic Blacks	Female	40-59	05-06	30.5	3.1	7
Non-Hispanic Blacks	Female	40-59	07-08	26.4	2.4	8
Non-Hispanic Blacks	Female	40-59	09-10	27.5	5	7
Non-Hispanic Blacks	Female	60+	05-06	88.6	17.3	5
Non-Hispanic Blacks	Female	60+	07-08	73.1	3.9	7
Non-Hispanic Blacks	Female	60+	09-10	79.3	9	7
Mexican Americans	Male	12-19	05-06	2.04	0.29	11
Mexican Americans	Male	12-19	07-08	2.24	0.34	6
Mexican Americans	Male	12-19	09-10	3.05	0.46	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	5.12	0.28	9
Mexican Americans	Male	20-39	07-08	5.47	0.57	9
Mexican Americans	Male	20-39	09-10	4.06	0.46	8
Mexican Americans	Male	40-59	05-06	15.9	1.3	4
Mexican Americans	Male	40-59	07-08	20.9	2.3	6
Mexican Americans	Male	40-59	09-10	15.0	1	8
Mexican Americans	Male	60+	05-06	39.3	10.1	4
Mexican Americans	Male	60+	07-08	42.0	4.9	5
Mexican Americans	Male	60+	09-10	44.8	3.2	5
Mexican Americans	Female	12-19	05-06	1.78	0.18	16
Mexican Americans	Female	12-19	07-08	2.10 **	1.13	5
Mexican Americans	Female	12-19	09-10	1.31	0.11	7
Mexican Americans	Female	20-39	05-06	3.45	0.6	9
Mexican Americans	Female	20-39	07-08	3.88	0.2	8
Mexican Americans	Female	20-39	09-10	3.22	0.38	10
Mexican Americans	Female	40-59	05-06	15.5	1.4	6
Mexican Americans	Female	40-59	07-08	18.2	2.4	6
Mexican Americans	Female	40-59	09-10	10.8	1.4	9
Mexican Americans	Female	60+	05-06	30.9	0.3	3
Mexican Americans	Female	60+	07-08	33.7	6	5
Mexican Americans	Female	60+	09-10	34.8	4.6	6
All Hispanics	Male	12-19	09-10	2.90	0.35	11
All Hispanics	Male	20-39	09-10	4.87	0.49	13
All Hispanics	Male	40-59	09-10	17.7	1.9	13
All Hispanics	Male	60+	09-10	45.0	2.9	8
All Hispanics	Female	12-19	09-10	1.49	0.17	10
All Hispanics	Female	20-39	09-10	3.68	0.39	14
All Hispanics	Female	40-59	09-10	12.1	1.4	14
All Hispanics	Female	60+	09-10	32.9	3	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.25, 0.28, and 0.62, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (lipid adjusted) (2011 - 2016)†

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	3.05	0.4	6
Non-Hispanic Whites	Male	12-19	13-14	2.46	0.24	8
Non-Hispanic Whites	Male	12-19	15-16	3.16	0.73	7
Non-Hispanic Whites	Male	20-39	11-12	5.21	0.41	12
Non-Hispanic Whites	Male	20-39	13-14	4.39	0.33	14
Non-Hispanic Whites	Male	20-39	15-16	4.28	0.23	10
Non-Hispanic Whites	Male	40-59	11-12	21.9	3.4	12
Non-Hispanic Whites	Male	40-59	13-14	19.1	1.6	14
Non-Hispanic Whites	Male	40-59	15-16	14.1	1.4	10
Non-Hispanic Whites	Male	60+	11-12	45.3	2.5	12
Non-Hispanic Whites	Male	60+	13-14	50.0	2.5	17
Non-Hispanic Whites	Male	60+	15-16	37.5	1.2	14
Non-Hispanic Whites	Female	12-19	11-12	2.47	0.5	5
Non-Hispanic Whites	Female	12-19	13-14	2.04	0.22	6
Non-Hispanic Whites	Female	12-19	15-16	1.41	0.28	5
Non-Hispanic Whites	Female	20-39	11-12	4.79	0.56	13
Non-Hispanic Whites	Female	20-39	13-14	4.12	0.44	15
Non-Hispanic Whites	Female	20-39	15-16	2.65	0.11	11
Non-Hispanic Whites	Female	40-59	11-12	19.6	1.8	11
Non-Hispanic Whites	Female	40-59	13-14	18.3	1.9	16
Non-Hispanic Whites	Female	40-59	15-16	14.2	1.2	9
Non-Hispanic Whites	Female	60+	11-12	42.3	3.2	14
Non-Hispanic Whites	Female	60+	13-14	44.5	2.5	20
Non-Hispanic Whites	Female	60+	15-16	37.5	3.9	13
Non-Hispanic Blacks	Male	12-19	11-12	2.33	0.23	7
Non-Hispanic Blacks	Male	12-19	13-14	1.92	0.15	6
Non-Hispanic Blacks	Male	12-19	15-16	1.83	0.3	5
Non-Hispanic Blacks	Male	20-39	11-12	5.03	0.29	9
Non-Hispanic Blacks	Male	20-39	13-14	5.01	0.83	7
Non-Hispanic Blacks	Male	20-39	15-16	3.94	0.24	7
Non-Hispanic Blacks	Male	40-59	11-12	28.8	7	7
Non-Hispanic Blacks	Male	40-59	13-14	24.3	2.9	7
Non-Hispanic Blacks	Male	40-59	15-16	26.1	4.9	7
Non-Hispanic Blacks	Male	60+	11-12	58.5	2.6	9
Non-Hispanic Blacks	Male	60+	13-14	60.6	5	9
Non-Hispanic Blacks	Male	60+	15-16	43.9	3.4	7
Non-Hispanic Blacks	Female	12-19	11-12	1.34	0.25	6
Non-Hispanic Blacks	Female	12-19	13-14	1.22	0.11	6
Non-Hispanic Blacks	Female	12-19	15-16	1.35 **	0.61	4
Non-Hispanic Blacks	Female	20-39	11-12	3.84	0.7	8
Non-Hispanic Blacks	Female	20-39	13-14	2.87	0.32	8
Non-Hispanic Blacks	Female	20-39	15-16	2.74	0.29	9
Non-Hispanic Blacks	Female	40-59	11-12	20.8	2.1	8
Non-Hispanic Blacks	Female	40-59	13-14	19.5	1.9	8
Non-Hispanic Blacks	Female	40-59	15-16	16.0	1.5	12
Non-Hispanic Blacks	Female	60+	11-12	56.0	4.3	8
Non-Hispanic Blacks	Female	60+	13-14	73.6	5.6	8
Non-Hispanic Blacks	Female	60+	15-16	48.2	4.5	7
Mexican Americans	Male	12-19	11-12	1.48	0.19	5
Mexican Americans	Male	12-19	13-14	1.20	0.07	7
Mexican Americans	Male	12-19	15-16	1.27	0.1	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	4.56	0.73	4
Mexican Americans	Male	20-39	13-14	2.51	0.31	5
Mexican Americans	Male	20-39	15-16	3.13	0.4	7
Mexican Americans	Male	40-59	11-12	12.8	2	4
Mexican Americans	Male	40-59	13-14	12.4	2.3	5
Mexican Americans	Male	40-59	15-16	7.64	1.5	4
Mexican Americans	Male	60+	11-12	26.9	3.2	2
Mexican Americans	Male	60+	13-14	41.7	4.4	4
Mexican Americans	Male	60+	15-16	35.1	4.3	5
Mexican Americans	Female	12-19	11-12	.900	0.184	4
Mexican Americans	Female	12-19	13-14	1.12	0.09	7
Mexican Americans	Female	12-19	15-16	.837	0.041	5
Mexican Americans	Female	20-39	11-12	2.82	0.65	4
Mexican Americans	Female	20-39	13-14	2.27	0.39	5
Mexican Americans	Female	20-39	15-16	2.09	0.24	6
Mexican Americans	Female	40-59	11-12	10.8	1.8	3
Mexican Americans	Female	40-59	13-14	9.26	1.81	6
Mexican Americans	Female	40-59	15-16	8.47	0.71	8
Mexican Americans	Female	60+	11-12	29.8	2.7	3
Mexican Americans	Female	60+	13-14	29.9	3.4	5
Mexican Americans	Female	60+	15-16	25.3	1	7
All Hispanics	Male	12-19	11-12	1.57	0.18	7
All Hispanics	Male	12-19	13-14	1.45	0.28	10
All Hispanics	Male	12-19	15-16	1.35	0.2	9
All Hispanics	Male	20-39	11-12	4.39	0.45	8
All Hispanics	Male	20-39	13-14	2.92	0.34	8
All Hispanics	Male	20-39	15-16	3.36	0.33	11
All Hispanics	Male	40-59	11-12	12.0	1.4	7
All Hispanics	Male	40-59	13-14	13.5	2.8	9
All Hispanics	Male	40-59	15-16	10.1	2.4	9
All Hispanics	Male	60+	11-12	30.9	2.4	6
All Hispanics	Male	60+	13-14	38.8	3.9	7
All Hispanics	Male	60+	15-16	34.4	2.8	9
All Hispanics	Female	12-19	11-12	1.24	0.21	7
All Hispanics	Female	12-19	13-14	1.24	0.14	10
All Hispanics	Female	12-19	15-16	.851	0.095	8
All Hispanics	Female	20-39	11-12	2.63	0.35	8
All Hispanics	Female	20-39	13-14	6.32 **	4	9
All Hispanics	Female	20-39	15-16	2.21	0.17	11
All Hispanics	Female	40-59	11-12	11.7	1	7
All Hispanics	Female	40-59	13-14	12.2	1.9	10
All Hispanics	Female	40-59	15-16	9.05	0.74	13
All Hispanics	Female	60+	11-12	36.7	5.6	7
All Hispanics	Female	60+	13-14	32.2	2.7	9
All Hispanics	Female	60+	15-16	24.9	0.9	13
Asians	Male	12-19	11-12	3.56	0.41	3
Asians	Male	12-19	13-14	2.48	0.51	3
Asians	Male	12-19	15-16	4.31	1.2	3
Asians	Male	20-39	11-12	8.69 **	2.93	6
Asians	Male	20-39	13-14	6.10	0.51	4
Asians	Male	20-39	15-16	6.60	1.35	5
Asians	Male	40-59	11-12	24.0	3	6
Asians	Male	40-59	13-14	19.3	3.2	4
Asians	Male	40-59	15-16	16.5	3	4
Asians	Male	60+	11-12	35.2	5	4
Asians	Male	60+	13-14	40.0	5.7	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	51.6	10.3	3
Asians	Female	12-19	11-12	2.77	0.45	4
Asians	Female	12-19	13-14	2.75	0.15	3
Asians	Female	12-19	15-16	2.47 **	0.85	3
Asians	Female	20-39	11-12	7.50	1.3	6
Asians	Female	20-39	13-14	7.01	0.68	5
Asians	Female	20-39	15-16	5.14	0.42	4
Asians	Female	40-59	11-12	17.9	3.9	6
Asians	Female	40-59	13-14	14.9	1.4	7
Asians	Female	40-59	15-16	23.7	4.4	5
Asians	Female	60+	11-12	42.9	7.6	3
Asians	Female	60+	13-14	46.6 **	20.2	3
Asians	Female	60+	15-16	50.7 **	20.9	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.3, 0.25, and 0.25, respectively.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (whole weight) (2005 - 2010)†

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.023	0.004	9
Non-Hispanic Whites	12-19	Male	07-08	.017	0.003	6
Non-Hispanic Whites	12-19	Male	09-10	.020	0.002	10
Non-Hispanic Whites	20-39	Male	05-06	.081	0.023	12
Non-Hispanic Whites	20-39	Male	07-08	.056	0.005	15
Non-Hispanic Whites	20-39	Male	09-10	.047	0.005	17
Non-Hispanic Whites	40-59	Male	05-06	.288	0.058	12
Non-Hispanic Whites	40-59	Male	07-08	.188	0.008	16
Non-Hispanic Whites	40-59	Male	09-10	.173	0.021	17
Non-Hispanic Whites	60+	Male	05-06	.397	0.02	15
Non-Hispanic Whites	60+	Male	07-08	.369	0.02	23
Non-Hispanic Whites	60+	Male	09-10	.311	0.021	21
Non-Hispanic Whites	12-19	Female	05-06	.014	0.002	10
Non-Hispanic Whites	12-19	Female	07-08	.014	0.004	7
Non-Hispanic Whites	12-19	Female	09-10	.012	0.003	8
Non-Hispanic Whites	20-39	Female	05-06	.042	0.005	16
Non-Hispanic Whites	20-39	Female	07-08	.040	0.006	13
Non-Hispanic Whites	20-39	Female	09-10	.028	0.002	19
Non-Hispanic Whites	40-59	Female	05-06	.167	0.014	13
Non-Hispanic Whites	40-59	Female	07-08	.147	0.008	17
Non-Hispanic Whites	40-59	Female	09-10	.146	0.013	17
Non-Hispanic Whites	60+	Female	05-06	.350	0.025	17
Non-Hispanic Whites	60+	Female	07-08	.306	0.014	21
Non-Hispanic Whites	60+	Female	09-10	.281	0.019	22
Non-Hispanic Blacks	12-19	Male	05-06	.020	0.003	13
Non-Hispanic Blacks	12-19	Male	07-08	.017	0.003	6
Non-Hispanic Blacks	12-19	Male	09-10	.014	0.001	6
Non-Hispanic Blacks	20-39	Male	05-06	.062	0.008	6
Non-Hispanic Blacks	20-39	Male	07-08	.041	0.004	6
Non-Hispanic Blacks	20-39	Male	09-10	.045	0.006	7
Non-Hispanic Blacks	40-59	Male	05-06	.209	0.015	5
Non-Hispanic Blacks	40-59	Male	07-08	.219	0.023	6
Non-Hispanic Blacks	40-59	Male	09-10	.216	0.019	7
Non-Hispanic Blacks	60+	Male	05-06	.527	0.054	5
Non-Hispanic Blacks	60+	Male	07-08	.501	0.059	8
Non-Hispanic Blacks	60+	Male	09-10	.420	0.033	9
Non-Hispanic Blacks	12-19	Female	05-06	.010	0.001	14
Non-Hispanic Blacks	12-19	Female	07-08	.010	0.001	5
Non-Hispanic Blacks	12-19	Female	09-10	.006	0.001	6
Non-Hispanic Blacks	20-39	Female	05-06	.040	0.006	7
Non-Hispanic Blacks	20-39	Female	07-08	.029	0.004	8
Non-Hispanic Blacks	20-39	Female	09-10	.024	0.004	7
Non-Hispanic Blacks	40-59	Female	05-06	.196	0.021	7
Non-Hispanic Blacks	40-59	Female	07-08	.160	0.017	8
Non-Hispanic Blacks	40-59	Female	09-10	.153	0.025	7
Non-Hispanic Blacks	60+	Female	05-06	.589	0.113	5
Non-Hispanic Blacks	60+	Female	07-08	.439	0.025	7
Non-Hispanic Blacks	60+	Female	09-10	.454	0.051	7
Mexican Americans	12-19	Male	05-06	.011	0.001	11
Mexican Americans	12-19	Male	07-08	.012	0.002	6
Mexican Americans	12-19	Male	09-10	.014	0.002	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.036	0.002	9
Mexican Americans	20-39	Male	07-08	.037	0.004	9
Mexican Americans	20-39	Male	09-10	.025	0.003	8
Mexican Americans	40-59	Male	05-06	.130	0.015	4
Mexican Americans	40-59	Male	07-08	.148	0.016	6
Mexican Americans	40-59	Male	09-10	.104	0.009	8
Mexican Americans	60+	Male	05-06	.281	0.066	4
Mexican Americans	60+	Male	07-08	.298	0.026	5
Mexican Americans	60+	Male	09-10	.275	0.017	5
Mexican Americans	12-19	Female	05-06	.010	0.001	16
Mexican Americans	12-19	Female	07-08	.010 **	0.005	5
Mexican Americans	12-19	Female	09-10	.006	0	7
Mexican Americans	20-39	Female	05-06	.023	0.004	9
Mexican Americans	20-39	Female	07-08	.023	0.001	8
Mexican Americans	20-39	Female	09-10	.018	0.002	10
Mexican Americans	40-59	Female	05-06	.113	0.009	6
Mexican Americans	40-59	Female	07-08	.122	0.016	6
Mexican Americans	40-59	Female	09-10	.070	0.01	9
Mexican Americans	60+	Female	05-06	.236	0.025	3
Mexican Americans	60+	Female	07-08	.233	0.044	5
Mexican Americans	60+	Female	09-10	.192	0.024	6
All Hispanics	12-19	Male	09-10	.014	0.002	11
All Hispanics	20-39	Male	09-10	.032	0.005	13
All Hispanics	40-59	Male	09-10	.121	0.013	13
All Hispanics	60+	Male	09-10	.281	0.012	8
All Hispanics	12-19	Female	09-10	.007	0.001	10
All Hispanics	20-39	Female	09-10	.021	0.002	14
All Hispanics	40-59	Female	09-10	.076	0.009	14
All Hispanics	60+	Female	09-10	.194	0.016	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (whole weight) (2011 - 2016)†

CAS Number 35065-29-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.015	0.002	6
Non-Hispanic Whites	Male	12-19	13-14	.012	0.001	8
Non-Hispanic Whites	Male	12-19	15-16	.015	0.004	7
Non-Hispanic Whites	Male	20-39	11-12	.030	0.003	12
Non-Hispanic Whites	Male	20-39	13-14	.024	0.002	14
Non-Hispanic Whites	Male	20-39	15-16	.027	0.002	10
Non-Hispanic Whites	Male	40-59	11-12	.144	0.021	12
Non-Hispanic Whites	Male	40-59	13-14	.112	0.01	14
Non-Hispanic Whites	Male	40-59	15-16	.096	0.011	10
Non-Hispanic Whites	Male	60+	11-12	.251	0.014	12
Non-Hispanic Whites	Male	60+	13-14	.270	0.015	17
Non-Hispanic Whites	Male	60+	15-16	.204	0.007	14
Non-Hispanic Whites	Female	12-19	11-12	.013	0.003	5
Non-Hispanic Whites	Female	12-19	13-14	.010	0.001	6
Non-Hispanic Whites	Female	12-19	15-16	.007	0.001	5
Non-Hispanic Whites	Female	20-39	11-12	.026	0.003	13
Non-Hispanic Whites	Female	20-39	13-14	.021	0.002	15
Non-Hispanic Whites	Female	20-39	15-16	.014	0.001	11
Non-Hispanic Whites	Female	40-59	11-12	.126	0.013	11
Non-Hispanic Whites	Female	40-59	13-14	.108	0.01	16
Non-Hispanic Whites	Female	40-59	15-16	.091	0.008	9
Non-Hispanic Whites	Female	60+	11-12	.259	0.019	14
Non-Hispanic Whites	Female	60+	13-14	.262	0.016	20
Non-Hispanic Whites	Female	60+	15-16	.231	0.021	13
Non-Hispanic Blacks	Male	12-19	11-12	.010	0.001	7
Non-Hispanic Blacks	Male	12-19	13-14	.008	0.001	6
Non-Hispanic Blacks	Male	12-19	15-16	.008	0.001	5
Non-Hispanic Blacks	Male	20-39	11-12	.026	0.002	9
Non-Hispanic Blacks	Male	20-39	13-14	.025	0.004	7
Non-Hispanic Blacks	Male	20-39	15-16	.021	0.001	7
Non-Hispanic Blacks	Male	40-59	11-12	.163	0.042	7
Non-Hispanic Blacks	Male	40-59	13-14	.137	0.016	7
Non-Hispanic Blacks	Male	40-59	15-16	.164	0.03	7
Non-Hispanic Blacks	Male	60+	11-12	.317	0.013	9
Non-Hispanic Blacks	Male	60+	13-14	.310	0.02	9
Non-Hispanic Blacks	Male	60+	15-16	.236	0.016	7
Non-Hispanic Blacks	Female	12-19	11-12	.006	0.001	6
Non-Hispanic Blacks	Female	12-19	13-14	.005	0.001	6
Non-Hispanic Blacks	Female	12-19	15-16	.006 **	0.003	4
Non-Hispanic Blacks	Female	20-39	11-12	.021	0.004	8
Non-Hispanic Blacks	Female	20-39	13-14	.014	0.001	8
Non-Hispanic Blacks	Female	20-39	15-16	.013	0.002	9
Non-Hispanic Blacks	Female	40-59	11-12	.127	0.016	8
Non-Hispanic Blacks	Female	40-59	13-14	.102	0.01	8
Non-Hispanic Blacks	Female	40-59	15-16	.093	0.01	12
Non-Hispanic Blacks	Female	60+	11-12	.313	0.022	8
Non-Hispanic Blacks	Female	60+	13-14	.392	0.023	8
Non-Hispanic Blacks	Female	60+	15-16	.281	0.026	7
Mexican Americans	Male	12-19	11-12	.007	0.001	5
Mexican Americans	Male	12-19	13-14	.006	0	7
Mexican Americans	Male	12-19	15-16	.006	0	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.028	0.004	4
Mexican Americans	Male	20-39	13-14	.016	0.002	5
Mexican Americans	Male	20-39	15-16	.023	0.005	7
Mexican Americans	Male	40-59	11-12	.098	0.009	4
Mexican Americans	Male	40-59	13-14	.075	0.012	5
Mexican Americans	Male	40-59	15-16	.050	0.009	4
Mexican Americans	Male	60+	11-12	.159	0.016	2
Mexican Americans	Male	60+	13-14	.222	0.018	4
Mexican Americans	Male	60+	15-16	.201	0.025	5
Mexican Americans	Female	12-19	11-12	.004	0.001	4
Mexican Americans	Female	12-19	13-14	.005	0	7
Mexican Americans	Female	12-19	15-16	.004	0	5
Mexican Americans	Female	20-39	11-12	.015	0.003	4
Mexican Americans	Female	20-39	13-14	.012	0.002	5
Mexican Americans	Female	20-39	15-16	.011	0.001	6
Mexican Americans	Female	40-59	11-12	.064	0.011	3
Mexican Americans	Female	40-59	13-14	.053	0.009	6
Mexican Americans	Female	40-59	15-16	.054	0.005	8
Mexican Americans	Female	60+	11-12	.183	0.016	3
Mexican Americans	Female	60+	13-14	.176	0.022	5
Mexican Americans	Female	60+	15-16	.159	0.007	7
All Hispanics	Male	12-19	11-12	7.60	0.86	7
All Hispanics	Male	12-19	13-14	6.94	1.28	10
All Hispanics	Male	12-19	15-16	6.85	0.97	9
All Hispanics	Male	20-39	11-12	26.5	2.4	8
All Hispanics	Male	20-39	13-14	17.3	1.7	8
All Hispanics	Male	20-39	15-16	22.2	3.3	11
All Hispanics	Male	40-59	11-12	88.1	8.3	7
All Hispanics	Male	40-59	13-14	82.9	18.2	9
All Hispanics	Male	40-59	15-16	64.4	14.9	9
All Hispanics	Male	60+	11-12	181	15	6
All Hispanics	Male	60+	13-14	208	17	7
All Hispanics	Male	60+	15-16	202	17	9
All Hispanics	Female	12-19	11-12	6.06	0.97	7
All Hispanics	Female	12-19	13-14	5.83	0.7	10
All Hispanics	Female	12-19	15-16	4.01	0.38	8
All Hispanics	Female	20-39	11-12	14.3	1.7	8
All Hispanics	Female	20-39	13-14	35.9 **	22.1	9
All Hispanics	Female	20-39	15-16	12.1	1	11
All Hispanics	Female	40-59	11-12	74.1	8.3	7
All Hispanics	Female	40-59	13-14	70.0	10.6	10
All Hispanics	Female	40-59	15-16	58.5	5.7	13
All Hispanics	Female	60+	11-12	223	30	7
All Hispanics	Female	60+	13-14	191	16	9
All Hispanics	Female	60+	15-16	153	6	13
Asians	Male	12-19	11-12	.018	0.002	3
Asians	Male	12-19	13-14	.012	0.002	3
Asians	Male	12-19	15-16	.020	0.006	3
Asians	Male	20-39	11-12	.048 **	0.016	6
Asians	Male	20-39	13-14	.036	0.002	4
Asians	Male	20-39	15-16	.044	0.011	5
Asians	Male	40-59	11-12	.146	0.018	6
Asians	Male	40-59	13-14	.110	0.015	4
Asians	Male	40-59	15-16	.105	0.019	4
Asians	Male	60+	11-12	.192	0.03	4
Asians	Male	60+	13-14	.244	0.034	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.281	0.042	3
Asians	Female	12-19	11-12	.013	0.002	4
Asians	Female	12-19	13-14	.013	0	3
Asians	Female	12-19	15-16	.013 **	0.004	3
Asians	Female	20-39	11-12	.041	0.006	6
Asians	Female	20-39	13-14	.035	0.002	5
Asians	Female	20-39	15-16	.029	0.002	4
Asians	Female	40-59	11-12	.109	0.023	6
Asians	Female	40-59	13-14	.088	0.008	7
Asians	Female	40-59	15-16	.145	0.029	5
Asians	Female	60+	11-12	.246	0.049	3
Asians	Female	60+	13-14	.265 **	0.085	3
Asians	Female	60+	15-16	.315 **	0.134	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (lipid adjusted) (2005 - 2010)†

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	.443	0.059	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	9
Non-Hispanic Whites	Male	20-39	05-06	1.17	0.31	12
Non-Hispanic Whites	Male	20-39	07-08	.964	0.067	15
Non-Hispanic Whites	Male	20-39	09-10	.750	0.072	17
Non-Hispanic Whites	Male	40-59	05-06	3.14	0.76	12
Non-Hispanic Whites	Male	40-59	07-08	2.15	0.08	16
Non-Hispanic Whites	Male	40-59	09-10	2.27	0.37	17
Non-Hispanic Whites	Male	60+	05-06	4.82	0.23	15
Non-Hispanic Whites	Male	60+	07-08	5.17	0.4	23
Non-Hispanic Whites	Male	60+	09-10	4.08	0.31	21
Non-Hispanic Whites	Female	12-19	05-06	.311	0.03	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	.694	0.043	16
Non-Hispanic Whites	Female	20-39	07-08	.839	0.187	13
Non-Hispanic Whites	Female	20-39	09-10	.716	0.049	19
Non-Hispanic Whites	Female	40-59	05-06	2.04	0.11	13
Non-Hispanic Whites	Female	40-59	07-08	2.08	0.11	17
Non-Hispanic Whites	Female	40-59	09-10	2.55	0.18	17
Non-Hispanic Whites	Female	60+	05-06	4.13	0.34	17
Non-Hispanic Whites	Female	60+	07-08	4.20	0.25	21
Non-Hispanic Whites	Female	60+	09-10	4.50	0.33	22
Non-Hispanic Blacks	Male	12-19	05-06	.598	0.087	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	4
Non-Hispanic Blacks	Male	20-39	05-06	1.10	0.13	6
Non-Hispanic Blacks	Male	20-39	07-08	.927	0.08	6
Non-Hispanic Blacks	Male	20-39	09-10	1.68	0.42	3
Non-Hispanic Blacks	Male	40-59	05-06	3.05	0.33	5
Non-Hispanic Blacks	Male	40-59	07-08	3.92	0.64	6
Non-Hispanic Blacks	Male	40-59	09-10	5.12	0.72	7
Non-Hispanic Blacks	Male	60+	05-06	7.74	0.74	5
Non-Hispanic Blacks	Male	60+	07-08	8.16	0.98	8
Non-Hispanic Blacks	Male	60+	09-10	9.17	1.05	9
Non-Hispanic Blacks	Female	12-19	05-06	.335	0.035	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	.861	0.111	7
Non-Hispanic Blacks	Female	20-39	07-08	.801	0.153	8
Non-Hispanic Blacks	Female	20-39	09-10	1.08	0.15	5
Non-Hispanic Blacks	Female	40-59	05-06	3.48	0.24	7
Non-Hispanic Blacks	Female	40-59	07-08	3.14	0.31	8
Non-Hispanic Blacks	Female	40-59	09-10	4.52	0.88	7
Non-Hispanic Blacks	Female	60+	05-06	9.38	2.28	5
Non-Hispanic Blacks	Female	60+	07-08	9.22	0.64	7
Non-Hispanic Blacks	Female	60+	09-10	9.71	1.38	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	.686	0.053	9
Mexican Americans	Male	20-39	07-08	.781	0.053	9
Mexican Americans	Male	20-39	09-10	.629	0.075	8
Mexican Americans	Male	40-59	05-06	1.52	0.12	4
Mexican Americans	Male	40-59	07-08	2.22	0.31	6
Mexican Americans	Male	40-59	09-10	1.62	0.14	8
Mexican Americans	Male	60+	05-06	3.05	0.58	4
Mexican Americans	Male	60+	07-08	3.84	0.6	5
Mexican Americans	Male	60+	09-10	4.15	0.43	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	5
Mexican Americans	Female	20-39	05-06	.476	0.076	9
Mexican Americans	Female	20-39	07-08	.475	0.082	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	1.86	0.13	6
Mexican Americans	Female	40-59	07-08	2.09	0.23	6
Mexican Americans	Female	40-59	09-10	1.28	0.14	9
Mexican Americans	Female	60+	05-06	3.36	0.07	3
Mexican Americans	Female	60+	07-08	4.27	0.94	5
Mexican Americans	Female	60+	09-10	3.51	0.62	6
All Hispanics	Male	12-19	09-10	*	*	10
All Hispanics	Male	20-39	09-10	.695	0.057	13
All Hispanics	Male	40-59	09-10	1.84	0.21	13
All Hispanics	Male	60+	09-10	4.23	0.34	8
All Hispanics	Female	12-19	09-10	*	*	8
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	1.51	0.16	14
All Hispanics	Female	60+	09-10	3.62	0.37	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.28, and 0.62, 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/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (lipid adjusted) (2011 - 2016)†

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	.377	0.046	8
Non-Hispanic Whites	Male	12-19	15-16	.482	0.125	7
Non-Hispanic Whites	Male	20-39	11-12	.605	0.056	12
Non-Hispanic Whites	Male	20-39	13-14	.572	0.062	13
Non-Hispanic Whites	Male	20-39	15-16	.425	0.045	10
Non-Hispanic Whites	Male	40-59	11-12	1.83	0.23	12
Non-Hispanic Whites	Male	40-59	13-14	1.86	0.15	14
Non-Hispanic Whites	Male	40-59	15-16	1.23	0.12	10
Non-Hispanic Whites	Male	60+	11-12	3.54	0.22	12
Non-Hispanic Whites	Male	60+	13-14	4.00	0.28	17
Non-Hispanic Whites	Male	60+	15-16	3.06	0.19	14
Non-Hispanic Whites	Female	12-19	11-12	.368	0.031	4
Non-Hispanic Whites	Female	12-19	13-14	.382	0.036	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.587	0.081	13
Non-Hispanic Whites	Female	20-39	13-14	.545	0.069	15
Non-Hispanic Whites	Female	20-39	15-16	.319	0.026	11
Non-Hispanic Whites	Female	40-59	11-12	2.06	0.2	11
Non-Hispanic Whites	Female	40-59	13-14	1.58	0.14	16
Non-Hispanic Whites	Female	40-59	15-16	1.42	0.18	9
Non-Hispanic Whites	Female	60+	11-12	3.63	0.24	14
Non-Hispanic Whites	Female	60+	13-14	4.09	0.34	20
Non-Hispanic Whites	Female	60+	15-16	3.32	0.3	13
Non-Hispanic Blacks	Male	12-19	11-12	.506	0.085	7
Non-Hispanic Blacks	Male	12-19	13-14	.336	0.03	5
Non-Hispanic Blacks	Male	12-19	15-16	.301	0.049	5
Non-Hispanic Blacks	Male	20-39	11-12	.764	0.026	9
Non-Hispanic Blacks	Male	20-39	13-14	.579	0.097	5
Non-Hispanic Blacks	Male	20-39	15-16	.597	0.038	7
Non-Hispanic Blacks	Male	40-59	11-12	2.96	0.63	7
Non-Hispanic Blacks	Male	40-59	13-14	2.52	0.46	7
Non-Hispanic Blacks	Male	40-59	15-16	3.27	0.83	7
Non-Hispanic Blacks	Male	60+	11-12	5.43	0.27	9
Non-Hispanic Blacks	Male	60+	13-14	5.97	0.63	9
Non-Hispanic Blacks	Male	60+	15-16	3.99	0.54	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	.251	0.035	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.608	0.101	8
Non-Hispanic Blacks	Female	20-39	13-14	.468	0.04	8
Non-Hispanic Blacks	Female	20-39	15-16	.517	0.068	9
Non-Hispanic Blacks	Female	40-59	11-12	2.69	0.27	8
Non-Hispanic Blacks	Female	40-59	13-14	2.57	0.28	8
Non-Hispanic Blacks	Female	40-59	15-16	2.02	0.25	12
Non-Hispanic Blacks	Female	60+	11-12	6.97	0.6	8
Non-Hispanic Blacks	Female	60+	13-14	8.20	0.69	8
Non-Hispanic Blacks	Female	60+	15-16	6.13	0.65	7
Mexican Americans	Male	12-19	11-12	.301	0.065	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.617	0.062	4
Mexican Americans	Male	20-39	13-14	.428	0.06	5
Mexican Americans	Male	20-39	15-16	.518	0.051	7
Mexican Americans	Male	40-59	11-12	1.26	0.2	4
Mexican Americans	Male	40-59	13-14	1.33	0.19	5
Mexican Americans	Male	40-59	15-16	.857	0.154	4
Mexican Americans	Male	60+	11-12	2.44	0.33	2
Mexican Americans	Male	60+	13-14	3.80	0.23	4
Mexican Americans	Male	60+	15-16	3.03	0.44	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	.273	0.032	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.461	0.099	4
Mexican Americans	Female	20-39	13-14	.335	0.03	5
Mexican Americans	Female	20-39	15-16	.354	0.031	6
Mexican Americans	Female	40-59	11-12	1.59	0.29	3
Mexican Americans	Female	40-59	13-14	1.30	0.25	6
Mexican Americans	Female	40-59	15-16	1.02	0.14	8
Mexican Americans	Female	60+	11-12	3.86	0.29	3
Mexican Americans	Female	60+	13-14	3.27	0.33	5
Mexican Americans	Female	60+	15-16	2.70	0.11	7
All Hispanics	Male	12-19	11-12	.306	0.051	7
All Hispanics	Male	12-19	13-14	.269	0.037	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	.636	0.036	8
All Hispanics	Male	20-39	13-14	.489	0.058	8
All Hispanics	Male	20-39	15-16	.552	0.071	11
All Hispanics	Male	40-59	11-12	1.36	0.19	7
All Hispanics	Male	40-59	13-14	1.52	0.27	9
All Hispanics	Male	40-59	15-16	1.17	0.26	9
All Hispanics	Male	60+	11-12	3.09	0.33	6
All Hispanics	Male	60+	13-14	3.44	0.29	7
All Hispanics	Male	60+	15-16	2.85	0.28	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	.279	0.035	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	.460	0.051	8
All Hispanics	Female	20-39	13-14	.925 **	0.575	9
All Hispanics	Female	20-39	15-16	.341	0.027	11
All Hispanics	Female	40-59	11-12	1.62	0.2	7
All Hispanics	Female	40-59	13-14	1.52	0.24	10
All Hispanics	Female	40-59	15-16	1.12	0.13	13
All Hispanics	Female	60+	11-12	3.96	0.39	7
All Hispanics	Female	60+	13-14	3.47	0.31	9
All Hispanics	Female	60+	15-16	2.58	0.14	13
Asians	Male	12-19	11-12	.755	0.081	3
Asians	Male	12-19	13-14	.397	0.088	3
Asians	Male	12-19	15-16	.746 **	0.266	3
Asians	Male	20-39	11-12	1.51 **	0.58	6
Asians	Male	20-39	13-14	.983	0.091	4
Asians	Male	20-39	15-16	1.14	0.27	5
Asians	Male	40-59	11-12	3.38	0.46	6
Asians	Male	40-59	13-14	2.57	0.59	4
Asians	Male	40-59	15-16	2.07	0.51	4
Asians	Male	60+	11-12	3.65	0.75	4
Asians	Male	60+	13-14	4.32	0.41	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	6.66	1.49	3
Asians	Female	12-19	11-12	.442	0.061	4
Asians	Female	12-19	13-14	.491	0.082	3
Asians	Female	12-19	15-16	.485 **	0.236	3
Asians	Female	20-39	11-12	1.52	0.32	6
Asians	Female	20-39	13-14	.956	0.05	5
Asians	Female	20-39	15-16	.848	0.045	3
Asians	Female	40-59	11-12	2.60	0.64	6
Asians	Female	40-59	13-14	2.12	0.21	7
Asians	Female	40-59	15-16	4.02	1.04	5
Asians	Female	60+	11-12	5.01	0.09	3
Asians	Female	60+	13-14	5.52 **	2.27	3
Asians	Female	60+	15-16	7.55 **	3.11	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (whole weight) (2005 - 2010)†

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.002	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001 **	0	6
Non-Hispanic Whites	12-19	Male	09-10	.003	0	9
Non-Hispanic Whites	20-39	Male	05-06	.009 **	0.003	12
Non-Hispanic Whites	20-39	Male	07-08	.006	0.001	15
Non-Hispanic Whites	20-39	Male	09-10	.005	0.001	17
Non-Hispanic Whites	40-59	Male	05-06	.024	0.006	12
Non-Hispanic Whites	40-59	Male	07-08	.016	0.001	16
Non-Hispanic Whites	40-59	Male	09-10	.016	0.003	17
Non-Hispanic Whites	60+	Male	05-06	.033	0.001	15
Non-Hispanic Whites	60+	Male	07-08	.033	0.003	23
Non-Hispanic Whites	60+	Male	09-10	.025	0.002	21
Non-Hispanic Whites	12-19	Female	05-06	.002	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001 **	0.001	7
Non-Hispanic Whites	12-19	Female	09-10	.002	0	8
Non-Hispanic Whites	20-39	Female	05-06	.005	0	16
Non-Hispanic Whites	20-39	Female	07-08	.005	0.001	13
Non-Hispanic Whites	20-39	Female	09-10	.004	0	19
Non-Hispanic Whites	40-59	Female	05-06	.015	0.001	13
Non-Hispanic Whites	40-59	Female	07-08	.014	0.001	17
Non-Hispanic Whites	40-59	Female	09-10	.016	0.001	17
Non-Hispanic Whites	60+	Female	05-06	.030	0.002	17
Non-Hispanic Whites	60+	Female	07-08	.028	0.002	21
Non-Hispanic Whites	60+	Female	09-10	.027	0.002	22
Non-Hispanic Blacks	12-19	Male	05-06	.003	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.002	0.001	6
Non-Hispanic Blacks	12-19	Male	09-10	.002	0	4
Non-Hispanic Blacks	20-39	Male	05-06	.007	0.001	6
Non-Hispanic Blacks	20-39	Male	07-08	.005	0.001	6
Non-Hispanic Blacks	20-39	Male	09-10	.009	0.002	3
Non-Hispanic Blacks	40-59	Male	05-06	.019	0.002	5
Non-Hispanic Blacks	40-59	Male	07-08	.025	0.004	6
Non-Hispanic Blacks	40-59	Male	09-10	.031	0.004	7
Non-Hispanic Blacks	60+	Male	05-06	.046	0.004	5
Non-Hispanic Blacks	60+	Male	07-08	.050	0.006	8
Non-Hispanic Blacks	60+	Male	09-10	.049	0.006	9
Non-Hispanic Blacks	12-19	Female	05-06	.002	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	12-19	Female	09-10	.001	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.005	0.001	7
Non-Hispanic Blacks	20-39	Female	07-08	.004	0.001	8
Non-Hispanic Blacks	20-39	Female	09-10	.005	0.001	5
Non-Hispanic Blacks	40-59	Female	05-06	.022	0.002	7
Non-Hispanic Blacks	40-59	Female	07-08	.019	0.002	8
Non-Hispanic Blacks	40-59	Female	09-10	.025	0.004	7
Non-Hispanic Blacks	60+	Female	05-06	.063	0.015	5
Non-Hispanic Blacks	60+	Female	07-08	.055	0.003	7
Non-Hispanic Blacks	60+	Female	09-10	.056	0.008	7
Mexican Americans	12-19	Male	05-06	.002	0	11
Mexican Americans	12-19	Male	07-08	.001 **	0	6
Mexican Americans	12-19	Male	09-10	.002	0	7

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.005	0	9
Mexican Americans	20-39	Male	07-08	.005	0	9
Mexican Americans	20-39	Male	09-10	.004	0.001	8
Mexican Americans	40-59	Male	05-06	.012	0.001	4
Mexican Americans	40-59	Male	07-08	.016	0.002	6
Mexican Americans	40-59	Male	09-10	.011	0.001	8
Mexican Americans	60+	Male	05-06	.022	0.004	4
Mexican Americans	60+	Male	07-08	.027	0.003	5
Mexican Americans	60+	Male	09-10	.026	0.003	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001 **	0	5
Mexican Americans	12-19	Female	09-10	.001	0	5
Mexican Americans	20-39	Female	05-06	.003	0.001	9
Mexican Americans	20-39	Female	07-08	.003	0	8
Mexican Americans	20-39	Female	09-10	.003	0	10
Mexican Americans	40-59	Female	05-06	.014	0.001	6
Mexican Americans	40-59	Female	07-08	.014	0.002	6
Mexican Americans	40-59	Female	09-10	.008	0.001	9
Mexican Americans	60+	Female	05-06	.026	0.003	3
Mexican Americans	60+	Female	07-08	.030	0.007	5
Mexican Americans	60+	Female	09-10	.019	0.003	6
All Hispanics	12-19	Male	09-10	.002	0	10
All Hispanics	20-39	Male	09-10	.005	0.001	13
All Hispanics	40-59	Male	09-10	.013	0.001	13
All Hispanics	60+	Male	09-10	.026	0.002	8
All Hispanics	12-19	Female	09-10	.001	0	8
All Hispanics	20-39	Female	09-10	.003	0	14
All Hispanics	40-59	Female	09-10	.010	0.001	14
All Hispanics	60+	Female	09-10	.021	0.002	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (whole weight) (2011 - 2016)†

CAS Number 52663-69-1

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	.002	0	8
Non-Hispanic Whites	Male	12-19	15-16	.002 **	0.001	7
Non-Hispanic Whites	Male	20-39	11-12	.004	0	12
Non-Hispanic Whites	Male	20-39	13-14	.003	0	13
Non-Hispanic Whites	Male	20-39	15-16	.003	0	10
Non-Hispanic Whites	Male	40-59	11-12	.012	0.002	12
Non-Hispanic Whites	Male	40-59	13-14	.011	0.001	14
Non-Hispanic Whites	Male	40-59	15-16	.008	0.001	10
Non-Hispanic Whites	Male	60+	11-12	.019	0.001	12
Non-Hispanic Whites	Male	60+	13-14	.022	0.002	17
Non-Hispanic Whites	Male	60+	15-16	.017	0.001	14
Non-Hispanic Whites	Female	12-19	11-12	.002	0	4
Non-Hispanic Whites	Female	12-19	13-14	.002	0	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.003	0	13
Non-Hispanic Whites	Female	20-39	13-14	.003	0	15
Non-Hispanic Whites	Female	20-39	15-16	.002	0	11
Non-Hispanic Whites	Female	40-59	11-12	.013	0.001	11
Non-Hispanic Whites	Female	40-59	13-14	.009	0.001	16
Non-Hispanic Whites	Female	40-59	15-16	.009	0.001	9
Non-Hispanic Whites	Female	60+	11-12	.022	0.001	14
Non-Hispanic Whites	Female	60+	13-14	.024	0.002	20
Non-Hispanic Whites	Female	60+	15-16	.020	0.002	13
Non-Hispanic Blacks	Male	12-19	11-12	.002	0	7
Non-Hispanic Blacks	Male	12-19	13-14	.001	0	5
Non-Hispanic Blacks	Male	12-19	15-16	.001	0	5
Non-Hispanic Blacks	Male	20-39	11-12	.004	0	9
Non-Hispanic Blacks	Male	20-39	13-14	.003	0.001	5
Non-Hispanic Blacks	Male	20-39	15-16	.003	0	7
Non-Hispanic Blacks	Male	40-59	11-12	.017	0.004	7
Non-Hispanic Blacks	Male	40-59	13-14	.014	0.002	7
Non-Hispanic Blacks	Male	40-59	15-16	.021	0.005	7
Non-Hispanic Blacks	Male	60+	11-12	.030	0.002	9
Non-Hispanic Blacks	Male	60+	13-14	.031	0.004	9
Non-Hispanic Blacks	Male	60+	15-16	.022	0.003	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	.001	0	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.003	0.001	8
Non-Hispanic Blacks	Female	20-39	13-14	.002	0	8
Non-Hispanic Blacks	Female	20-39	15-16	.003	0	9
Non-Hispanic Blacks	Female	40-59	11-12	.016	0.002	8
Non-Hispanic Blacks	Female	40-59	13-14	.013	0.001	8
Non-Hispanic Blacks	Female	40-59	15-16	.012	0.002	12
Non-Hispanic Blacks	Female	60+	11-12	.039	0.003	8
Non-Hispanic Blacks	Female	60+	13-14	.044	0.003	8
Non-Hispanic Blacks	Female	60+	15-16	.036	0.004	7
Mexican Americans	Male	12-19	11-12	.001 **	0	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.004	0	4
Mexican Americans	Male	20-39	13-14	.003	0	5
Mexican Americans	Male	20-39	15-16	.004	0.001	7
Mexican Americans	Male	40-59	11-12	.010	0.001	4
Mexican Americans	Male	40-59	13-14	.008	0.001	5
Mexican Americans	Male	40-59	15-16	.006	0.001	4
Mexican Americans	Male	60+	11-12	.014	0.002	2
Mexican Americans	Male	60+	13-14	.020	0.001	4
Mexican Americans	Male	60+	15-16	.017	0.002	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	.001	0	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.002	0	4
Mexican Americans	Female	20-39	13-14	.002	0	5
Mexican Americans	Female	20-39	15-16	.002	0	6
Mexican Americans	Female	40-59	11-12	.009	0.002	3
Mexican Americans	Female	40-59	13-14	.007	0.001	6
Mexican Americans	Female	40-59	15-16	.006	0.001	8
Mexican Americans	Female	60+	11-12	.024	0.002	3
Mexican Americans	Female	60+	13-14	.019	0.002	5
Mexican Americans	Female	60+	15-16	.017	0.001	7
All Hispanics	Male	12-19	11-12	1.48	0.24	7
All Hispanics	Male	12-19	13-14	1.29	0.16	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	3.87	0.25	8
All Hispanics	Male	20-39	13-14	2.92	0.32	8
All Hispanics	Male	20-39	15-16	3.63	0.52	11
All Hispanics	Male	40-59	11-12	9.99	1.22	7
All Hispanics	Male	40-59	13-14	9.29	1.78	9
All Hispanics	Male	40-59	15-16	7.44	1.61	9
All Hispanics	Male	60+	11-12	18.1	1.8	6
All Hispanics	Male	60+	13-14	18.5	1.3	7
All Hispanics	Male	60+	15-16	16.6	1.5	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	1.31	0.17	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	2.51	0.25	8
All Hispanics	Female	20-39	13-14	5.28 **	3.18	9
All Hispanics	Female	20-39	15-16	1.87	0.17	11
All Hispanics	Female	40-59	11-12	10.2	1.4	7
All Hispanics	Female	40-59	13-14	8.80	1.33	10
All Hispanics	Female	40-59	15-16	7.24	0.98	13
All Hispanics	Female	60+	11-12	24.2	2	7
All Hispanics	Female	60+	13-14	20.5	1.7	9
All Hispanics	Female	60+	15-16	15.8	0.9	13
Asians	Male	12-19	11-12	.004	0.001	3
Asians	Male	12-19	13-14	.002	0	3
Asians	Male	12-19	15-16	.004 **	0.001	3
Asians	Male	20-39	11-12	.008 **	0.003	6
Asians	Male	20-39	13-14	.006	0.001	4
Asians	Male	20-39	15-16	.008	0.002	5
Asians	Male	40-59	11-12	.021	0.003	6
Asians	Male	40-59	13-14	.015	0.003	4
Asians	Male	40-59	15-16	.013	0.003	4
Asians	Male	60+	11-12	.020	0.004	4
Asians	Male	60+	13-14	.026	0.002	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.036	0.006	3
Asians	Female	12-19	11-12	.002	0	4
Asians	Female	12-19	13-14	.002	0	3
Asians	Female	12-19	15-16	.003 **	0.001	3
Asians	Female	20-39	11-12	.008	0.002	6
Asians	Female	20-39	13-14	.005	0	5
Asians	Female	20-39	15-16	.005	0	3
Asians	Female	40-59	11-12	.016	0.004	6
Asians	Female	40-59	13-14	.012	0.001	7
Asians	Female	40-59	15-16	.025	0.007	5
Asians	Female	60+	11-12	.028	0.001	3
Asians	Female	60+	13-14	.031 **	0.009	3
Asians	Female	60+	15-16	.047 **	0.02	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (lipid adjusted) (2005 - 2010)†

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	1.15	0.17	9
Non-Hispanic Whites	Male	12-19	07-08	.986	0.222	6
Non-Hispanic Whites	Male	12-19	09-10	1.23	0.15	10
Non-Hispanic Whites	Male	20-39	05-06	3.08	0.71	12
Non-Hispanic Whites	Male	20-39	07-08	2.65	0.22	15
Non-Hispanic Whites	Male	20-39	09-10	2.07	0.2	17
Non-Hispanic Whites	Male	40-59	05-06	8.32	0.66	12
Non-Hispanic Whites	Male	40-59	07-08	6.81	0.32	16
Non-Hispanic Whites	Male	40-59	09-10	7.31	1.03	17
Non-Hispanic Whites	Male	60+	05-06	16.6	1	15
Non-Hispanic Whites	Male	60+	07-08	16.8	1.3	23
Non-Hispanic Whites	Male	60+	09-10	13.8	1.2	21
Non-Hispanic Whites	Female	12-19	05-06	.832	0.069	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	.852	0.192	8
Non-Hispanic Whites	Female	20-39	05-06	1.77	0.13	16
Non-Hispanic Whites	Female	20-39	07-08	2.19	0.52	13
Non-Hispanic Whites	Female	20-39	09-10	1.91	0.12	17
Non-Hispanic Whites	Female	40-59	05-06	6.07	0.42	13
Non-Hispanic Whites	Female	40-59	07-08	5.76	0.31	17
Non-Hispanic Whites	Female	40-59	09-10	6.30	0.43	17
Non-Hispanic Whites	Female	60+	05-06	14.0	1.1	17
Non-Hispanic Whites	Female	60+	07-08	13.8	0.8	21
Non-Hispanic Whites	Female	60+	09-10	15.1	1.3	22
Non-Hispanic Blacks	Male	12-19	05-06	1.68	0.29	13
Non-Hispanic Blacks	Male	12-19	07-08	1.56	0.28	6
Non-Hispanic Blacks	Male	12-19	09-10	1.27	0.17	4
Non-Hispanic Blacks	Male	20-39	05-06	3.61	0.61	6
Non-Hispanic Blacks	Male	20-39	07-08	2.73	0.28	6
Non-Hispanic Blacks	Male	20-39	09-10	4.18	1.18	5
Non-Hispanic Blacks	Male	40-59	05-06	12.3	1	5
Non-Hispanic Blacks	Male	40-59	07-08	12.8	1.7	6
Non-Hispanic Blacks	Male	40-59	09-10	16.6	2.3	7
Non-Hispanic Blacks	Male	60+	05-06	32.1	3.5	5
Non-Hispanic Blacks	Male	60+	07-08	31.5	3.9	8
Non-Hispanic Blacks	Male	60+	09-10	32.4	3.7	9
Non-Hispanic Blacks	Female	12-19	05-06	.956	0.08	14
Non-Hispanic Blacks	Female	12-19	07-08	.872	0.145	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	3
Non-Hispanic Blacks	Female	20-39	05-06	2.57	0.42	7
Non-Hispanic Blacks	Female	20-39	07-08	2.20	0.29	8
Non-Hispanic Blacks	Female	20-39	09-10	2.41	0.47	6
Non-Hispanic Blacks	Female	40-59	05-06	11.3	1.1	7
Non-Hispanic Blacks	Female	40-59	07-08	9.55	1.01	8
Non-Hispanic Blacks	Female	40-59	09-10	12.5	3.2	7
Non-Hispanic Blacks	Female	60+	05-06	37.6	9.4	5
Non-Hispanic Blacks	Female	60+	07-08	32.7	3	7
Non-Hispanic Blacks	Female	60+	09-10	31.7	4.9	7
Mexican Americans	Male	12-19	05-06	.633	0.083	11
Mexican Americans	Male	12-19	07-08	.656	0.121	6
Mexican Americans	Male	12-19	09-10	1.05	0.25	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	1.72	0.15	9
Mexican Americans	Male	20-39	07-08	1.92	0.21	9
Mexican Americans	Male	20-39	09-10	1.44	0.12	8
Mexican Americans	Male	40-59	05-06	4.78	0.5	4
Mexican Americans	Male	40-59	07-08	6.80	0.84	6
Mexican Americans	Male	40-59	09-10	5.04	0.39	8
Mexican Americans	Male	60+	05-06	10.6	2.5	4
Mexican Americans	Male	60+	07-08	13.1	1.7	5
Mexican Americans	Male	60+	09-10	13.9	1	5
Mexican Americans	Female	12-19	05-06	.615	0.063	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	6
Mexican Americans	Female	20-39	05-06	1.05	0.2	9
Mexican Americans	Female	20-39	07-08	1.40	0.12	8
Mexican Americans	Female	20-39	09-10	1.02	0.11	10
Mexican Americans	Female	40-59	05-06	4.80	0.3	6
Mexican Americans	Female	40-59	07-08	5.66	0.73	6
Mexican Americans	Female	40-59	09-10	3.70	0.45	9
Mexican Americans	Female	60+	05-06	10.4	0.6	3
Mexican Americans	Female	60+	07-08	12.7	2.5	5
Mexican Americans	Female	60+	09-10	11.0	1.3	6
All Hispanics	Male	12-19	09-10	1.10	0.18	9
All Hispanics	Male	20-39	09-10	1.79	0.19	13
All Hispanics	Male	40-59	09-10	6.30	0.75	13
All Hispanics	Male	60+	09-10	15.3	1.4	8
All Hispanics	Female	12-19	09-10	*	*	8
All Hispanics	Female	20-39	09-10	1.29	0.17	14
All Hispanics	Female	40-59	09-10	4.24	0.52	14
All Hispanics	Female	60+	09-10	11.3	0.9	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.25, 0.28, and 0.62, 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/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (lipid adjusted) (2011 - 2016)†

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.847	0.203	6
Non-Hispanic Whites	Male	12-19	13-14	.901	0.117	7
Non-Hispanic Whites	Male	12-19	15-16	1.05	0.23	7
Non-Hispanic Whites	Male	20-39	11-12	1.65	0.13	12
Non-Hispanic Whites	Male	20-39	13-14	1.34	0.11	14
Non-Hispanic Whites	Male	20-39	15-16	1.31	0.13	10
Non-Hispanic Whites	Male	40-59	11-12	6.05	0.95	12
Non-Hispanic Whites	Male	40-59	13-14	5.45	0.52	14
Non-Hispanic Whites	Male	40-59	15-16	4.11	0.44	10
Non-Hispanic Whites	Male	60+	11-12	12.5	0.7	12
Non-Hispanic Whites	Male	60+	13-14	13.9	1	17
Non-Hispanic Whites	Male	60+	15-16	10.4	0.5	13
Non-Hispanic Whites	Female	12-19	11-12	.802	0.132	5
Non-Hispanic Whites	Female	12-19	13-14	.694	0.08	5
Non-Hispanic Whites	Female	12-19	15-16	.479	0.129	5
Non-Hispanic Whites	Female	20-39	11-12	1.63	0.19	13
Non-Hispanic Whites	Female	20-39	13-14	1.40	0.14	15
Non-Hispanic Whites	Female	20-39	15-16	.926	0.064	9
Non-Hispanic Whites	Female	40-59	11-12	6.06	0.52	11
Non-Hispanic Whites	Female	40-59	13-14	4.62	0.38	16
Non-Hispanic Whites	Female	40-59	15-16	4.57	0.52	9
Non-Hispanic Whites	Female	60+	11-12	12.9	1	14
Non-Hispanic Whites	Female	60+	13-14	13.8	1.3	20
Non-Hispanic Whites	Female	60+	15-16	11.4	1	13
Non-Hispanic Blacks	Male	12-19	11-12	1.10	0.14	7
Non-Hispanic Blacks	Male	12-19	13-14	.811	0.08	6
Non-Hispanic Blacks	Male	12-19	15-16	.804	0.136	5
Non-Hispanic Blacks	Male	20-39	11-12	2.34	0.17	9
Non-Hispanic Blacks	Male	20-39	13-14	2.02	0.36	7
Non-Hispanic Blacks	Male	20-39	15-16	1.74	0.15	7
Non-Hispanic Blacks	Male	40-59	11-12	12.6	3.4	7
Non-Hispanic Blacks	Male	40-59	13-14	9.24	1.42	7
Non-Hispanic Blacks	Male	40-59	15-16	12.6	3.5	7
Non-Hispanic Blacks	Male	60+	11-12	21.3	0.8	9
Non-Hispanic Blacks	Male	60+	13-14	21.8	2.2	9
Non-Hispanic Blacks	Male	60+	15-16	16.1	1.4	7
Non-Hispanic Blacks	Female	12-19	11-12	.653	0.13	6
Non-Hispanic Blacks	Female	12-19	13-14	.491	0.056	6
Non-Hispanic Blacks	Female	12-19	15-16	.788 **	0.298	4
Non-Hispanic Blacks	Female	20-39	11-12	1.73	0.33	8
Non-Hispanic Blacks	Female	20-39	13-14	1.25	0.2	7
Non-Hispanic Blacks	Female	20-39	15-16	1.43	0.21	9
Non-Hispanic Blacks	Female	40-59	11-12	8.89	0.9	8
Non-Hispanic Blacks	Female	40-59	13-14	8.01	0.99	8
Non-Hispanic Blacks	Female	40-59	15-16	6.44	0.61	12
Non-Hispanic Blacks	Female	60+	11-12	24.9	2	8
Non-Hispanic Blacks	Female	60+	13-14	30.8	2.6	8
Non-Hispanic Blacks	Female	60+	15-16	19.9	2.4	7
Mexican Americans	Male	12-19	11-12	.548	0.099	5
Mexican Americans	Male	12-19	13-14	.433	0.031	7
Mexican Americans	Male	12-19	15-16	.355	0.027	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	1.76	0.38	4
Mexican Americans	Male	20-39	13-14	.940	0.109	4
Mexican Americans	Male	20-39	15-16	1.25	0.21	7
Mexican Americans	Male	40-59	11-12	4.49	0.56	4
Mexican Americans	Male	40-59	13-14	3.82	0.73	5
Mexican Americans	Male	40-59	15-16	2.62	0.52	4
Mexican Americans	Male	60+	11-12	7.78	1.07	2
Mexican Americans	Male	60+	13-14	12.8	1.6	4
Mexican Americans	Male	60+	15-16	11.6	1.4	5
Mexican Americans	Female	12-19	11-12	.384	0.059	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	.301	0.041	5
Mexican Americans	Female	20-39	11-12	1.01	0.28	4
Mexican Americans	Female	20-39	13-14	.775	0.124	5
Mexican Americans	Female	20-39	15-16	.731	0.044	5
Mexican Americans	Female	40-59	11-12	3.80	0.67	3
Mexican Americans	Female	40-59	13-14	3.13	0.61	6
Mexican Americans	Female	40-59	15-16	2.94	0.35	8
Mexican Americans	Female	60+	11-12	10.0	0.7	3
Mexican Americans	Female	60+	13-14	9.76	1.07	5
Mexican Americans	Female	60+	15-16	8.28	0.45	7
All Hispanics	Male	12-19	11-12	.578	0.087	7
All Hispanics	Male	12-19	13-14	.502	0.108	10
All Hispanics	Male	12-19	15-16	.429	0.085	9
All Hispanics	Male	20-39	11-12	1.79	0.21	8
All Hispanics	Male	20-39	13-14	1.16	0.17	7
All Hispanics	Male	20-39	15-16	1.39	0.22	10
All Hispanics	Male	40-59	11-12	4.28	0.45	7
All Hispanics	Male	40-59	13-14	4.75 **	1.49	9
All Hispanics	Male	40-59	15-16	3.82	0.99	9
All Hispanics	Male	60+	11-12	10.1	1.1	6
All Hispanics	Male	60+	13-14	12.4	1.1	7
All Hispanics	Male	60+	15-16	11.0	0.9	9
All Hispanics	Female	12-19	11-12	.463	0.069	7
All Hispanics	Female	12-19	13-14	.474	0.103	10
All Hispanics	Female	12-19	15-16	.309	0.045	8
All Hispanics	Female	20-39	11-12	1.04	0.16	8
All Hispanics	Female	20-39	13-14	2.53 **	1.69	9
All Hispanics	Female	20-39	15-16	.755	0.049	10
All Hispanics	Female	40-59	11-12	4.14	0.37	7
All Hispanics	Female	40-59	13-14	4.10	0.7	10
All Hispanics	Female	40-59	15-16	3.11	0.3	13
All Hispanics	Female	60+	11-12	13.2	2	7
All Hispanics	Female	60+	13-14	10.9	1.1	9
All Hispanics	Female	60+	15-16	8.31	0.35	13
Asians	Male	12-19	11-12	2.16	0.41	3
Asians	Male	12-19	13-14	1.46 **	0.47	3
Asians	Male	12-19	15-16	2.41 **	1.08	3
Asians	Male	20-39	11-12	4.67 **	1.93	6
Asians	Male	20-39	13-14	3.32	0.43	4
Asians	Male	20-39	15-16	3.68 **	1.14	5
Asians	Male	40-59	11-12	12.7	2.1	6
Asians	Male	40-59	13-14	9.47	2.35	4
Asians	Male	40-59	15-16	8.89	2.07	4
Asians	Male	60+	11-12	15.6	2.7	4
Asians	Male	60+	13-14	19.5	3.7	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	30.6	8.5	3
Asians	Female	12-19	11-12	1.40	0.2	4
Asians	Female	12-19	13-14	1.32	0.21	3
Asians	Female	12-19	15-16	1.45 **	0.79	3
Asians	Female	20-39	11-12	5.00	0.95	6
Asians	Female	20-39	13-14	3.42	0.27	5
Asians	Female	20-39	15-16	2.96	0.19	4
Asians	Female	40-59	11-12	9.59	2.39	6
Asians	Female	40-59	13-14	7.29	0.84	7
Asians	Female	40-59	15-16	15.9	4	5
Asians	Female	60+	11-12	21.3	1.3	3
Asians	Female	60+	13-14	23.6 **	11	3
Asians	Female	60+	15-16	29.4 **	13.9	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (whole weight) (2005 - 2010)†

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.006	0.001	9
Non-Hispanic Whites	12-19	Male	07-08	.005	0.001	6
Non-Hispanic Whites	12-19	Male	09-10	.007	0.001	10
Non-Hispanic Whites	20-39	Male	05-06	.023	0.006	12
Non-Hispanic Whites	20-39	Male	07-08	.018	0.002	15
Non-Hispanic Whites	20-39	Male	09-10	.014	0.001	17
Non-Hispanic Whites	40-59	Male	05-06	.063	0.005	12
Non-Hispanic Whites	40-59	Male	07-08	.049	0.002	16
Non-Hispanic Whites	40-59	Male	09-10	.050	0.007	17
Non-Hispanic Whites	60+	Male	05-06	.112	0.006	15
Non-Hispanic Whites	60+	Male	07-08	.107	0.008	23
Non-Hispanic Whites	60+	Male	09-10	.083	0.007	21
Non-Hispanic Whites	12-19	Female	05-06	.004	0	10
Non-Hispanic Whites	12-19	Female	07-08	.004 **	0.002	7
Non-Hispanic Whites	12-19	Female	09-10	.004	0.001	8
Non-Hispanic Whites	20-39	Female	05-06	.011	0.001	16
Non-Hispanic Whites	20-39	Female	07-08	.013	0.004	13
Non-Hispanic Whites	20-39	Female	09-10	.010	0.001	17
Non-Hispanic Whites	40-59	Female	05-06	.045	0.004	13
Non-Hispanic Whites	40-59	Female	07-08	.038	0.002	17
Non-Hispanic Whites	40-59	Female	09-10	.040	0.003	17
Non-Hispanic Whites	60+	Female	05-06	.102	0.008	17
Non-Hispanic Whites	60+	Female	07-08	.093	0.005	21
Non-Hispanic Whites	60+	Female	09-10	.091	0.008	22
Non-Hispanic Blacks	12-19	Male	05-06	.008	0.001	13
Non-Hispanic Blacks	12-19	Male	07-08	.007	0.001	6
Non-Hispanic Blacks	12-19	Male	09-10	.006	0.001	4
Non-Hispanic Blacks	20-39	Male	05-06	.021	0.004	6
Non-Hispanic Blacks	20-39	Male	07-08	.015	0.002	6
Non-Hispanic Blacks	20-39	Male	09-10	.023	0.006	5
Non-Hispanic Blacks	40-59	Male	05-06	.078	0.006	5
Non-Hispanic Blacks	40-59	Male	07-08	.082	0.011	6
Non-Hispanic Blacks	40-59	Male	09-10	.101	0.013	7
Non-Hispanic Blacks	60+	Male	05-06	.191	0.02	5
Non-Hispanic Blacks	60+	Male	07-08	.193	0.026	8
Non-Hispanic Blacks	60+	Male	09-10	.174	0.022	9
Non-Hispanic Blacks	12-19	Female	05-06	.005	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.004	0.001	5
Non-Hispanic Blacks	12-19	Female	09-10	.002	0.001	3
Non-Hispanic Blacks	20-39	Female	05-06	.015	0.003	7
Non-Hispanic Blacks	20-39	Female	07-08	.011	0.001	8
Non-Hispanic Blacks	20-39	Female	09-10	.012	0.003	6
Non-Hispanic Blacks	40-59	Female	05-06	.072	0.007	7
Non-Hispanic Blacks	40-59	Female	07-08	.058	0.007	8
Non-Hispanic Blacks	40-59	Female	09-10	.069	0.016	7
Non-Hispanic Blacks	60+	Female	05-06	.251	0.063	5
Non-Hispanic Blacks	60+	Female	07-08	.197	0.019	7
Non-Hispanic Blacks	60+	Female	09-10	.182	0.029	7
Mexican Americans	12-19	Male	05-06	.003	0	11
Mexican Americans	12-19	Male	07-08	.004	0.001	6
Mexican Americans	12-19	Male	09-10	.005	0.001	6

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.012	0.001	9
Mexican Americans	20-39	Male	07-08	.013	0.002	9
Mexican Americans	20-39	Male	09-10	.009	0.001	8
Mexican Americans	40-59	Male	05-06	.039	0.006	4
Mexican Americans	40-59	Male	07-08	.048	0.006	6
Mexican Americans	40-59	Male	09-10	.035	0.004	8
Mexican Americans	60+	Male	05-06	.076	0.017	4
Mexican Americans	60+	Male	07-08	.092	0.009	5
Mexican Americans	60+	Male	09-10	.085	0.006	5
Mexican Americans	12-19	Female	05-06	.003	0	16
Mexican Americans	12-19	Female	07-08	.002 **	0.001	5
Mexican Americans	12-19	Female	09-10	.002	0	6
Mexican Americans	20-39	Female	05-06	.007	0.001	9
Mexican Americans	20-39	Female	07-08	.008	0.001	8
Mexican Americans	20-39	Female	09-10	.006	0.001	10
Mexican Americans	40-59	Female	05-06	.035	0.001	6
Mexican Americans	40-59	Female	07-08	.038	0.005	6
Mexican Americans	40-59	Female	09-10	.024	0.004	9
Mexican Americans	60+	Female	05-06	.080	0.012	3
Mexican Americans	60+	Female	07-08	.088	0.018	5
Mexican Americans	60+	Female	09-10	.061	0.007	6
All Hispanics	12-19	Male	09-10	.005	0.001	9
All Hispanics	20-39	Male	09-10	.012	0.002	13
All Hispanics	40-59	Male	09-10	.043	0.005	13
All Hispanics	60+	Male	09-10	.096	0.007	8
All Hispanics	12-19	Female	09-10	.002	0	8
All Hispanics	20-39	Female	09-10	.007	0.001	14
All Hispanics	40-59	Female	09-10	.027	0.003	14
All Hispanics	60+	Female	09-10	.067	0.005	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (whole weight) (2011 - 2016)†

CAS Number 52663-68-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.004	0.001	6
Non-Hispanic Whites	Male	12-19	13-14	.004	0.001	7
Non-Hispanic Whites	Male	12-19	15-16	.005	0.001	7
Non-Hispanic Whites	Male	20-39	11-12	.010	0.001	12
Non-Hispanic Whites	Male	20-39	13-14	.007	0.001	14
Non-Hispanic Whites	Male	20-39	15-16	.008	0.001	10
Non-Hispanic Whites	Male	40-59	11-12	.040	0.006	12
Non-Hispanic Whites	Male	40-59	13-14	.032	0.003	14
Non-Hispanic Whites	Male	40-59	15-16	.028	0.003	10
Non-Hispanic Whites	Male	60+	11-12	.070	0.005	12
Non-Hispanic Whites	Male	60+	13-14	.075	0.005	17
Non-Hispanic Whites	Male	60+	15-16	.057	0.003	13
Non-Hispanic Whites	Female	12-19	11-12	.004	0.001	5
Non-Hispanic Whites	Female	12-19	13-14	.003	0	5
Non-Hispanic Whites	Female	12-19	15-16	.002	0.001	5
Non-Hispanic Whites	Female	20-39	11-12	.009	0.001	13
Non-Hispanic Whites	Female	20-39	13-14	.007	0.001	15
Non-Hispanic Whites	Female	20-39	15-16	.005	0	9
Non-Hispanic Whites	Female	40-59	11-12	.039	0.004	11
Non-Hispanic Whites	Female	40-59	13-14	.027	0.002	16
Non-Hispanic Whites	Female	40-59	15-16	.029	0.003	9
Non-Hispanic Whites	Female	60+	11-12	.079	0.006	14
Non-Hispanic Whites	Female	60+	13-14	.081	0.008	20
Non-Hispanic Whites	Female	60+	15-16	.071	0.006	13
Non-Hispanic Blacks	Male	12-19	11-12	.005	0.001	7
Non-Hispanic Blacks	Male	12-19	13-14	.004	0	6
Non-Hispanic Blacks	Male	12-19	15-16	.003	0.001	5
Non-Hispanic Blacks	Male	20-39	11-12	.012	0.001	9
Non-Hispanic Blacks	Male	20-39	13-14	.010	0.002	7
Non-Hispanic Blacks	Male	20-39	15-16	.009	0.001	7
Non-Hispanic Blacks	Male	40-59	11-12	.072	0.02	7
Non-Hispanic Blacks	Male	40-59	13-14	.052	0.008	7
Non-Hispanic Blacks	Male	40-59	15-16	.079	0.02	7
Non-Hispanic Blacks	Male	60+	11-12	.115	0.005	9
Non-Hispanic Blacks	Male	60+	13-14	.113	0.011	9
Non-Hispanic Blacks	Male	60+	15-16	.087	0.008	7
Non-Hispanic Blacks	Female	12-19	11-12	.003	0.001	6
Non-Hispanic Blacks	Female	12-19	13-14	.002	0	6
Non-Hispanic Blacks	Female	12-19	15-16	.004 **	0.001	4
Non-Hispanic Blacks	Female	20-39	11-12	.010	0.002	8
Non-Hispanic Blacks	Female	20-39	13-14	.006	0.001	7
Non-Hispanic Blacks	Female	20-39	15-16	.007	0.001	9
Non-Hispanic Blacks	Female	40-59	11-12	.054	0.007	8
Non-Hispanic Blacks	Female	40-59	13-14	.042	0.005	8
Non-Hispanic Blacks	Female	40-59	15-16	.037	0.004	12
Non-Hispanic Blacks	Female	60+	11-12	.139	0.011	8
Non-Hispanic Blacks	Female	60+	13-14	.165	0.012	8
Non-Hispanic Blacks	Female	60+	15-16	.117	0.015	7
Mexican Americans	Male	12-19	11-12	.003	0.001	5
Mexican Americans	Male	12-19	13-14	.002	0	7
Mexican Americans	Male	12-19	15-16	.002	0	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.011	0.002	4
Mexican Americans	Male	20-39	13-14	.006	0.001	4
Mexican Americans	Male	20-39	15-16	.009	0.003	7
Mexican Americans	Male	40-59	11-12	.035	0.002	4
Mexican Americans	Male	40-59	13-14	.023	0.004	5
Mexican Americans	Male	40-59	15-16	.017	0.003	4
Mexican Americans	Male	60+	11-12	.046	0.006	2
Mexican Americans	Male	60+	13-14	.068	0.005	4
Mexican Americans	Male	60+	15-16	.066	0.007	5
Mexican Americans	Female	12-19	11-12	.002	0	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	.002	0	5
Mexican Americans	Female	20-39	11-12	.005	0.001	4
Mexican Americans	Female	20-39	13-14	.004	0.001	5
Mexican Americans	Female	20-39	15-16	.004	0	5
Mexican Americans	Female	40-59	11-12	.022	0.003	3
Mexican Americans	Female	40-59	13-14	.018	0.003	6
Mexican Americans	Female	40-59	15-16	.019	0.002	8
Mexican Americans	Female	60+	11-12	.062	0.005	3
Mexican Americans	Female	60+	13-14	.057	0.007	5
Mexican Americans	Female	60+	15-16	.052	0.004	7
All Hispanics	Male	12-19	11-12	2.82	0.44	7
All Hispanics	Male	12-19	13-14	2.40	0.51	10
All Hispanics	Male	12-19	15-16	2.19	0.42	9
All Hispanics	Male	20-39	11-12	10.8	1.1	8
All Hispanics	Male	20-39	13-14	6.72	0.84	7
All Hispanics	Male	20-39	15-16	9.41	1.88	10
All Hispanics	Male	40-59	11-12	31.5	2.7	7
All Hispanics	Male	40-59	13-14	29.6 **	10	9
All Hispanics	Male	40-59	15-16	24.3	6.1	9
All Hispanics	Male	60+	11-12	58.7	5.9	6
All Hispanics	Male	60+	13-14	66.2	4.4	7
All Hispanics	Male	60+	15-16	64.3	4.8	9
All Hispanics	Female	12-19	11-12	2.26	0.31	7
All Hispanics	Female	12-19	13-14	2.23	0.5	10
All Hispanics	Female	12-19	15-16	1.46	0.2	8
All Hispanics	Female	20-39	11-12	5.60	0.78	8
All Hispanics	Female	20-39	13-14	14.4 **	9.3	9
All Hispanics	Female	20-39	15-16	4.12	0.3	10
All Hispanics	Female	40-59	11-12	26.1	3	7
All Hispanics	Female	40-59	13-14	23.6	4	10
All Hispanics	Female	40-59	15-16	20.1	2.2	13
All Hispanics	Female	60+	11-12	80.2	10.8	7
All Hispanics	Female	60+	13-14	64.4	5.7	9
All Hispanics	Female	60+	15-16	50.9	2.5	13
Asians	Male	12-19	11-12	.011	0.003	3
Asians	Male	12-19	13-14	.007	0.002	3
Asians	Male	12-19	15-16	.011 **	0.005	3
Asians	Male	20-39	11-12	.026 **	0.011	6
Asians	Male	20-39	13-14	.020	0.003	4
Asians	Male	20-39	15-16	.025 **	0.009	5
Asians	Male	40-59	11-12	.077	0.013	6
Asians	Male	40-59	13-14	.054	0.012	4
Asians	Male	40-59	15-16	.056	0.013	4
Asians	Male	60+	11-12	.085	0.015	4
Asians	Male	60+	13-14	.120	0.023	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.165	0.038	3
Asians	Female	12-19	11-12	.007	0.001	4
Asians	Female	12-19	13-14	.006	0.001	3
Asians	Female	12-19	15-16	.008 **	0.004	3
Asians	Female	20-39	11-12	.028	0.005	6
Asians	Female	20-39	13-14	.018	0.001	5
Asians	Female	20-39	15-16	.016	0	4
Asians	Female	40-59	11-12	.059	0.014	6
Asians	Female	40-59	13-14	.043	0.005	7
Asians	Female	40-59	15-16	.098	0.026	5
Asians	Female	60+	11-12	.121	0.01	3
Asians	Female	60+	13-14	.134 **	0.047	3
Asians	Female	60+	15-16	.184 **	0.088	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	.599	0.081	9
Non-Hispanic Whites	Male	12-19	07-08	.622	0.09	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	7
Non-Hispanic Whites	Male	20-39	05-06	2.31	0.63	12
Non-Hispanic Whites	Male	20-39	07-08	1.91	0.19	15
Non-Hispanic Whites	Male	20-39	09-10	1.46	0.15	17
Non-Hispanic Whites	Male	40-59	05-06	8.60	1.06	12
Non-Hispanic Whites	Male	40-59	07-08	7.17	0.31	16
Non-Hispanic Whites	Male	40-59	09-10	6.67	0.7	17
Non-Hispanic Whites	Male	60+	05-06	15.1	0.9	15
Non-Hispanic Whites	Male	60+	07-08	15.5	0.7	23
Non-Hispanic Whites	Male	60+	09-10	14.7	0.8	21
Non-Hispanic Whites	Female	12-19	05-06	.386	0.061	10
Non-Hispanic Whites	Female	12-19	07-08	.691	0.171	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	1.30	0.16	16
Non-Hispanic Whites	Female	20-39	07-08	1.64	0.15	13
Non-Hispanic Whites	Female	20-39	09-10	1.08	0.08	18
Non-Hispanic Whites	Female	40-59	05-06	4.30	0.54	13
Non-Hispanic Whites	Female	40-59	07-08	5.43	0.34	17
Non-Hispanic Whites	Female	40-59	09-10	5.07	0.41	17
Non-Hispanic Whites	Female	60+	05-06	11.3	0.8	17
Non-Hispanic Whites	Female	60+	07-08	11.7	0.5	21
Non-Hispanic Whites	Female	60+	09-10	11.4	0.8	22
Non-Hispanic Blacks	Male	12-19	05-06	.604	0.084	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	.678	0.114	6
Non-Hispanic Blacks	Male	20-39	05-06	2.19	0.28	6
Non-Hispanic Blacks	Male	20-39	07-08	1.75	0.18	6
Non-Hispanic Blacks	Male	20-39	09-10	1.25	0.2	6
Non-Hispanic Blacks	Male	40-59	05-06	8.55	0.39	5
Non-Hispanic Blacks	Male	40-59	07-08	8.95	0.79	6
Non-Hispanic Blacks	Male	40-59	09-10	9.34	1.09	7
Non-Hispanic Blacks	Male	60+	05-06	21.6	2.2	5
Non-Hispanic Blacks	Male	60+	07-08	20.8	2	8
Non-Hispanic Blacks	Male	60+	09-10	20.5	1.8	9
Non-Hispanic Blacks	Female	12-19	05-06	.362	0.042	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	1.30	0.2	7
Non-Hispanic Blacks	Female	20-39	07-08	1.11	0.24	8
Non-Hispanic Blacks	Female	20-39	09-10	1.06	0.19	7
Non-Hispanic Blacks	Female	40-59	05-06	6.26	0.84	7
Non-Hispanic Blacks	Female	40-59	07-08	6.00	0.65	8
Non-Hispanic Blacks	Female	40-59	09-10	5.54	0.89	7
Non-Hispanic Blacks	Female	60+	05-06	18.1	3.4	5
Non-Hispanic Blacks	Female	60+	07-08	16.9	1	7
Non-Hispanic Blacks	Female	60+	09-10	17.4	1.9	7
Mexican Americans	Male	12-19	05-06	.501	0.138	11
Mexican Americans	Male	12-19	07-08	.465	0.071	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	.988	0.082	9
Mexican Americans	Male	20-39	07-08	1.76 **	0.54	9
Mexican Americans	Male	20-39	09-10	.805	0.105	8
Mexican Americans	Male	40-59	05-06	3.83	0.39	4
Mexican Americans	Male	40-59	07-08	5.26	0.7	6
Mexican Americans	Male	40-59	09-10	3.65	0.27	8
Mexican Americans	Male	60+	05-06	9.53	2.54	4
Mexican Americans	Male	60+	07-08	12.2	1.5	5
Mexican Americans	Male	60+	09-10	11.5	0.9	5
Mexican Americans	Female	12-19	05-06	.331	0.038	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	.641	0.109	9
Mexican Americans	Female	20-39	07-08	.943	0.046	8
Mexican Americans	Female	20-39	09-10	.629	0.088	9
Mexican Americans	Female	40-59	05-06	3.25	0.45	6
Mexican Americans	Female	40-59	07-08	3.73	0.86	6
Mexican Americans	Female	40-59	09-10	2.38	0.38	9
Mexican Americans	Female	60+	05-06	6.74	0.23	3
Mexican Americans	Female	60+	07-08	7.77	1.27	5
Mexican Americans	Female	60+	09-10	7.96	1.17	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	.942	0.098	13
All Hispanics	Male	40-59	09-10	4.20	0.4	13
All Hispanics	Male	60+	09-10	11.6	0.7	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	.688	0.076	13
All Hispanics	Female	40-59	09-10	2.66	0.29	14
All Hispanics	Female	60+	09-10	7.53	0.77	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.28, and 0.62, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.501	0.077	6
Non-Hispanic Whites	Male	12-19	13-14	.446	0.044	8
Non-Hispanic Whites	Male	12-19	15-16	.433	0.065	7
Non-Hispanic Whites	Male	20-39	11-12	1.03	0.1	12
Non-Hispanic Whites	Male	20-39	13-14	.972	0.051	13
Non-Hispanic Whites	Male	20-39	15-16	.992	0.063	10
Non-Hispanic Whites	Male	40-59	11-12	5.40	0.4	12
Non-Hispanic Whites	Male	40-59	13-14	4.87	0.33	14
Non-Hispanic Whites	Male	40-59	15-16	3.84	0.45	10
Non-Hispanic Whites	Male	60+	11-12	12.4	0.7	12
Non-Hispanic Whites	Male	60+	13-14	13.0	0.7	16
Non-Hispanic Whites	Male	60+	15-16	10.7	0.4	14
Non-Hispanic Whites	Female	12-19	11-12	.503	0.125	5
Non-Hispanic Whites	Female	12-19	13-14	.329	0.043	5
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.932	0.104	13
Non-Hispanic Whites	Female	20-39	13-14	.810	0.08	15
Non-Hispanic Whites	Female	20-39	15-16	.570	0.029	10
Non-Hispanic Whites	Female	40-59	11-12	4.54	0.41	11
Non-Hispanic Whites	Female	40-59	13-14	4.41	0.51	16
Non-Hispanic Whites	Female	40-59	15-16	3.46	0.32	9
Non-Hispanic Whites	Female	60+	11-12	10.8	1	14
Non-Hispanic Whites	Female	60+	13-14	11.2	0.6	20
Non-Hispanic Whites	Female	60+	15-16	9.26	0.95	13
Non-Hispanic Blacks	Male	12-19	11-12	.443	0.067	7
Non-Hispanic Blacks	Male	12-19	13-14	.406	0.033	6
Non-Hispanic Blacks	Male	12-19	15-16	.409	0.064	5
Non-Hispanic Blacks	Male	20-39	11-12	1.16	0.08	9
Non-Hispanic Blacks	Male	20-39	13-14	1.16	0.21	7
Non-Hispanic Blacks	Male	20-39	15-16	.944	0.087	7
Non-Hispanic Blacks	Male	40-59	11-12	7.34	1.36	7
Non-Hispanic Blacks	Male	40-59	13-14	6.49	0.74	7
Non-Hispanic Blacks	Male	40-59	15-16	6.47	0.97	7
Non-Hispanic Blacks	Male	60+	11-12	16.7	1.1	9
Non-Hispanic Blacks	Male	60+	13-14	17.7	1.4	9
Non-Hispanic Blacks	Male	60+	15-16	13.4	1.4	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	.289	0.062	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.732	0.122	8
Non-Hispanic Blacks	Female	20-39	13-14	.571	0.066	7
Non-Hispanic Blacks	Female	20-39	15-16	.569	0.064	9
Non-Hispanic Blacks	Female	40-59	11-12	4.65	0.5	8
Non-Hispanic Blacks	Female	40-59	13-14	4.20	0.32	8
Non-Hispanic Blacks	Female	40-59	15-16	3.35	0.29	12
Non-Hispanic Blacks	Female	60+	11-12	12.5	0.8	8
Non-Hispanic Blacks	Female	60+	13-14	17.2	1.5	8
Non-Hispanic Blacks	Female	60+	15-16	10.9	1	7
Mexican Americans	Male	12-19	11-12	.267	0.05	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.965	0.135	4
Mexican Americans	Male	20-39	13-14	.590	0.073	5
Mexican Americans	Male	20-39	15-16	.681	0.091	7
Mexican Americans	Male	40-59	11-12	3.31	0.51	4
Mexican Americans	Male	40-59	13-14	3.14	0.71	5
Mexican Americans	Male	40-59	15-16	1.96	0.4	4
Mexican Americans	Male	60+	11-12	6.28	0.32	2
Mexican Americans	Male	60+	13-14	11.1	0.9	4
Mexican Americans	Male	60+	15-16	8.86	0.94	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.622	0.154	4
Mexican Americans	Female	20-39	13-14	.506	0.097	5
Mexican Americans	Female	20-39	15-16	.410	0.041	6
Mexican Americans	Female	40-59	11-12	2.20	0.39	3
Mexican Americans	Female	40-59	13-14	2.26	0.51	6
Mexican Americans	Female	40-59	15-16	2.03	0.16	8
Mexican Americans	Female	60+	11-12	6.67	0.42	3
Mexican Americans	Female	60+	13-14	8.01	0.93	5
Mexican Americans	Female	60+	15-16	6.35	0.38	7
All Hispanics	Male	12-19	11-12	.279	0.04	7
All Hispanics	Male	12-19	13-14	.251	0.041	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	.933	0.084	8
All Hispanics	Male	20-39	13-14	.627	0.056	8
All Hispanics	Male	20-39	15-16	.741	0.095	11
All Hispanics	Male	40-59	11-12	2.95	0.37	7
All Hispanics	Male	40-59	13-14	3.24	0.61	9
All Hispanics	Male	40-59	15-16	2.43	0.59	9
All Hispanics	Male	60+	11-12	7.29	0.51	6
All Hispanics	Male	60+	13-14	10.2	0.8	7
All Hispanics	Male	60+	15-16	8.52	0.72	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	.559	0.084	8
All Hispanics	Female	20-39	13-14	.951 **	0.46	9
All Hispanics	Female	20-39	15-16	.398	0.029	11
All Hispanics	Female	40-59	11-12	2.43	0.38	7
All Hispanics	Female	40-59	13-14	2.66	0.4	10
All Hispanics	Female	40-59	15-16	2.12	0.21	13
All Hispanics	Female	60+	11-12	7.97	1.1	7
All Hispanics	Female	60+	13-14	7.85	0.65	9
All Hispanics	Female	60+	15-16	5.96	0.29	13
Asians	Male	12-19	11-12	.723	0.156	3
Asians	Male	12-19	13-14	.387	0.062	3
Asians	Male	12-19	15-16	.742 **	0.244	3
Asians	Male	20-39	11-12	1.54 **	0.49	6
Asians	Male	20-39	13-14	1.10	0.09	4
Asians	Male	20-39	15-16	1.34	0.37	5
Asians	Male	40-59	11-12	4.95	0.4	6
Asians	Male	40-59	13-14	4.42	0.78	4
Asians	Male	40-59	15-16	3.51	0.7	4
Asians	Male	60+	11-12	9.17	1.45	4
Asians	Male	60+	13-14	9.90	1.73	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	11.9	1.4	3
Asians	Female	12-19	11-12	.431	0.063	4
Asians	Female	12-19	13-14	.416	0.036	3
Asians	Female	12-19	15-16	.463 **	0.172	3
Asians	Female	20-39	11-12	1.34	0.27	6
Asians	Female	20-39	13-14	1.07	0.17	5
Asians	Female	20-39	15-16	1.06	0.08	4
Asians	Female	40-59	11-12	3.53	0.72	6
Asians	Female	40-59	13-14	3.03	0.32	7
Asians	Female	40-59	15-16	4.92	0.64	5
Asians	Female	60+	11-12	8.80	2.32	3
Asians	Female	60+	13-14	10.1 **	4.5	3
Asians	Female	60+	15-16	9.15 **	3	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.003	0	9
Non-Hispanic Whites	12-19	Male	07-08	.003	0	6
Non-Hispanic Whites	12-19	Male	09-10	.003	0	7
Non-Hispanic Whites	20-39	Male	05-06	.018 **	0.005	12
Non-Hispanic Whites	20-39	Male	07-08	.013	0.001	15
Non-Hispanic Whites	20-39	Male	09-10	.010	0.001	17
Non-Hispanic Whites	40-59	Male	05-06	.065	0.008	12
Non-Hispanic Whites	40-59	Male	07-08	.052	0.002	16
Non-Hispanic Whites	40-59	Male	09-10	.045	0.005	17
Non-Hispanic Whites	60+	Male	05-06	.102	0.005	15
Non-Hispanic Whites	60+	Male	07-08	.100	0.005	23
Non-Hispanic Whites	60+	Male	09-10	.089	0.004	21
Non-Hispanic Whites	12-19	Female	05-06	.002	0	10
Non-Hispanic Whites	12-19	Female	07-08	.003	0.001	7
Non-Hispanic Whites	12-19	Female	09-10	.002	0	8
Non-Hispanic Whites	20-39	Female	05-06	.008	0.001	16
Non-Hispanic Whites	20-39	Female	07-08	.010	0.001	13
Non-Hispanic Whites	20-39	Female	09-10	.006	0	18
Non-Hispanic Whites	40-59	Female	05-06	.032	0.005	13
Non-Hispanic Whites	40-59	Female	07-08	.036	0.002	17
Non-Hispanic Whites	40-59	Female	09-10	.032	0.003	17
Non-Hispanic Whites	60+	Female	05-06	.082	0.006	17
Non-Hispanic Whites	60+	Female	07-08	.079	0.004	21
Non-Hispanic Whites	60+	Female	09-10	.070	0.005	22
Non-Hispanic Blacks	12-19	Male	05-06	.003	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.003	0.001	6
Non-Hispanic Blacks	12-19	Male	09-10	.003	0.001	6
Non-Hispanic Blacks	20-39	Male	05-06	.013	0.002	6
Non-Hispanic Blacks	20-39	Male	07-08	.010	0.001	6
Non-Hispanic Blacks	20-39	Male	09-10	.007	0.001	6
Non-Hispanic Blacks	40-59	Male	05-06	.054	0.003	5
Non-Hispanic Blacks	40-59	Male	07-08	.057	0.005	6
Non-Hispanic Blacks	40-59	Male	09-10	.057	0.005	7
Non-Hispanic Blacks	60+	Male	05-06	.131	0.017	5
Non-Hispanic Blacks	60+	Male	07-08	.127	0.013	8
Non-Hispanic Blacks	60+	Male	09-10	.110	0.01	9
Non-Hispanic Blacks	12-19	Female	05-06	.002	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.002	0	5
Non-Hispanic Blacks	12-19	Female	09-10	.001	0	6
Non-Hispanic Blacks	20-39	Female	05-06	.007	0.001	7
Non-Hispanic Blacks	20-39	Female	07-08	.006	0.001	8
Non-Hispanic Blacks	20-39	Female	09-10	.005	0.001	7
Non-Hispanic Blacks	40-59	Female	05-06	.040	0.005	7
Non-Hispanic Blacks	40-59	Female	07-08	.036	0.005	8
Non-Hispanic Blacks	40-59	Female	09-10	.031	0.004	7
Non-Hispanic Blacks	60+	Female	05-06	.120	0.022	5
Non-Hispanic Blacks	60+	Female	07-08	.102	0.006	7
Non-Hispanic Blacks	60+	Female	09-10	.100	0.01	7
Mexican Americans	12-19	Male	05-06	.003	0.001	11
Mexican Americans	12-19	Male	07-08	.002	0	6
Mexican Americans	12-19	Male	09-10	.003	0	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.007	0.001	9
Mexican Americans	20-39	Male	07-08	.012 **	0.004	9
Mexican Americans	20-39	Male	09-10	.005	0.001	8
Mexican Americans	40-59	Male	05-06	.031	0.004	4
Mexican Americans	40-59	Male	07-08	.037	0.004	6
Mexican Americans	40-59	Male	09-10	.025	0.003	8
Mexican Americans	60+	Male	05-06	.069	0.018	4
Mexican Americans	60+	Male	07-08	.086	0.008	5
Mexican Americans	60+	Male	09-10	.070	0.005	5
Mexican Americans	12-19	Female	05-06	.002	0	16
Mexican Americans	12-19	Female	07-08	.002 **	0.001	5
Mexican Americans	12-19	Female	09-10	.001	0	7
Mexican Americans	20-39	Female	05-06	.004	0.001	9
Mexican Americans	20-39	Female	07-08	.005	0	8
Mexican Americans	20-39	Female	09-10	.003	0.001	9
Mexican Americans	40-59	Female	05-06	.024	0.003	6
Mexican Americans	40-59	Female	07-08	.025	0.006	6
Mexican Americans	40-59	Female	09-10	.016	0.003	9
Mexican Americans	60+	Female	05-06	.052	0.007	3
Mexican Americans	60+	Female	07-08	.054	0.009	5
Mexican Americans	60+	Female	09-10	.044	0.006	6
All Hispanics	12-19	Male	09-10	.002	0	11
All Hispanics	20-39	Male	09-10	.006	0.001	13
All Hispanics	40-59	Male	09-10	.029	0.003	13
All Hispanics	60+	Male	09-10	.073	0.003	8
All Hispanics	12-19	Female	09-10	.001	0	10
All Hispanics	20-39	Female	09-10	.004	0	13
All Hispanics	40-59	Female	09-10	.017	0.002	14
All Hispanics	60+	Female	09-10	.044	0.004	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 35694-08-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.002	0	6
Non-Hispanic Whites	Male	12-19	13-14	.002	0	8
Non-Hispanic Whites	Male	12-19	15-16	.002	0	7
Non-Hispanic Whites	Male	20-39	11-12	.006	0.001	12
Non-Hispanic Whites	Male	20-39	13-14	.005	0	13
Non-Hispanic Whites	Male	20-39	15-16	.006	0.001	10
Non-Hispanic Whites	Male	40-59	11-12	.036	0.003	12
Non-Hispanic Whites	Male	40-59	13-14	.029	0.002	14
Non-Hispanic Whites	Male	40-59	15-16	.026	0.003	10
Non-Hispanic Whites	Male	60+	11-12	.069	0.005	12
Non-Hispanic Whites	Male	60+	13-14	.071	0.004	16
Non-Hispanic Whites	Male	60+	15-16	.059	0.002	14
Non-Hispanic Whites	Female	12-19	11-12	.003	0.001	5
Non-Hispanic Whites	Female	12-19	13-14	.002	0	5
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.005	0.001	13
Non-Hispanic Whites	Female	20-39	13-14	.004	0	15
Non-Hispanic Whites	Female	20-39	15-16	.003	0	10
Non-Hispanic Whites	Female	40-59	11-12	.029	0.003	11
Non-Hispanic Whites	Female	40-59	13-14	.026	0.003	16
Non-Hispanic Whites	Female	40-59	15-16	.022	0.002	9
Non-Hispanic Whites	Female	60+	11-12	.066	0.006	14
Non-Hispanic Whites	Female	60+	13-14	.066	0.004	20
Non-Hispanic Whites	Female	60+	15-16	.057	0.005	13
Non-Hispanic Blacks	Male	12-19	11-12	.002	0	7
Non-Hispanic Blacks	Male	12-19	13-14	.002	0	6
Non-Hispanic Blacks	Male	12-19	15-16	.002	0	5
Non-Hispanic Blacks	Male	20-39	11-12	.006	0	9
Non-Hispanic Blacks	Male	20-39	13-14	.006	0.001	7
Non-Hispanic Blacks	Male	20-39	15-16	.005	0	7
Non-Hispanic Blacks	Male	40-59	11-12	.041	0.008	7
Non-Hispanic Blacks	Male	40-59	13-14	.037	0.004	7
Non-Hispanic Blacks	Male	40-59	15-16	.041	0.006	7
Non-Hispanic Blacks	Male	60+	11-12	.090	0.005	9
Non-Hispanic Blacks	Male	60+	13-14	.091	0.005	9
Non-Hispanic Blacks	Male	60+	15-16	.072	0.006	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	.001	0	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.004	0.001	8
Non-Hispanic Blacks	Female	20-39	13-14	.003	0	7
Non-Hispanic Blacks	Female	20-39	15-16	.003	0	9
Non-Hispanic Blacks	Female	40-59	11-12	.028	0.004	8
Non-Hispanic Blacks	Female	40-59	13-14	.022	0.002	8
Non-Hispanic Blacks	Female	40-59	15-16	.019	0.002	12
Non-Hispanic Blacks	Female	60+	11-12	.070	0.004	8
Non-Hispanic Blacks	Female	60+	13-14	.092	0.006	8
Non-Hispanic Blacks	Female	60+	15-16	.063	0.005	7
Mexican Americans	Male	12-19	11-12	.001	0	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.006	0.001	4
Mexican Americans	Male	20-39	13-14	.004	0.001	5
Mexican Americans	Male	20-39	15-16	.005	0.001	7
Mexican Americans	Male	40-59	11-12	.025	0.002	4
Mexican Americans	Male	40-59	13-14	.019	0.004	5
Mexican Americans	Male	40-59	15-16	.013	0.002	4
Mexican Americans	Male	60+	11-12	.037	0.001	2
Mexican Americans	Male	60+	13-14	.060	0.005	4
Mexican Americans	Male	60+	15-16	.051	0.005	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.003	0.001	4
Mexican Americans	Female	20-39	13-14	.003	0	5
Mexican Americans	Female	20-39	15-16	.002	0	6
Mexican Americans	Female	40-59	11-12	.013	0.002	3
Mexican Americans	Female	40-59	13-14	.013	0.002	6
Mexican Americans	Female	40-59	15-16	.013	0.001	8
Mexican Americans	Female	60+	11-12	.041	0.003	3
Mexican Americans	Female	60+	13-14	.047	0.006	5
Mexican Americans	Female	60+	15-16	.040	0.002	7
All Hispanics	Male	12-19	11-12	1.35	0.2	7
All Hispanics	Male	12-19	13-14	1.19	0.16	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	5.67	0.53	8
All Hispanics	Male	20-39	13-14	3.77	0.36	8
All Hispanics	Male	20-39	15-16	4.85	0.78	11
All Hispanics	Male	40-59	11-12	21.6	2.2	7
All Hispanics	Male	40-59	13-14	19.8	3.9	9
All Hispanics	Male	40-59	15-16	15.6	3.6	9
All Hispanics	Male	60+	11-12	43.0	3.5	6
All Hispanics	Male	60+	13-14	55.4	4	7
All Hispanics	Male	60+	15-16	50.2	4.6	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	3.03	0.42	8
All Hispanics	Female	20-39	13-14	5.36 **	2.55	9
All Hispanics	Female	20-39	15-16	2.17	0.17	11
All Hispanics	Female	40-59	11-12	15.7	3.1	7
All Hispanics	Female	40-59	13-14	15.2	2.2	10
All Hispanics	Female	40-59	15-16	13.8	1.6	13
All Hispanics	Female	60+	11-12	48.5	5.8	7
All Hispanics	Female	60+	13-14	46.3	3.6	9
All Hispanics	Female	60+	15-16	36.5	2	13
Asians	Male	12-19	11-12	.004	0.001	3
Asians	Male	12-19	13-14	.002	0	3
Asians	Male	12-19	15-16	.003 **	0.001	3
Asians	Male	20-39	11-12	.009 **	0.003	6
Asians	Male	20-39	13-14	.006	0	4
Asians	Male	20-39	15-16	.009 **	0.003	5
Asians	Male	40-59	11-12	.030	0.002	6
Asians	Male	40-59	13-14	.025	0.003	4
Asians	Male	40-59	15-16	.022	0.005	4
Asians	Male	60+	11-12	.050	0.009	4
Asians	Male	60+	13-14	.061	0.01	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.066	0.004	3
Asians	Female	12-19	11-12	.002	0	4
Asians	Female	12-19	13-14	.002	0	3
Asians	Female	12-19	15-16	.002 **	0.001	3
Asians	Female	20-39	11-12	.007	0.001	6
Asians	Female	20-39	13-14	.005	0.001	5
Asians	Female	20-39	15-16	.006	0	4
Asians	Female	40-59	11-12	.022	0.004	6
Asians	Female	40-59	13-14	.018	0.002	7
Asians	Female	40-59	15-16	.030	0.005	5
Asians	Female	60+	11-12	.051	0.014	3
Asians	Female	60+	13-14	.057 **	0.019	3
Asians	Female	60+	15-16	.057 **	0.019	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2008)†

CAS Number 52663-78-2

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	20-39	05-06	.487	0.129	12
Non-Hispanic Whites	Male	20-39	07-08	*	*	15
Non-Hispanic Whites	Male	40-59	05-06	1.50	0.29	12
Non-Hispanic Whites	Male	40-59	07-08	1.25	0.05	16
Non-Hispanic Whites	Male	60+	05-06	2.52	0.16	15
Non-Hispanic Whites	Male	60+	07-08	2.74	0.15	23
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	20-39	05-06	*	*	16
Non-Hispanic Whites	Female	20-39	07-08	*	*	13
Non-Hispanic Whites	Female	40-59	05-06	.936	0.067	13
Non-Hispanic Whites	Female	40-59	07-08	1.14	0.08	17
Non-Hispanic Whites	Female	60+	05-06	2.04	0.16	17
Non-Hispanic Whites	Female	60+	07-08	2.38	0.13	21
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	.435	0.047	6
Non-Hispanic Blacks	Male	20-39	07-08	*	*	6
Non-Hispanic Blacks	Male	40-59	05-06	1.35	0.13	5
Non-Hispanic Blacks	Male	40-59	07-08	1.80	0.21	6
Non-Hispanic Blacks	Male	60+	05-06	3.40	0.27	5
Non-Hispanic Blacks	Male	60+	07-08	3.99	0.49	8
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	.348	0.044	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	40-59	05-06	1.41	0.15	7
Non-Hispanic Blacks	Female	40-59	07-08	1.35	0.16	8
Non-Hispanic Blacks	Female	60+	05-06	3.82	0.76	5
Non-Hispanic Blacks	Female	60+	07-08	3.94	0.24	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	20-39	05-06	*	*	9
Mexican Americans	Male	20-39	07-08	*	*	9
Mexican Americans	Male	40-59	05-06	.766	0.083	4
Mexican Americans	Male	40-59	07-08	1.02	0.1	6
Mexican Americans	Male	60+	05-06	1.69	0.4	4
Mexican Americans	Male	60+	07-08	2.24	0.26	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	40-59	05-06	.780	0.083	6
Mexican Americans	Female	40-59	07-08	.986	0.17	6
Mexican Americans	Female	60+	05-06	1.47	0.06	3
Mexican Americans	Female	60+	07-08	1.98	0.35	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.28.

* 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) (2005 - 2008)†

CAS Number 52663-78-2

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.001	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	20-39	Male	05-06	.004	0.001	12
Non-Hispanic Whites	20-39	Male	07-08	.002	0	15
Non-Hispanic Whites	40-59	Male	05-06	.011	0.002	12
Non-Hispanic Whites	40-59	Male	07-08	.009	0	16
Non-Hispanic Whites	60+	Male	05-06	.017	0.001	15
Non-Hispanic Whites	60+	Male	07-08	.018	0.001	23
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001	0	7
Non-Hispanic Whites	20-39	Female	05-06	.002	0	16
Non-Hispanic Whites	20-39	Female	07-08	.002	0.001	13
Non-Hispanic Whites	40-59	Female	05-06	.007	0.001	13
Non-Hispanic Whites	40-59	Female	07-08	.008	0.001	17
Non-Hispanic Whites	60+	Female	05-06	.015	0.001	17
Non-Hispanic Whites	60+	Female	07-08	.016	0.001	21
Non-Hispanic Blacks	12-19	Male	05-06	.001	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.003	0	6
Non-Hispanic Blacks	20-39	Male	07-08	.002	0	6
Non-Hispanic Blacks	40-59	Male	05-06	.009	0.001	5
Non-Hispanic Blacks	40-59	Male	07-08	.012	0.001	6
Non-Hispanic Blacks	60+	Male	05-06	.020	0.001	5
Non-Hispanic Blacks	60+	Male	07-08	.024	0.003	8
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.002	0	7
Non-Hispanic Blacks	20-39	Female	07-08	.001	0	8
Non-Hispanic Blacks	40-59	Female	05-06	.009	0.001	7
Non-Hispanic Blacks	40-59	Female	07-08	.008	0.001	8
Non-Hispanic Blacks	60+	Female	05-06	.025	0.005	5
Non-Hispanic Blacks	60+	Female	07-08	.024	0.002	7
Mexican Americans	12-19	Male	05-06	.001	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	20-39	Male	05-06	.002	0	9
Mexican Americans	20-39	Male	07-08	.002 **	0.001	9
Mexican Americans	40-59	Male	05-06	.006	0.001	4
Mexican Americans	40-59	Male	07-08	.007	0.001	6
Mexican Americans	60+	Male	05-06	.012	0.003	4
Mexican Americans	60+	Male	07-08	.016	0.001	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	20-39	Female	05-06	.001	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	40-59	Female	05-06	.006	0.001	6
Mexican Americans	40-59	Female	07-08	.006	0.001	6
Mexican Americans	60+	Female	05-06	.011	0.002	3
Mexican Americans	60+	Female	07-08	.014	0.003	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' and 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (lipid adjusted) (2005 - 2010)†

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	.793	0.071	9
Non-Hispanic Whites	Male	12-19	07-08	.667	0.137	6
Non-Hispanic Whites	Male	12-19	09-10	.650	0.092	7
Non-Hispanic Whites	Male	20-39	05-06	2.63	0.69	12
Non-Hispanic Whites	Male	20-39	07-08	2.15	0.14	15
Non-Hispanic Whites	Male	20-39	09-10	1.48	0.14	17
Non-Hispanic Whites	Male	40-59	05-06	8.33	0.94	12
Non-Hispanic Whites	Male	40-59	07-08	6.45	0.24	16
Non-Hispanic Whites	Male	40-59	09-10	5.79	0.61	17
Non-Hispanic Whites	Male	60+	05-06	15.4	0.8	15
Non-Hispanic Whites	Male	60+	07-08	15.3	0.8	23
Non-Hispanic Whites	Male	60+	09-10	12.3	0.7	21
Non-Hispanic Whites	Female	12-19	05-06	.593	0.046	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	1.49	0.12	16
Non-Hispanic Whites	Female	20-39	07-08	1.72	0.2	13
Non-Hispanic Whites	Female	20-39	09-10	1.13	0.07	18
Non-Hispanic Whites	Female	40-59	05-06	5.23	0.24	13
Non-Hispanic Whites	Female	40-59	07-08	5.27	0.29	17
Non-Hispanic Whites	Female	40-59	09-10	4.80	0.35	17
Non-Hispanic Whites	Female	60+	05-06	12.6	1	17
Non-Hispanic Whites	Female	60+	07-08	12.2	0.7	21
Non-Hispanic Whites	Female	60+	09-10	11.3	0.8	22
Non-Hispanic Blacks	Male	12-19	05-06	.937	0.103	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	.788	0.186	5
Non-Hispanic Blacks	Male	20-39	05-06	2.34	0.22	6
Non-Hispanic Blacks	Male	20-39	07-08	1.79	0.17	6
Non-Hispanic Blacks	Male	20-39	09-10	2.21	0.31	5
Non-Hispanic Blacks	Male	40-59	05-06	8.31	0.66	5
Non-Hispanic Blacks	Male	40-59	07-08	8.17	0.83	6
Non-Hispanic Blacks	Male	40-59	09-10	8.79	1.05	7
Non-Hispanic Blacks	Male	60+	05-06	20.9	2.2	5
Non-Hispanic Blacks	Male	60+	07-08	19.8	2.1	8
Non-Hispanic Blacks	Male	60+	09-10	19.2	2.2	9
Non-Hispanic Blacks	Female	12-19	05-06	.557	0.039	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	1.61	0.22	7
Non-Hispanic Blacks	Female	20-39	07-08	1.40	0.2	8
Non-Hispanic Blacks	Female	20-39	09-10	1.09	0.18	7
Non-Hispanic Blacks	Female	40-59	05-06	7.01	0.65	7
Non-Hispanic Blacks	Female	40-59	07-08	6.50	0.68	8
Non-Hispanic Blacks	Female	40-59	09-10	5.81	0.98	7
Non-Hispanic Blacks	Female	60+	05-06	21.2	4.7	5
Non-Hispanic Blacks	Female	60+	07-08	18.1	1.3	7
Non-Hispanic Blacks	Female	60+	09-10	17.4	1.9	7
Mexican Americans	Male	12-19	05-06	.500	0.047	11
Mexican Americans	Male	12-19	07-08	.514	0.079	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	09-10	.662	0.09	8
Mexican Americans	Male	20-39	05-06	1.16	0.1	9
Mexican Americans	Male	20-39	07-08	1.97 **	0.66	9
Mexican Americans	Male	20-39	09-10	.946	0.129	8
Mexican Americans	Male	40-59	05-06	3.85	0.42	4
Mexican Americans	Male	40-59	07-08	4.71	0.56	6
Mexican Americans	Male	40-59	09-10	3.49	0.24	8
Mexican Americans	Male	60+	05-06	9.56	2.38	4
Mexican Americans	Male	60+	07-08	10.6	1.6	5
Mexican Americans	Male	60+	09-10	10.6	0.6	5
Mexican Americans	Female	12-19	05-06	.464	0.05	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	.770	0.121	9
Mexican Americans	Female	20-39	07-08	1.02	0.04	8
Mexican Americans	Female	20-39	09-10	.765	0.081	10
Mexican Americans	Female	40-59	05-06	3.87	0.54	6
Mexican Americans	Female	40-59	07-08	4.02	0.55	6
Mexican Americans	Female	40-59	09-10	2.49	0.39	9
Mexican Americans	Female	60+	05-06	7.87	0.44	3
Mexican Americans	Female	60+	07-08	7.87	1.4	5
Mexican Americans	Female	60+	09-10	8.01	1.08	6
All Hispanics	Male	12-19	09-10	.632	0.07	11
All Hispanics	Male	20-39	09-10	1.07	0.12	12
All Hispanics	Male	40-59	09-10	3.83	0.36	13
All Hispanics	Male	60+	09-10	10.6	0.5	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	.809	0.068	14
All Hispanics	Female	40-59	09-10	2.65	0.31	14
All Hispanics	Female	60+	09-10	7.66	0.73	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.25, 0.28, and 0.62, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' and 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (lipid adjusted) (2011 - 2016)†

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.745	0.087	6
Non-Hispanic Whites	Male	12-19	13-14	.568	0.064	8
Non-Hispanic Whites	Male	12-19	15-16	.505	0.068	7
Non-Hispanic Whites	Male	20-39	11-12	1.23	0.12	12
Non-Hispanic Whites	Male	20-39	13-14	1.02	0.06	14
Non-Hispanic Whites	Male	20-39	15-16	1.02	0.06	10
Non-Hispanic Whites	Male	40-59	11-12	4.83	0.27	12
Non-Hispanic Whites	Male	40-59	13-14	4.50	0.26	14
Non-Hispanic Whites	Male	40-59	15-16	3.38	0.3	10
Non-Hispanic Whites	Male	60+	11-12	10.8	0.5	12
Non-Hispanic Whites	Male	60+	13-14	11.4	0.7	17
Non-Hispanic Whites	Male	60+	15-16	9.82	0.26	14
Non-Hispanic Whites	Female	12-19	11-12	.625	0.125	5
Non-Hispanic Whites	Female	12-19	13-14	.449	0.059	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	1.11	0.11	13
Non-Hispanic Whites	Female	20-39	13-14	.916	0.106	15
Non-Hispanic Whites	Female	20-39	15-16	.660	0.03	11
Non-Hispanic Whites	Female	40-59	11-12	4.83	0.48	11
Non-Hispanic Whites	Female	40-59	13-14	4.07	0.34	16
Non-Hispanic Whites	Female	40-59	15-16	3.50	0.35	9
Non-Hispanic Whites	Female	60+	11-12	10.6	0.9	14
Non-Hispanic Whites	Female	60+	13-14	10.9	0.6	20
Non-Hispanic Whites	Female	60+	15-16	8.87	0.93	13
Non-Hispanic Blacks	Male	12-19	11-12	.685	0.099	7
Non-Hispanic Blacks	Male	12-19	13-14	.603	0.063	6
Non-Hispanic Blacks	Male	12-19	15-16	.492	0.067	5
Non-Hispanic Blacks	Male	20-39	11-12	1.33	0.08	9
Non-Hispanic Blacks	Male	20-39	13-14	1.25	0.2	7
Non-Hispanic Blacks	Male	20-39	15-16	1.02	0.08	7
Non-Hispanic Blacks	Male	40-59	11-12	7.23	1.37	7
Non-Hispanic Blacks	Male	40-59	13-14	5.94	0.69	7
Non-Hispanic Blacks	Male	40-59	15-16	6.42	1.27	7
Non-Hispanic Blacks	Male	60+	11-12	14.5	0.6	9
Non-Hispanic Blacks	Male	60+	13-14	15.0	1	9
Non-Hispanic Blacks	Male	60+	15-16	11.5	1.2	7
Non-Hispanic Blacks	Female	12-19	11-12	.376	0.046	6
Non-Hispanic Blacks	Female	12-19	13-14	.315	0.045	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.964	0.148	8
Non-Hispanic Blacks	Female	20-39	13-14	.701	0.061	8
Non-Hispanic Blacks	Female	20-39	15-16	.756	0.065	9
Non-Hispanic Blacks	Female	40-59	11-12	5.41	0.6	8
Non-Hispanic Blacks	Female	40-59	13-14	4.45	0.46	8
Non-Hispanic Blacks	Female	40-59	15-16	3.59	0.31	12
Non-Hispanic Blacks	Female	60+	11-12	13.0	0.6	8
Non-Hispanic Blacks	Female	60+	13-14	17.5	1.9	8
Non-Hispanic Blacks	Female	60+	15-16	11.3	1.1	7
Mexican Americans	Male	12-19	11-12	.432	0.014	5
Mexican Americans	Male	12-19	13-14	.357	0.027	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	15-16	.290	0.014	6
Mexican Americans	Male	20-39	11-12	1.23	0.15	4
Mexican Americans	Male	20-39	13-14	.639	0.101	5
Mexican Americans	Male	20-39	15-16	.713	0.097	6
Mexican Americans	Male	40-59	11-12	3.30	0.64	4
Mexican Americans	Male	40-59	13-14	3.07	0.73	5
Mexican Americans	Male	40-59	15-16	2.05	0.43	4
Mexican Americans	Male	60+	11-12	6.43	1.01	2
Mexican Americans	Male	60+	13-14	9.93	1.01	4
Mexican Americans	Male	60+	15-16	7.78	0.8	5
Mexican Americans	Female	12-19	11-12	.300	0.029	4
Mexican Americans	Female	12-19	13-14	.335	0.036	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.791	0.112	4
Mexican Americans	Female	20-39	13-14	.564	0.093	5
Mexican Americans	Female	20-39	15-16	.485	0.05	6
Mexican Americans	Female	40-59	11-12	2.53	0.39	3
Mexican Americans	Female	40-59	13-14	2.23	0.48	6
Mexican Americans	Female	40-59	15-16	2.08	0.16	8
Mexican Americans	Female	60+	11-12	6.80	0.28	3
Mexican Americans	Female	60+	13-14	7.82	0.99	5
Mexican Americans	Female	60+	15-16	6.06	0.35	7
All Hispanics	Male	12-19	11-12	.432	0.015	7
All Hispanics	Male	12-19	13-14	.380	0.042	10
All Hispanics	Male	12-19	15-16	.295	0.028	9
All Hispanics	Male	20-39	11-12	1.13	0.1	8
All Hispanics	Male	20-39	13-14	.709	0.085	8
All Hispanics	Male	20-39	15-16	.842	0.137	10
All Hispanics	Male	40-59	11-12	2.99	0.42	7
All Hispanics	Male	40-59	13-14	3.21	0.57	9
All Hispanics	Male	40-59	15-16	2.31	0.46	9
All Hispanics	Male	60+	11-12	6.95	0.55	6
All Hispanics	Male	60+	13-14	9.09	0.87	7
All Hispanics	Male	60+	15-16	7.30	0.59	9
All Hispanics	Female	12-19	11-12	.328	0.025	7
All Hispanics	Female	12-19	13-14	.370	0.044	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	.706	0.066	8
All Hispanics	Female	20-39	13-14	.875 **	0.335	9
All Hispanics	Female	20-39	15-16	.488	0.034	11
All Hispanics	Female	40-59	11-12	2.72	0.35	7
All Hispanics	Female	40-59	13-14	2.76	0.41	10
All Hispanics	Female	40-59	15-16	2.15	0.2	13
All Hispanics	Female	60+	11-12	7.85	1.08	7
All Hispanics	Female	60+	13-14	7.65	0.81	9
All Hispanics	Female	60+	15-16	5.74	0.28	13
Asians	Male	12-19	11-12	1.02 **	0.31	3
Asians	Male	12-19	13-14	.593	0.088	3
Asians	Male	12-19	15-16	.910 **	0.366	3
Asians	Male	20-39	11-12	1.84 **	0.64	6
Asians	Male	20-39	13-14	1.33	0.14	4
Asians	Male	20-39	15-16	1.46	0.37	5
Asians	Male	40-59	11-12	5.21	0.72	6
Asians	Male	40-59	13-14	4.24	0.53	4
Asians	Male	40-59	15-16	3.75	0.76	4
Asians	Male	60+	11-12	7.83	1.03	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	13-14	8.70	1.02	3
Asians	Male	60+	15-16	10.8	2	3
Asians	Female	12-19	11-12	.632	0.078	4
Asians	Female	12-19	13-14	.486	0.065	3
Asians	Female	12-19	15-16	.595 **	0.209	3
Asians	Female	20-39	11-12	2.01	0.4	6
Asians	Female	20-39	13-14	1.21	0.19	5
Asians	Female	20-39	15-16	1.23	0.05	4
Asians	Female	40-59	11-12	3.48	0.75	6
Asians	Female	40-59	13-14	3.26	0.38	7
Asians	Female	40-59	15-16	6.07	0.89	5
Asians	Female	60+	11-12	9.15	1.85	3
Asians	Female	60+	13-14	9.25 **	4.22	3
Asians	Female	60+	15-16	9.86 **	3.97	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' and 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (whole weight) (2005 - 2010)†

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.004	0	9
Non-Hispanic Whites	12-19	Male	07-08	.003	0.001	6
Non-Hispanic Whites	12-19	Male	09-10	.003	0.001	7
Non-Hispanic Whites	20-39	Male	05-06	.020 **	0.006	12
Non-Hispanic Whites	20-39	Male	07-08	.014	0.001	15
Non-Hispanic Whites	20-39	Male	09-10	.010	0.001	17
Non-Hispanic Whites	40-59	Male	05-06	.063	0.008	12
Non-Hispanic Whites	40-59	Male	07-08	.047	0.002	16
Non-Hispanic Whites	40-59	Male	09-10	.039	0.004	17
Non-Hispanic Whites	60+	Male	05-06	.104	0.004	15
Non-Hispanic Whites	60+	Male	07-08	.098	0.005	23
Non-Hispanic Whites	60+	Male	09-10	.074	0.004	21
Non-Hispanic Whites	12-19	Female	05-06	.003	0	10
Non-Hispanic Whites	12-19	Female	07-08	.003 **	0.001	7
Non-Hispanic Whites	12-19	Female	09-10	.002	0	8
Non-Hispanic Whites	20-39	Female	05-06	.010	0.001	16
Non-Hispanic Whites	20-39	Female	07-08	.010	0.001	13
Non-Hispanic Whites	20-39	Female	09-10	.006	0	18
Non-Hispanic Whites	40-59	Female	05-06	.039	0.003	13
Non-Hispanic Whites	40-59	Female	07-08	.035	0.002	17
Non-Hispanic Whites	40-59	Female	09-10	.030	0.002	17
Non-Hispanic Whites	60+	Female	05-06	.091	0.007	17
Non-Hispanic Whites	60+	Female	07-08	.082	0.005	21
Non-Hispanic Whites	60+	Female	09-10	.068	0.005	22
Non-Hispanic Blacks	12-19	Male	05-06	.005	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.003	0.001	6
Non-Hispanic Blacks	12-19	Male	09-10	.004	0.001	5
Non-Hispanic Blacks	20-39	Male	05-06	.014	0.001	6
Non-Hispanic Blacks	20-39	Male	07-08	.010	0.001	6
Non-Hispanic Blacks	20-39	Male	09-10	.013	0.002	5
Non-Hispanic Blacks	40-59	Male	05-06	.053	0.004	5
Non-Hispanic Blacks	40-59	Male	07-08	.053	0.005	6
Non-Hispanic Blacks	40-59	Male	09-10	.053	0.005	7
Non-Hispanic Blacks	60+	Male	05-06	.125	0.013	5
Non-Hispanic Blacks	60+	Male	07-08	.121	0.015	8
Non-Hispanic Blacks	60+	Male	09-10	.103	0.013	9
Non-Hispanic Blacks	12-19	Female	05-06	.003	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001 **	0	5
Non-Hispanic Blacks	12-19	Female	09-10	.001	0	6
Non-Hispanic Blacks	20-39	Female	05-06	.009	0.001	7
Non-Hispanic Blacks	20-39	Female	07-08	.007	0.001	8
Non-Hispanic Blacks	20-39	Female	09-10	.005	0.001	7
Non-Hispanic Blacks	40-59	Female	05-06	.045	0.004	7
Non-Hispanic Blacks	40-59	Female	07-08	.039	0.005	8
Non-Hispanic Blacks	40-59	Female	09-10	.032	0.005	7
Non-Hispanic Blacks	60+	Female	05-06	.140	0.031	5
Non-Hispanic Blacks	60+	Female	07-08	.108	0.007	7
Non-Hispanic Blacks	60+	Female	09-10	.100	0.011	7
Mexican Americans	12-19	Male	05-06	.003	0	11
Mexican Americans	12-19	Male	07-08	.003	0	6

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	12-19	Male	09-10	.003	0	8
Mexican Americans	20-39	Male	05-06	.008	0.001	9
Mexican Americans	20-39	Male	07-08	.013 **	0.004	9
Mexican Americans	20-39	Male	09-10	.006	0.001	8
Mexican Americans	40-59	Male	05-06	.032	0.004	4
Mexican Americans	40-59	Male	07-08	.033	0.004	6
Mexican Americans	40-59	Male	09-10	.024	0.002	8
Mexican Americans	60+	Male	05-06	.069	0.017	4
Mexican Americans	60+	Male	07-08	.075	0.01	5
Mexican Americans	60+	Male	09-10	.065	0.003	5
Mexican Americans	12-19	Female	05-06	.003	0	16
Mexican Americans	12-19	Female	07-08	.001 **	0	5
Mexican Americans	12-19	Female	09-10	.001	0	7
Mexican Americans	20-39	Female	05-06	.005	0.001	9
Mexican Americans	20-39	Female	07-08	.006	0	8
Mexican Americans	20-39	Female	09-10	.004	0.001	10
Mexican Americans	40-59	Female	05-06	.028	0.003	6
Mexican Americans	40-59	Female	07-08	.027	0.004	6
Mexican Americans	40-59	Female	09-10	.016	0.003	9
Mexican Americans	60+	Female	05-06	.060	0.008	3
Mexican Americans	60+	Female	07-08	.054	0.01	5
Mexican Americans	60+	Female	09-10	.044	0.005	6
All Hispanics	12-19	Male	09-10	.003	0	11
All Hispanics	20-39	Male	09-10	.007	0.001	12
All Hispanics	40-59	Male	09-10	.026	0.003	13
All Hispanics	60+	Male	09-10	.067	0.002	8
All Hispanics	12-19	Female	09-10	.001	0	10
All Hispanics	20-39	Female	09-10	.005	0	14
All Hispanics	40-59	Female	09-10	.017	0.002	14
All Hispanics	60+	Female	09-10	.045	0.004	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6' and 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203) (whole weight) (2011 - 2016)†

CAS Number 42740-50-1 and 52663-76-0

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.004	0	6
Non-Hispanic Whites	Male	12-19	13-14	.003	0	8
Non-Hispanic Whites	Male	12-19	15-16	.002	0	7
Non-Hispanic Whites	Male	20-39	11-12	.007	0.001	12
Non-Hispanic Whites	Male	20-39	13-14	.006	0	14
Non-Hispanic Whites	Male	20-39	15-16	.006	0	10
Non-Hispanic Whites	Male	40-59	11-12	.032	0.002	12
Non-Hispanic Whites	Male	40-59	13-14	.027	0.002	14
Non-Hispanic Whites	Male	40-59	15-16	.023	0.002	10
Non-Hispanic Whites	Male	60+	11-12	.060	0.003	12
Non-Hispanic Whites	Male	60+	13-14	.062	0.004	17
Non-Hispanic Whites	Male	60+	15-16	.054	0.002	14
Non-Hispanic Whites	Female	12-19	11-12	.003	0.001	5
Non-Hispanic Whites	Female	12-19	13-14	.002	0	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.006	0.001	13
Non-Hispanic Whites	Female	20-39	13-14	.005	0	15
Non-Hispanic Whites	Female	20-39	15-16	.004	0	11
Non-Hispanic Whites	Female	40-59	11-12	.031	0.004	11
Non-Hispanic Whites	Female	40-59	13-14	.024	0.002	16
Non-Hispanic Whites	Female	40-59	15-16	.023	0.002	9
Non-Hispanic Whites	Female	60+	11-12	.065	0.006	14
Non-Hispanic Whites	Female	60+	13-14	.064	0.004	20
Non-Hispanic Whites	Female	60+	15-16	.055	0.005	13
Non-Hispanic Blacks	Male	12-19	11-12	.003	0	7
Non-Hispanic Blacks	Male	12-19	13-14	.003	0	6
Non-Hispanic Blacks	Male	12-19	15-16	.002	0	5
Non-Hispanic Blacks	Male	20-39	11-12	.007	0	9
Non-Hispanic Blacks	Male	20-39	13-14	.006	0.001	7
Non-Hispanic Blacks	Male	20-39	15-16	.005	0	7
Non-Hispanic Blacks	Male	40-59	11-12	.041	0.008	7
Non-Hispanic Blacks	Male	40-59	13-14	.033	0.004	7
Non-Hispanic Blacks	Male	40-59	15-16	.040	0.007	7
Non-Hispanic Blacks	Male	60+	11-12	.079	0.004	9
Non-Hispanic Blacks	Male	60+	13-14	.077	0.005	9
Non-Hispanic Blacks	Male	60+	15-16	.061	0.006	7
Non-Hispanic Blacks	Female	12-19	11-12	.002	0	6
Non-Hispanic Blacks	Female	12-19	13-14	.001	0	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.005	0.001	8
Non-Hispanic Blacks	Female	20-39	13-14	.003	0	8
Non-Hispanic Blacks	Female	20-39	15-16	.004	0	9
Non-Hispanic Blacks	Female	40-59	11-12	.033	0.004	8
Non-Hispanic Blacks	Female	40-59	13-14	.023	0.003	8
Non-Hispanic Blacks	Female	40-59	15-16	.021	0.002	12
Non-Hispanic Blacks	Female	60+	11-12	.073	0.003	8
Non-Hispanic Blacks	Female	60+	13-14	.093	0.008	8
Non-Hispanic Blacks	Female	60+	15-16	.066	0.007	7
Mexican Americans	Male	12-19	11-12	.002	0	5
Mexican Americans	Male	12-19	13-14	.002	0	7

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	12-19	15-16	.001	0	6
Mexican Americans	Male	20-39	11-12	.008	0.001	4
Mexican Americans	Male	20-39	13-14	.004	0.001	5
Mexican Americans	Male	20-39	15-16	.005	0.001	6
Mexican Americans	Male	40-59	11-12	.025	0.004	4
Mexican Americans	Male	40-59	13-14	.019	0.004	5
Mexican Americans	Male	40-59	15-16	.013	0.003	4
Mexican Americans	Male	60+	11-12	.038	0.005	2
Mexican Americans	Male	60+	13-14	.054	0.006	4
Mexican Americans	Male	60+	15-16	.044	0.004	5
Mexican Americans	Female	12-19	11-12	.001	0	4
Mexican Americans	Female	12-19	13-14	.002	0	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.004	0.001	4
Mexican Americans	Female	20-39	13-14	.003	0	5
Mexican Americans	Female	20-39	15-16	.003	0	6
Mexican Americans	Female	40-59	11-12	.015	0.002	3
Mexican Americans	Female	40-59	13-14	.013	0.002	6
Mexican Americans	Female	40-59	15-16	.013	0.001	8
Mexican Americans	Female	60+	11-12	.042	0.003	3
Mexican Americans	Female	60+	13-14	.046	0.006	5
Mexican Americans	Female	60+	15-16	.038	0.003	7
All Hispanics	Male	12-19	11-12	2.10	0.11	7
All Hispanics	Male	12-19	13-14	1.80	0.16	10
All Hispanics	Male	12-19	15-16	1.50	0.13	9
All Hispanics	Male	20-39	11-12	6.93	0.75	8
All Hispanics	Male	20-39	13-14	4.27	0.52	8
All Hispanics	Male	20-39	15-16	5.51	0.9	10
All Hispanics	Male	40-59	11-12	21.9	2.6	7
All Hispanics	Male	40-59	13-14	19.6	3.6	9
All Hispanics	Male	40-59	15-16	14.8	2.9	9
All Hispanics	Male	60+	11-12	40.9	3.7	6
All Hispanics	Male	60+	13-14	49.2	4.4	7
All Hispanics	Male	60+	15-16	42.8	3.5	9
All Hispanics	Female	12-19	11-12	1.61	0.11	7
All Hispanics	Female	12-19	13-14	1.74	0.22	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	3.84	0.31	8
All Hispanics	Female	20-39	13-14	4.90 **	1.87	9
All Hispanics	Female	20-39	15-16	2.66	0.2	11
All Hispanics	Female	40-59	11-12	17.4	2.9	7
All Hispanics	Female	40-59	13-14	15.9	2.3	10
All Hispanics	Female	40-59	15-16	14.0	1.5	13
All Hispanics	Female	60+	11-12	47.9	5.8	7
All Hispanics	Female	60+	13-14	45.0	4.3	9
All Hispanics	Female	60+	15-16	35.2	1.9	13
Asians	Male	12-19	11-12	.005	0.001	3
Asians	Male	12-19	13-14	.003	0	3
Asians	Male	12-19	15-16	.004 **	0.002	3
Asians	Male	20-39	11-12	.010 **	0.004	6
Asians	Male	20-39	13-14	.008	0.001	4
Asians	Male	20-39	15-16	.010	0.003	5
Asians	Male	40-59	11-12	.032	0.005	6
Asians	Male	40-59	13-14	.024	0.003	4
Asians	Male	40-59	15-16	.024	0.005	4
Asians	Male	60+	11-12	.043	0.006	4

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	13-14	.053	0.007	3
Asians	Male	60+	15-16	.059	0.008	3
Asians	Female	12-19	11-12	.003	0	4
Asians	Female	12-19	13-14	.002	0	3
Asians	Female	12-19	15-16	.003 **	0.001	3
Asians	Female	20-39	11-12	.011	0.002	6
Asians	Female	20-39	13-14	.006	0.001	5
Asians	Female	20-39	15-16	.007	0	4
Asians	Female	40-59	11-12	.021	0.005	6
Asians	Female	40-59	13-14	.019	0.002	7
Asians	Female	40-59	15-16	.037	0.006	5
Asians	Female	60+	11-12	.053	0.012	3
Asians	Female	60+	13-14	.052 **	0.018	3
Asians	Female	60+	15-16	.061 **	0.025	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	.629	0.101	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	2.45	0.63	12
Non-Hispanic Whites	Male	20-39	07-08	2.12	0.18	15
Non-Hispanic Whites	Male	20-39	09-10	1.36	0.13	16
Non-Hispanic Whites	Male	40-59	05-06	8.40	0.83	12
Non-Hispanic Whites	Male	40-59	07-08	6.73	0.39	16
Non-Hispanic Whites	Male	40-59	09-10	5.87	0.62	17
Non-Hispanic Whites	Male	60+	05-06	17.5	1.1	15
Non-Hispanic Whites	Male	60+	07-08	16.9	1	23
Non-Hispanic Whites	Male	60+	09-10	13.1	0.7	21
Non-Hispanic Whites	Female	12-19	05-06	.540	0.058	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	1.37	0.12	16
Non-Hispanic Whites	Female	20-39	07-08	1.61	0.18	13
Non-Hispanic Whites	Female	20-39	09-10	1.09	0.08	18
Non-Hispanic Whites	Female	40-59	05-06	5.45	0.34	13
Non-Hispanic Whites	Female	40-59	07-08	5.27	0.37	17
Non-Hispanic Whites	Female	40-59	09-10	5.05	0.41	17
Non-Hispanic Whites	Female	60+	05-06	15.1	1.2	17
Non-Hispanic Whites	Female	60+	07-08	14.7	0.9	21
Non-Hispanic Whites	Female	60+	09-10	13.2	1.1	22
Non-Hispanic Blacks	Male	12-19	05-06	.851	0.108	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	5
Non-Hispanic Blacks	Male	20-39	05-06	2.43	0.32	6
Non-Hispanic Blacks	Male	20-39	07-08	1.70	0.16	6
Non-Hispanic Blacks	Male	20-39	09-10	1.74	0.21	5
Non-Hispanic Blacks	Male	40-59	05-06	10.7	0.9	5
Non-Hispanic Blacks	Male	40-59	07-08	9.25	0.96	6
Non-Hispanic Blacks	Male	40-59	09-10	11.3	1.5	7
Non-Hispanic Blacks	Male	60+	05-06	28.0	3.6	5
Non-Hispanic Blacks	Male	60+	07-08	24.6	2.8	8
Non-Hispanic Blacks	Male	60+	09-10	24.9	2.5	9
Non-Hispanic Blacks	Female	12-19	05-06	.490	0.051	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	5
Non-Hispanic Blacks	Female	20-39	05-06	1.59	0.24	7
Non-Hispanic Blacks	Female	20-39	07-08	1.36	0.16	8
Non-Hispanic Blacks	Female	20-39	09-10	1.21	0.26	6
Non-Hispanic Blacks	Female	40-59	05-06	8.16	1.04	7
Non-Hispanic Blacks	Female	40-59	07-08	6.94	0.81	8
Non-Hispanic Blacks	Female	40-59	09-10	6.46	1.22	7
Non-Hispanic Blacks	Female	60+	05-06	27.6	6	5
Non-Hispanic Blacks	Female	60+	07-08	22.0	1.7	7
Non-Hispanic Blacks	Female	60+	09-10	21.8	2.4	7
Mexican Americans	Male	12-19	05-06	.395	0.045	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	.643	0.1	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	1.03	0.11	9
Mexican Americans	Male	20-39	07-08	1.92 **	0.74	9
Mexican Americans	Male	20-39	09-10	.848	0.106	7
Mexican Americans	Male	40-59	05-06	4.23	0.49	4
Mexican Americans	Male	40-59	07-08	5.47	0.84	6
Mexican Americans	Male	40-59	09-10	3.64	0.28	8
Mexican Americans	Male	60+	05-06	10.1	2.6	4
Mexican Americans	Male	60+	07-08	11.4	1.4	5
Mexican Americans	Male	60+	09-10	11.9	0.9	5
Mexican Americans	Female	12-19	05-06	.386	0.052	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	.634	0.11	9
Mexican Americans	Female	20-39	07-08	.843	0.029	8
Mexican Americans	Female	20-39	09-10	*	*	9
Mexican Americans	Female	40-59	05-06	3.67	0.52	6
Mexican Americans	Female	40-59	07-08	4.09	0.63	6
Mexican Americans	Female	40-59	09-10	2.58	0.4	9
Mexican Americans	Female	60+	05-06	8.79	0.55	3
Mexican Americans	Female	60+	07-08	8.71	1.73	5
Mexican Americans	Female	60+	09-10	8.93	1.39	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	1.00	0.1	12
All Hispanics	Male	40-59	09-10	4.16	0.43	13
All Hispanics	Male	60+	09-10	12.6	0.8	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	.694	0.078	13
All Hispanics	Female	40-59	09-10	2.78	0.33	14
All Hispanics	Female	60+	09-10	8.71	0.94	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.3, 0.28, and 0.62, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.675	0.109	6
Non-Hispanic Whites	Male	12-19	13-14	.497	0.058	8
Non-Hispanic Whites	Male	12-19	15-16	.527	0.085	7
Non-Hispanic Whites	Male	20-39	11-12	1.16	0.16	12
Non-Hispanic Whites	Male	20-39	13-14	.978	0.069	13
Non-Hispanic Whites	Male	20-39	15-16	.939	0.057	10
Non-Hispanic Whites	Male	40-59	11-12	4.99	0.33	12
Non-Hispanic Whites	Male	40-59	13-14	4.68	0.3	14
Non-Hispanic Whites	Male	40-59	15-16	3.49	0.34	10
Non-Hispanic Whites	Male	60+	11-12	12.2	0.8	12
Non-Hispanic Whites	Male	60+	13-14	13.2	0.8	17
Non-Hispanic Whites	Male	60+	15-16	10.8	0.5	14
Non-Hispanic Whites	Female	12-19	11-12	.554	0.137	5
Non-Hispanic Whites	Female	12-19	13-14	.437	0.073	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	1.10	0.13	13
Non-Hispanic Whites	Female	20-39	13-14	.911	0.118	15
Non-Hispanic Whites	Female	20-39	15-16	.552	0.029	11
Non-Hispanic Whites	Female	40-59	11-12	4.98	0.47	11
Non-Hispanic Whites	Female	40-59	13-14	4.29	0.42	16
Non-Hispanic Whites	Female	40-59	15-16	3.47	0.33	9
Non-Hispanic Whites	Female	60+	11-12	12.5	1.3	14
Non-Hispanic Whites	Female	60+	13-14	12.4	0.9	20
Non-Hispanic Whites	Female	60+	15-16	10.1	1.1	13
Non-Hispanic Blacks	Male	12-19	11-12	.602	0.104	7
Non-Hispanic Blacks	Male	12-19	13-14	.533	0.083	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	1.28	0.09	9
Non-Hispanic Blacks	Male	20-39	13-14	1.45	0.26	7
Non-Hispanic Blacks	Male	20-39	15-16	.989	0.099	7
Non-Hispanic Blacks	Male	40-59	11-12	9.15	2.12	7
Non-Hispanic Blacks	Male	40-59	13-14	6.66	0.71	7
Non-Hispanic Blacks	Male	40-59	15-16	6.74	1.23	7
Non-Hispanic Blacks	Male	60+	11-12	18.6	1.1	9
Non-Hispanic Blacks	Male	60+	13-14	18.7	1.5	9
Non-Hispanic Blacks	Male	60+	15-16	14.1	1.5	7
Non-Hispanic Blacks	Female	12-19	11-12	.318	0.059	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.870	0.155	8
Non-Hispanic Blacks	Female	20-39	13-14	.621	0.089	8
Non-Hispanic Blacks	Female	20-39	15-16	.716	0.08	9
Non-Hispanic Blacks	Female	40-59	11-12	5.80	0.74	8
Non-Hispanic Blacks	Female	40-59	13-14	4.95	0.43	8
Non-Hispanic Blacks	Female	40-59	15-16	3.91	0.37	12
Non-Hispanic Blacks	Female	60+	11-12	15.7	1.1	8
Non-Hispanic Blacks	Female	60+	13-14	21.8	2.6	8
Non-Hispanic Blacks	Female	60+	15-16	12.6	1.5	7
Mexican Americans	Male	12-19	11-12	.356	0.04	5
Mexican Americans	Male	12-19	13-14	.252	0.024	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	1.09	0.16	4
Mexican Americans	Male	20-39	13-14	.563	0.075	5
Mexican Americans	Male	20-39	15-16	.574	0.093	6
Mexican Americans	Male	40-59	11-12	3.42	0.87	4
Mexican Americans	Male	40-59	13-14	3.05	0.7	5
Mexican Americans	Male	40-59	15-16	2.08	0.47	4
Mexican Americans	Male	60+	11-12	7.63	1.23	2
Mexican Americans	Male	60+	13-14	11.2	1	4
Mexican Americans	Male	60+	15-16	8.92	0.86	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.665	0.129	4
Mexican Americans	Female	20-39	13-14	.459	0.095	5
Mexican Americans	Female	20-39	15-16	.415	0.034	6
Mexican Americans	Female	40-59	11-12	2.19	0.38	3
Mexican Americans	Female	40-59	13-14	2.15	0.48	6
Mexican Americans	Female	40-59	15-16	2.08	0.19	8
Mexican Americans	Female	60+	11-12	6.95	0.22	3
Mexican Americans	Female	60+	13-14	8.97	1.47	5
Mexican Americans	Female	60+	15-16	6.88	0.49	7
All Hispanics	Male	12-19	11-12	.344	0.034	7
All Hispanics	Male	12-19	13-14	.272	0.04	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	.992	0.102	8
All Hispanics	Male	20-39	13-14	.602	0.076	8
All Hispanics	Male	20-39	15-16	.733	0.148	10
All Hispanics	Male	40-59	11-12	3.01	0.56	7
All Hispanics	Male	40-59	13-14	3.29	0.75	9
All Hispanics	Male	40-59	15-16	2.52	0.69	9
All Hispanics	Male	60+	11-12	8.61	0.79	6
All Hispanics	Male	60+	13-14	10.6	0.9	7
All Hispanics	Male	60+	15-16	8.71	0.63	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	9
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	.588	0.08	8
All Hispanics	Female	20-39	13-14	.927 **	0.426	9
All Hispanics	Female	20-39	15-16	.401	0.026	11
All Hispanics	Female	40-59	11-12	2.84	0.52	7
All Hispanics	Female	40-59	13-14	2.66	0.4	10
All Hispanics	Female	40-59	15-16	2.17	0.18	13
All Hispanics	Female	60+	11-12	9.23	1.72	7
All Hispanics	Female	60+	13-14	9.09	1.11	9
All Hispanics	Female	60+	15-16	6.65	0.32	13
Asians	Male	12-19	11-12	.991	0.178	3
Asians	Male	12-19	13-14	.514	0.144	3
Asians	Male	12-19	15-16	1.07 **	0.5	3
Asians	Male	20-39	11-12	1.89 **	0.65	6
Asians	Male	20-39	13-14	1.49	0.2	4
Asians	Male	20-39	15-16	1.53	0.4	5
Asians	Male	40-59	11-12	6.79	1.05	6
Asians	Male	40-59	13-14	5.14	0.69	4
Asians	Male	40-59	15-16	4.57	0.87	4
Asians	Male	60+	11-12	10.4	1.2	4
Asians	Male	60+	13-14	11.6	1.6	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	14.0	2.2	3
Asians	Female	12-19	11-12	.691	0.135	4
Asians	Female	12-19	13-14	.507	0.074	2
Asians	Female	12-19	15-16	.573 **	0.325	2
Asians	Female	20-39	11-12	2.06	0.44	6
Asians	Female	20-39	13-14	1.39	0.23	5
Asians	Female	20-39	15-16	1.32	0.06	4
Asians	Female	40-59	11-12	4.05	0.85	6
Asians	Female	40-59	13-14	3.95	0.49	7
Asians	Female	40-59	15-16	6.66	0.9	5
Asians	Female	60+	11-12	12.3	2.2	3
Asians	Female	60+	13-14	15.1 **	7.4	3
Asians	Female	60+	15-16	12.6 **	5.3	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.003	0.001	9
Non-Hispanic Whites	12-19	Male	07-08	.003	0.001	6
Non-Hispanic Whites	12-19	Male	09-10	.003	0	10
Non-Hispanic Whites	20-39	Male	05-06	.019	0.006	12
Non-Hispanic Whites	20-39	Male	07-08	.014	0.001	15
Non-Hispanic Whites	20-39	Male	09-10	.009	0.001	16
Non-Hispanic Whites	40-59	Male	05-06	.063	0.005	12
Non-Hispanic Whites	40-59	Male	07-08	.049	0.003	16
Non-Hispanic Whites	40-59	Male	09-10	.040	0.004	17
Non-Hispanic Whites	60+	Male	05-06	.118	0.006	15
Non-Hispanic Whites	60+	Male	07-08	.109	0.006	23
Non-Hispanic Whites	60+	Male	09-10	.079	0.004	21
Non-Hispanic Whites	12-19	Female	05-06	.003	0	10
Non-Hispanic Whites	12-19	Female	07-08	.002 **	0.001	7
Non-Hispanic Whites	12-19	Female	09-10	.002	0	8
Non-Hispanic Whites	20-39	Female	05-06	.009	0.001	16
Non-Hispanic Whites	20-39	Female	07-08	.010	0.001	13
Non-Hispanic Whites	20-39	Female	09-10	.006	0	18
Non-Hispanic Whites	40-59	Female	05-06	.041	0.004	13
Non-Hispanic Whites	40-59	Female	07-08	.035	0.003	17
Non-Hispanic Whites	40-59	Female	09-10	.032	0.003	17
Non-Hispanic Whites	60+	Female	05-06	.110	0.009	17
Non-Hispanic Whites	60+	Female	07-08	.099	0.006	21
Non-Hispanic Whites	60+	Female	09-10	.080	0.006	22
Non-Hispanic Blacks	12-19	Male	05-06	.004	0.001	13
Non-Hispanic Blacks	12-19	Male	07-08	.003	0.001	6
Non-Hispanic Blacks	12-19	Male	09-10	.002	0	5
Non-Hispanic Blacks	20-39	Male	05-06	.014	0.002	6
Non-Hispanic Blacks	20-39	Male	07-08	.010	0.001	6
Non-Hispanic Blacks	20-39	Male	09-10	.009	0.001	5
Non-Hispanic Blacks	40-59	Male	05-06	.069	0.006	5
Non-Hispanic Blacks	40-59	Male	07-08	.059	0.006	6
Non-Hispanic Blacks	40-59	Male	09-10	.068	0.007	7
Non-Hispanic Blacks	60+	Male	05-06	.168	0.024	5
Non-Hispanic Blacks	60+	Male	07-08	.150	0.018	8
Non-Hispanic Blacks	60+	Male	09-10	.134	0.015	9
Non-Hispanic Blacks	12-19	Female	05-06	.002	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.002	0	5
Non-Hispanic Blacks	12-19	Female	09-10	.001	0	5
Non-Hispanic Blacks	20-39	Female	05-06	.009	0.001	7
Non-Hispanic Blacks	20-39	Female	07-08	.007	0.001	8
Non-Hispanic Blacks	20-39	Female	09-10	.006	0.001	6
Non-Hispanic Blacks	40-59	Female	05-06	.052	0.006	7
Non-Hispanic Blacks	40-59	Female	07-08	.042	0.006	8
Non-Hispanic Blacks	40-59	Female	09-10	.036	0.006	7
Non-Hispanic Blacks	60+	Female	05-06	.183	0.039	5
Non-Hispanic Blacks	60+	Female	07-08	.132	0.01	7
Non-Hispanic Blacks	60+	Female	09-10	.125	0.013	7
Mexican Americans	12-19	Male	05-06	.002	0	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	12-19	Male	09-10	.003	0	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.007	0.001	9
Mexican Americans	20-39	Male	07-08	.013 **	0.005	9
Mexican Americans	20-39	Male	09-10	.005	0.001	7
Mexican Americans	40-59	Male	05-06	.035	0.005	4
Mexican Americans	40-59	Male	07-08	.038	0.006	6
Mexican Americans	40-59	Male	09-10	.025	0.003	8
Mexican Americans	60+	Male	05-06	.073	0.02	4
Mexican Americans	60+	Male	07-08	.081	0.008	5
Mexican Americans	60+	Male	09-10	.073	0.005	5
Mexican Americans	12-19	Female	05-06	.002	0	16
Mexican Americans	12-19	Female	07-08	.001 **	0	5
Mexican Americans	12-19	Female	09-10	.001	0	7
Mexican Americans	20-39	Female	05-06	.004	0.001	9
Mexican Americans	20-39	Female	07-08	.005	0	8
Mexican Americans	20-39	Female	09-10	.003	0	9
Mexican Americans	40-59	Female	05-06	.027	0.003	6
Mexican Americans	40-59	Female	07-08	.028	0.004	6
Mexican Americans	40-59	Female	09-10	.017	0.003	9
Mexican Americans	60+	Female	05-06	.068	0.01	3
Mexican Americans	60+	Female	07-08	.060	0.012	5
Mexican Americans	60+	Female	09-10	.049	0.007	6
All Hispanics	12-19	Male	09-10	.003	0	11
All Hispanics	20-39	Male	09-10	.007	0.001	12
All Hispanics	40-59	Male	09-10	.028	0.003	13
All Hispanics	60+	Male	09-10	.079	0.005	8
All Hispanics	12-19	Female	09-10	.001	0	10
All Hispanics	20-39	Female	09-10	.004	0	13
All Hispanics	40-59	Female	09-10	.018	0.002	14
All Hispanics	60+	Female	09-10	.051	0.005	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 52663-73-7

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	.003	0.001	6
Non-Hispanic Whites	Male	12-19	13-14	.002	0	8
Non-Hispanic Whites	Male	12-19	15-16	.003	0	7
Non-Hispanic Whites	Male	20-39	11-12	.007	0.001	12
Non-Hispanic Whites	Male	20-39	13-14	.005	0	13
Non-Hispanic Whites	Male	20-39	15-16	.006	0	10
Non-Hispanic Whites	Male	40-59	11-12	.033	0.003	12
Non-Hispanic Whites	Male	40-59	13-14	.027	0.002	14
Non-Hispanic Whites	Male	40-59	15-16	.024	0.003	10
Non-Hispanic Whites	Male	60+	11-12	.068	0.005	12
Non-Hispanic Whites	Male	60+	13-14	.071	0.004	17
Non-Hispanic Whites	Male	60+	15-16	.059	0.003	14
Non-Hispanic Whites	Female	12-19	11-12	.003	0.001	5
Non-Hispanic Whites	Female	12-19	13-14	.002	0	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	.006	0.001	13
Non-Hispanic Whites	Female	20-39	13-14	.005	0.001	15
Non-Hispanic Whites	Female	20-39	15-16	.003	0	11
Non-Hispanic Whites	Female	40-59	11-12	.032	0.003	11
Non-Hispanic Whites	Female	40-59	13-14	.025	0.002	16
Non-Hispanic Whites	Female	40-59	15-16	.022	0.002	9
Non-Hispanic Whites	Female	60+	11-12	.077	0.008	14
Non-Hispanic Whites	Female	60+	13-14	.073	0.005	20
Non-Hispanic Whites	Female	60+	15-16	.063	0.007	13
Non-Hispanic Blacks	Male	12-19	11-12	.003	0	7
Non-Hispanic Blacks	Male	12-19	13-14	.002	0	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	.007	0.001	9
Non-Hispanic Blacks	Male	20-39	13-14	.007	0.001	7
Non-Hispanic Blacks	Male	20-39	15-16	.005	0.001	7
Non-Hispanic Blacks	Male	40-59	11-12	.052	0.013	7
Non-Hispanic Blacks	Male	40-59	13-14	.037	0.004	7
Non-Hispanic Blacks	Male	40-59	15-16	.042	0.007	7
Non-Hispanic Blacks	Male	60+	11-12	.101	0.006	9
Non-Hispanic Blacks	Male	60+	13-14	.097	0.007	9
Non-Hispanic Blacks	Male	60+	15-16	.075	0.007	7
Non-Hispanic Blacks	Female	12-19	11-12	.001	0	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	.005	0.001	8
Non-Hispanic Blacks	Female	20-39	13-14	.003	0	8
Non-Hispanic Blacks	Female	20-39	15-16	.003	0	9
Non-Hispanic Blacks	Female	40-59	11-12	.035	0.005	8
Non-Hispanic Blacks	Female	40-59	13-14	.026	0.002	8
Non-Hispanic Blacks	Female	40-59	15-16	.023	0.003	12
Non-Hispanic Blacks	Female	60+	11-12	.088	0.006	8
Non-Hispanic Blacks	Female	60+	13-14	.115	0.011	8
Non-Hispanic Blacks	Female	60+	15-16	.073	0.008	7
Mexican Americans	Male	12-19	11-12	.002	0	5
Mexican Americans	Male	12-19	13-14	.001	0	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.007	0.001	4
Mexican Americans	Male	20-39	13-14	.004	0.001	5
Mexican Americans	Male	20-39	15-16	.004	0.001	6
Mexican Americans	Male	40-59	11-12	.026	0.005	4
Mexican Americans	Male	40-59	13-14	.019	0.004	5
Mexican Americans	Male	40-59	15-16	.014	0.003	4
Mexican Americans	Male	60+	11-12	.045	0.006	2
Mexican Americans	Male	60+	13-14	.060	0.005	4
Mexican Americans	Male	60+	15-16	.051	0.005	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	.004	0.001	4
Mexican Americans	Female	20-39	13-14	.002	0	5
Mexican Americans	Female	20-39	15-16	.002	0	6
Mexican Americans	Female	40-59	11-12	.013	0.002	3
Mexican Americans	Female	40-59	13-14	.012	0.002	6
Mexican Americans	Female	40-59	15-16	.013	0.001	8
Mexican Americans	Female	60+	11-12	.043	0.003	3
Mexican Americans	Female	60+	13-14	.052	0.008	5
Mexican Americans	Female	60+	15-16	.043	0.003	7
All Hispanics	Male	12-19	11-12	1.67	0.17	7
All Hispanics	Male	12-19	13-14	1.30	0.19	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	6.06	0.68	8
All Hispanics	Male	20-39	13-14	3.60	0.42	8
All Hispanics	Male	20-39	15-16	4.66	0.87	10
All Hispanics	Male	40-59	11-12	21.8	3.6	7
All Hispanics	Male	40-59	13-14	20.3	4.9	9
All Hispanics	Male	40-59	15-16	16.1	4.2	9
All Hispanics	Male	60+	11-12	50.6	5	6
All Hispanics	Male	60+	13-14	57.3	4.1	7
All Hispanics	Male	60+	15-16	51.3	4.1	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	9
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	3.18	0.39	8
All Hispanics	Female	20-39	13-14	5.21 **	2.36	9
All Hispanics	Female	20-39	15-16	2.18	0.15	11
All Hispanics	Female	40-59	11-12	18.5	4.3	7
All Hispanics	Female	40-59	13-14	15.2	2.3	10
All Hispanics	Female	40-59	15-16	14.0	1.4	13
All Hispanics	Female	60+	11-12	56.0	9.4	7
All Hispanics	Female	60+	13-14	53.4	5.6	9
All Hispanics	Female	60+	15-16	40.8	2.2	13
Asians	Male	12-19	11-12	.005	0.001	3
Asians	Male	12-19	13-14	.002	0.001	3
Asians	Male	12-19	15-16	.005 **	0.002	3
Asians	Male	20-39	11-12	.010 **	0.004	6
Asians	Male	20-39	13-14	.009	0.001	4
Asians	Male	20-39	15-16	.010 **	0.003	5
Asians	Male	40-59	11-12	.041	0.006	6
Asians	Male	40-59	13-14	.029	0.003	4
Asians	Male	40-59	15-16	.029	0.006	4
Asians	Male	60+	11-12	.057	0.008	4
Asians	Male	60+	13-14	.071	0.011	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.077	0.009	3
Asians	Female	12-19	11-12	.003	0.001	4
Asians	Female	12-19	13-14	.002	0	2
Asians	Female	12-19	15-16	.003 **	0.002	2
Asians	Female	20-39	11-12	.011	0.002	6
Asians	Female	20-39	13-14	.007	0.001	5
Asians	Female	20-39	15-16	.007	0	4
Asians	Female	40-59	11-12	.025	0.005	6
Asians	Female	40-59	13-14	.023	0.003	7
Asians	Female	40-59	15-16	.041	0.006	5
Asians	Female	60+	11-12	.071	0.014	3
Asians	Female	60+	13-14	.085 **	0.032	3
Asians	Female	60+	15-16	.078 **	0.034	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	.392	0.038	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	1.24	0.26	12
Non-Hispanic Whites	Male	20-39	07-08	1.19	0.09	15
Non-Hispanic Whites	Male	20-39	09-10	.833	0.053	17
Non-Hispanic Whites	Male	40-59	05-06	3.97	0.23	12
Non-Hispanic Whites	Male	40-59	07-08	3.46	0.25	16
Non-Hispanic Whites	Male	40-59	09-10	2.79	0.24	17
Non-Hispanic Whites	Male	60+	05-06	10.3	0.7	15
Non-Hispanic Whites	Male	60+	07-08	8.72	0.47	23
Non-Hispanic Whites	Male	60+	09-10	7.40	0.48	21
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	.486	0.083	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	.778	0.066	16
Non-Hispanic Whites	Female	20-39	07-08	.970	0.112	13
Non-Hispanic Whites	Female	20-39	09-10	.645	0.04	19
Non-Hispanic Whites	Female	40-59	05-06	2.94	0.22	13
Non-Hispanic Whites	Female	40-59	07-08	2.93	0.2	17
Non-Hispanic Whites	Female	40-59	09-10	2.68	0.17	17
Non-Hispanic Whites	Female	60+	05-06	11.2	1.3	17
Non-Hispanic Whites	Female	60+	07-08	9.65	0.74	21
Non-Hispanic Whites	Female	60+	09-10	8.60	0.89	22
Non-Hispanic Blacks	Male	12-19	05-06	.519	0.052	13
Non-Hispanic Blacks	Male	12-19	07-08	.427	0.102	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	1.27	0.13	6
Non-Hispanic Blacks	Male	20-39	07-08	1.10	0.12	6
Non-Hispanic Blacks	Male	20-39	09-10	.907	0.105	7
Non-Hispanic Blacks	Male	40-59	05-06	6.34	0.29	5
Non-Hispanic Blacks	Male	40-59	07-08	4.69	0.39	6
Non-Hispanic Blacks	Male	40-59	09-10	6.39	1.3	7
Non-Hispanic Blacks	Male	60+	05-06	17.8	3.2	5
Non-Hispanic Blacks	Male	60+	07-08	13.7	1.6	8
Non-Hispanic Blacks	Male	60+	09-10	14.3	1.4	9
Non-Hispanic Blacks	Female	12-19	05-06	.333	0.028	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	.953	0.119	7
Non-Hispanic Blacks	Female	20-39	07-08	.861	0.114	8
Non-Hispanic Blacks	Female	20-39	09-10	.933	0.167	7
Non-Hispanic Blacks	Female	40-59	05-06	4.56	0.47	7
Non-Hispanic Blacks	Female	40-59	07-08	3.75	0.48	8
Non-Hispanic Blacks	Female	40-59	09-10	3.73	0.8	7
Non-Hispanic Blacks	Female	60+	05-06	21.1	4.7	5
Non-Hispanic Blacks	Female	60+	07-08	14.9	1.6	7
Non-Hispanic Blacks	Female	60+	09-10	13.9	1.8	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	.528	0.046	9
Mexican Americans	Male	20-39	07-08	1.32 **	0.58	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	2.01	0.24	4
Mexican Americans	Male	40-59	07-08	2.47	0.31	6
Mexican Americans	Male	40-59	09-10	1.88	0.1	8
Mexican Americans	Male	60+	05-06	5.50	1.47	4
Mexican Americans	Male	60+	07-08	5.60	0.62	5
Mexican Americans	Male	60+	09-10	6.03	0.51	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	.351	0.047	9
Mexican Americans	Female	20-39	07-08	.509	0.082	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	1.91	0.28	6
Mexican Americans	Female	40-59	07-08	2.01	0.26	6
Mexican Americans	Female	40-59	09-10	1.49	0.22	9
Mexican Americans	Female	60+	05-06	5.76	0.27	3
Mexican Americans	Female	60+	07-08	5.10	1.11	5
Mexican Americans	Female	60+	09-10	5.56	1.05	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	.650	0.053	13
All Hispanics	Male	40-59	09-10	2.07	0.15	13
All Hispanics	Male	60+	09-10	6.91	0.65	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	1.50	0.15	14
All Hispanics	Female	60+	09-10	5.64	0.71	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.28, and 0.62, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	.311	0.035	7
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	.623	0.041	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	2.57	0.1	12
Non-Hispanic Whites	Male	40-59	13-14	2.31	0.1	14
Non-Hispanic Whites	Male	40-59	15-16	1.72	0.15	10
Non-Hispanic Whites	Male	60+	11-12	6.36	0.42	12
Non-Hispanic Whites	Male	60+	13-14	6.34	0.42	17
Non-Hispanic Whites	Male	60+	15-16	5.75	0.28	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	.539	0.036	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	3.09	0.42	11
Non-Hispanic Whites	Female	40-59	13-14	2.27	0.25	16
Non-Hispanic Whites	Female	40-59	15-16	1.65	0.13	9
Non-Hispanic Whites	Female	60+	11-12	7.71	0.92	14
Non-Hispanic Whites	Female	60+	13-14	6.96	0.61	20
Non-Hispanic Whites	Female	60+	15-16	5.99	0.79	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	.466	0.087	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	20-39	13-14	.833	0.106	7
Non-Hispanic Blacks	Male	20-39	15-16	.598	0.058	7
Non-Hispanic Blacks	Male	40-59	11-12	3.68	0.34	7
Non-Hispanic Blacks	Male	40-59	13-14	3.32	0.39	7
Non-Hispanic Blacks	Male	40-59	15-16	3.50	0.68	7
Non-Hispanic Blacks	Male	60+	11-12	10.3	0.8	9
Non-Hispanic Blacks	Male	60+	13-14	10.5	1.7	9
Non-Hispanic Blacks	Male	60+	15-16	7.81	1.11	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	.497	0.06	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	3.12	0.38	8
Non-Hispanic Blacks	Female	40-59	13-14	2.71	0.36	8
Non-Hispanic Blacks	Female	40-59	15-16	1.99	0.14	12
Non-Hispanic Blacks	Female	60+	11-12	11.4	1.7	8
Non-Hispanic Blacks	Female	60+	13-14	13.2	1.5	8
Non-Hispanic Blacks	Female	60+	15-16	7.44	1.17	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	.392	0.058	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	1.91	0.51	4
Mexican Americans	Male	40-59	13-14	1.57	0.34	5
Mexican Americans	Male	40-59	15-16	1.24	0.29	4
Mexican Americans	Male	60+	11-12	3.41	0.48	2
Mexican Americans	Male	60+	13-14	5.57	0.49	4
Mexican Americans	Male	60+	15-16	3.92	0.35	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	.507	0.11	4
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	*	*	3
Mexican Americans	Female	40-59	13-14	.964	0.182	6
Mexican Americans	Female	40-59	15-16	1.17	0.09	8
Mexican Americans	Female	60+	11-12	3.52	0.22	3
Mexican Americans	Female	60+	13-14	5.01	1.1	5
Mexican Americans	Female	60+	15-16	3.69	0.39	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	.256	0.039	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	.437	0.051	7
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	1.61	0.34	7
All Hispanics	Male	40-59	13-14	1.59	0.29	9
All Hispanics	Male	40-59	15-16	1.33	0.3	9
All Hispanics	Male	60+	11-12	4.16	0.31	6
All Hispanics	Male	60+	13-14	5.01	0.44	7
All Hispanics	Male	60+	15-16	4.00	0.32	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	.497	0.083	7
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	*	*	7
All Hispanics	Female	40-59	13-14	1.12	0.16	10
All Hispanics	Female	40-59	15-16	1.19	0.1	13
All Hispanics	Female	60+	11-12	6.36	1.84	7
All Hispanics	Female	60+	13-14	5.14	0.75	9
All Hispanics	Female	60+	15-16	3.67	0.26	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	.326 **	0.102	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	*	*	6
Asians	Male	20-39	13-14	.883	0.156	4
Asians	Male	20-39	15-16	.805	0.232	5
Asians	Male	40-59	11-12	2.98	0.44	6
Asians	Male	40-59	13-14	2.19	0.27	4
Asians	Male	40-59	15-16	1.93	0.48	4
Asians	Male	60+	11-12	3.96	0.85	4
Asians	Male	60+	13-14	5.85	0.68	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	5.32	0.85	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	.325	0.025	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	*	*	6
Asians	Female	20-39	13-14	.704	0.08	5
Asians	Female	20-39	15-16	.511	0.031	4
Asians	Female	40-59	11-12	1.76	0.33	6
Asians	Female	40-59	13-14	1.55	0.22	7
Asians	Female	40-59	15-16	3.00	0.58	5
Asians	Female	60+	11-12	5.68	0.86	3
Asians	Female	60+	13-14	6.38 **	3.03	3
Asians	Female	60+	15-16	4.60 **	1.86	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 1.56, 0.25, and 0.51, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.002	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001 **	0	6
Non-Hispanic Whites	12-19	Male	09-10	.002	0	10
Non-Hispanic Whites	20-39	Male	05-06	.009	0.002	12
Non-Hispanic Whites	20-39	Male	07-08	.008	0.001	15
Non-Hispanic Whites	20-39	Male	09-10	.005	0	17
Non-Hispanic Whites	40-59	Male	05-06	.030	0.002	12
Non-Hispanic Whites	40-59	Male	07-08	.025	0.002	16
Non-Hispanic Whites	40-59	Male	09-10	.019	0.002	17
Non-Hispanic Whites	60+	Male	05-06	.070	0.004	15
Non-Hispanic Whites	60+	Male	07-08	.056	0.003	23
Non-Hispanic Whites	60+	Male	09-10	.045	0.003	21
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.002	0	7
Non-Hispanic Whites	12-19	Female	09-10	.001	0	8
Non-Hispanic Whites	20-39	Female	05-06	.005	0	16
Non-Hispanic Whites	20-39	Female	07-08	.006	0.001	13
Non-Hispanic Whites	20-39	Female	09-10	.003	0	19
Non-Hispanic Whites	40-59	Female	05-06	.022	0.002	13
Non-Hispanic Whites	40-59	Female	07-08	.019	0.001	17
Non-Hispanic Whites	40-59	Female	09-10	.017	0.001	17
Non-Hispanic Whites	60+	Female	05-06	.081	0.009	17
Non-Hispanic Whites	60+	Female	07-08	.065	0.005	21
Non-Hispanic Whites	60+	Female	09-10	.052	0.005	22
Non-Hispanic Blacks	12-19	Male	05-06	.003	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.002	0	6
Non-Hispanic Blacks	12-19	Male	09-10	.003	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.007	0.001	6
Non-Hispanic Blacks	20-39	Male	07-08	.006	0.001	6
Non-Hispanic Blacks	20-39	Male	09-10	.005	0.001	7
Non-Hispanic Blacks	40-59	Male	05-06	.040	0.003	5
Non-Hispanic Blacks	40-59	Male	07-08	.030	0.003	6
Non-Hispanic Blacks	40-59	Male	09-10	.038	0.007	7
Non-Hispanic Blacks	60+	Male	05-06	.107	0.02	5
Non-Hispanic Blacks	60+	Male	07-08	.084	0.011	8
Non-Hispanic Blacks	60+	Male	09-10	.077	0.008	9
Non-Hispanic Blacks	12-19	Female	05-06	.002	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.002 **	0.001	5
Non-Hispanic Blacks	12-19	Female	09-10	.001	0	6
Non-Hispanic Blacks	20-39	Female	05-06	.005	0.001	7
Non-Hispanic Blacks	20-39	Female	07-08	.004	0.001	8
Non-Hispanic Blacks	20-39	Female	09-10	.005	0.001	7
Non-Hispanic Blacks	40-59	Female	05-06	.029	0.003	7
Non-Hispanic Blacks	40-59	Female	07-08	.023	0.003	8
Non-Hispanic Blacks	40-59	Female	09-10	.021	0.004	7
Non-Hispanic Blacks	60+	Female	05-06	.140	0.03	5
Non-Hispanic Blacks	60+	Female	07-08	.090	0.009	7
Non-Hispanic Blacks	60+	Female	09-10	.079	0.009	7
Mexican Americans	12-19	Male	05-06	.002 **	0.001	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	12-19	Male	09-10	.002	0	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.004	0	9
Mexican Americans	20-39	Male	07-08	.009 **	0.004	9
Mexican Americans	20-39	Male	09-10	.004	0.001	8
Mexican Americans	40-59	Male	05-06	.016	0.002	4
Mexican Americans	40-59	Male	07-08	.017	0.002	6
Mexican Americans	40-59	Male	09-10	.013	0.001	8
Mexican Americans	60+	Male	05-06	.040	0.012	4
Mexican Americans	60+	Male	07-08	.040	0.003	5
Mexican Americans	60+	Male	09-10	.037	0.003	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.002 **	0.001	5
Mexican Americans	12-19	Female	09-10	.001	0	7
Mexican Americans	20-39	Female	05-06	.002	0	9
Mexican Americans	20-39	Female	07-08	.003	0	8
Mexican Americans	20-39	Female	09-10	.002	0	10
Mexican Americans	40-59	Female	05-06	.014	0.002	6
Mexican Americans	40-59	Female	07-08	.014	0.002	6
Mexican Americans	40-59	Female	09-10	.010	0.002	9
Mexican Americans	60+	Female	05-06	.044	0.005	3
Mexican Americans	60+	Female	07-08	.035	0.008	5
Mexican Americans	60+	Female	09-10	.030	0.005	6
All Hispanics	12-19	Male	09-10	.002	0	11
All Hispanics	20-39	Male	09-10	.004	0	13
All Hispanics	40-59	Male	09-10	.014	0.001	13
All Hispanics	60+	Male	09-10	.044	0.006	8
All Hispanics	12-19	Female	09-10	.001	0	10
All Hispanics	20-39	Female	09-10	.003	0	14
All Hispanics	40-59	Female	09-10	.009	0.001	14
All Hispanics	60+	Female	09-10	.033	0.004	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 40186-72-9

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	.001	0	7
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	*	*	12
Non-Hispanic Whites	Male	20-39	13-14	.003	0	14
Non-Hispanic Whites	Male	20-39	15-16	*	*	10
Non-Hispanic Whites	Male	40-59	11-12	.017	0.001	12
Non-Hispanic Whites	Male	40-59	13-14	.014	0.001	14
Non-Hispanic Whites	Male	40-59	15-16	.012	0.001	10
Non-Hispanic Whites	Male	60+	11-12	.036	0.003	12
Non-Hispanic Whites	Male	60+	13-14	.034	0.002	17
Non-Hispanic Whites	Male	60+	15-16	.031	0.002	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	.003	0	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	.020	0.003	11
Non-Hispanic Whites	Female	40-59	13-14	.013	0.001	16
Non-Hispanic Whites	Female	40-59	15-16	.011	0.001	9
Non-Hispanic Whites	Female	60+	11-12	.047	0.005	14
Non-Hispanic Whites	Female	60+	13-14	.041	0.004	20
Non-Hispanic Whites	Female	60+	15-16	.037	0.005	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	.002	0	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	*	*	9
Non-Hispanic Blacks	Male	20-39	13-14	.004	0.001	7
Non-Hispanic Blacks	Male	20-39	15-16	.003	0	7
Non-Hispanic Blacks	Male	40-59	11-12	.020	0.002	7
Non-Hispanic Blacks	Male	40-59	13-14	.019	0.002	7
Non-Hispanic Blacks	Male	40-59	15-16	.022	0.004	7
Non-Hispanic Blacks	Male	60+	11-12	.056	0.004	9
Non-Hispanic Blacks	Male	60+	13-14	.054	0.008	9
Non-Hispanic Blacks	Male	60+	15-16	.041	0.005	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	.002	0	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.019	0.002	8
Non-Hispanic Blacks	Female	40-59	13-14	.014	0.002	8
Non-Hispanic Blacks	Female	40-59	15-16	.011	0.001	12
Non-Hispanic Blacks	Female	60+	11-12	.064	0.01	8
Non-Hispanic Blacks	Female	60+	13-14	.070	0.006	8
Non-Hispanic Blacks	Female	60+	15-16	.043	0.007	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	*	*	4
Mexican Americans	Male	20-39	13-14	.002	0	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.014	0.003	4
Mexican Americans	Male	40-59	13-14	.010	0.002	5
Mexican Americans	Male	40-59	15-16	.008	0.002	4
Mexican Americans	Male	60+	11-12	.020	0.002	2
Mexican Americans	Male	60+	13-14	.030	0.003	4
Mexican Americans	Male	60+	15-16	.022	0.002	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	.003	0.001	4
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	*	*	3
Mexican Americans	Female	40-59	13-14	.005	0.001	6
Mexican Americans	Female	40-59	15-16	.007	0.001	8
Mexican Americans	Female	60+	11-12	.022	0.002	3
Mexican Americans	Female	60+	13-14	.029	0.005	5
Mexican Americans	Female	60+	15-16	.023	0.002	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	1.23	0.2	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	*	*	8
All Hispanics	Male	20-39	13-14	2.60	0.24	7
All Hispanics	Male	20-39	15-16	*	*	11
All Hispanics	Male	40-59	11-12	11.7	2.3	7
All Hispanics	Male	40-59	13-14	9.80	1.9	9
All Hispanics	Male	40-59	15-16	8.51	1.83	9
All Hispanics	Male	60+	11-12	24.4	1.9	6
All Hispanics	Male	60+	13-14	27.1	2.2	7
All Hispanics	Male	60+	15-16	23.6	2.2	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	2.70	0.43	7
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	*	*	7
All Hispanics	Female	40-59	13-14	6.46	0.9	10
All Hispanics	Female	40-59	15-16	7.71	0.79	13
All Hispanics	Female	60+	11-12	38.2	10.4	7
All Hispanics	Female	60+	13-14	30.1	3.6	9
All Hispanics	Female	60+	15-16	22.4	1.5	13
Asians	Male	12-19	11-12	*	*	3
Asians	Male	12-19	13-14	.002	0	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	*	*	6
Asians	Male	20-39	13-14	.005	0.001	4
Asians	Male	20-39	15-16	.005 **	0.002	5
Asians	Male	40-59	11-12	.018	0.003	6
Asians	Male	40-59	13-14	.013	0.001	4
Asians	Male	40-59	15-16	.012	0.003	4
Asians	Male	60+	11-12	.022	0.005	4
Asians	Male	60+	13-14	.036	0.005	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.029	0.004	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	.002	0	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	*	*	6
Asians	Female	20-39	13-14	.004	0	5
Asians	Female	20-39	15-16	.003	0	4
Asians	Female	40-59	11-12	.011	0.002	6
Asians	Female	40-59	13-14	.009	0.001	7
Asians	Female	40-59	15-16	.018	0.004	5
Asians	Female	60+	11-12	.032	0.005	3
Asians	Female	60+	13-14	.036 **	0.013	3
Asians	Female	60+	15-16	.029 **	0.012	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	05-06	*	*	9
Non-Hispanic Whites	Male	12-19	07-08	*	*	6
Non-Hispanic Whites	Male	12-19	09-10	*	*	10
Non-Hispanic Whites	Male	20-39	05-06	.664	0.144	12
Non-Hispanic Whites	Male	20-39	07-08	.654	0.093	15
Non-Hispanic Whites	Male	20-39	09-10	*	*	17
Non-Hispanic Whites	Male	40-59	05-06	1.78	0.14	12
Non-Hispanic Whites	Male	40-59	07-08	1.86	0.17	16
Non-Hispanic Whites	Male	40-59	09-10	1.56	0.15	17
Non-Hispanic Whites	Male	60+	05-06	7.07	0.6	15
Non-Hispanic Whites	Male	60+	07-08	7.12	0.66	23
Non-Hispanic Whites	Male	60+	09-10	5.69	0.51	21
Non-Hispanic Whites	Female	12-19	05-06	*	*	10
Non-Hispanic Whites	Female	12-19	07-08	*	*	7
Non-Hispanic Whites	Female	12-19	09-10	*	*	8
Non-Hispanic Whites	Female	20-39	05-06	.374	0.033	16
Non-Hispanic Whites	Female	20-39	07-08	.420	0.07	13
Non-Hispanic Whites	Female	20-39	09-10	*	*	19
Non-Hispanic Whites	Female	40-59	05-06	1.36	0.12	13
Non-Hispanic Whites	Female	40-59	07-08	1.64	0.15	17
Non-Hispanic Whites	Female	40-59	09-10	1.28	0.08	17
Non-Hispanic Whites	Female	60+	05-06	11.2	1.5	17
Non-Hispanic Whites	Female	60+	07-08	11.0	1.1	21
Non-Hispanic Whites	Female	60+	09-10	8.47	1.16	22
Non-Hispanic Blacks	Male	12-19	05-06	*	*	13
Non-Hispanic Blacks	Male	12-19	07-08	*	*	6
Non-Hispanic Blacks	Male	12-19	09-10	*	*	6
Non-Hispanic Blacks	Male	20-39	05-06	.797	0.226	6
Non-Hispanic Blacks	Male	20-39	07-08	.500	0.098	6
Non-Hispanic Blacks	Male	20-39	09-10	.638	0.115	7
Non-Hispanic Blacks	Male	40-59	05-06	4.04	0.4	5
Non-Hispanic Blacks	Male	40-59	07-08	2.72	0.36	6
Non-Hispanic Blacks	Male	40-59	09-10	3.74	0.7	7
Non-Hispanic Blacks	Male	60+	05-06	14.7	2.6	5
Non-Hispanic Blacks	Male	60+	07-08	13.4	1.8	8
Non-Hispanic Blacks	Male	60+	09-10	13.0	1.8	9
Non-Hispanic Blacks	Female	12-19	05-06	*	*	14
Non-Hispanic Blacks	Female	12-19	07-08	*	*	5
Non-Hispanic Blacks	Female	12-19	09-10	*	*	6
Non-Hispanic Blacks	Female	20-39	05-06	.570	0.093	7
Non-Hispanic Blacks	Female	20-39	07-08	*	*	8
Non-Hispanic Blacks	Female	20-39	09-10	*	*	7
Non-Hispanic Blacks	Female	40-59	05-06	2.80	0.3	7
Non-Hispanic Blacks	Female	40-59	07-08	2.36	0.36	8
Non-Hispanic Blacks	Female	40-59	09-10	3.33 **	1.32	7
Non-Hispanic Blacks	Female	60+	05-06	21.6	4.9	5
Non-Hispanic Blacks	Female	60+	07-08	16.0	2.3	7
Non-Hispanic Blacks	Female	60+	09-10	14.3	2.9	7
Mexican Americans	Male	12-19	05-06	*	*	11
Mexican Americans	Male	12-19	07-08	*	*	6
Mexican Americans	Male	12-19	09-10	*	*	8

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	05-06	.317	0.029	9
Mexican Americans	Male	20-39	07-08	.330	0.071	9
Mexican Americans	Male	20-39	09-10	*	*	8
Mexican Americans	Male	40-59	05-06	.846	0.084	4
Mexican Americans	Male	40-59	07-08	1.21	0.16	6
Mexican Americans	Male	40-59	09-10	1.10	0.09	8
Mexican Americans	Male	60+	05-06	3.91 **	1.65	4
Mexican Americans	Male	60+	07-08	4.41	0.58	5
Mexican Americans	Male	60+	09-10	4.44	0.76	5
Mexican Americans	Female	12-19	05-06	*	*	16
Mexican Americans	Female	12-19	07-08	*	*	5
Mexican Americans	Female	12-19	09-10	*	*	7
Mexican Americans	Female	20-39	05-06	*	*	9
Mexican Americans	Female	20-39	07-08	*	*	8
Mexican Americans	Female	20-39	09-10	*	*	10
Mexican Americans	Female	40-59	05-06	1.01	0.15	6
Mexican Americans	Female	40-59	07-08	1.44	0.35	6
Mexican Americans	Female	40-59	09-10	.699	0.117	8
Mexican Americans	Female	60+	05-06	4.98	0.24	3
Mexican Americans	Female	60+	07-08	4.83	1.33	5
Mexican Americans	Female	60+	09-10	5.71	1.38	6
All Hispanics	Male	12-19	09-10	*	*	11
All Hispanics	Male	20-39	09-10	*	*	13
All Hispanics	Male	40-59	09-10	1.21	0.1	13
All Hispanics	Male	60+	09-10	5.54	1.03	8
All Hispanics	Female	12-19	09-10	*	*	10
All Hispanics	Female	20-39	09-10	*	*	14
All Hispanics	Female	40-59	09-10	.725	0.081	13
All Hispanics	Female	60+	09-10	6.14	0.97	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 05-06, 07-08, and 09-10 are 0.31, 0.28, and 0.62, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled 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.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	.347	0.035	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	.284	0.032	10
Non-Hispanic Whites	Male	40-59	11-12	1.32	0.12	12
Non-Hispanic Whites	Male	40-59	13-14	1.17	0.08	14
Non-Hispanic Whites	Male	40-59	15-16	.828	0.098	10
Non-Hispanic Whites	Male	60+	11-12	5.12	0.6	12
Non-Hispanic Whites	Male	60+	13-14	4.60	0.45	17
Non-Hispanic Whites	Male	60+	15-16	3.75	0.36	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	1.25	0.11	11
Non-Hispanic Whites	Female	40-59	13-14	1.17	0.2	16
Non-Hispanic Whites	Female	40-59	15-16	.791	0.062	9
Non-Hispanic Whites	Female	60+	11-12	7.67	1.42	14
Non-Hispanic Whites	Female	60+	13-14	6.34	0.8	20
Non-Hispanic Whites	Female	60+	15-16	4.94	1	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	.421	0.042	9
Non-Hispanic Blacks	Male	20-39	13-14	.394	0.037	7
Non-Hispanic Blacks	Male	20-39	15-16	.408	0.09	7
Non-Hispanic Blacks	Male	40-59	11-12	2.03	0.26	7
Non-Hispanic Blacks	Male	40-59	13-14	2.12	0.3	7
Non-Hispanic Blacks	Male	40-59	15-16	2.40	0.45	7
Non-Hispanic Blacks	Male	60+	11-12	8.98	0.91	9
Non-Hispanic Blacks	Male	60+	13-14	8.88	0.94	9
Non-Hispanic Blacks	Male	60+	15-16	6.14	0.91	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	1.73	0.16	8
Non-Hispanic Blacks	Female	40-59	13-14	1.68	0.36	8
Non-Hispanic Blacks	Female	40-59	15-16	1.12	0.08	12
Non-Hispanic Blacks	Female	60+	11-12	10.9	1.6	8
Non-Hispanic Blacks	Female	60+	13-14	11.3	1.2	8
Non-Hispanic Blacks	Female	60+	15-16	6.06	1.05	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.271	0.033	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.938	0.144	4
Mexican Americans	Male	40-59	13-14	.747	0.147	5
Mexican Americans	Male	40-59	15-16	.591	0.083	4
Mexican Americans	Male	60+	11-12	1.98	0.04	2
Mexican Americans	Male	60+	13-14	4.28	0.71	4
Mexican Americans	Male	60+	15-16	2.91	0.48	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	.723	0.044	3
Mexican Americans	Female	40-59	13-14	.539	0.086	6
Mexican Americans	Female	40-59	15-16	.596	0.041	8
Mexican Americans	Female	60+	11-12	2.83	0.16	3
Mexican Americans	Female	60+	13-14	3.51	0.76	5
Mexican Americans	Female	60+	15-16	2.98	0.49	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	.319	0.035	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	.261	0.055	11
All Hispanics	Male	40-59	11-12	.899	0.109	7
All Hispanics	Male	40-59	13-14	.867	0.182	9
All Hispanics	Male	40-59	15-16	.809	0.221	9
All Hispanics	Male	60+	11-12	2.67	0.26	6
All Hispanics	Male	60+	13-14	3.94	0.48	7
All Hispanics	Male	60+	15-16	2.94	0.29	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	.721	0.068	7
All Hispanics	Female	40-59	13-14	.653	0.093	9
All Hispanics	Female	40-59	15-16	.647	0.054	13
All Hispanics	Female	60+	11-12	7.32 **	2.88	7
All Hispanics	Female	60+	13-14	4.37	0.85	9
All Hispanics	Female	60+	15-16	3.26	0.35	13
Asians	Male	12-19	11-12	.440 **	0.133	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	.727	0.152	6
Asians	Male	20-39	13-14	.677	0.149	4
Asians	Male	20-39	15-16	.688	0.142	5
Asians	Male	40-59	11-12	1.77	0.38	6
Asians	Male	40-59	13-14	1.53	0.29	4
Asians	Male	40-59	15-16	1.08 **	0.34	4
Asians	Male	60+	11-12	2.81	0.31	4
Asians	Male	60+	13-14	4.19	0.69	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	3.60	0.53	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	*	*	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	.617	0.123	6
Asians	Female	20-39	13-14	.490	0.062	5
Asians	Female	20-39	15-16	.460	0.026	4
Asians	Female	40-59	11-12	.997	0.173	6
Asians	Female	40-59	13-14	1.05	0.14	7
Asians	Female	40-59	15-16	1.73	0.42	5
Asians	Female	60+	11-12	4.78	0.66	3
Asians	Female	60+	13-14	5.33 **	2.03	3
Asians	Female	60+	15-16	3.88 **	1.95	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

Limit of detection (LOD, see Data Analysis section) for Survey years 11-12, 13-14, and 15-16 are 0.25, 0.25, and 0.25, respectively.

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

** Unadjusted standard error of the mean estimate is > 30%.

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) (2005 - 2010)†

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	12-19	Male	05-06	.001	0	9
Non-Hispanic Whites	12-19	Male	07-08	.001	0	6
Non-Hispanic Whites	12-19	Male	09-10	.001	0	10
Non-Hispanic Whites	20-39	Male	05-06	.005	0.001	12
Non-Hispanic Whites	20-39	Male	07-08	.004	0.001	15
Non-Hispanic Whites	20-39	Male	09-10	.002	0	17
Non-Hispanic Whites	40-59	Male	05-06	.013	0.001	12
Non-Hispanic Whites	40-59	Male	07-08	.014	0.001	16
Non-Hispanic Whites	40-59	Male	09-10	.011	0.001	17
Non-Hispanic Whites	60+	Male	05-06	.048	0.004	15
Non-Hispanic Whites	60+	Male	07-08	.045	0.004	23
Non-Hispanic Whites	60+	Male	09-10	.034	0.003	21
Non-Hispanic Whites	12-19	Female	05-06	.001	0	10
Non-Hispanic Whites	12-19	Female	07-08	.001	0	7
Non-Hispanic Whites	12-19	Female	09-10	.001	0	8
Non-Hispanic Whites	20-39	Female	05-06	.002	0	16
Non-Hispanic Whites	20-39	Female	07-08	.003	0	13
Non-Hispanic Whites	20-39	Female	09-10	.001	0	19
Non-Hispanic Whites	40-59	Female	05-06	.010	0.001	13
Non-Hispanic Whites	40-59	Female	07-08	.011	0.001	17
Non-Hispanic Whites	40-59	Female	09-10	.008	0.001	17
Non-Hispanic Whites	60+	Female	05-06	.080	0.01	17
Non-Hispanic Whites	60+	Female	07-08	.074	0.008	21
Non-Hispanic Whites	60+	Female	09-10	.050	0.006	22
Non-Hispanic Blacks	12-19	Male	05-06	.001	0	13
Non-Hispanic Blacks	12-19	Male	07-08	.001	0	6
Non-Hispanic Blacks	12-19	Male	09-10	.002	0	6
Non-Hispanic Blacks	20-39	Male	05-06	.005	0.001	6
Non-Hispanic Blacks	20-39	Male	07-08	.003	0	6
Non-Hispanic Blacks	20-39	Male	09-10	.004	0.001	7
Non-Hispanic Blacks	40-59	Male	05-06	.026	0.003	5
Non-Hispanic Blacks	40-59	Male	07-08	.017	0.002	6
Non-Hispanic Blacks	40-59	Male	09-10	.023	0.004	7
Non-Hispanic Blacks	60+	Male	05-06	.089	0.017	5
Non-Hispanic Blacks	60+	Male	07-08	.082	0.012	8
Non-Hispanic Blacks	60+	Male	09-10	.069	0.009	9
Non-Hispanic Blacks	12-19	Female	05-06	.001	0	14
Non-Hispanic Blacks	12-19	Female	07-08	.001	0	5
Non-Hispanic Blacks	12-19	Female	09-10	.001	0	6
Non-Hispanic Blacks	20-39	Female	05-06	.003	0.001	7
Non-Hispanic Blacks	20-39	Female	07-08	.002	0	8
Non-Hispanic Blacks	20-39	Female	09-10	.002	0	7
Non-Hispanic Blacks	40-59	Female	05-06	.018	0.002	7
Non-Hispanic Blacks	40-59	Female	07-08	.014	0.002	8
Non-Hispanic Blacks	40-59	Female	09-10	.018 **	0.007	7
Non-Hispanic Blacks	60+	Female	05-06	.142	0.03	5
Non-Hispanic Blacks	60+	Female	07-08	.096	0.014	7
Non-Hispanic Blacks	60+	Female	09-10	.081	0.016	7
Mexican Americans	12-19	Male	05-06	.001 **	0.001	11
Mexican Americans	12-19	Male	07-08	.001	0	6
Mexican Americans	12-19	Male	09-10	.001	0	8

Race/Ethnicity	Age (years)	Gender	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	20-39	Male	05-06	.002	0	9
Mexican Americans	20-39	Male	07-08	.002	0	9
Mexican Americans	20-39	Male	09-10	.002	0	8
Mexican Americans	40-59	Male	05-06	.007	0.001	4
Mexican Americans	40-59	Male	07-08	.008	0.001	6
Mexican Americans	40-59	Male	09-10	.008	0.001	8
Mexican Americans	60+	Male	05-06	.030 **	0.014	4
Mexican Americans	60+	Male	07-08	.031	0.004	5
Mexican Americans	60+	Male	09-10	.027	0.005	5
Mexican Americans	12-19	Female	05-06	.001	0	16
Mexican Americans	12-19	Female	07-08	.001	0	5
Mexican Americans	12-19	Female	09-10	.001	0	7
Mexican Americans	20-39	Female	05-06	.001	0	9
Mexican Americans	20-39	Female	07-08	.001	0	8
Mexican Americans	20-39	Female	09-10	.001	0	10
Mexican Americans	40-59	Female	05-06	.007	0.001	6
Mexican Americans	40-59	Female	07-08	.010	0.002	6
Mexican Americans	40-59	Female	09-10	.005	0.001	8
Mexican Americans	60+	Female	05-06	.038	0.002	3
Mexican Americans	60+	Female	07-08	.033	0.009	5
Mexican Americans	60+	Female	09-10	.031	0.007	6
All Hispanics	12-19	Male	09-10	.001	0	11
All Hispanics	20-39	Male	09-10	.002	0	13
All Hispanics	40-59	Male	09-10	.008	0.001	13
All Hispanics	60+	Male	09-10	.036	0.008	8
All Hispanics	12-19	Female	09-10	.001	0	10
All Hispanics	20-39	Female	09-10	.001	0	14
All Hispanics	40-59	Female	09-10	.005	0.001	13
All Hispanics	60+	Female	09-10	.036	0.006	11

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

** Unadjusted standard error of the mean estimate is > 30%.

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) (2011 - 2016)†

CAS Number 2051-24-3

Weighted arithmetic mean and unadjusted standard error of pooled serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Non-Hispanic Whites	Male	12-19	11-12	*	*	6
Non-Hispanic Whites	Male	12-19	13-14	*	*	8
Non-Hispanic Whites	Male	12-19	15-16	*	*	7
Non-Hispanic Whites	Male	20-39	11-12	.002	0	12
Non-Hispanic Whites	Male	20-39	13-14	*	*	14
Non-Hispanic Whites	Male	20-39	15-16	.002	0	10
Non-Hispanic Whites	Male	40-59	11-12	.009	0.001	12
Non-Hispanic Whites	Male	40-59	13-14	.007	0.001	14
Non-Hispanic Whites	Male	40-59	15-16	.006	0.001	10
Non-Hispanic Whites	Male	60+	11-12	.029	0.004	12
Non-Hispanic Whites	Male	60+	13-14	.025	0.002	17
Non-Hispanic Whites	Male	60+	15-16	.020	0.002	14
Non-Hispanic Whites	Female	12-19	11-12	*	*	5
Non-Hispanic Whites	Female	12-19	13-14	*	*	6
Non-Hispanic Whites	Female	12-19	15-16	*	*	5
Non-Hispanic Whites	Female	20-39	11-12	*	*	13
Non-Hispanic Whites	Female	20-39	13-14	*	*	15
Non-Hispanic Whites	Female	20-39	15-16	*	*	11
Non-Hispanic Whites	Female	40-59	11-12	.008	0.001	11
Non-Hispanic Whites	Female	40-59	13-14	.007	0.001	16
Non-Hispanic Whites	Female	40-59	15-16	.005	0	9
Non-Hispanic Whites	Female	60+	11-12	.047	0.009	14
Non-Hispanic Whites	Female	60+	13-14	.038	0.005	20
Non-Hispanic Whites	Female	60+	15-16	.030	0.006	13
Non-Hispanic Blacks	Male	12-19	11-12	*	*	7
Non-Hispanic Blacks	Male	12-19	13-14	*	*	6
Non-Hispanic Blacks	Male	12-19	15-16	*	*	5
Non-Hispanic Blacks	Male	20-39	11-12	.002	0	9
Non-Hispanic Blacks	Male	20-39	13-14	.002	0	7
Non-Hispanic Blacks	Male	20-39	15-16	.002	0.001	7
Non-Hispanic Blacks	Male	40-59	11-12	.011	0.001	7
Non-Hispanic Blacks	Male	40-59	13-14	.012	0.002	7
Non-Hispanic Blacks	Male	40-59	15-16	.015	0.003	7
Non-Hispanic Blacks	Male	60+	11-12	.049	0.005	9
Non-Hispanic Blacks	Male	60+	13-14	.046	0.004	9
Non-Hispanic Blacks	Male	60+	15-16	.032	0.004	7
Non-Hispanic Blacks	Female	12-19	11-12	*	*	6
Non-Hispanic Blacks	Female	12-19	13-14	*	*	6
Non-Hispanic Blacks	Female	12-19	15-16	*	*	4
Non-Hispanic Blacks	Female	20-39	11-12	*	*	8
Non-Hispanic Blacks	Female	20-39	13-14	*	*	8
Non-Hispanic Blacks	Female	20-39	15-16	*	*	9
Non-Hispanic Blacks	Female	40-59	11-12	.011	0.001	8
Non-Hispanic Blacks	Female	40-59	13-14	.009	0.002	8
Non-Hispanic Blacks	Female	40-59	15-16	.006	0.001	12
Non-Hispanic Blacks	Female	60+	11-12	.061	0.009	8
Non-Hispanic Blacks	Female	60+	13-14	.060	0.006	8
Non-Hispanic Blacks	Female	60+	15-16	.035	0.006	7
Mexican Americans	Male	12-19	11-12	*	*	5
Mexican Americans	Male	12-19	13-14	*	*	7
Mexican Americans	Male	12-19	15-16	*	*	6

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Mexican Americans	Male	20-39	11-12	.002	0	4
Mexican Americans	Male	20-39	13-14	*	*	5
Mexican Americans	Male	20-39	15-16	*	*	7
Mexican Americans	Male	40-59	11-12	.007	0.001	4
Mexican Americans	Male	40-59	13-14	.005	0.001	5
Mexican Americans	Male	40-59	15-16	.004	0	4
Mexican Americans	Male	60+	11-12	.012	0	2
Mexican Americans	Male	60+	13-14	.023	0.003	4
Mexican Americans	Male	60+	15-16	.017	0.003	5
Mexican Americans	Female	12-19	11-12	*	*	4
Mexican Americans	Female	12-19	13-14	*	*	7
Mexican Americans	Female	12-19	15-16	*	*	5
Mexican Americans	Female	20-39	11-12	*	*	4
Mexican Americans	Female	20-39	13-14	*	*	5
Mexican Americans	Female	20-39	15-16	*	*	6
Mexican Americans	Female	40-59	11-12	.004	0	3
Mexican Americans	Female	40-59	13-14	.003	0	6
Mexican Americans	Female	40-59	15-16	.004	0	8
Mexican Americans	Female	60+	11-12	.017	0.001	3
Mexican Americans	Female	60+	13-14	.020	0.004	5
Mexican Americans	Female	60+	15-16	.018	0.003	7
All Hispanics	Male	12-19	11-12	*	*	7
All Hispanics	Male	12-19	13-14	*	*	10
All Hispanics	Male	12-19	15-16	*	*	9
All Hispanics	Male	20-39	11-12	1.94	0.21	8
All Hispanics	Male	20-39	13-14	*	*	8
All Hispanics	Male	20-39	15-16	1.63	0.28	11
All Hispanics	Male	40-59	11-12	6.63	0.7	7
All Hispanics	Male	40-59	13-14	5.32	1.21	9
All Hispanics	Male	40-59	15-16	5.17	1.38	9
All Hispanics	Male	60+	11-12	15.7	1.6	6
All Hispanics	Male	60+	13-14	21.4	2.4	7
All Hispanics	Male	60+	15-16	17.3	1.8	9
All Hispanics	Female	12-19	11-12	*	*	7
All Hispanics	Female	12-19	13-14	*	*	10
All Hispanics	Female	12-19	15-16	*	*	8
All Hispanics	Female	20-39	11-12	*	*	8
All Hispanics	Female	20-39	13-14	*	*	9
All Hispanics	Female	20-39	15-16	*	*	11
All Hispanics	Female	40-59	11-12	4.60	0.6	7
All Hispanics	Female	40-59	13-14	3.79	0.52	9
All Hispanics	Female	40-59	15-16	4.19	0.42	13
All Hispanics	Female	60+	11-12	43.6 **	16.5	7
All Hispanics	Female	60+	13-14	25.5	4.2	9
All Hispanics	Female	60+	15-16	19.7	2	13
Asians	Male	12-19	11-12	.002 **	0.001	3
Asians	Male	12-19	13-14	*	*	3
Asians	Male	12-19	15-16	*	*	3
Asians	Male	20-39	11-12	.004	0.001	6
Asians	Male	20-39	13-14	.004	0.001	4
Asians	Male	20-39	15-16	.004	0.001	5
Asians	Male	40-59	11-12	.011	0.002	6
Asians	Male	40-59	13-14	.009	0.001	4
Asians	Male	40-59	15-16	.007 **	0.002	4
Asians	Male	60+	11-12	.015	0.002	4
Asians	Male	60+	13-14	.026	0.005	3

Race/Ethnicity	Gender	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools‡
Asians	Male	60+	15-16	.020	0.002	3
Asians	Female	12-19	11-12	*	*	4
Asians	Female	12-19	13-14	*	*	3
Asians	Female	12-19	15-16	*	*	3
Asians	Female	20-39	11-12	.003	0.001	6
Asians	Female	20-39	13-14	.003	0	5
Asians	Female	20-39	15-16	.003	0	4
Asians	Female	40-59	11-12	.006	0.001	6
Asians	Female	40-59	13-14	.006	0.001	7
Asians	Female	40-59	15-16	.011	0.003	5
Asians	Female	60+	11-12	.027	0.004	3
Asians	Female	60+	13-14	.030	0.008	3
Asians	Female	60+	15-16	.024 **	0.012	3

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation. Weighted arithmetic means are not comparable to weighted geometric means. Unadjusted standard errors do not incorporate survey design effects.

‡Each pool was composed of serum from 8 persons.

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

** Unadjusted standard error of the mean estimate is > 30%.

Biomonitoring Summary: https://www.cdc.gov/biomonitoring/NDL-PCBs_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:

$$(1) \quad n_{df} = ((t_{num}/t_{denom})^2)P_ALTR(1 - P_ALTR)/(SEMEAN_ORIG^2)$$

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:

$$(2) \quad P_L(x, n_{df}) = v_1 F_{v_1, v_2} (0.025) / (v_2 + v_1 F_{v_1, v_2} (0.025))$$

&

$$P_U(x, n_{df}) = v_3 F_{v_3, v_4} (0.975) / (v_4 + v_3 F_{v_3, v_4} (0.975))$$

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 $F_{d_1, d_2}(\beta)$ 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 $\mu\text{g/L}$.

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 $\mu\text{g/L}$.

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 93.9th and 95.8th percentiles. These point estimates are the lower and upper confidence limits on the 95th percentile estimate. Round the 95th 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 Three: Analysis of Pooled Serum Samples for Select Chemicals, NHANES 2005-2016

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.).

Organochlorine Pesticides and Metabolites (Lipid Adjusted)

Chemical, in serum, ng/g lipid	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016
Oxychlorodane	1.2	1.41	20.0	1.3	1.3	1.3
trans-Nonachlor	0.64	1.41	3.1	1.3	1.3	1.3
p,p'-DDT	1.24	1.41	3.1	1.3	1.3	1.3
p,p'-DDE	0.64	1.41	5.2	4.38	1.84	1.3
Hexachlorobenzene	3.85	1.41	4.4	2.4	1.3	1.3
beta-Hexachlorocyclohexane	1.44	1.41	3.1	1.3	1.3	1.3
gamma-Hexachlorocyclohexane	1.46	1.41	3.1	1.3	--	--
Mirex	1.46	1.41	3.1	1.3	1.3	1.3

Polybrominated Diphenyl Ethers and PBB 153 (Lipid Adjusted)

Chemical, in serum, ng/g lipid	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016
2,2',4'-Tribromodiphenyl ether (BDE 17)	0.57	0.57	0.83	0.47	0.25	0.37
2,4,4'-Tribromodiphenyl ether (BDE 28)	0.57	0.57	0.93	0.68	0.25	0.52
2,2',4,4'-Tetrabromodiphenyl ether (BDE 47)	0.57	0.57	0.91	0.99	1.0	0.44
2,3',4,4'-Tetrabromodiphenyl ether (BDE 66)	0.57	0.57	0.62	0.58	0.74	0.42
2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85)	0.57	0.57	0.62	0.27	0.25	0.49
2,2',4,4',5-Pentabromodiphenyl ether (BDE 99)	0.57	0.57	0.79	0.52	0.44	0.42
2,2',4,4',6-Pentabromodiphenyl ether (BDE 100)	0.57	0.57	0.62	1.0	0.25	0.35
2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153)	0.57	0.57	0.85	0.25	0.25	0.35
2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154)	0.57	0.57	0.82	0.25	0.25	0.34
2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183)	0.57	0.57	0.69	0.3	0.25	0.41
2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE 209)	5.8	5.8	3.1	1.6	1.3	1.3
2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153)	0.57	0.57	1.3	0.25	0.25	0.4

Polychlorinated Dibenzo-p-dioxins (Lipid Adjusted)

Chemical, in serum, pg/g lipid	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	1.18	0.62	6.36	--	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.14	0.26	0.4	--	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.09	0.09	0.31	--	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.07	0.1	0.2	--	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	8.88	10.1	33.9	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.51	1.07	1.56	--	--	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.39	0.74	1.1	--	--	--

Polychlorinated Dibenzofurans (Lipid Adjusted)

Chemical, in serum, pg/g lipid	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	0.23	0.05	2.69	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.23	0.33	0.49	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	0.27	0.39	0.78	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.1	0.14	0.27	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.23	0.35	0.52	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.13	0.2	0.3	--	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	1.17	1.14	3.68	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.47	0.81	1.2	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	0.39	0.38	1.3	--	--	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	0.3	0.45	0.68	--	--	--

Dioxin-like Polychlorinated Biphenyls: Coplanar PCBs (Lipid Adjusted)

Chemical, in serum, pg/g lipid	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	1.71	1.6	4.95	--	--	--
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	1.05	1.94	3.54	--	--	--
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	0.8	0.93	3.54	--	--	--

Dioxin-like Polychlorinated Biphenyls: mono-ortho-substituted PCBs (Lipid Adjusted)

Chemical, in serum, ng/g lipid	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016
2,3,3',4,4'-Pentachlorobiphenyl (PCB 105)	0.31	0.28	0.52	0.27	0.25	0.3
2,3,3',4,4'-Pentachlorobiphenyl (PCB 114)	0.31	0.28	0.62	0.25	0.25	0.25
2,3',4,4',5-Pentachlorobiphenyl (PCB 118)	0.31	0.14	0.62	0.27	0.25	0.38
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	0.31	0.28	--	--	--	--
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	0.3	0.28	0.62	0.25	0.25	0.25
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	0.31	0.28	0.62	0.25	0.25	0.25
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	0.31	0.28	0.62	0.25	0.25	0.25
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	0.31	0.28	0.62	0.25	0.25	0.25

Polychlorinated Biphenyls: Non-Dioxin-Like (Lipid Adjusted)

Chemical, in serum, ng/g lipid	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016
2,4,4'-Trichlorobiphenyl (PCB 28)	2.55	0.71	1.3	0.71	0.27	0.86
2,2',3,5'-Tetrachlorobiphenyl (PCB 44)	0.36	0.3	--	--	--	--
2,2',4,5'-Tetrachlorobiphenyl (PCB 49)	0.31	0.28	--	--	--	--
2,2',5,5'-Tetrachlorobiphenyl (PCB 52)	0.33	0.28	--	--	--	--
2,3',4,4'-Tetrachlorobiphenyl (PCB 66)	0.4	0.28	0.98	0.37	0.25	0.65
2,4,4',5-Tetrachlorobiphenyl (PCB 74)	0.28	0.85	1.1	0.37	0.27	0.62
2,2',3,4,5'-Pentachlorobiphenyl (PCB 87)	0.31	0.3	--	--	--	--
2,2',4,4',5-Pentachlorobiphenyl (PCB 99)	0.25	0.28	0.62	0.25	0.25	0.25
2,2',4,5,5'-Pentachlorobiphenyl (PCB 101)	0.59	0.28	--	--	--	--
2,3,3',4,6-Pentachlorobiphenyl (PCB 110)	0.31	0.28	--	--	--	--
2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128)	0.31	0.28	--	--	--	--
2,2',3,4,4',5' & 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158)	0.25	0.14	0.62	0.25	0.25	0.25
2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146)	0.27	0.28	0.62	0.25	0.25	0.25

Chemical, in serum, ng/g lipid	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016
2,2',3,4',5',6'-Hexachlorobiphenyl (PCB 149)	0.31	0.28	--	--	--	--
2,2',3,5,5',6'-Hexachlorobiphenyl (PCB 151)	0.31	0.28	--	--	--	--
2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153)	0.31	0.14	0.83	0.3	0.25	0.25
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	0.31	0.28	0.62	0.25	0.25	0.25
2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172)	0.31	0.28	--	--	--	--
2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177)	0.31	0.28	--	--	--	--
2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178)	0.31	0.28	0.62	0.25	0.25	0.25
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	0.25	0.28	0.62	0.3	0.25	0.25
2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183)	0.31	0.28	0.62	0.25	0.25	0.25
2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187)	0.25	0.28	0.62	0.25	0.25	0.25
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194)	0.31	0.28	0.62	0.25	0.25	0.25
2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195)	0.31	0.28	--	--	--	--
2,2',3,3',4,4',5,6' & 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203)	0.25	0.28	0.62	0.25	0.25	0.25
2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199)	0.3	0.28	0.62	0.25	0.25	0.25
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206)	0.31	0.28	0.62	1.56	0.25	0.51
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209)	0.31	0.28	0.62	0.25	0.25	0.25

Appendix D. References for Biomonitoring Analytical Methods

Adducts of Hemoglobin

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