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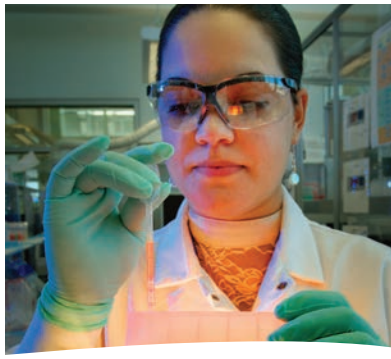

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

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8 Glycidamide
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52 2,4-Dichlorophenol
CAS No. 120-83-2

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CAS No. 90-43-7

62 Ethylene thiourea
CAS No. 96-45-7

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CAS No. 87-86-5

66 Propylene thiourea
CAS No. 2122-19-2

Herbicides and Metabolites

68 Atrazine
CAS No. 1912-24-9

70 Atrazine mercapturate
CAS No. 138722-96-0

72 Desethyl atrazine
CAS No. 6190-65-4

74 Desisopropyl atrazine
CAS No. 1007-28-9

76 Desisopropyl atrazine mercapturate
CAS No. 1007-28-9

78 Diaminochlorotriazine

80 2,4-Dichlorophenoxyacetic acid
CAS No. 94-75-7

84 2,4,5-Trichlorophenoxyacetic acid
CAS No. 93-76-5

Sulfonyl Urea Herbicides

88 Urinary Bensulfuron-methyl
CAS No. 83055-99-6

90 Urinary Chlorsulfuron
CAS No. 64902-72-3

92 Urinary Ethametsulfuron-methyl
CAS No. 97780-06-8

94 Urinary Foramsulfuron
CAS No. 173159-57-4

96 Urinary Halosulfuron
CAS No. 135397-30-7

98 Urinary Mesosulfuron-methyl
CAS No. 208465-21-8

100 Urinary Metsulfuron-methyl
CAS No. 74223-64-6

102 Urinary Nicosulfuron
CAS No. 111991-09-4

104 Urinary Oxasulfuron
CAS No. 144651-06-9

106 Urinary Primisulfuron-methyl
CAS No. 86209-51-0

108 Urinary Prosulfuron
CAS No. 94125-34-5

110 Urinary Rimsulfuron
CAS No. 122931-48-0

112 Urinary Sulfometuron-methyl
CAS No. 74222-97-2

114 Urinary Sulfosulfuron
CAS No. 141776-32-1

116 Urinary Thifensulfuron-methyl
CAS No. 79277-27-3

118 Urinary Triasulfuron
CAS No. 82097-50-5

120 Urinary Triflusulfuron-methyl
CAS No. 126535-15-7

Insect Repellent and Metabolites

122 N,N-Diethyl-*meta*-toluamide (DEET)
CAS No. 134-62-3

124 3-(Diethylcarbamoyl) benzoic acid (DCBA)
CAS No. 858981-15-4

126 N,N-Diethyl-3-(hydroxymethyl) benzamide (DHMB)
CAS No. 72236-22-7

Carbamate Pesticide Metabolites

128 Carbofuranphenol
CAS No. 1563-38-8

130 2-Isopropoxyphenol
CAS No. 4812-20-8

Organochlorine Pesticide Metabolites

132 2,4,5-Trichlorophenol
CAS No. 95-95-4

134 2,4,6-Trichlorophenol
CAS No. 88-06-2

Organophosphorus Insecticides: Specific Metabolites

136 Acephate
CAS No. 30560-19-1

138 Dimethoate
CAS No. 60-51-5

140 Methamidophos
CAS No. 10265-92-6

142 Omethoate
CAS No. 1113-02-6

144 Malathion dicarboxylic acid
CAS No. 1190-28-9

146 2-Isopropyl-4-methyl-pyrimidinol
CAS No. 2814-20-2

148 *para*-Nitrophenol
CAS No. 100-02-7

150 3,5,6-Trichlor-2-pyridinol
CAS No. 6515-38-4

Organophosphorus Insecticides: Dialkyl Phosphate Metabolites

152 Diethylphosphate (DEP)
CAS No. 598-02-7

156 Dimethylphosphate (DMP)
CAS No. 813-78-5

160 Diethylthiophosphate (DETP)
CAS No. 5871-17-0

164 Dimethylthiophosphate (DMTP)
CAS No. 59401-04-6

168 Diethyldithiophosphate (DEDTP)
CAS No. 298-06-6

172 Dimethyldithiophosphate (DMDTP)
CAS No. 756-80-9

Pyrethroid Metabolites

176 *trans*-3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid
CAS No. 55701-05-8

180 *cis*-3-(2,2-Dibromovinyl)-2,2dimethylcyclopropane carboxylic acid

182 4-Fluoro-3-phenoxybenzoic acid
CAS No. 77279-89-1

184 3-Phenoxybenzoic acid
CAS No. 3739-38-6

Metals and Metalloids

186 Antimony
CAS No. 7440-36-0

192 Arsenic, Total
CAS No. 7440-38-2

196 Inorganic-related Arsenic Species

200 Arsenic (V) acid

204 Arsenobetaine
CAS No. 64436-13-1

208 Arsenocholine
CAS No. 96055-45-7

212 Arsenous (III) acid
CAS No. 13464-58-9

216 Dimethylarsinic acid
CAS No. 917-76-0

220 Monomethylarsonic acid
CAS No. 65513-69-1

224 Trimethylarsine oxide
CAS No. 4964-14-1

228 Barium
CAS No. 81-25-4

234 Beryllium
CAS No. 7440-41-7

238 Cadmium
CAS No. 81271-94-5

247 Cesium
CAS No. 7440-46-2

253 Cobalt
CAS No. 7440-48-4

259 Copper
CAS No. 7440-50-8

260 Lead
CAS No. 7439-92-1

269 Manganese
CAS No. 8075-39-6

272 Mercury (total; inorganic; ethyl and methyl species)
CAS No. 92786-62-4

283 Molybdenum
CAS No. 7439-98-7

289 Platinum
CAS No. 7740-l06-4

293 Selenium
CAS No. 7782-49-2

295 Strontium
CAS No. 7440-24-6

297 Thallium
CAS No. 7440-28-0

303 Tin
CAS No. 7440-31-5

305 Tungsten
CAS No. 7440-33-7

311 Uranium
CAS No. 7440-61-1

317 Zinc
CAS No. 7440-66-6

Perchlorate and Other Anions

318 Nitrate
CAS No. 84145-82-4

322 Perchlorate
CAS No. 14797-73-0

328 Thiocyanate
CAS No. 302-04-5

Perfluoroalkyl and Polyfluoroalkyl Substances: Surfactants

332 Perfluorobutane sulfonic acid (PFBuS)
CAS No. 375-73-5

335 Perfluorodecanoic acid (PFDeA)
CAS No. 335-76-2

338 Perfluorododecanoic acid (PFDoA)
CAS No. 307-55-1

341 Perfluoroheptanoic acid (PFHpA)
CAS No. 375-85-9

344 Perfluorohexane sulfonic acid (PFHxS)
CAS No. 355-46-4

347 Perfluorononanoic acid (PFNA)
CAS No. 375-95-1

350 Perfluorooctanoic acid (PFOA)
CAS No. 335-67-1

353 *n*-Perfluorooctanoic acid (*n*-PFOA)

354 Branched Perfluorooctanoic isomers (Sb-PFOA)

355 Perfluorooctane sulfonic acid (PFOS)
CAS No. 1763-23-1

358 *n*-Perfluorooctane sulfonic acid (*n*-PFOS)

359 Perfluoromethylheptane sulfonic acid isomers (Sm-PFOS)

360 Perfluorooctane sulfonamide (PFOSA)
CAS No. 754-91-6

363 2-(N-Ethyl-perfluorooctane sulfonamido) acetic acid (Et-PFOSA-AcOH)
CAS No. 2991-50-6

366 2-(N-Methyl-perfluorooctane sulfonamido) acetic acid (Me-PFOSA-AcOH)
CAS No. 2355-31-9

369 Perfluoroundecanoic acid (PFUA)
CAS No. 2058-94-8

Phthalate and Phthalate Alternative Metabolites

372 Mono-benzyl phthalate (MBzP)
CAS No. 2528-16-7

378 Mono-*n*-butyl phthalate (MnBP)
CAS No. 131-70-4

384 Mono-isobutyl phthalate (MiBP)
CAS No. 30833-53-5

390 Mono-cyclohexyl phthalate (MCHP)
CAS No. 7517-36-4

394 Mono-ethyl phthalate (MEP)
CAS No. 863029-89-4

400 Mono-2-ethylhexyl phthalate (MEHP)
CAS No. 4376-20-9

406 Mono-(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP)
CAS No. 40321-99-1

412 Mono-(2-ethyl-5-oxohexyl) phthalate (MEOHP)
CAS No. 40321-98-0

418 Mono-(2-ethyl-5-carboxypentyl) phthalate (MECPP)
CAS No. 40809-41-4

422 Mono-(carboxynonyl) phthalate (MCNP)
CAS No. 1373125-93-9

426 Mono-isononyl phthalate (MiNP)
CAS No. 297182-83-3

432 Mono-(carboxyoctyl) phthalate (MCOP)
CAS No. Di-isononyl phthalate (DNP)

436 Mono-methyl phthalate (MMP)
CAS No. 4376-18-5

442 Mono-(3-carboxypropyl) phthalate (MCPP)
CAS No. 66851-46-5

448 Mono-*n*-octyl phthalate (MOP)
CAS No. 5393-19-1

452 Cyclohexane-1,2-dicarboxylic acid mono(hydroxy-isononyl ester) (MHNCH)

Phytoestrogens and Metabolites

454 Daidzein
CAS No. 486-66-8

458 Enterodiol
CAS No. 80226-00-2

462 Enterolactone
CAS No. 77756-20-8

466 Equol
CAS No. 531-95-3

470 Genistein
CAS No. 446-72-0

474 O-Desmethylangolensin
CAS No. 21255-69-6

Polycyclic Aromatic Hydrocarbon Metabolites

478 2-Hydroxyfluorene
CAS No. 2443-58-5

484 3-Hydroxyfluorene
CAS No. 6344-67-8

490 9-Hydroxyfluorene
CAS No. 1689-64-1

496 1-Hydroxyphenanthrene
CAS No. 2433-56-9

502 2-Hydroxyphenanthrene
CAS No. 605-55-0

508 3-Hydroxyphenanthrene
CAS No. 605-87-8

514 4-Hydroxyphenanthrene
CAS No. 7657-86-7

518 1-Hydroxypyrene
CAS No. 5315-79-7

524 1-Hydroxynaphthalene (1-Naphthol)
CAS No. 90-15-3

530 2-Hydroxynaphthalene (2-Naphthol)
CAS No. 135-19-3

Volatile Organic Compounds (VOCs)

536 1,1,1-Trichloroethane (Methyl chloroform)
CAS No. 71-55-6

537 1,1,1,2-Tetrachloroethane
CAS No. 79-34-5

538 1,1,2,2-Tetrachloroethane
CAS No. 79-34-5

539 1,1,2-Trichloroethane
CAS No. 79-00-5

540 1,2,3-Trichloropropane
CAS No. 96-18-4

541 1,1-Dichloroethane
CAS No. 75-34-3

542 1,1-Dichloroethene (Vinylidene chloride)
CAS No. 75-34-3

543 1,2-Dibromo-3-chloropropane (DBCP)
CAS No. 96-12-8

544 1,2-Dibromoethane
CAS No. 106-93-4

545 1,2-Dichlorobenzene (*o*-Dichlorobenzene)
CAS No. 95-50-1

546 1,2-Dichloroethane (Ethylene dichloride)
CAS No. 107-06-2

547 *cis*-1,2-Dichloroethene
CAS No. 156-59-2

548 *trans*-1,2-Dichloroethene
CAS No. 156-60-5

549 1,2-Dichloropropane
CAS No. 78-87-5

550 1,3-Dichlorobenzene (*m*-Dichlorobenzene)
CAS No. 95-50-1

551 1,4-Dichlorobenzene (Paradichlorobenzene)
CAS No. 106-46-7

552 2,5-Dimethylfuran
CAS No. 625-86-5

553 Benzene
CAS No. 71-43-2

554 Chlorobenzene (Monochlorobenzene)
CAS No. 108-90-7

555 Dibromomethane
CAS No. 74-95-3

556 Dichloromethane (Methylene chloride)
CAS No. 75-09-2

557 Ethylbenzene
CAS No. 100-41-4

558 Furan
CAS No. 110-00-9

559 Hexachloroethane
CAS No. 67-72-1

560 Isopropylbenzene (Cumene)
CAS No. 98-82-8

561 Methyl-*tert*-butyl ether (MTBE)
CAS No. 1634-04-4

562 Nitrobenzene
CAS No. 98-95-3

563 Nitromethane
CAS No. 75-52-5

564 Styrene
CAS No. 100-42-5

565 Tetrachloroethene (Perchloroethylene)
CAS No. 127-18-4

566 Tetrachloromethane (Carbon tetrachloride)
CAS No. 56-23-5

567 Toluene
CAS No. 108-88-3

568 Trichloroethene (Trichloroethylene)
CAS No. 79-01-6

569 *m-/p-*Xylene
CAS No. 108-38-3/106-42-3

570 *o*-Xylene
CAS No. 95-47-6

Volatile Organic Compound (VOC) Metabolites

571 N-Acetyl-S-(2-carboxyethyl)-L-cysteine
CAS No. 51868-61-2

573 N-Acetyl-S-(3-hydroxypropyl)-L-cysteine
CAS No. 23127-40-4

575 N-Acetyl-S-(2-carbamoylethyl)-L-cysteine
CAS No. 81690-92-8

577 N-Acetyl-S-(2-carbamoyl-2-hydroxyethyl)-L-cysteine

579 N-Acetyl-S-(2-cyanoethyl)-L-cysteine
CAS No. 74514-75-3

581 N-Acetyl-S-(2-hydroxyethyl)-L-cysteine
CAS No. 15060-26-1

583 N-Acetyl-S-(phenyl)-L-cysteine
CAS No. 4775-80-8

585 N-Acetyl-S-(*n*-propyl)-L-cysteine

587 N-Acetyl-S-(3,4-dihydroxybutyl)-L-cysteine
CAS No. 144889-50-9

589 N-Acetyl-S-(1-hydroxymethyl-2-propenyl)-L-cysteine

591 N-Acetyl-S-(2-hydroxy-3-butenyl)-L-cysteine
CAS No. 159092-64-5

593 N-Acetyl-S-(4-hydroxy-2-butenyl)-L-cysteine
CAS No. 159092-65-6

595 2-Thioxothiazolidine-4-carboxylic acid
CAS No. 20933-67-9

597 N-Acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine
CAS No. 33164-70-4

599 2-Aminothiazoline-4-carboxylic acid
CAS No. 40283-41-8

601 N-Acetyl-S-(N-methylcarbamoyl)-L-cysteine
CAS No. 103974-29-4

603 Phenylglyoxylic acid
CAS No. 611-73-4

605 N-Acetyl-S-(2-hydroxypropyl)-L-cysteine
CAS No. 923-43-3

607 N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine

609 Mandelic acid
CAS No. 90-64-2, 611-71-2 (R), 17199-29-0 (S)

611 N-Acetyl-S-(trichlorovinyl)-L-cysteine
CAS No. 111348-61-9

613 N-Acetyl-S-(benzyl)-L-cysteine
CAS No. 19542-77-9

615 N-Acetyl-S-(1,2-dichlorovinyl)-L-cysteine
CAS No. 2148-31-4

617 N-Acetyl-S-(2,2-dichlorovinyl)-L-cysteine
CAS No. 126543-43-9

619 N-Acetyl-S-(dimethylphenyl)-L-cysteine

621 2-Methylhippuric acid
CAS No. 42013-20-7

623 3- and 4-Methylhippuric acid
CAS No. 27115-49-7, 27115-50-0

Appendices

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Volume Two

Special Analysis of Pooled Samples for Select Chemicals

1 Special Analysis of Pooled Samples for Select Chemicals

Organochlorine Pesticides and Metabolites (Pooled Samples after 2004)

3 Aldrin
CAS No. 309-00-2

5 Dieldrin
CAS No. 60-57-1

7 Endrin
CAS No. 72-20-8

9 Heptachlor epoxide
CAS No. 1024-57-3

11 Oxychlordane
CAS No. 27304-13-8

17 *trans-Nonachlor*
CAS No. 39765-80-5

23 *p,p'*-DDT
CAS No. 50-29-3

29 *p,p'*-DDE
CAS No. 72-55-9

35 *o,p'*-DDT

37 Hexachlorobenzene
CAS No. 118-74-1

43 *beta*-Hexachlorocyclohexane
CAS No. 319-85-7

49 *gamma*-Hexachlorocyclohexane

55 Mirex
CAS No. 2385-85-5

Polybrominated Diphenyl Ethers and PBB 153 (Pooled Samples after 2004)

61 2,2',4'-Tribromodiphenyl ether (BDE 17)
CAS No. 147217-75-2

64 2,4,4'-Tribromodiphenyl ether (BDE 28)
CAS No. 41318-75-6

67 2,2',4,4'-Tetrabromodiphenyl ether (BDE 47)
CAS No. 5436-43-1

70 2,3',4,4'-Tetrabromodiphenyl ether (BDE 66)
CAS No. 189084-61-5

73 2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85)
CAS No. 182346-21-0

76 2,2',4,4',5-Pentabromodiphenyl ether (BDE 99)
CAS No. 60328-60-9

79 2,2',4,4',6-Pentabromodiphenyl ether (BDE 100)
CAS No. 189084-64-8

82 2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153)
CAS No. 68631-49-2

85 2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154)
CAS No. 207122-15-4

88 2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183)
CAS No. 207122-16-5

91 2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE 209)
CAS No. 1163-19-5

93 2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153)
CAS No. 59080-40-9

Polychlorinated Dibenzo-*p*-dioxins (Pooled Samples after 2004)

96 1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin (HpCDD)

102 1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD)
CAS No. 39227-28-6

108 1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD)
CAS No. 57653-85-7

114 1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin (HxCDD)
CAS No. 19408-74-3

120 1,2,3,4,6,7,8,9-Octachlorodibenzo-*p*-dioxin (OCDD)
CAS No. 3268-87-9

126 1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin (PeCDD)
CAS No. 40321-76-4

132 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD)
CAS No. 1746-01-6

Polychlorinated Dibenzofurans (Pooled Samples after 2004)

138 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)
CAS No. 67562-39-4

144 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)
CAS No. 55673-89-7

150 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)
CAS No. 70648-26-9

156 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)
CAS No. 57117-44-9

162 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)
CAS No. 72918-21-9

168 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)
CAS No. 60851-34-5

174 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)
CAS No. 39001-02-0

180 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)
CAS No. 57117-41-6

186 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)
CAS No. 57117-31-4

192 2,3,7,8-Tetrachlorodibenzofuran (TCDF)
CAS No. 51207-31-9

Dioxin-like Polychlorinated Biphenyls: coplanar PCBs (Pooled Samples after 2004)

198 3,4,4',5-Tetrachlorobiphenyl (PCB 81)
CAS No. 70362-50-4

204 3,3',4,4',5-Pentachlorobiphenyl (PCB 126)
CAS No. 57465-28-8

210 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)
CAS No. 32774-16-6

Dioxin-like Polychlorinated Biphenyls: mono-*ortho*-substituted PCBs (Pooled Samples after 2004)

216 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105)
CAS No. 32598-14-4

222 2,3,3',4,4'-Pentachlorobiphenyl (PCB 114)
CAS No. 74472-37-0

226 2,3',4,4',5-Pentachlorobiphenyl (PCB 118)
CAS No. 31508-00-6

232 2',3,4,4',5-Pentachlorobiphenyl (PCB 123)
CAS No. 65510-44-3

236 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)
CAS No. 38380-08-4

242 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)
CAS No. 69782-90-7

248 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)
CAS No. 52663-72-6

254 2,3,3’,4,4’,5,5’-Heptachlorobiphenyl (PCB 189)
CAS No. 39635-31-9

Polychlorinated Biphenyls: Non-Dioxin-Like (Pooled Samples after 2004)

260 2,4,4'-Trichlorobiphenyl (PCB 28)
CAS No. 7012-37-5

266 2,2'3,5'-Tetrachloro biphenyl (PCB 44)
CAS No. 41464-39-5

272 2,2',4,5'-Tetrachloro biphenyl (PCB 49)
CAS No. 41464-40-8

278 2,2',5,5'-Tetrachlorobiphenyl (PCB 52)
CAS No. 35693-99-3

284 2,3',4,4'-Tetrachlorobiphenyl (PCB 66)
CAS No. 33025-41-1

290 2,4,4',5-Tetrachlorobiphenyl (PCB 74)
CAS No. 32690-93-0

296 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87)
CAS No. 41464-51-1

302 2,2',4,4',5-Pentachlorobiphenyl (PCB 99)
CAS No. 38380-02-8

308 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101)
CAS No. 37680-73-2

314 2,3,3’,4’,6-Pentachlorobiphenyl (PCB 110)
CAS No. 74472-35-8

320 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128)
CAS No. 38380-07-3

326 2,2',3,4,4',5' and 2,3,3’,4,4’,6-Hexachlorobiphenyl (PCB 138 & 158)
CAS No. 52712-04-6 and 74472-42-7

332 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146)
CAS No. 51908-16-8

338 2,2’,3,4’,5’,6-Hexachlorobiphenyl (PCB 149)
CAS No. 38380-04-0

344 2,2’,3,5,5’,6-Hexachlorobiphenyl (PCB 151)
CAS No. 52663-63-5

350 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153)
CAS No. 35065-27-1

356 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)
CAS No. 35065-30-6

362 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172)
CAS No. 52663-74-8

368 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177)
CAS No. 40186-70-7

374 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178)
CAS No. 52663-67-9

380 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)
CAS No. 35065-29-3

386 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183)
CAS No. 52663-69-1

392 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187)
CAS No. 52663-68-0

398 2,2’,3,3’,4,4’,5,5’-Octachlorobiphenyl (PCB 194)
CAS No. 35694-08-7

404 2,2’,3,3’,4,4’,5,6-Octachlorobiphenyl (PCB 195)
CAS No. 52663-78-2

410 2,2’,3,3’,4,4’,5,6’ and 2,2’,3,4,4’,5,5’,6-Octachlorobiphenyl (PCB 196 & 203)
CAS No. 42740-50-1 and 52663-76-0

416 2,2’,3,3’,4,5,5’,6-Octachlorobiphenyl (PCB 199)
CAS No. 52663-73-7

422 2,2’,3,3’,4,4’,5,5’,6-Nonachlorobiphenyl (PCB 206)
CAS No. 40186-72-9

428 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209)
CAS No. 2051-24-3

Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults

434 Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Analysis of Select Chemicals in a Special Sample

Metals and Metalloids (Special Sample: Adult Smokers & Nonsmokers)

435 Antimony
CAS No. 7440-36-0

437 Arsenic, Total
CAS No. 7440-38-2

439 Arsenic (V) acid

441 Arsenobetaine
CAS No. 64436-13-1

443 Arsenocholine
CAS No. 96055-45-7

445 Arsenous (III) acid
CAS No. 13464-58-9

447 Dimethylarsinic acid
CAS No. 917-76-0

449 Monomethylarsonic acid
CAS No. 65513-69-1

451 Trimethylarsine oxide
CAS No. 4964-14-1

453 Barium
CAS No. 81-25-4

455 Cadmium
CAS No. 81271-94-5

457 Cesium
CAS No. 7440-46-2

459 Cobalt
CAS No. 7440-48-4

461 Lead
CAS No. 7439-92-1

463 Manganese
CAS No. 8075-39-6

465 Molybdenum
CAS No. 7439-98-7

467 Strontium
CAS No. 7440-24-6

469 Thallium
CAS No. 7440-28-0

471 Tin
CAS No. 7440-31-5

473 Tungsten
CAS No. 7440-33-7

475 Uranium
CAS No. 7440-61-1

Perchlorate and Other Anions (Special Sample: Adult Smokers & Nonsmokers)

477 Nitrate
CAS No. 84145-82-4

479 Perchlorate
CAS No. 14797-73-0

481 Thiocyanate
CAS No. 302-04-5

Polycyclic Aromatic Hydrocarbon Metabolites (Adult Cigarette Smokers & Nonsmokers: Special Sample)

483 2-Hydroxyfluorene
CAS No. 2443-58-5

485 3-Hydroxyfluorene
CAS No. 6344-67-8

487 9-Hydroxyfluorene
CAS No. 1689-64-1

489 1-Hydroxyphenanthrene
CAS No. 2433-56-9

491 2-Hydroxyphenanthrene
CAS No. 605-55-0

493 3-Hydroxyphenanthrene
CAS No. 605-87-8

495 4-Hydroxyphenanthrene
CAS No. 7657-86-7

497 1-Hydroxypyrene
CAS No. 5315-79-7

499 1-Hydroxynaphthalene (1-Naphthol)
CAS No. 90-15-3

501 2-Hydroxynaphthalene (2-Naphthol)
CAS No. 135-19-3

Volatile Organic Compound (VOC) Metabolites (Special Sample: Adult Smokers & Nonsmokers)

503 N-Acetyl-S-(2-carboxyethyl)-L-cysteine
CAS No. 51868-61-2

505 N-Acetyl-S-(3-hydroxypropyl)-L-cysteine
CAS No. 23127-40-4

507 N-Acetyl-S-(2-carbamoylethyl)-L-cysteine
CAS No. 81690-92-8

509 N-Acetyl-S-(2-carbamoyl-2-hydroxyethyl)-L-cysteine

511 N-Acetyl-S-(2-cyanoethyl)-L-cysteine
CAS No. 74514-75-3

513 N-Acetyl-S-(2-hydroxyethyl)-L-cysteine
CAS No. 15060-26-1

515 N-Acetyl-S-(phenyl)-L-cysteine
CAS No. 4775-80-8

517 N-Acetyl-S-(n-propyl)-L-cysteine

519 N-Acetyl-S-(3,4-dihydroxybutyl)-L-cysteine
CAS No. 144889-50-9

521 N-Acetyl-S-(1-hydroxymethyl-2-propenyl)-L-cysteine

523 N-Acetyl-S-(2-hydroxy-3-butenyl)-L-cysteine
CAS No. 159092-64-5

525 N-Acetyl-S-(4-hydroxy-2-butenyl)-L-cysteine
CAS No. 159092-65-6

527 2-Thioxothiazolidine-4 carboxylic acid
CAS No. 20933-67-9

529 N-Acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine
CAS No. 33164-70-4

531 2-Aminothiazoline-4-carboxylic acid
CAS No. 40283-41-8

533 N-Acetyl-S-(N-methylcarbamoyl)-L-cysteine
CAS No. 103974-29-4

535 Phenylglyoxylic acid
CAS No. 611-73-4

537 N-Acetyl-S-(2-hydroxypropyl)-L-cysteine
CAS No. 923-43-3

539 N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine

541 Mandelic acid
CAS No. 90-64-2, 611-71-2 (R), 17199-29-0 (S)

543 N-Acetyl-S-(trichlorovinyl)-L-cysteine
CAS No. 111348-61-9

545 N-Acetyl-S-(benzyl)-L-cysteine
CAS No. 19542-77-9

547 N-Acetyl-S-(1,2-dichlorovinyl)-L-cysteine
CAS No. 2148-31-4

549 N-Acetyl-S-(2,2-dichlorovinyl)-L-cysteine
CAS No. 126543-43-9

551 N-Acetyl-S-(dimethylphenyl)-L-cysteine

553 2-Methylhippuric acid
CAS No. 42013-20-7

555 3- & 4-Methylhippuric acid
CAS No. 27115-49-7, 27115-50-0

Appendices

557 Appendix C

563 Appendix D

Special Analysis of Pooled Samples for Select Chemicals

Background

In the National Biomonitoring Program, the decision to pool samples before making chemical measurements has been driven by at least two factors:

- 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*

This release of the *Updated Tables* includes NHANES 2005-2006 and 2007-2008 results for chemicals that were measured in samples created from pools of serum samples. The historical data tables for these chemicals with results for NHANES survey periods prior to 2005-2006 are included and show results for individual sample measurements. Each historical data table is presented before its corresponding pooled sample data table. PCBs 114 and 123 and the brominated flame retardant BDE 209 were not measured prior to NHANES 2005-2006; therefore, for these chemicals only the pooled data tables are presented. In addition, five organochlorine pesticides were not measured after NHANES 2003-2004, so there are no pooled data tables for these chemicals.

Overview of Sample Pooling

Beginning with NHANES 2005-2006, the CDC is using 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)

http://www.ncbi.nlm.nih.gov/pubmed/17618673

Characterizing populations of individuals using pooled samples (2010)

http://www.ncbi.nlm.nih.gov/pubmed/19002216

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

http://www.ncbi.nlm.nih.gov/pubmed/22492247

Estimation of exposure distributions from pooled samples (2014)

http://www.ncbi.nlm.nih.gov/pubmed/25213192

Confidence interval estimation of pooled sample results from a complex survey design (2015)

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4648671/

Serum Aldrin (lipid adjusted) (2001-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2275
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1946
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	756
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	588
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1519
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1358
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1057
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	946
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1218
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1000
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	559
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	456
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	512
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	485
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1045
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	881

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 5.94 and 7.8.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Aldrin (whole weight) (2001-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2275
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1946
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	756
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	588
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1519
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1358
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1057
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	946
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1218
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1000
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	559
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	456
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	512
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	485
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1045
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	881

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Dieldrin (lipid adjusted) (2001-2004)

Also a Metabolite of Aldrin

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**15.3** (14.5-17.4)	**20.3** (18.7-22.4)	2159
	03-04	*	**< LOD**	**9.00** (8.40-9.90)	**14.4** (12.1-16.4)	**19.0** (15.8-24.2)	1952
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	716
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**9.10** (<LOD-16.4)	587
20 years and older	01-02	*	**< LOD**	**10.5** (<LOD-11.6)	**16.6** (15.1-18.2)	**21.3** (19.1-24.0)	1443
	03-04	*	**< LOD**	**9.50** (8.80-10.4)	**14.9** (12.8-17.0)	**19.5** (16.0-25.7)	1365
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**15.7** (14.4-18.7)	**20.3** (18.6-24.0)	1007
	03-04	*	**< LOD**	**9.30** (8.40-10.8)	**15.1** (13.1-19.1)	**21.9** (14.9-38.5)	954
Females	01-02	*	**< LOD**	**< LOD**	**15.3** (13.4-17.2)	**19.8** (18.0-21.6)	1152
	03-04	*	**< LOD**	**8.70** (7.80-9.50)	**12.8** (11.2-15.4)	**16.9** (13.9-22.4)	998
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**11.7** (<LOD-15.1)	**15.4** (12.7-19.1)	539
	03-04	*	**< LOD**	**< LOD**	**10.8** (9.00-14.1)	**14.0** (10.6-24.1)	456
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**15.0** (11.8-19.1)	**20.6** (15.8-25.2)	484
	03-04	*	**< LOD**	**8.80** (<LOD-10.1)	**13.0** (10.5-15.8)	**15.9** (13.3-21.5)	487
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**15.6** (14.8-17.8)	**21.1** (18.9-23.6)	980
	03-04	*	**< LOD**	**9.30** (8.60-10.2)	**14.9** (12.5-17.5)	**19.7** (15.6-33.4)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 7.8.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Dieldrin (whole weight) (2001-2004)

Metabolite of Aldrin

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**.110** (.100-.120)	**.150** (.130-.170)	2159
	03-04	*	**< LOD**	**.059** (.054-.064)	**.098** (.083-.112)	**.138** (.109-.177)	1952
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	716
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.048** (<LOD-.093)	587
20 years and older	01-02	*	**< LOD**	**.070** (<LOD-.080)	**.120** (.110-.130)	**.160** (.140-.180)	1443
	03-04	*	**< LOD**	**.062** (.056-.069)	**.102** (.088-.117)	**.139** (.112-.182)	1365
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**.120** (.100-.130)	**.160** (.130-.190)	1007
	03-04	*	**< LOD**	**.064** (.054-.075)	**.109** (.084-.138)	**.147** (.108-.242)	954
Females	01-02	*	**< LOD**	**< LOD**	**.100** (.090-.110)	**.140** (.120-.160)	1152
	03-04	*	**< LOD**	**.055** (.049-.060)	**.089** (.077-.100)	**.110** (.096-.147)	998
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**.090** (<LOD-.100)	**.120** (.090-.140)	539
	03-04	*	**< LOD**	**< LOD**	**.077** (.062-.116)	**.113** (.073-.158)	456
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**.090** (.070-.110)	**.130** (.090-.190)	484
	03-04	*	**< LOD**	**.053** (<LOD-.058)	**.080** (.063-.101)	**.103** (.080-.149)	487
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**.110** (.100-.130)	**.150** (.130-.180)	980
	03-04	*	**< LOD**	**.062** (.054-.070)	**.103** (.086-.124)	**.139** (.109-.202)	885

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Endrin (lipid adjusted) (2001-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**5.10** (<LOD-5.40)	2187
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1825
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**5.20** (<LOD-5.50)	**5.60** (5.40-5.70)	730
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	539
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1457
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1286
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**5.20** (<LOD-5.40)	1022
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	885
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1165
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	940
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**5.30** (<LOD-6.50)	547
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	433
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**5.40** (<LOD-6.30)	487
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	446
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**5.10** (<LOD-5.40)	1000
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	831

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 5.09 and 7.8.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Endrin (whole weight) (2001-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.020** (<LOD-.020)	2187
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1825
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**.020** (<LOD-.020)	**.020** (.020-.020)	730
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	539
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1457
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1286
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.020** (<LOD-.020)	1022
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	885
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1165
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	940
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.020** (<LOD-.020)	547
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	433
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.020** (<LOD-.020)	487
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	446
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.020** (<LOD-.020)	1000
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	831

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Heptachlor epoxide (lipid adjusted) (1999-2004)

Metabolite of Heptachlor

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**15.4** (<LOD-19.8)	**24.0** (15.1-38.8)	1589
	01-02	*	**< LOD**	**< LOD**	**14.8** (13.0-17.8)	**21.8** (18.2-27.3)	2259
	03-04	*	**< LOD**	**< LOD**	**13.4** (11.1-15.9)	**18.9** (15.9-23.0)	1963
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	638
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	741
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	592
20 years and older	99-00	*	**< LOD**	**< LOD**	**17.8** (<LOD-23.9)	**27.1** (16.8-46.1)	951
	01-02	*	**< LOD**	**< LOD**	**15.7** (13.7-18.8)	**23.1** (19.1-29.1)	1518
	03-04	*	**< LOD**	**8.20** (<LOD-9.50)	**14.5** (11.6-17.6)	**20.6** (16.8-24.0)	1371
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**19.6** (<LOD-27.2)	760
	01-02	*	**< LOD**	**< LOD**	**13.9** (12.0-17.8)	**20.8** (15.9-25.3)	1047
	03-04	*	**< LOD**	**< LOD**	**13.4** (11.2-16.4)	**18.6** (16.6-21.3)	956
Females	99-00	*	**< LOD**	**< LOD**	**18.2** (<LOD-25.2)	**27.7** (16.0-54.3)	829
	01-02	*	**< LOD**	**< LOD**	**15.6** (13.3-18.2)	**23.2** (18.9-29.8)	1212
	03-04	*	**< LOD**	**< LOD**	**13.5** (11.0-16.8)	**19.6** (14.8-24.5)	1007
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**15.3** (<LOD-25.6)	**22.2** (<LOD-62.3)	598
	01-02	*	**< LOD**	**< LOD**	**13.2** (<LOD-16.3)	**16.8** (13.8-23.1)	553
	03-04	*	**< LOD**	**< LOD**	**10.6** (8.10-13.5)	**13.7** (10.9-16.5)	460
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**19.5** (<LOD-32.4)	336
	01-02	*	**< LOD**	**< LOD**	**14.6** (11.7-19.0)	**21.5** (18.2-27.3)	503
	03-04	*	**< LOD**	**< LOD**	**13.5** (10.1-16.8)	**18.6** (12.7-25.2)	490
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**16.5** (<LOD-21.8)	**26.4** (<LOD-54.3)	539
	01-02	*	**< LOD**	**< LOD**	**15.3** (13.0-19.6)	**22.8** (18.9-29.8)	1041
	03-04	*	**< LOD**	**7.90** (<LOD-9.40)	**14.0** (11.2-17.6)	**20.4** (15.8-24.5)	888

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.6, 10.5, and 7.8, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Heptachlor epoxide (whole weight) (1999-2004)

Metabolite of Heptachlor

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**.110** (<LOD-.140)	**.180** (.110-.220)	1589
	01-02	*	**< LOD**	**< LOD**	**.100** (.090-.120)	**.150** (.130-.180)	2259
	03-04	*	**< LOD**	**< LOD**	**.094** (.076-.108)	**.128** (.108-.161)	1963
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	638
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	741
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	592
20 years and older	99-00	*	**< LOD**	**< LOD**	**.130** (<LOD-.170)	**.190** (.130-.270)	951
	01-02	*	**< LOD**	**< LOD**	**.110** (.090-.140)	**.170** (.140-.190)	1518
	03-04	*	**< LOD**	**.057** (<LOD-.063)	**.101** (.082-.116)	**.135** (.113-.173)	1371
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.150** (<LOD-.180)	760
	01-02	*	**< LOD**	**< LOD**	**.100** (.090-.120)	**.150** (.110-.180)	1047
	03-04	*	**< LOD**	**< LOD**	**.094** (.077-.111)	**.126** (.106-.149)	956
Females	99-00	*	**< LOD**	**< LOD**	**.120** (<LOD-.190)	**.200** (.120-.310)	829
	01-02	*	**< LOD**	**< LOD**	**.100** (.090-.130)	**.170** (.130-.200)	1212
	03-04	*	**< LOD**	**< LOD**	**.096** (.071-.108)	**.133** (.107-.173)	1007
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**.100** (<LOD-.170)	**.170** (<LOD-.380)	598
	01-02	*	**< LOD**	**< LOD**	**.090** (<LOD-.110)	**.120** (.100-.240)	553
	03-04	*	**< LOD**	**< LOD**	**.069** (.053-.097)	**.098** (.074-.113)	460
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.110** (<LOD-.200)	336
	01-02	*	**< LOD**	**< LOD**	**.090** (.070-.110)	**.130** (.100-.180)	503
	03-04	*	**< LOD**	**< LOD**	**.087** (.067-.104)	**.110** (.090-.157)	490
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**.120** (<LOD-.170)	**.180** (<LOD-.310)	539
	01-02	*	**< LOD**	**< LOD**	**.100** (.090-.130)	**.170** (.130-.190)	1041
	03-04	*	**< LOD**	**.055** (<LOD-.063)	**.101** (.077-.117)	**.135** (.111-.180)	888

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

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

Serum Oxychlordane (lipid adjusted) (1999-2004)

Metabolite of Chlordane

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**20.8** (17.8-23.0)	**34.4** (30.5-38.6)	**44.8** (40.2-49.6)	1661
	01-02	**11.4** (<LOD-12.5)	**11.1** (<LOD-12.5)	**21.7** (19.3-24.4)	**36.4** (31.5-41.4)	**49.7** (42.0-61.2)	2249
	03-04	**9.37** (8.69-10.1)	**10.3** (9.20-11.0)	**18.0** (16.8-20.1)	**29.0** (26.8-32.1)	**37.7** (34.8-43.8)	1978
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	663
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**11.5** (<LOD-12.6)	752
	03-04	*	**< LOD**	**< LOD**	**9.20** (<LOD-11.5)	**11.5** (8.10-18.9)	595
20 years and older	99-00	*	**< LOD**	**23.3** (21.0-25.9)	**37.7** (32.3-43.5)	**47.7** (43.1-50.8)	998
	01-02	**12.9** (11.7-14.3)	**13.3** (11.4-14.9)	**23.9** (21.2-26.7)	**38.5** (33.4-45.9)	**53.1** (44.1-65.9)	1497
	03-04	**10.6** (9.82-11.5)	**11.4** (10.6-12.4)	**19.9** (17.9-21.5)	**31.3** (28.8-33.2)	**39.2** (36.5-44.8)	1383
Gender							
Males	99-00	*	**< LOD**	**18.1** (16.1-19.6)	**31.3** (25.9-38.2)	**42.4** (35.3-49.6)	793
	01-02	**11.1** (<LOD-12.6)	**11.1** (<LOD-12.6)	**20.6** (16.6-24.9)	**33.1** (27.5-43.8)	**48.1** (40.2-56.9)	1049
	03-04	**9.10** (8.20-10.1)	**9.90** (8.30-11.2)	**17.1** (15.6-18.4)	**27.6** (25.3-32.2)	**36.0** (32.7-39.2)	963
Females	99-00	*	**< LOD**	**22.3** (20.1-25.9)	**36.9** (31.5-40.3)	**46.2** (39.1-51.8)	868
	01-02	**11.7** (10.7-12.7)	**11.0** (<LOD-12.9)	**23.1** (20.7-25.0)	**37.5** (34.5-42.1)	**52.8** (42.7-70.0)	1200
	03-04	**9.63** (8.89-10.4)	**10.6** (9.10-11.3)	**20.1** (17.4-21.7)	**30.3** (27.5-32.7)	**41.9** (36.3-45.5)	1015
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**16.3** (<LOD-19.9)	**28.9** (18.8-42.0)	**39.9** (26.8-61.0)	628
	01-02	*	**< LOD**	**13.9** (11.0-18.4)	**27.2** (21.0-33.1)	**37.9** (29.9-42.0)	557
	03-04	*	**< LOD**	**12.8** (10.1-15.8)	**22.9** (15.8-31.4)	**31.4** (22.4-51.6)	462
Non-Hispanic blacks	99-00	*	**< LOD**	**18.7** (<LOD-32.2)	**39.9** (26.5-47.3)	**48.6** (43.5-65.5)	350
	01-02	**11.7** (<LOD-13.6)	**< LOD**	**22.8** (17.2-28.3)	**41.4** (30.6-53.7)	**56.5** (41.8-73.5)	501
	03-04	**8.74** (<LOD-10.2)	**8.70** (<LOD-10.6)	**18.9** (15.9-21.5)	**35.1** (25.4-40.2)	**44.2** (37.7-56.8)	493
Non-Hispanic whites	99-00	*	**< LOD**	**21.8** (18.6-24.6)	**34.2** (28.9-40.9)	**44.0** (37.2-49.8)	559
	01-02	**12.1** (11.0-13.3)	**11.8** (10.5-13.9)	**23.0** (20.1-25.7)	**37.5** (31.6-45.1)	**52.2** (41.0-67.4)	1031
	03-04	**10.2** (9.36-11.1)	**11.2** (10.0-12.1)	**19.7** (17.2-21.7)	**30.3** (26.8-33.6)	**37.7** (34.3-45.5)	898

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.5, 10.5, and 7.8, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (lipid adjusted) (2005 - 2008)

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.

See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**4.80**	1.1	9
		07-08	**3.52**	0.52	6
	20-39	05-06	**6.50**	1.06	12
		07-08	**6.93**	0.75	15
	40-59	05-06	**14.9**	1.4	12
		07-08	**12.1**	0.5	16
	60+	05-06	**25.4**	2.5	15
		07-08	**26.1**	1.4	23
Non-Hispanic White Female	12-19	05-06	**2.98**	0.3	10
		07-08	**3.66**	0.74	7
	20-39	05-06	**5.64**	0.56	16
		07-08	**5.79**	0.51	13
	40-59	05-06	**13.7**	1	13
		07-08	**11.8**	0.8	17
	60+	05-06	**28.9**	2.6	17
		07-08	**31.8**	2.3	21
Non-Hispanic Black Male	12-19	05-06	**4.08**	0.49	13
		07-08	**2.80**	0.75	6
	20-39	05-06	**4.53**	0.9	6
		07-08	**5.72**	0.28	6
	40-59	05-06	**12.0**	1	5
		07-08	**12.1**	1.1	6
	60+	05-06	**32.7**	5.3	5
		07-08	**26.6**	2.5	8
Non-Hispanic Black Female	12-19	05-06	**2.92**	0.31	14
		07-08	*	*	5
	20-39	05-06	**5.56**	0.68	7
		07-08	**4.45**	0.79	8
	40-59	05-06	**14.5**	0.8	7
		07-08	**14.3**	1	8
	60+	05-06	**52.9**	11.7	5
		07-08	**38.1**	1.7	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.46 and 1.4.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**2.54**	0.33	11
		07-08	**2.76**	0.45	6
	20-39	05-06	**5.84**	1.22	9
		07-08	**4.93**	0.38	9
	40-59	05-06	**11.0**	1.4	4
		07-08	**12.0**	0.7	6
	60+	05-06	**18.6**	2.4	4
		07-08	**21.9**	2.2	5
Mexican American Female	12-19	05-06	**2.39**	0.25	16
		07-08	*	*	5
	20-39	05-06	**4.39**	0.5	9
		07-08	**4.17**	0.55	8
	40-59	05-06	**13.7**	1.8	6
		07-08	**13.4**	2.2	6
	60+	05-06	**27.4**	3.8	3
		07-08	**28.2**	4.3	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.46 and 1.4.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (whole weight) (1999-2004)

Metabolite of Chlordane

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**.140** (.120-.150)	**.260** (.200-.290)	**.310** (.290-.340)	1661
	01-02	**.070** (<LOD-.077)	**.070** (<LOD-.080)	**.140** (.130-.160)	**.250** (.220-.300)	**.350** (.290-.440)	2249
	03-04	**.057** (.053-.062)	**.063** (.058-.068)	**.119** (.106-.133)	**.204** (.189-.213)	**.269** (.246-.291)	1978
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	663
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.060** (<LOD-.070)	752
	03-04	*	**< LOD**	**< LOD**	**.047** (<LOD-.063)	**.066** (.048-.092)	595
20 years and older	99-00	*	**< LOD**	**.150** (.140-.180)	**.280** (.230-.300)	**.330** (.300-.400)	998
	01-02	**.082** (.074-.091)	**.080** (.070-.090)	**.160** (.140-.180)	**.270** (.230-.320)	**.370** (.310-.450)	1497
	03-04	**.067** (.061-.073)	**.073** (.066-.079)	**.130** (.115-.146)	**.210** (.203-.227)	**.286** (.258-.320)	1383
Gender							
Males	99-00	*	**< LOD**	**.120** (.100-.140)	**.220** (.180-.280)	**.300** (.260-.340)	793
	01-02	**.069** (<LOD-.079)	**.070** (<LOD-.080)	**.130** (.120-.160)	**.230** (.190-.300)	**.320** (.250-.430)	1049
	03-04	**.056** (.050-.063)	**.063** (.055-.076)	**.115** (.100-.126)	**.189** (.168-.207)	**.258** (.216-.302)	963
Females	99-00	*	**< LOD**	**.140** (.130-.170)	**.270** (.200-.310)	**.320** (.290-.400)	868
	01-02	**.071** (.065-.077)	**.070** (<LOD-.080)	**.150** (.130-.160)	**.260** (.230-.310)	**.370** (.280-.510)	1200
	03-04	**.058** (.053-.064)	**.063** (.057-.068)	**.126** (.104-.146)	**.208** (.199-.231)	**.286** (.245-.331)	1015
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**.100** (<LOD-.130)	**.210** (.130-.320)	**.290** (.190-.410)	628
	01-02	*	**< LOD**	**.100** (.070-.130)	**.200** (.150-.240)	**.280** (.210-.360)	557
	03-04	*	**< LOD**	**.083** (.066-.104)	**.149** (.108-.230)	**.230** (.148-.373)	462
Non-Hispanic blacks	99-00	*	**< LOD**	**.110** (<LOD-.170)	**.240** (.170-.290)	**.320** (.240-.430)	350
	01-02	**.066** (<LOD-.077)	**< LOD**	**.130** (.090-.170)	**.260** (.180-.350)	**.350** (.240-.560)	501
	03-04	**.049** (<LOD-.057)	**.050** (<LOD-.062)	**.112** (.087-.136)	**.225** (.165-.287)	**.315** (.253-.348)	493
Non-Hispanic whites	99-00	*	**< LOD**	**.140** (.120-.170)	**.270** (.200-.300)	**.320** (.280-.380)	559
	01-02	**.075** (.068-.083)	**.080** (.070-.090)	**.150** (.130-.170)	**.250** (.220-.310)	**.370** (.280-.450)	1031
	03-04	**.063** (.058-.070)	**.070** (.063-.077)	**.128** (.110-.148)	**.207** (.190-.223)	**.271** (.242-.315)	898

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.026**	0.006	9
		07-08	**.018**	0.003	6
	20-39	05-06	**.049**	0.01	12
		07-08	**.047**	0.006	15
	40-59	05-06	**.113**	0.013	12
		07-08	**.089**	0.005	16
	60+	05-06	**.171**	0.015	15
		07-08	**.167**	0.009	23
Non-Hispanic White Female	12-19	05-06	**.016**	0.002	10
		07-08	**.017**	0.004	7
	20-39	05-06	**.037**	0.004	16
		07-08	**.035**	0.003	13
	40-59	05-06	**.101**	0.01	13
		07-08	**.079**	0.006	17
	60+	05-06	**.210**	0.017	17
		07-08	**.214**	0.017	21
Non-Hispanic Black Male	12-19	05-06	**.020**	0.002	13
		07-08	**.013**	0.003	6
	20-39	05-06	**.027**	0.005	6
		07-08	**.032**	0.002	6
	40-59	05-06	**.076**	0.006	5
		07-08	**.077**	0.007	6
	60+	05-06	**.193**	0.028	5
		07-08	**.162**	0.017	8
Non-Hispanic Black Female	12-19	05-06	**.014**	0.001	14
		07-08	*	*	5
	20-39	05-06	**.032**	0.004	7
		07-08	**.022**	0.004	8
	40-59	05-06	**.093**	0.006	7
		07-08	**.086**	0.008	8
	60+	05-06	**.347**	0.067	5
		07-08	**.229**	0.012	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum Oxychlordane (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.014**	0.002	11
		07-08	**.014**	0.002	6
	20-39	05-06	**.041**	0.007	9
		07-08	**.034**	0.004	9
	40-59	05-06	**.089**	0.014	4
		07-08	**.087**	0.009	6
	60+	05-06	**.137**	0.025	4
		07-08	**.156**	0.011	5
Mexican American Female	12-19	05-06	**.013**	0.001	16
		07-08	*	*	5
	20-39	05-06	**.029**	0.003	9
		07-08	**.024**	0.004	8
	40-59	05-06	**.100**	0.011	6
		07-08	**.090**	0.014	6
	60+	05-06	**.208**	0.035	3
		07-08	**.193**	0.03	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum *trans*-Nonachlor (lipid adjusted) (1999-2004)

Metabolite of Chlordane

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	**18.3** (16.7-20.0)	**17.9** (16.1-20.1)	**31.9** (28.9-36.0)	**55.1** (48.4-62.6)	**79.4** (67.6-88.1)	1933
	01-02	**17.0** (15.2-18.9)	**17.9** (15.5-20.5)	**33.7** (30.2-37.2)	**56.3** (49.6-66.0)	**78.2** (64.0-113)	2286
	03-04	**14.7** (13.1-16.5)	**14.8** (13.5-17.0)	**30.2** (26.7-32.5)	**49.0** (42.6-54.7)	**68.3** (58.6-82.3)	1955
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**18.8** (<LOD-20.6)	**25.2** (19.1-28.4)	664
	01-02	*	**< LOD**	**< LOD**	**13.4** (11.8-16.4)	**19.2** (15.2-23.5)	758
	03-04	*	**< LOD**	**8.70** (<LOD-12.5)	**16.1** (10.7-23.7)	**22.6** (16.1-34.6)	589
20 years and older	99-00	**20.8** (19.0-22.8)	**20.7** (18.0-23.5)	**35.4** (30.9-40.3)	**59.9** (51.8-67.6)	**82.7** (74.9-89.6)	1269
	01-02	**19.8** (17.6-22.3)	**20.9** (19.0-23.1)	**36.6** (32.8-41.1)	**60.6** (52.5-69.9)	**84.9** (66.0-123)	1528
	03-04	**16.9** (15.1-18.9)	**17.3** (14.6-20.0)	**31.8** (28.9-35.3)	**51.4** (45.9-58.6)	**74.7** (59.8-90.0)	1366
Gender							
Males	99-00	**17.7** (16.5-19.1)	**17.2** (14.9-20.1)	**30.2** (27.7-34.2)	**51.1** (47.3-58.6)	**78.2** (60.2-88.1)	922
	01-02	**17.0** (14.8-19.5)	**18.3** (14.8-21.1)	**34.4** (28.3-39.3)	**54.8** (45.0-68.9)	**78.2** (59.7-113)	1062
	03-04	**14.8** (12.7-17.3)	**14.6** (12.2-18.0)	**30.8** (26.7-35.3)	**51.0** (42.0-59.4)	**68.6** (56.0-93.8)	955
Females	99-00	**18.8** (16.7-21.1)	**18.4** (16.1-22.2)	**32.9** (29.0-38.3)	**59.0** (48.4-67.6)	**80.8** (71.5-95.5)	1011
	01-02	**17.0** (15.4-18.7)	**17.6** (15.0-20.3)	**32.8** (30.4-36.7)	**56.9** (51.9-65.5)	**78.1** (65.5-111)	1224
	03-04	**14.5** (13.1-16.1)	**15.0** (13.8-16.3)	**28.2** (25.3-32.8)	**48.1** (41.4-52.7)	**68.3** (56.8-79.9)	1000
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**25.1** (22.7-29.5)	**40.7** (35.1-51.8)	**56.3** (45.8-77.2)	650
	01-02	**11.9** (<LOD-14.6)	**10.6** (<LOD-14.5)	**26.0** (19.3-30.4)	**47.9** (36.3-57.2)	**59.8** (49.3-74.1)	558
	03-04	**10.2** (7.86-13.2)	**9.10** (<LOD-11.1)	**20.7** (11.1-34.7)	**39.5** (25.9-65.5)	**62.2** (36.0-93.4)	457
Non-Hispanic blacks	99-00	**20.3** (17.0-24.1)	**17.5** (15.4-23.5)	**35.7** (28.9-45.5)	**77.0** (60.8-90.7)	**107** (84.0-143)	404
	01-02	**18.8** (15.4-22.9)	**19.2** (14.7-22.0)	**36.8** (28.3-50.5)	**73.6** (50.8-110)	**112** (68.7-160)	514
	03-04	**14.4** (12.2-17.0)	**13.8** (11.2-16.3)	**30.8** (26.5-36.1)	**59.9** (47.7-77.7)	**86.6** (56.8-129)	486
Non-Hispanic whites	99-00	**19.1** (17.2-21.1)	**19.0** (16.9-22.2)	**32.8** (28.0-37.6)	**52.5** (44.9-64.4)	**74.0** (62.3-86.7)	722
	01-02	**17.5** (15.6-19.7)	**19.0** (16.3-21.1)	**34.0** (29.7-38.1)	**55.5** (45.9-69.4)	**78.7** (59.1-126)	1052
	03-04	**15.8** (13.7-18.2)	**16.0** (13.8-19.3)	**30.8** (26.4-35.0)	**48.8** (42.1-55.7)	**67.6** (57.5-87.3)	889

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.5, 10.5, and 7.8, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum *trans*-Nonachlor (lipid adjusted) (2005 - 2008)

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.

See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	****9.03**	2.84	9
		07-08	**6.06**	1.08	6
	20-39	05-06	**11.3**	2	12
		07-08	**11.1**	1.5	15
	40-59	05-06	**26.9**	3.9	12
		07-08	**21.5**	1.2	16
	60+	05-06	**49.4**	7.9	15
		07-08	**50.6**	4.2	23
Non-Hispanic White Female	12-19	05-06	**4.94**	0.52	10
		07-08	**6.70**	0.89	7
	20-39	05-06	**9.70**	1.44	16
		07-08	**8.95**	0.97	13
	40-59	05-06	**21.8**	2.3	13
		07-08	**16.4**	1.5	17
	60+	05-06	**50.2**	6.1	17
		07-08	**51.7**	6.1	21
Non-Hispanic Black Male	12-19	05-06	**6.50**	0.67	13
		07-08	**4.71**	0.65	6
	20-39	05-06	**8.24**	0.86	6
		07-08	**8.87**	0.97	6
	40-59	05-06	**22.0**	2.6	5
		07-08	**21.7**	2.1	6
	60+	05-06	**66.4**	13.2	5
		07-08	**54.4**	4.9	8
Non-Hispanic Black Female	12-19	05-06	**4.44**	0.54	14
		07-08	****3.39**	1.18	5
	20-39	05-06	**9.32**	1.22	7
		07-08	**6.42**	0.6	8
	40-59	05-06	**24.1**	1.5	7
		07-08	**20.4**	1.7	8
	60+	05-06	**89.0**	15.4	5
		07-08	**68.0**	3.9	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.77 and 1.4.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum *trans*-Nonachlor (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**3.71**	0.49	11
		07-08	**3.91**	0.81	6
	20-39	05-06	**7.58**	0.75	9
		07-08	**8.43**	0.97	9
	40-59	05-06	**18.8**	2.4	4
		07-08	**24.5**	2.9	6
	60+	05-06	**30.7**	6.3	4
		07-08	**40.3**	4.5	5
Mexican American Female	12-19	05-06	**3.53**	0.23	16
		07-08	*	*	5
	20-39	05-06	**6.40**	0.75	9
		07-08	**7.55**	0.9	8
	40-59	05-06	**18.5**	1.7	6
		07-08	**22.6**	4.4	6
	60+	05-06	**46.4**	9.8	3
		07-08	**46.9**	8	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.77 and 1.4.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum *trans*-Nonachlor (whole weight) (1999-2004)

Metabolite of Chlordane

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	**.109** (.099-.119)	**.110** (.090-.120)	**.210** (.190-.240)	**.370** (.330-.420)	**.550** (.470-.630)	1933
	01-02	**.104** (.093-.116)	**.110** (.100-.120)	**.220** (.190-.250)	**.390** (.330-.480)	**.590** (.430-.800)	2286
	03-04	**.089** (.080-.100)	**.094** (.084-.108)	**.191** (.171-.211)	**.324** (.290-.371)	**.470** (.410-.558)	1955
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**.090** (<LOD-.110)	**.120** (.100-.130)	664
	01-02	*	**< LOD**	**< LOD**	**.070** (.060-.080)	**.090** (.080-.130)	758
	03-04	*	**< LOD**	**.041** (<LOD-.060)	**.081** (.054-.117)	**.109** (.081-.161)	589
20 years and older	99-00	**.128** (.116-.141)	**.130** (.110-.150)	**.230** (.210-.260)	**.400** (.360-.460)	**.580** (.490-.690)	1269
	01-02	**.125** (.111-.141)	**.130** (.120-.150)	**.240** (.210-.280)	**.420** (.350-.540)	**.640** (.470-.840)	1528
	03-04	**.106** (.095-.119)	**.112** (.096-.127)	**.210** (.186-.237)	**.355** (.301-.405)	**.520** (.430-.594)	1366
Gender							
Males	99-00	**.106** (.098-.114)	**.100** (.090-.120)	**.210** (.180-.220)	**.350** (.310-.400)	**.520** (.400-.630)	922
	01-02	**.105** (.091-.122)	**.110** (.090-.130)	**.220** (.190-.260)	**.380** (.310-.500)	**.580** (.390-.830)	1062
	03-04	**.092** (.079-.108)	**.098** (.085-.126)	**.202** (.177-.232)	**.343** (.285-.395)	**.458** (.395-.594)	955
Females	99-00	**.111** (.099-.125)	**.110** (.090-.130)	**.220** (.190-.250)	**.390** (.310-.460)	**.580** (.460-.690)	1011
	01-02	**.103** (.093-.113)	**.110** (.090-.120)	**.220** (.180-.240)	**.400** (.340-.450)	**.590** (.430-.830)	1224
	03-04	**.087** (.078-.097)	**.092** (.079-.098)	**.183** (.161-.210)	**.317** (.286-.367)	**.470** (.409-.565)	1000
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**.170** (.120-.210)	**.310** (.240-.340)	**.390** (.320-.520)	650
	01-02	**.071** (<LOD-.091)	**.060** (<LOD-.090)	**.160** (.120-.210)	**.330** (.270-.390)	**.470** (.360-.590)	558
	03-04	**.062** (.047-.082)	**.055** (<LOD-.069)	**.135** (.069-.237)	**.288** (.158-.559)	**.414** (.279-.651)	457
Non-Hispanic blacks	99-00	**.112** (.093-.134)	**.100** (.080-.130)	**.220** (.180-.300)	**.490** (.340-.600)	**.760** (.510-.960)	404
	01-02	**.106** (.085-.131)	**.110** (.080-.130)	**.220** (.160-.310)	**.490** (.320-.680)	**.680** (.410-1.20)	514
	03-04	**.080** (.068-.096)	**.078** (.061-.093)	**.186** (.145-.242)	**.417** (.272-.565)	**.573** (.497-.684)	486
Non-Hispanic whites	99-00	**.116** (.104-.129)	**.120** (.100-.140)	**.220** (.190-.240)	**.370** (.300-.440)	**.510** (.440-.630)	722
	01-02	**.108** (.096-.122)	**.120** (.100-.130)	**.220** (.190-.250)	**.390** (.310-.490)	**.600** (.400-.930)	1052
	03-04	**.098** (.085-.113)	**.103** (.090-.124)	**.205** (.173-.234)	**.327** (.288-.390)	**.461** (.397-.576)	889

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum *trans*-Nonachlor (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	****.048**	0.015	9
		07-08	**.030**	0.005	6
	20-39	05-06	**.086**	0.019	12
		07-08	**.076**	0.011	15
	40-59	05-06	**.206**	0.034	12
		07-08	**.159**	0.012	16
	60+	05-06	**.331**	0.049	15
		07-08	**.325**	0.028	23
Non-Hispanic White Female	12-19	05-06	**.026**	0.003	10
		07-08	**.031**	0.004	7
	20-39	05-06	**.063**	0.01	16
		07-08	**.054**	0.007	13
	40-59	05-06	**.161**	0.019	13
		07-08	**.108**	0.009	17
	60+	05-06	**.362**	0.04	17
		07-08	**.352**	0.045	21
Non-Hispanic Black Male	12-19	05-06	**.032**	0.003	13
		07-08	**.022**	0.003	6
	20-39	05-06	**.049**	0.006	6
		07-08	**.050**	0.006	6
	40-59	05-06	**.140**	0.014	5
		07-08	**.138**	0.013	6
	60+	05-06	**.390**	0.071	5
		07-08	**.331**	0.032	8
Non-Hispanic Black Female	12-19	05-06	**.022**	0.003	14
		07-08	****.016**	0.005	5
	20-39	05-06	**.054**	0.007	7
		07-08	**.032**	0.003	8
	40-59	05-06	**.154**	0.009	7
		07-08	**.124**	0.012	8
	60+	05-06	**.588**	0.088	5
		07-08	**.409**	0.027	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum *trans*-Nonachlor (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.020**	0.002	11
		07-08	**.020**	0.004	6
	20-39	05-06	**.054**	0.005	9
		07-08	**.058**	0.008	9
	40-59	05-06	**.153**	0.022	4
		07-08	**.176**	0.024	6
	60+	05-06	**.228**	0.06	4
		07-08	**.289**	0.028	5
Mexican American Female	12-19	05-06	**.019**	0.001	16
		07-08	*	*	5
	20-39	05-06	**.042**	0.005	9
		07-08	**.044**	0.006	8
	40-59	05-06	**.135**	0.011	6
		07-08	**.151**	0.029	6
	60+	05-06	**.360**	0.095	3
		07-08	**.323**	0.058	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/ChlordaneHeptachlor_FactSheet.html

Serum *p,p'*-Dichlorodiphenyltrichloroethane (DDT) (lipid adjusted) (1999-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**28.0** (21.9-34.0)	1679
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**26.6** (22.5-36.0)	2305
	03-04	*	**< LOD**	**< LOD**	**11.9** (10.0-15.1)	**19.5** (15.1-27.5)	1965
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	677
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	756
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**9.10** (<LOD-12.2)	595
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**30.5** (23.0-37.3)	1002
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**28.1** (23.8-39.0)	1549
	03-04	*	**< LOD**	**< LOD**	**12.9** (10.3-16.5)	**20.7** (15.9-28.7)	1370
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**25.1** (<LOD-39.3)	799
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**21.6** (<LOD-25.8)	1073
	03-04	*	**< LOD**	**< LOD**	**10.6** (9.10-13.7)	**15.2** (11.8-26.9)	959
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**29.4** (23.0-35.8)	880
	01-02	*	**< LOD**	**< LOD**	**18.3** (<LOD-21.9)	**36.6** (25.5-54.3)	1232
	03-04	*	**< LOD**	**< LOD**	**14.0** (10.8-17.5)	**21.0** (18.0-27.8)	1006
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**61.3** (27.0-155)	**155** (59.3-590)	635
	01-02	*	**< LOD**	**< LOD**	**83.1** (33.3-236)	**293** (104-541)	566
	03-04	*	**< LOD**	**8.90** (<LOD-12.9)	**24.0** (18.6-33.3)	**48.6** (31.1-71.1)	461
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**22.3** (<LOD-31.5)	**31.5** (23.2-65.0)	356
	01-02	*	**< LOD**	**< LOD**	**23.2** (<LOD-40.9)	**40.9** (21.2-95.8)	514
	03-04	*	**< LOD**	**9.00** (<LOD-10.4)	**17.5** (14.8-23.2)	**30.7** (19.0-53.4)	490
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	564
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**17.9** (<LOD-20.7)	1061
	03-04	*	**< LOD**	**< LOD**	**9.70** (8.50-11.2)	**12.9** (10.7-16.6)	890

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 20.7, 17.4, and 7.8, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum *p,p'*-DDT (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**2.23**	0.15	9
		07-08	*	*	6
	20-39	05-06	****10.7**	8.4	12
		07-08	**2.05**	0.37	15
	40-59	05-06	**3.79**	0.26	12
		07-08	**2.81**	0.25	16
	60+	05-06	**5.68**	0.54	15
		07-08	**4.85**	0.47	23
Non-Hispanic White Female	12-19	05-06	**2.27**	0.45	10
		07-08	*	*	7
	20-39	05-06	**2.72**	0.22	16
		07-08	*	*	13
	40-59	05-06	**3.81**	0.41	13
		07-08	**2.90**	0.23	17
	60+	05-06	**6.21**	0.41	17
		07-08	**6.37**	0.91	21
Non-Hispanic Black Male	12-19	05-06	****4.98**	1.85	13
		07-08	*	*	6
	20-39	05-06	****7.55**	3.07	6
		07-08	**1.80**	0.37	6
	40-59	05-06	****7.42**	3.13	5
		07-08	**4.68**	0.69	6
	60+	05-06	**14.9**	3.2	5
		07-08	**6.57**	0.83	8
Non-Hispanic Black Female	12-19	05-06	**2.59**	0.34	14
		07-08	*	*	5
	20-39	05-06	****14.5**	10.8	7
		07-08	*	*	8
	40-59	05-06	**7.36**	1.11	7
		07-08	**5.86**	0.51	8
	60+	05-06	****32.5**	11.5	5
		07-08	**19.3**	3	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.46 and 1.4.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum *p,p'*-DDT (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	****118**	67	11
		07-08	*	*	6
	20-39	05-06	****46.9**	16	9
		07-08	**18.6**	4.2	9
	40-59	05-06	****107**	62	4
		07-08	****14.7**	7.1	6
	60+	05-06	**7.14**	1.69	4
		07-08	****17.5**	16.1	5
Mexican American Female	12-19	05-06	****21.5**	12.2	16
		07-08	*	*	5
	20-39	05-06	****47.9**	27.9	9
		07-08	****40.4**	28	8
	40-59	05-06	****33.7**	15.9	6
		07-08	**11.8**	3.1	6
	60+	05-06	**17.3**	4.8	3
		07-08	****119**	151	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.46 and 1.4.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum *p,p'*-Dichlorodiphenyltrichloroethane (DDT) (whole weight) (1999-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.170** (.130-.220)	1679
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.180** (.160-.220)	2305
	03-04	*	**< LOD**	**< LOD**	**.078** (.065-.097)	**.128** (.098-.167)	1965
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	677
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	756
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.048** (<LOD-.069)	595
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.190** (.150-.230)	1002
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.200** (.170-.260)	1549
	03-04	*	**< LOD**	**< LOD**	**.084** (.068-.106)	**.142** (.105-.189)	1370
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.150** (<LOD-.240)	799
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.150** (<LOD-.180)	1073
	03-04	*	**< LOD**	**< LOD**	**.071** (.059-.095)	**.108** (.078-.180)	959
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.190** (.150-.230)	880
	01-02	*	**< LOD**	**< LOD**	**.130** (<LOD-.150)	**.240** (.180-.400)	1232
	03-04	*	**< LOD**	**< LOD**	**.087** (.071-.106)	**.146** (.106-.207)	1006
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**.400** (.190-1.00)	**1.00** (.330-4.26)	635
	01-02	*	**< LOD**	**< LOD**	**.530** (.250-1.34)	**1.62** (.570-4.01)	566
	03-04	*	**< LOD**	**.063** (<LOD-.079)	**.146** (.114-.203)	**.313** (.189-.627)	461
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**.120** (<LOD-.170)	**.180** (.140-.420)	356
	01-02	*	**< LOD**	**< LOD**	**.130** (<LOD-.290)	**.250** (.120-.530)	514
	03-04	*	**< LOD**	**.051** (<LOD-.061)	**.112** (.080-.143)	**.201** (.132-.343)	490
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	564
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.130** (<LOD-.140)	1061
	03-04	*	**< LOD**	**< LOD**	**.064** (.054-.075)	**.086** (.074-.107)	890

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum *p,p'*-Dichlorodiphenyltrichloroethane (DDT) (whole weight)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.012**	0.001	9
		07-08	*	*	6
	20-39	05-06	**.088	0.072	12
		07-08	**.014**	0.003	15
	40-59	05-06	**.028**	0.002	12
		07-08	**.021**	0.002	16
	60+	05-06	**.038**	0.003	15
		07-08	**.031**	0.003	23
Non-Hispanic White Female	12-19	05-06	**.012**	0.002	10
		07-08	*	*	7
	20-39	05-06	**.018**	0.002	16
		07-08	*	*	13
	40-59	05-06	**.028**	0.003	13
		07-08	**.019**	0.002	17
	60+	05-06	**.045**	0.003	17
		07-08	**.043**	0.006	21
Non-Hispanic Black Male	12-19	05-06	**.025	0.01	13
		07-08	*	*	6
	20-39	05-06	**.047	0.02	6
		07-08	**.010**	0.002	6
	40-59	05-06	**.048	0.021	5
		07-08	**.030**	0.004	6
	60+	05-06	**.088**	0.019	5
		07-08	**.040**	0.005	8
Non-Hispanic Black Female	12-19	05-06	**.013**	0.002	14
		07-08	*	*	5
	20-39	05-06	**.085	0.064	7
		07-08	*	*	8
	40-59	05-06	**.047**	0.007	7
		07-08	**.035**	0.003	8
	60+	05-06	**.216	0.078	5
		07-08	**.115**	0.017	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not reported: proportion of results below limit of detection was too high to provide a valid result.
**Standard error of the mean estimate is >30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum *p,p'*-Dichlorodiphenyltrichloroethane (DDT) (whole weight)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	****.632**	0.352	11
		07-08	*	*	6
	20-39	05-06	****.349**	0.127	9
		07-08	**.129**	0.029	9
	40-59	05-06	****.864**	0.515	4
		07-08	****.108**	0.052	6
	60+	05-06	**.053**	0.015	4
		07-08	****.131**	0.121	5
Mexican American Female	12-19	05-06	****.117**	0.068	16
		07-08	*	*	5
	20-39	05-06	****.293**	0.163	9
		07-08	****.233**	0.159	8
	40-59	05-06	****.239**	0.107	6
		07-08	**.081**	0.022	6
	60+	05-06	****.138**	0.05	3
		07-08	****.820**	1.049	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not reported: proportion of results below limit of detection was too high to provide a valid result.
**Standard error of the mean estimate is >30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum *p,p'*-Dichlorodiphenyldichloroethene (DDE) (lipid adjusted) (1999-2004)

Metabolite of Dichlorodiphenyltrichloroethane

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	**260** (226-298)	**226** (184-278)	**537** (476-631)	**1150** (976-1350)	**1830** (1410-2300)	1964
	01-02	**295** (267-327)	**251** (228-278)	**598** (521-699)	**1410** (1210-1500)	**2320** (1830-2780)	2298
	03-04	**238** (195-292)	**203** (163-275)	**509** (376-655)	**1170** (836-1570)	**1860** (1400-2380)	1956
Age group							
12-19 years	99-00	**118** (102-135)	**108** (97.7-119)	**185** (141-237)	**339** (243-479)	**528** (339-812)	686
	01-02	**124** (106-146)	**113** (100-140)	**213** (172-253)	**319** (282-389)	**456** (343-722)	758
	03-04	**105** (84.7-129)	**93.6** (81.0-114)	**167** (123-240)	**341** (211-586)	**522** (313-1430)	588
20 years and older	99-00	**297** (256-344)	**269** (213-323)	**608** (530-693)	**1260** (1030-1550)	**2020** (1520-2730)	1278
	01-02	**338** (303-376)	**285** (249-337)	**695** (595-798)	**1480** (1310-1700)	**2550** (1980-3080)	1540
	03-04	**268** (217-332)	**233** (175-314)	**557** (420-734)	**1270** (877-1800)	**1990** (1500-2470)	1368
Gender							
Males	99-00	**249** (220-283)	**223** (182-262)	**494** (380-578)	**1010** (789-1130)	**1430** (1080-2160)	937
	01-02	**285** (252-323)	**248** (222-285)	**520** (441-627)	**1160** (937-1360)	**1900** (1580-2490)	1069
	03-04	**235** (193-288)	**200** (164-262)	**466** (331-653)	**1000** (763-1400)	**1610** (1210-2320)	955
Females	99-00	**270** (226-322)	**234** (184-302)	**601** (492-711)	**1350** (1040-1720)	**2210** (1570-2810)	1027
	01-02	**305** (273-341)	**256** (219-297)	**708** (567-844)	**1480** (1410-1710)	**2670** (1940-3300)	1229
	03-04	**241** (193-301)	**207** (161-281)	**539** (386-735)	**1250** (813-1900)	**2010** (1500-2450)	1001
Race/ethnicity							
Mexican Americans	99-00	**674** (574-792)	**624** (545-701)	**1350** (1090-1660)	**3090** (2040-4950)	**4950** (3070-9350)	657
	01-02	**652** (569-747)	**561** (455-690)	**1400** (1050-1950)	**4110** (2520-6550)	**7080** (3080-15600)	566
	03-04	**444** (362-545)	**373** (283-522)	**875** (608-1170)	**2150** (1520-2470)	**3290** (2380-9240)	457
Non-Hispanic blacks	99-00	**295** (241-362)	**251** (199-313)	**668** (492-874)	**1850** (1040-2220)	**2300** (1560-5680)	416
	01-02	**324** (262-400)	**248** (223-296)	**762** (583-999)	**1620** (1180-2980)	**3260** (1270-6900)	515
	03-04	**262** (233-295)	**216** (173-267)	**589** (453-747)	**1620** (1130-2310)	**2860** (1880-3440)	487
Non-Hispanic whites	99-00	**217** (189-249)	**194** (162-238)	**438** (355-507)	**825** (647-1010)	**1160** (1010-1350)	732
	01-02	**253** (226-284)	**225** (203-254)	**463** (402-558)	**1150** (878-1340)	**1640** (1410-1940)	1053
	03-04	**208** (165-263)	**177** (148-238)	**417** (302-564)	**907** (574-1480)	**1490** (909-2300)	888

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 18.6, 8.3, and 7.8, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum *p,p'*-DDE (lipid adjusted) (2005 - 2008)

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.

See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**113**	20	9
		07-08	**86.7**	7.7	6
	20-39	05-06	****399**	280	12
		07-08	**113**	11	15
	40-59	05-06	**220**	19	12
		07-08	**176**	14	16
	60+	05-06	**696**	53	15
		07-08	**502**	46	23
Non-Hispanic White Female	12-19	05-06	**83.6**	6.7	10
		07-08	**70.2**	14.9	7
	20-39	05-06	**102**	7	16
		07-08	**91.8**	6.3	13
	40-59	05-06	**276**	36	13
		07-08	**179**	12	17
	60+	05-06	**736**	71	17
		07-08	**521**	46	21
Non-Hispanic Black Male	12-19	05-06	**141**	21	13
		07-08	**91.5**	8.5	6
	20-39	05-06	**236**	59	6
		07-08	**123**	12	6
	40-59	05-06	**454**	70	5
		07-08	**333**	20	6
	60+	05-06	**1910**	448	5
		07-08	**854**	88	8
Non-Hispanic Black Female	12-19	05-06	**81.8**	4.8	14
		07-08	**63.6**	8.4	5
	20-39	05-06	****237**	87	7
		07-08	**105**	10	8
	40-59	05-06	**691**	130	7
		07-08	**495**	82	8
	60+	05-06	**2110**	398	5
		07-08	**2390**	354	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 4.02 and 1.4.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum *p,p'*-DDE (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	****2450**	1272	11
		07-08	**265**	39	6
	20-39	05-06	**1730**	472	9
		07-08	**1090**	233	9
	40-59	05-06	****2160**	845	4
		07-08	**1010**	149	6
	60+	05-06	****1180**	394	4
		07-08	**1160**	223	5
Mexican American Female	12-19	05-06	**464**	118	16
		07-08	**164**	34	5
	20-39	05-06	**895**	239	9
		07-08	****653**	301	8
	40-59	05-06	**1320**	121	6
		07-08	**1080**	133	6
	60+	05-06	**1550**	153	3
		07-08	****2960**	1477	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 4.02 and 1.4.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum *p,p'*-Dichlorodiphenyldichloroethene (DDE) (whole weight) (1999-2004)

Metabolite of Dichlorodiphenyltrichloroethane

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	**1.54** (1.33-1.79)	**1.31** (1.09-1.66)	**3.50** (2.97-4.27)	**7.49** (6.14-9.25)	**11.6** (9.25-14.8)	1964
	01-02	**1.81** (1.64-2.01)	**1.57** (1.37-1.72)	**3.97** (3.43-4.59)	**8.81** (7.85-10.1)	**15.4** (12.9-17.6)	2298
	03-04	**1.45** (1.18-1.79)	**1.26** (1.00-1.58)	**3.16** (2.40-4.21)	**7.07** (5.55-9.80)	**12.1** (8.37-16.0)	1956
Age group							
12-19 years	99-00	**.561** (.488-.646)	**.520** (.430-.600)	**.870** (.680-1.18)	**1.52** (1.13-2.25)	**2.32** (1.76-3.56)	686
	01-02	**.623** (.534-.726)	**.590** (.500-.730)	**1.00** (.820-1.22)	**1.65** (1.39-2.07)	**2.30** (1.91-3.14)	758
	03-04	**.516** (.419-.635)	**.456** (.385-.557)	**.796** (.611-1.19)	**1.69** (.994-2.69)	**2.51** (1.56-6.71)	588
20 years and older	99-00	**1.83** (1.56-2.14)	**1.61** (1.26-2.07)	**4.17** (3.48-4.66)	**8.12** (6.37-10.6)	**12.3** (9.87-16.7)	1278
	01-02	**2.14** (1.91-2.39)	**1.77** (1.61-2.05)	**4.59** (4.10-5.26)	**9.75** (8.34-11.5)	**16.8** (13.7-19.1)	1540
	03-04	**1.69** (1.36-2.10)	**1.46** (1.12-1.96)	**3.68** (2.66-4.96)	**7.91** (6.01-11.0)	**12.8** (9.25-16.8)	1368
Gender							
Males	99-00	**1.49** (1.30-1.70)	**1.25** (1.10-1.44)	**3.02** (2.57-3.80)	**6.43** (5.40-8.00)	**9.63** (6.63-15.6)	937
	01-02	**1.77** (1.57-2.01)	**1.59** (1.36-1.76)	**3.40** (3.03-4.10)	**7.48** (6.43-8.75)	**13.1** (9.66-17.6)	1069
	03-04	**1.46** (1.18-1.80)	**1.30** (1.04-1.58)	**2.80** (2.18-4.13)	**6.71** (5.51-8.54)	**9.93** (7.51-15.4)	955
Females	99-00	**1.59** (1.32-1.92)	**1.38** (1.03-1.99)	**4.05** (3.15-4.79)	**8.18** (6.36-11.5)	**13.2** (9.81-18.5)	1027
	01-02	**1.85** (1.66-2.06)	**1.49** (1.32-1.75)	**4.57** (3.81-5.47)	**10.2** (9.01-11.9)	**16.8** (13.4-19.7)	1229
	03-04	**1.45** (1.16-1.82)	**1.25** (.965-1.66)	**3.55** (2.43-4.59)	**7.87** (5.41-12.6)	**13.7** (8.50-17.3)	1001
Race/ethnicity							
Mexican Americans	99-00	**3.92** (3.40-4.51)	**3.52** (3.17-3.91)	**8.22** (7.26-10.4)	**22.0** (12.2-32.2)	**32.2** (19.7-48.1)	657
	01-02	**3.92** (3.37-4.57)	**3.53** (2.68-4.34)	**9.34** (7.31-12.5)	**26.6** (17.9-38.3)	**40.9** (26.8-90.5)	566
	03-04	**2.69** (2.18-3.32)	**2.24** (1.70-3.24)	**5.78** (4.54-7.21)	**13.0** (9.53-15.6)	**22.9** (15.3-43.4)	457
Non-Hispanic blacks	99-00	**1.63** (1.31-2.02)	**1.37** (1.11-1.66)	**3.84** (3.01-5.69)	**11.2** (6.57-13.3)	**14.6** (8.88-35.2)	416
	01-02	**1.82** (1.46-2.28)	**1.38** (1.22-1.72)	**4.39** (3.52-6.06)	**10.6** (7.24-17.6)	**19.4** (8.51-49.3)	515
	03-04	**1.47** (1.30-1.65)	**1.20** (.963-1.51)	**3.76** (2.85-4.75)	**9.23** (7.19-14.9)	**16.8** (14.7-20.6)	487
Non-Hispanic whites	99-00	**1.32** (1.14-1.53)	**1.13** (1.01-1.35)	**2.88** (2.34-3.36)	**5.75** (4.62-6.53)	**8.04** (6.32-9.81)	732
	01-02	**1.57** (1.39-1.76)	**1.41** (1.27-1.58)	**3.11** (2.56-3.68)	**7.00** (6.02-8.34)	**11.3** (8.60-13.7)	1053
	03-04	**1.29** (1.01-1.64)	**1.12** (.890-1.49)	**2.63** (1.84-3.90)	**6.36** (3.90-8.71)	**9.71** (6.01-15.0)	888

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

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum *p,p'*-Dichlorodiphenyldichloroethene (DDE) (whole weight)

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.

See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.592**	0.071	9
		07-08	**.429**	0.031	6
	20-39	05-06	****3.23**	2.4	12
		07-08	**.745**	0.073	15
	40-59	05-06	**1.64**	0.13	12
		07-08	**1.27**	0.09	16
	60+	05-06	**4.72**	0.32	15
		07-08	**3.21**	0.29	23
Non-Hispanic White Female	12-19	05-06	**.444**	0.034	10
		07-08	**.334**	0.079	7
	20-39	05-06	**.657**	0.046	16
		07-08	**.546**	0.037	13
	40-59	05-06	**2.02**	0.27	13
		07-08	**1.18**	0.08	17
	60+	05-06	**5.38**	0.51	17
		07-08	**3.50**	0.31	21
Non-Hispanic Black Male	12-19	05-06	**.705**	0.099	13
		07-08	**.434**	0.044	6
	20-39	05-06	**1.43**	0.39	6
		07-08	**.694**	0.076	6
	40-59	05-06	**2.86**	0.39	5
		07-08	**2.14**	0.15	6
	60+	05-06	**11.4**	2.7	5
		07-08	**5.21**	0.59	8
Non-Hispanic Black Female	12-19	05-06	**.406**	0.025	14
		07-08	**.300**	0.037	5
	20-39	05-06	****1.38**	0.52	7
		07-08	**.524**	0.05	8
	40-59	05-06	**4.51**	0.94	7
		07-08	**2.97**	0.49	8
	60+	05-06	**14.0**	2.5	5
		07-08	**14.4**	2.2	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
**Standard error of the mean estimate is >30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum *p,p'*-Dichlorodiphenyldichloroethene (DDE) (whole weight)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	****13.0**	6.7	11
		07-08	**1.39**	0.18	6
	20-39	05-06	**12.8**	3.7	9
		07-08	**7.50**	1.68	9
	40-59	05-06	****17.0**	6	4
		07-08	**7.34**	1.34	6
	60+	05-06	****8.69**	3.03	4
		07-08	**8.68**	2.08	5
Mexican American Female	12-19	05-06	**2.52**	0.65	16
		07-08	**.803**	0.172	5
	20-39	05-06	**5.94**	1.49	9
		07-08	****3.80**	1.71	8
	40-59	05-06	**9.64**	0.85	6
		07-08	**7.28**	0.97	6
	60+	05-06	**12.1**	2.3	3
		07-08	****20.4**	10.2	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
**Standard error of the mean estimate is >30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DDT_BiomonitoringSummary.html

Serum *o,p'*-Dichlorodiphenyltrichloroethane (DDT) (lipid adjusted) (1999-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1669
	01-02	*	< LOD	< LOD	< LOD	< LOD	2279
	03-04	*	< LOD	< LOD	< LOD	< LOD	1946
Age group							
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	667
	01-02	*	< LOD	< LOD	< LOD	< LOD	756
	03-04	*	< LOD	< LOD	< LOD	< LOD	588
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1002
	01-02	*	< LOD	< LOD	< LOD	< LOD	1523
	03-04	*	< LOD	< LOD	< LOD	< LOD	1358
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	796
	01-02	*	< LOD	< LOD	< LOD	< LOD	1059
	03-04	*	< LOD	< LOD	< LOD	< LOD	949
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	873
	01-02	*	< LOD	< LOD	< LOD	< LOD	1220
	03-04	*	< LOD	< LOD	< LOD	< LOD	997
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	632
	01-02	*	< LOD	< LOD	< LOD	< LOD	565
	03-04	*	< LOD	< LOD	< LOD	< LOD	458
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	354
	01-02	*	< LOD	< LOD	< LOD	< LOD	507
	03-04	*	< LOD	< LOD	< LOD	< LOD	486
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	560
	01-02	*	< LOD	< LOD	< LOD	< LOD	1045
	03-04	*	< LOD	< LOD	< LOD	< LOD	880

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 20.7, 17.4, and 7.8, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum *o,p'*-Dichlorodiphenyltrichloroethane (DDT) (whole weight)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1669
	01-02	*	< LOD	< LOD	< LOD	< LOD	2279
	03-04	*	< LOD	< LOD	< LOD	< LOD	1946
Age group							
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	667
	01-02	*	< LOD	< LOD	< LOD	< LOD	756
	03-04	*	< LOD	< LOD	< LOD	< LOD	588
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1002
	01-02	*	< LOD	< LOD	< LOD	< LOD	1523
	03-04	*	< LOD	< LOD	< LOD	< LOD	1358
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	796
	01-02	*	< LOD	< LOD	< LOD	< LOD	1059
	03-04	*	< LOD	< LOD	< LOD	< LOD	949
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	873
	01-02	*	< LOD	< LOD	< LOD	< LOD	1220
	03-04	*	< LOD	< LOD	< LOD	< LOD	997
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	632
	01-02	*	< LOD	< LOD	< LOD	< LOD	565
	03-04	*	< LOD	< LOD	< LOD	< LOD	458
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	354
	01-02	*	< LOD	< LOD	< LOD	< LOD	507
	03-04	*	< LOD	< LOD	< LOD	< LOD	486
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	560
	01-02	*	< LOD	< LOD	< LOD	< LOD	1045
	03-04	*	< LOD	< LOD	< LOD	< LOD	880

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Serum Hexachlorobenzene (lipid adjusted) (1999-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1702
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2277
	03-04	**15.2** (14.5-15.9)	**14.9** (14.2-15.7)	**19.0** (18.1-20.3)	**24.4** (22.6-26.4)	**28.9** (25.6-32.8)	1961
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	591
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	747
	03-04	**13.3** (12.5-14.1)	**13.4** (11.5-14.9)	**16.7** (15.5-18.4)	**20.7** (19.7-22.7)	**25.3** (22.7-30.2)	588
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1111
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1530
	03-04	**15.5** (14.7-16.2)	**15.1** (14.5-15.9)	**19.4** (18.3-20.9)	**24.8** (22.7-26.6)	**29.0** (25.6-33.6)	1373
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	807
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1058
	03-04	**14.5** (13.8-15.3)	**14.2** (13.4-15.0)	**18.1** (17.0-19.3)	**23.6** (21.0-25.6)	**26.9** (25.2-31.3)	957
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	895
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1219
	03-04	**15.8** (15.0-16.6)	**15.7** (15.1-16.4)	**20.0** (18.7-21.4)	**24.9** (23.0-28.6)	**29.8** (26.5-33.7)	1004
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	583
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	554
	03-04	**16.2** (14.9-17.7)	**15.3** (14.7-16.4)	**20.4** (18.3-22.5)	**27.6** (24.7-29.4)	**33.7** (27.6-44.6)	460
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	350
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	511
	03-04	**14.5** (13.9-15.0)	**14.1** (13.7-15.1)	**18.3** (16.6-19.9)	**22.3** (20.9-24.0)	**26.6** (23.9-30.9)	488
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	636
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1052
	03-04	**15.1** (14.4-16.0)	**15.0** (14.2-15.9)	**19.2** (17.9-20.8)	**24.3** (22.3-26.4)	**28.2** (24.9-32.8)	888

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 118.0, 31.4, and 7.8, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**7.62**	1.17	9
		07-08	**12.4**	0.8	6
	20-39	05-06	**7.34**	0.41	12
		07-08	**9.45**	0.46	15
	40-59	05-06	**8.85**	0.38	12
		07-08	**10.1**	0.3	16
	60+	05-06	**11.1**	0.5	15
		07-08	**11.8**	0.5	23
Non-Hispanic White Female	12-19	05-06	**5.44**	0.49	10
		07-08	**7.06**	0.29	7
	20-39	05-06	**7.11**	0.33	16
		07-08	**7.94**	0.23	13
	40-59	05-06	**9.25**	0.44	13
		07-08	**10.8**	0.7	17
	60+	05-06	**13.9**	0.7	17
		07-08	**15.1**	0.7	21
Non-Hispanic Black Male	12-19	05-06	**6.42**	0.37	13
		07-08	**9.67**	0.79	6
	20-39	05-06	**5.77**	0.38	6
		07-08	**9.11**	0.58	6
	40-59	05-06	**7.19**	0.45	5
		07-08	**9.58**	0.43	6
	60+	05-06	**10.9**	1.6	5
		07-08	**10.3**	0.6	8
Non-Hispanic Black Female	12-19	05-06	**4.41**	0.27	14
		07-08	**7.20**	0.57	5
	20-39	05-06	**5.90**	0.64	7
		07-08	**7.04**	0.3	8
	40-59	05-06	**9.19**	0.42	7
		07-08	**9.90**	0.58	8
	60+	05-06	**18.1**	1.9	5
		07-08	**15.1**	1.2	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 4.17 and 1.4.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**6.25**	0.43	11
		07-08	**9.49**	0.7	6
	20-39	05-06	**9.61**	1.74	9
		07-08	**9.47**	0.57	9
	40-59	05-06	**14.0**	1.9	4
		07-08	****20.6**	8.3	6
	60+	05-06	**10.5**	1.3	4
		07-08	**12.1**	0.8	5
Mexican American Female	12-19	05-06	**5.93**	0.55	16
		07-08	**6.81**	0.44	5
	20-39	05-06	**9.78**	0.81	9
		07-08	**10.4**	0.7	8
	40-59	05-06	**15.9**	1.4	6
		07-08	**20.6**	2.6	6
	60+	05-06	**19.6**	2.6	3
		07-08	**20.7**	1.9	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 4.17 and 1.4.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (whole weight) (1999-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1702
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2277
	03-04	**.092** (.088-.097)	**.090** (.086-.095)	**.120** (.113-.126)	**.157** (.145-.167)	**.186** (.169-.212)	1961
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	591
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	747
	03-04	**.065** (.062-.069)	**.064** (.060-.069)	**.079** (.072-.086)	**.102** (.091-.111)	**.123** (.111-.141)	588
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1111
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1530
	03-04	**.097** (.092-.102)	**.095** (.090-.099)	**.123** (.118-.130)	**.160** (.147-.175)	**.191** (.174-.223)	1373
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	807
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1058
	03-04	**.090** (.085-.095)	**.087** (.082-.094)	**.115** (.107-.122)	**.147** (.135-.163)	**.179** (.159-.203)	957
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	895
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1219
	03-04	**.095** (.089-.100)	**.092** (.088-.099)	**.123** (.118-.132)	**.163** (.148-.176)	**.190** (.176-.226)	1004
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	583
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	554
	03-04	**.098** (.089-.109)	**.090** (.081-.107)	**.125** (.114-.152)	**.171** (.157-.203)	**.225** (.178-.258)	460
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	350
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	511
	03-04	**.081** (.077-.085)	**.078** (.073-.083)	**.104** (.095-.118)	**.140** (.127-.155)	**.167** (.145-.196)	488
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	636
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1052
	03-04	**.094** (.088-.099)	**.092** (.086-.097)	**.121** (.114-.129)	**.156** (.143-.173)	**.182** (.163-.218)	888

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.043**	0.008	9
		07-08	**.062**	0.003	6
	20-39	05-06	**.054**	0.004	12
		07-08	**.062**	0.003	15
	40-59	05-06	**.067**	0.003	12
		07-08	**.074**	0.003	16
	60+	05-06	**.076**	0.002	15
		07-08	**.075**	0.003	23
Non-Hispanic White Female	12-19	05-06	**.029**	0.003	10
		07-08	**.033**	0.001	7
	20-39	05-06	**.046**	0.002	16
		07-08	**.047**	0.002	13
	40-59	05-06	**.069**	0.005	13
		07-08	**.071**	0.005	17
	60+	05-06	**.102**	0.005	17
		07-08	**.102**	0.004	21
Non-Hispanic Black Male	12-19	05-06	**.032**	0.001	13
		07-08	**.046**	0.004	6
	20-39	05-06	**.034**	0.003	6
		07-08	**.051**	0.003	6
	40-59	05-06	**.046**	0.003	5
		07-08	**.061**	0.003	6
	60+	05-06	**.064**	0.008	5
		07-08	**.062**	0.003	8
Non-Hispanic Black Female	12-19	05-06	**.022**	0.001	14
		07-08	**.034**	0.003	5
	20-39	05-06	**.034**	0.004	7
		07-08	**.035**	0.001	8
	40-59	05-06	**.059**	0.003	7
		07-08	**.059**	0.004	8
	60+	05-06	**.121**	0.012	5
		07-08	**.090**	0.006	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum Hexachlorobenzene (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.034**	0.002	11
		07-08	**.050**	0.003	6
	20-39	05-06	**.066**	0.01	9
		07-08	**.065**	0.006	9
	40-59	05-06	**.113**	0.011	4
		07-08	****.146**	0.058	6
	60+	05-06	**.076**	0.011	4
		07-08	**.089**	0.011	5
Mexican American Female	12-19	05-06	**.032**	0.003	16
		07-08	**.033**	0.002	5
	20-39	05-06	**.066**	0.008	9
		07-08	**.060**	0.004	8
	40-59	05-06	**.117**	0.01	6
		07-08	**.138**	0.016	6
	60+	05-06	**.148**	0.02	3
		07-08	**.141**	0.013	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorobenzene_BiomonitoringSummary.html

Serum *beta*-Hexachlorocyclohexane (lipid adjusted) (1999-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	**9.68** (<LOD-10.9)	**< LOD**	**19.1** (16.0-21.6)	**42.0** (33.4-50.6)	**68.9** (50.6-89.5)	1893
	01-02	*	**< LOD**	**16.0** (14.2-17.3)	**36.7** (30.4-45.7)	**67.2** (50.3-85.7)	2291
	03-04	*	**< LOD**	**14.1** (12.1-16.5)	**32.1** (27.1-37.8)	**56.5** (43.7-69.4)	1959
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**11.7** (<LOD-16.1)	653
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**13.1** (9.70-19.0)	758
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**8.80** (<LOD-14.7)	589
20 years and older	99-00	**10.9** (9.61-12.4)	**< LOD**	**21.1** (18.9-24.0)	**46.0** (35.9-56.8)	**73.4** (52.7-96.0)	1240
	01-02	**9.87** (9.04-10.8)	**7.80** (6.90-8.90)	**17.4** (16.0-20.5)	**39.6** (33.2-52.0)	**71.7** (53.7-96.2)	1533
	03-04	**7.89** (<LOD-9.09)	**< LOD**	**16.3** (13.6-18.4)	**35.2** (29.6-42.5)	**62.2** (48.2-87.6)	1370
Gender							
Males	99-00	*	**< LOD**	**14.6** (10.8-19.1)	**29.8** (23.3-38.7)	**44.9** (32.8-68.9)	901
	01-02	*	**< LOD**	**12.9** (11.1-15.7)	**27.5** (24.0-34.4)	**45.7** (35.2-55.6)	1067
	03-04	*	**< LOD**	**10.4** (8.70-12.5)	**21.6** (17.7-26.4)	**35.3** (26.1-49.9)	952
Females	99-00	**11.1** (9.56-12.8)	**< LOD**	**22.0** (19.1-27.6)	**51.3** (42.2-67.6)	**81.8** (64.4-111)	992
	01-02	**10.2** (9.46-11.0)	**7.70** (6.90-8.50)	**18.5** (16.2-22.7)	**47.5** (37.6-62.0)	**84.7** (62.0-111)	1224
	03-04	**8.43** (<LOD-9.45)	**< LOD**	**18.6** (16.9-21.5)	**41.8** (33.9-51.4)	**70.3** (62.2-98.4)	1007
Race/ethnicity							
Mexican Americans	99-00	**16.7** (13.7-20.2)	**15.5** (11.6-20.4)	**37.7** (29.6-47.3)	**97.9** (62.6-135)	**142** (99.8-199)	632
	01-02	**13.1** (11.6-14.7)	**11.8** (9.60-13.4)	**25.8** (21.1-32.7)	**69.4** (50.8-87.6)	**134** (85.7-166)	563
	03-04	**10.5** (8.66-12.8)	**10.0** (<LOD-12.7)	**23.8** (17.5-29.9)	**50.1** (30.0-70.3)	**70.3** (42.5-123)	460
Non-Hispanic blacks	99-00	*	**< LOD**	**15.4** (12.0-23.1)	**37.9** (30.2-42.2)	**49.9** (40.9-81.1)	403
	01-02	*	**< LOD**	**12.0** (8.20-16.2)	**36.2** (18.4-73.4)	**71.2** (31.9-178)	513
	03-04	*	**< LOD**	**9.70** (8.30-11.9)	**27.1** (21.1-36.3)	**48.2** (34.8-54.3)	487
Non-Hispanic whites	99-00	*	**< LOD**	**17.5** (14.2-20.5)	**34.7** (25.2-46.1)	**51.6** (40.0-70.8)	702
	01-02	*	**< LOD**	**14.4** (11.8-16.8)	**31.9** (26.6-37.8)	**52.0** (37.7-69.5)	1051
	03-04	*	**< LOD**	**12.8** (10.9-14.7)	**27.6** (22.1-32.2)	**40.8** (32.3-56.5)	887

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 9.36, 6.76, and 7.8, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum *beta*-Hexachlorocyclohexane (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	****3.53**	1.51	12
		07-08	*	*	15
	40-59	05-06	**4.44**	0.23	12
		07-08	**3.34**	0.35	16
	60+	05-06	**14.3**	2.1	15
		07-08	**11.3**	2.6	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	**2.79**	0.55	16
		07-08	*	*	13
	40-59	05-06	**7.32**	0.81	13
		07-08	**3.90**	1	17
	60+	05-06	**19.6**	1.3	17
		07-08	**17.3**	1.7	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	**2.00**	0.39	6
		07-08	*	*	6
	40-59	05-06	**5.64**	1.62	5
		07-08	**3.62**	0.43	6
	60+	05-06	**15.0**	3.5	5
		07-08	**7.79**	1.2	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	****3.89**	1.98	7
		07-08	*	*	8
	40-59	05-06	**9.50**	1.59	7
		07-08	**6.79**	1.13	8
	60+	05-06	**56.1**	12.3	5
		07-08	**34.4**	5.5	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.46 and 1.4.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum *beta*-Hexachlorocyclohexane (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**10.7**	2.2	9
		07-08	**5.59**	1.57	9
	40-59	05-06	****23.7**	8.6	4
		07-08	**16.6**	5	6
	60+	05-06	**20.5**	1.6	4
		07-08	**21.9**	5.7	5
Mexican American Female	12-19	05-06	**3.50**	0.67	16
		07-08	*	*	5
	20-39	05-06	**12.0**	2.2	9
		07-08	**5.65**	1.61	8
	40-59	05-06	**25.3**	3.5	6
		07-08	**16.8**	2.1	6
	60+	05-06	**36.8**	5.5	3
		07-08	**50.2**	8.6	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.46 and 1.4.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum *beta*-Hexachlorocyclohexane (whole weight) (1999-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	**.058** (<LOD-.066)	**< LOD**	**.120** (.100-.150)	**.290** (.220-.360)	**.450** (.360-.560)	1893
	01-02	*	**< LOD**	**.100** (.090-.120)	**.250** (.210-.310)	**.460** (.340-.600)	2291
	03-04	*	**< LOD**	**.092** (.081-.103)	**.216** (.173-.254)	**.372** (.294-.442)	1959
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.050** (<LOD-.070)	653
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.080** (.050-.100)	758
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.048** (<LOD-.064)	589
20 years and older	99-00	**.067** (.059-.077)	**< LOD**	**.140** (.120-.160)	**.330** (.240-.410)	**.480** (.410-.620)	1240
	01-02	**.062** (.057-.069)	**.050** (.050-.060)	**.120** (.100-.140)	**.270** (.230-.350)	**.480** (.370-.690)	1533
	03-04	**.050** (<LOD-.058)	**< LOD**	**.103** (.089-.125)	**.234** (.191-.290)	**.412** (.308-.587)	1370
Gender							
Males	99-00	*	**< LOD**	**.090** (.080-.120)	**.210** (.160-.250)	**.290** (.220-.470)	901
	01-02	*	**< LOD**	**.080** (.070-.100)	**.200** (.150-.260)	**.310** (.250-.400)	1067
	03-04	*	**< LOD**	**.072** (.056-.089)	**.144** (.118-.174)	**.222** (.170-.305)	952
Females	99-00	**.065** (.056-.077)	**< LOD**	**.150** (.120-.190)	**.380** (.300-.450)	**.560** (.420-.680)	992
	01-02	**.062** (.057-.067)	**.050** (.040-.050)	**.130** (.110-.150)	**.320** (.260-.400)	**.570** (.450-.710)	1224
	03-04	**.051** (<LOD-.057)	**< LOD**	**.118** (.103-.130)	**.290** (.244-.319)	**.442** (.382-.661)	1007
Race/ethnicity							
Mexican Americans	99-00	**.098** (.080-.119)	**.090** (.070-.110)	**.240** (.200-.310)	**.580** (.390-.840)	**.910** (.580-1.37)	632
	01-02	**.078** (.068-.091)	**.070** (.050-.080)	**.160** (.130-.210)	**.470** (.330-.700)	**1.01** (.620-1.32)	563
	03-04	**.064** (.051-.080)	**.057** (<LOD-.086)	**.139** (.124-.190)	**.331** (.191-.501)	**.521** (.297-.814)	460
Non-Hispanic blacks	99-00	*	**< LOD**	**.100** (.070-.140)	**.250** (.190-.290)	**.360** (.280-.460)	403
	01-02	*	**< LOD**	**.070** (.050-.110)	**.220** (.120-.410)	**.410** (.190-1.05)	513
	03-04	*	**< LOD**	**.065** (.047-.083)	**.167** (.131-.214)	**.281** (.200-.404)	487
Non-Hispanic whites	99-00	*	**< LOD**	**.120** (.100-.140)	**.250** (.170-.340)	**.390** (.280-.510)	702
	01-02	*	**< LOD**	**.090** (.080-.110)	**.210** (.180-.260)	**.350** (.250-.480)	1051
	03-04	*	**< LOD**	**.083** (.073-.096)	**.175** (.146-.220)	**.287** (.221-.372)	887

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum *beta*-Hexachlorocyclohexane (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.028	0.013	12
		07-08	*	*	15
	40-59	05-06	.033	0.002	12
		07-08	.025	0.003	16
	60+	05-06	.095	0.012	15
		07-08	.071	0.015	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	.018	0.004	16
		07-08	*	*	13
	40-59	05-06	.055	0.007	13
		07-08	.026	0.007	17
	60+	05-06	.142	0.008	17
		07-08	.117	0.012	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	.012	0.002	6
		07-08	*	*	6
	40-59	05-06	.036	0.011	5
		07-08	.023	0.003	6
	60+	05-06	.087	0.018	5
		07-08	.047	0.007	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**.021	0.01	7
		07-08	*	*	8
	40-59	05-06	.062	0.011	7
		07-08	.041	0.007	8
	60+	05-06	.369	0.07	5
		07-08	.204	0.029	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum *beta*-Hexachlorocyclohexane (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**.075**	0.015	9
		07-08	****.041**	0.013	9
	40-59	05-06	****.185**	0.058	4
		07-08	****.120**	0.038	6
	60+	05-06	**.150**	0.02	4
		07-08	****.171**	0.058	5
Mexican American Female	12-19	05-06	**.019**	0.003	16
		07-08	*	*	5
	20-39	05-06	**.082**	0.016	9
		07-08	**.033**	0.009	8
	40-59	05-06	**.186**	0.025	6
		07-08	**.114**	0.015	6
	60+	05-06	**.275**	0.037	3
		07-08	**.344**	0.06	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum *gamma*-Hexachlorocyclohexane (Lindane) (lipid adjusted) (1999-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1799
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2280
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1960
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	660
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	593
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1139
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1522
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1367
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	863
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1060
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	952
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	936
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1220
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1008
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	631
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	563
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	461
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	380
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	509
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	490
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	646
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1045
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	884

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.5, 10.5, and 7.8, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum *gamma*-Hexachlorocyclohexane (Lindane) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.46 and 1.4.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum *gamma*-Hexachlorocyclohexane (Lindane) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.46 and 1.4.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum *gamma*-Hexachlorocyclohexane (Lindane) (whole weight) (1999-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1799
	01-02	*	< LOD	< LOD	< LOD	< LOD	2280
	03-04	*	< LOD	< LOD	< LOD	< LOD	1960
Age group							
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	660
	01-02	*	< LOD	< LOD	< LOD	< LOD	758
	03-04	*	< LOD	< LOD	< LOD	< LOD	593
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1139
	01-02	*	< LOD	< LOD	< LOD	< LOD	1522
	03-04	*	< LOD	< LOD	< LOD	< LOD	1367
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	863
	01-02	*	< LOD	< LOD	< LOD	< LOD	1060
	03-04	*	< LOD	< LOD	< LOD	< LOD	952
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	936
	01-02	*	< LOD	< LOD	< LOD	< LOD	1220
	03-04	*	< LOD	< LOD	< LOD	< LOD	1008
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	631
	01-02	*	< LOD	< LOD	< LOD	< LOD	563
	03-04	*	< LOD	< LOD	< LOD	< LOD	461
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	380
	01-02	*	< LOD	< LOD	< LOD	< LOD	509
	03-04	*	< LOD	< LOD	< LOD	< LOD	490
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	646
	01-02	*	< LOD	< LOD	< LOD	< LOD	1045
	03-04	*	< LOD	< LOD	< LOD	< LOD	884

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum *gamma*-Hexachlorocyclohexane (Lindane) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum *gamma*-Hexachlorocyclohexane (Lindane) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Hexachlorocyclohexane_BiomonitoringSummary.html

Serum Mirex (lipid adjusted) (1999-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1853
	01-02	*	**< LOD**	**< LOD**	**15.8** (<LOD-73.7)	**57.1** (13.2-230)	2257
	03-04	*	**< LOD**	**< LOD**	**8.40** (<LOD-13.0)	**13.2** (7.90-29.6)	1951
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	659
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	728
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	592
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1194
	01-02	*	**< LOD**	**< LOD**	**19.6** (<LOD-108)	**71.0** (14.6-305)	1529
	03-04	*	**< LOD**	**< LOD**	**9.10** (<LOD-15.6)	**15.4** (8.10-37.1)	1359
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	887
	01-02	*	**< LOD**	**< LOD**	**16.1** (<LOD-65.6)	**50.8** (12.3-225)	1052
	03-04	*	**< LOD**	**< LOD**	**9.70** (<LOD-15.4)	**15.5** (9.70-24.4)	949
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	966
	01-02	*	**< LOD**	**< LOD**	**15.0** (<LOD-108)	**63.0** (12.0-374)	1205
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**11.6** (<LOD-31.3)	1002
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	617
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	548
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	459
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**15.5** (<LOD-42.2)	**39.5** (<LOD-115)	398
	01-02	*	**< LOD**	**13.7** (<LOD-47.3)	**51.3** (15.4-230)	**153** (30.5-425)	500
	03-04	*	**< LOD**	**< LOD**	**18.1** (8.70-40.8)	**40.3** (15.5-82.7)	484
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	688
	01-02	*	**< LOD**	**< LOD**	**15.1** (<LOD-104)	**66.7** (12.5-291)	1049
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**11.6** (<LOD-23.4)	884

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.6, 10.5, and 7.8, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	****3.88**	2.18	12
		07-08	*	*	15
	40-59	05-06	****6.39**	2.15	12
		07-08	**4.25**	0.31	16
	60+	05-06	**5.32**	0.61	15
		07-08	**6.36**	1.34	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	**2.42**	0.14	13
		07-08	**2.05**	0.28	17
	60+	05-06	**3.51**	0.24	17
		07-08	**3.90**	0.39	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	**2.68**	0.59	6
		07-08	*	*	6
	40-59	05-06	**5.90**	0.49	5
		07-08	****16.8**	6.1	6
	60+	05-06	****27.2**	10.1	5
		07-08	**13.9**	2.1	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**1.62**	0.32	7
		07-08	*	*	8
	40-59	05-06	**5.92**	0.65	7
		07-08	**5.42**	1.21	8
	60+	05-06	**10.3**	2.7	5
		07-08	****24.0**	9.3	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.46 and 1.4.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	**2.66**	0.74	4
		07-08	****4.37**	1.38	6
	60+	05-06	**2.89**	0.78	4
		07-08	****11.0**	8	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**1.84**	0.34	6
		07-08	****3.76**	1.3	6
	60+	05-06	**2.84**	0.37	3
		07-08	**2.59**	0.49	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.46 and 1.4.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (whole weight) (1999-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1853
	01-02	*	**< LOD**	**< LOD**	**.100** (<LOD-.470)	**.410** (.080-1.73)	2257
	03-04	*	**< LOD**	**< LOD**	**.054** (<LOD-.084)	**.093** (.052-.170)	1951
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	659
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	728
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	592
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1194
	01-02	*	**< LOD**	**< LOD**	**.140** (<LOD-.690)	**.470** (.090-1.92)	1529
	03-04	*	**< LOD**	**< LOD**	**.059** (<LOD-.102)	**.106** (.053-.215)	1359
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	887
	01-02	*	**< LOD**	**< LOD**	**.110** (<LOD-.470)	**.370** (.090-1.37)	1052
	03-04	*	**< LOD**	**< LOD**	**.064** (<LOD-.106)	**.108** (.062-.170)	949
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	966
	01-02	*	**< LOD**	**< LOD**	**.090** (<LOD-.510)	**.430** (.070-1.79)	1205
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.077** (<LOD-.170)	1002
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	617
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	548
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	459
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**.090** (<LOD-.220)	**.220** (<LOD-.450)	398
	01-02	*	**< LOD**	**.090** (<LOD-.240)	**.310** (.090-1.41)	**1.08** (.170-3.02)	500
	03-04	*	**< LOD**	**< LOD**	**.112** (.055-.268)	**.256** (.089-.635)	484
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	688
	01-02	*	**< LOD**	**< LOD**	**.100** (<LOD-.610)	**.450** (.080-1.79)	1049
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.079** (<LOD-.174)	884

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.027	0.014	12
		07-08	*	*	15
	40-59	05-06	**.048	0.016	12
		07-08	.031	0.003	16
	60+	05-06	.036	0.004	15
		07-08	.040	0.008	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	.018	0.002	13
		07-08	.014	0.002	17
	60+	05-06	.026	0.002	17
		07-08	.026	0.003	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	.016	0.004	6
		07-08	*	*	6
	40-59	05-06	.038	0.003	5
		07-08	**.109	0.04	6
	60+	05-06	**.168	0.062	5
		07-08	.084	0.012	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	.009	0.002	7
		07-08	*	*	8
	40-59	05-06	.038	0.004	7
		07-08	.032	0.008	8
	60+	05-06	.067	0.016	5
		07-08	**.146	0.057	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum Mirex (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	**.022	0.007	4
		07-08	**.031	0.01	6
	60+	05-06	**.022	0.008	4
		07-08	**.074	0.052	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	.014	0.003	6
		07-08	**.024	0.008	6
	60+	05-06	.022	0.005	3
		07-08	.018	0.003	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Mirex_BiomonitoringSummary.html

Serum 2,2',4-Tribromodiphenyl ether (BDE 17) (lipid adjusted) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1992
Age group							
12-19 years	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	607
20 years and older	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1385
Gender							
Males	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	964
Females	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1028
Race/ethnicity							
Mexican Americans	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	482
Non-Hispanic blacks	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	491
Non-Hispanic whites	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	892

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 1.0.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4-Tribromodiphenyl ether (BDE 17) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4-Tribromodiphenyl ether (BDE 17) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,4,4'-Tribromodiphenyl ether (BDE 28) (lipid adjusted) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	**1.19** (1.03-1.37)	**1.10** (1.00-1.30)	**2.20** (1.90-2.60)	**4.80** (3.30-6.70)	**8.00** (5.40-11.3)	1987
Age group							
12-19 years	03-04	**1.30** (1.15-1.46)	**1.20** (1.10-1.50)	**2.40** (2.00-2.60)	**4.00** (2.90-5.60)	**6.10** (4.00-9.40)	598
20 years and older	03-04	**1.17** (1.01-1.37)	**1.10** (.900-1.30)	**2.20** (1.90-2.70)	**5.00** (3.30-7.20)	**8.20** (6.00-10.9)	1389
Gender							
Males	03-04	**1.21** (1.05-1.39)	**1.10** (1.00-1.30)	**2.30** (2.00-2.70)	**5.10** (3.50-7.30)	**8.20** (6.00-11.3)	964
Females	03-04	**1.17** (.990-1.38)	**1.10** (.900-1.40)	**2.10** (1.80-2.60)	**4.60** (3.00-6.90)	**7.80** (4.70-11.8)	1023
Race/ethnicity							
Mexican Americans	03-04	**1.43** (1.29-1.59)	**1.40** (1.20-1.50)	**2.40** (2.00-2.90)	**4.70** (3.70-5.50)	**7.30** (5.60-8.30)	488
Non-Hispanic blacks	03-04	**1.21** (1.03-1.42)	**1.10** (.900-1.30)	**2.20** (1.80-2.50)	**5.30** (3.50-6.70)	**8.40** (5.40-12.3)	470
Non-Hispanic whites	03-04	**1.17** (.968-1.42)	**1.10** (.900-1.30)	**2.20** (1.80-2.70)	**4.90** (3.00-8.00)	**8.00** (4.50-13.6)	905

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.8.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,4,4'-Tribromodiphenyl ether (BDE 28) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**1.82**	0.44	9
		07-08	**1.38**	0.19	6
	20-39	05-06	**2.16**	0.45	12
		07-08	**1.37**	0.16	15
	40-59	05-06	**1.23**	0.12	12
		07-08	**1.97**	0.43	16
	60+	05-06	**3.07**	0.34	15
		07-08	**2.39**	0.29	23
Non-Hispanic White Female	12-19	05-06	**2.37**	0.49	10
		07-08	**1.31**	0.12	7
	20-39	05-06	**1.70**	0.32	16
		07-08	**1.67**	0.23	13
	40-59	05-06	**1.44**	0.2	13
		07-08	**1.37**	0.15	17
	60+	05-06	**2.59**	0.55	17
		07-08	**2.51**	0.38	21
Non-Hispanic Black Male	12-19	05-06	**1.79**	0.2	13
		07-08	**1.21**	0.1	6
	20-39	05-06	**1.38**	0.19	6
		07-08	**1.25**	0.14	6
	40-59	05-06	**1.47**	0.35	5
		07-08	**1.33**	0.17	6
	60+	05-06	**1.91**	0.5	5
		07-08	**1.94**	0.3	8
Non-Hispanic Black Female	12-19	05-06	**2.29**	0.39	14
		07-08	****1.66**	0.56	5
	20-39	05-06	**1.93**	0.37	7
		07-08	**1.61**	0.21	8
	40-59	05-06	****2.07**	0.77	7
		07-08	**1.29**	0.11	8
	60+	05-06	****1.76**	0.56	5
		07-08	**2.33**	0.61	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,4,4'-Tribromodiphenyl ether (BDE 28) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**2.04**	0.21	11
		07-08	**2.06**	0.38	6
	20-39	05-06	**1.99**	0.21	9
		07-08	**1.52**	0.21	9
	40-59	05-06	**2.06**	0.13	4
		07-08	**2.15**	0.28	6
	60+	05-06	**2.38**	0.14	4
		07-08	**2.87**	0.84	5
Mexican American Female	12-19	05-06	**2.08**	0.19	16
		07-08	**1.49**	0.24	5
	20-39	05-06	**1.51**	0.14	9
		07-08	**1.84**	0.42	8
	40-59	05-06	**1.57**	0.29	6
		07-08	**1.81**	0.31	6
	60+	05-06	**3.29**	0.62	3
		07-08	**2.34**	0.33	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4'-Tetrabromodiphenyl ether (BDE 47) (lipid adjusted) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	**20.5** (17.6-23.9)	**19.2** (15.7-22.3)	**41.1** (35.6-49.2)	**85.1** (66.8-127)	**163** (108-240)	2016
Age group							
12-19 years	03-04	**28.2** (24.6-32.3)	**27.2** (22.1-33.6)	**53.6** (44.9-63.6)	**104** (82.4-145)	**174** (115-211)	615
20 years and older	03-04	**19.5** (16.5-23.1)	**18.0** (14.6-21.6)	**39.1** (32.8-47.0)	**83.3** (63.0-127)	**163** (102-240)	1401
Gender							
Males	03-04	**21.4** (18.1-25.3)	**19.2** (15.8-24.0)	**45.2** (37.3-54.9)	**94.3** (66.8-148)	**168** (112-382)	981
Females	03-04	**19.6** (16.4-23.5)	**19.1** (14.1-23.2)	**38.4** (31.8-46.4)	**79.5** (60.7-121)	**155** (102-239)	1035
Race/ethnicity							
Mexican Americans	03-04	**25.5** (23.0-28.1)	**23.6** (21.2-25.5)	**47.1** (38.2-56.5)	**87.2** (72.0-105)	**151** (105-195)	478
Non-Hispanic blacks	03-04	**24.3** (20.9-28.2)	**21.4** (18.2-25.6)	**47.5** (40.7-53.2)	**116** (81.8-149)	**242** (136-481)	499
Non-Hispanic whites	03-04	**19.5** (16.1-23.7)	**17.4** (14.4-22.2)	**40.2** (33.1-51.9)	**85.1** (60.3-142)	**163** (90.2-283)	912

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 4.2.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4'-Tetrabromodiphenyl ether (BDE 47) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**59.0**	16.8	9
		07-08	**32.9**	4.8	6
	20-39	05-06	****46.1**	14.4	12
		07-08	**29.1**	4.2	15
	40-59	05-06	**21.2**	2.6	12
		07-08	**38.7**	9.7	16
	60+	05-06	**67.3**	12.4	15
		07-08	**40.1**	6.5	23
Non-Hispanic White Female	12-19	05-06	**62.5**	14.4	10
		07-08	**31.2**	3.2	7
	20-39	05-06	****50.0**	16.4	16
		07-08	**32.2**	6.6	13
	40-59	05-06	**22.5**	4.6	13
		07-08	**20.5**	3.1	17
	60+	05-06	****60.0**	20.4	17
		07-08	**40.4**	7.5	21
Non-Hispanic Black Male	12-19	05-06	**51.3**	4.9	13
		07-08	**31.0**	4.9	6
	20-39	05-06	**42.8**	8.7	6
		07-08	**28.1**	3.3	6
	40-59	05-06	**29.6**	6.9	5
		07-08	**30.5**	5.3	6
	60+	05-06	**65.8**	18.9	5
		07-08	**31.8**	4.1	8
Non-Hispanic Black Female	12-19	05-06	**74.9**	13.9	14
		07-08	****56.4**	23.5	5
	20-39	05-06	****61.0**	21.6	7
		07-08	**32.2**	4.1	8
	40-59	05-06	****59.0**	26.9	7
		07-08	**20.9**	2.4	8
	60+	05-06	**41.4**	8.5	5
		07-08	**46.4**	12.5	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.6 and 0.6.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

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http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4'-Tetrabromodiphenyl ether (BDE 47) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**46.8**	5	11
		07-08	**53.1**	9.7	6
	20-39	05-06	**41.2**	4.2	9
		07-08	**33.9**	6	9
	40-59	05-06	**36.4**	3.7	4
		07-08	**37.4**	8.6	6
	60+	05-06	**36.8**	2.9	4
		07-08	**41.5**	6.6	5
Mexican American Female	12-19	05-06	**50.7**	5.4	16
		07-08	**34.2**	6	5
	20-39	05-06	**30.4**	3.6	9
		07-08	**31.2**	8.1	8
	40-59	05-06	**25.4**	4	6
		07-08	**23.0**	3	6
	60+	05-06	**52.9**	12.1	3
		07-08	**37.8**	6.9	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.6 and 0.6.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

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http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,3',4,4'-Tetrabromodiphenyl ether (BDE 66) (lipid adjusted) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	*	**< LOD**	**< LOD**	**< LOD**	**1.30** (1.00-2.10)	1999
Age group							
12-19 years	03-04	*	**< LOD**	**< LOD**	**< LOD**	**1.30** (<LOD-1.90)	606
20 years and older	03-04	*	**< LOD**	**< LOD**	**< LOD**	**1.30** (1.00-2.20)	1393
Gender							
Males	03-04	*	**< LOD**	**< LOD**	**< LOD**	**1.40** (1.00-2.60)	970
Females	03-04	*	**< LOD**	**< LOD**	**< LOD**	**1.10** (<LOD-2.20)	1029
Race/ethnicity							
Mexican Americans	03-04	*	**< LOD**	**< LOD**	**< LOD**	**1.20** (<LOD-1.60)	461
Non-Hispanic blacks	03-04	*	**< LOD**	**< LOD**	**1.00** (<LOD-2.00)	**2.40** (1.40-5.10)	496
Non-Hispanic whites	03-04	*	**< LOD**	**< LOD**	**< LOD**	**1.20** (<LOD-2.50)	914

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 1.0.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 2,3',4,4'-Tetrabromodiphenyl ether (BDE 66) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

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Serum 2,3',4,4'-Tetrabromodiphenyl ether (BDE 66) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

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http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85) (lipid adjusted) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	*	**< LOD**	**< LOD**	**< LOD**	**4.10** (2.80-6.30)	2000
Age group							
12-19 years	03-04	*	**< LOD**	**< LOD**	**2.80** (<LOD-3.50)	**4.00** (3.50-6.30)	610
20 years and older	03-04	*	**< LOD**	**< LOD**	**< LOD**	**4.10** (2.50-6.70)	1390
Gender							
Males	03-04	*	**< LOD**	**< LOD**	**2.40** (<LOD-3.30)	**4.80** (3.10-8.40)	967
Females	03-04	*	**< LOD**	**< LOD**	**< LOD**	**3.60** (<LOD-5.20)	1033
Race/ethnicity							
Mexican Americans	03-04	*	**< LOD**	**< LOD**	**< LOD**	**3.70** (2.80-4.80)	484
Non-Hispanic blacks	03-04	*	**< LOD**	**< LOD**	**3.50** (2.50-4.40)	**6.90** (3.10-18.0)	493
Non-Hispanic whites	03-04	*	**< LOD**	**< LOD**	**< LOD**	**3.90** (<LOD-7.50)	895

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 2.4.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

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http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	****1.56**	0.49	9
		07-08	**.648**	0.088	6
	20-39	05-06	****.960**	0.337	12
		07-08	**.618**	0.09	15
	40-59	05-06	*	*	12
		07-08	**1.06**	0.29	16
	60+	05-06	**1.58**	0.32	15
		07-08	**.971**	0.197	23
Non-Hispanic White Female	12-19	05-06	**1.50**	0.41	10
		07-08	**.807**	0.166	7
	20-39	05-06	****1.26**	0.43	16
		07-08	**.804**	0.207	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	****1.70**	0.77	17
		07-08	**.802**	0.172	21
Non-Hispanic Black Male	12-19	05-06	**1.14**	0.11	13
		07-08	**.763**	0.149	6
	20-39	05-06	**1.08**	0.2	6
		07-08	**.727**	0.104	6
	40-59	05-06	*	*	5
		07-08	**.829**	0.141	6
	60+	05-06	****1.55**	0.6	5
		07-08	**.848**	0.199	8
Non-Hispanic Black Female	12-19	05-06	**1.88**	0.41	14
		07-08	****1.61**	0.74	5
	20-39	05-06	****1.58**	0.69	7
		07-08	**.905**	0.109	8
	40-59	05-06	****1.51**	0.8	7
		07-08	*	*	8
	60+	05-06	**1.11**	0.32	5
		07-08	**1.16**	0.33	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

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Serum 2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.899**	0.078	11
		07-08	**1.04**	0.3	6
	20-39	05-06	**.825**	0.081	9
		07-08	**.790**	0.125	9
	40-59	05-06	**.900**	0.144	4
		07-08	**.804**	0.214	6
	60+	05-06	**.683**	0.167	4
		07-08	**.967**	0.239	5
Mexican American Female	12-19	05-06	**1.00**	0.1	16
		07-08	**.766**	0.147	5
	20-39	05-06	**.662**	0.098	9
		07-08	****.789**	0.256	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	**1.10**	0.33	3
		07-08	**1.00**	0.25	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

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Serum 2,2',4,4',5-Pentabromodiphenyl ether (BDE 99) (lipid adjusted) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	*	**< LOD**	**9.20** (7.50-11.1)	**21.7** (17.0-29.1)	**42.2** (33.3-54.8)	1985
Age group							
12-19 years	03-04	**6.88** (6.14-7.72)	**5.70** (<LOD-7.70)	**12.9** (11.4-15.7)	**27.9** (19.6-37.9)	**45.2** (35.9-56.8)	602
20 years and older	03-04	*	**< LOD**	**8.50** (7.10-10.5)	**20.6** (15.5-28.8)	**41.6** (30.8-57.3)	1383
Gender							
Males	03-04	**5.28** (<LOD-6.14)	**< LOD**	**10.0** (8.40-11.6)	**24.5** (18.0-37.3)	**45.5** (33.8-57.3)	964
Females	03-04	*	**< LOD**	**8.70** (6.60-10.6)	**18.3** (14.7-28.8)	**41.2** (22.9-60.3)	1021
Race/ethnicity							
Mexican Americans	03-04	**5.90** (5.45-6.39)	**5.50** (<LOD-5.80)	**10.8** (9.30-12.6)	**20.0** (17.0-23.5)	**30.8** (24.5-41.7)	478
Non-Hispanic blacks	03-04	**6.22** (5.42-7.12)	**5.00** (<LOD-5.70)	**11.5** (9.60-13.1)	**30.2** (21.5-42.2)	**74.7** (30.2-155)	479
Non-Hispanic whites	03-04	*	**< LOD**	**8.90** (6.80-11.3)	**21.7** (15.3-34.0)	**43.6** (30.7-71.4)	903

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 5.0.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 2,2',4,4',5-Pentabromodiphenyl ether (BDE 99) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	****14.6**	4.7	9
		07-08	**6.80**	1.22	6
	20-39	05-06	****10.3**	3.6	12
		07-08	**5.38**	0.78	15
	40-59	05-06	**4.45**	0.74	12
		07-08	****9.95**	3.12	16
	60+	05-06	**15.4**	4.3	15
		07-08	**9.80**	2.13	23
Non-Hispanic White Female	12-19	05-06	**17.5**	4.8	10
		07-08	**8.10**	2.09	7
	20-39	05-06	****13.4**	5	16
		07-08	**7.72**	2.02	13
	40-59	05-06	**4.16**	0.79	13
		07-08	**4.40**	0.82	17
	60+	05-06	****12.3**	4.4	17
		07-08	**8.00**	1.79	21
Non-Hispanic Black Male	12-19	05-06	**12.6**	1.4	13
		07-08	**7.39**	1.79	6
	20-39	05-06	****16.5**	6.2	6
		07-08	**6.25**	0.82	6
	40-59	05-06	**5.66**	1.1	5
		07-08	**7.22**	1.5	6
	60+	05-06	****19.5**	10.2	5
		07-08	**8.27**	1.74	8
Non-Hispanic Black Female	12-19	05-06	**23.3**	4.8	14
		07-08	****17.6**	8.3	5
	20-39	05-06	****17.5**	7.8	7
		07-08	**7.19**	1.14	8
	40-59	05-06	****16.1**	8.9	7
		07-08	**4.30**	0.6	8
	60+	05-06	**11.2**	3.1	5
		07-08	****11.3**	4	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.2 and 0.6.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

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http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5-Pentabromodiphenyl ether (BDE 99) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**9.27**	0.91	11
		07-08	**10.7**	2.5	6
	20-39	05-06	**8.47**	1	9
		07-08	**7.77**	1.66	9
	40-59	05-06	**9.14**	0.97	4
		07-08	**6.94**	1.71	6
	60+	05-06	**7.52**	1.13	4
		07-08	**8.39**	1.47	5
Mexican American Female	12-19	05-06	**10.7**	1.3	16
		07-08	**7.04**	0.95	5
	20-39	05-06	**6.51**	0.65	9
		07-08	****6.44**	1.97	8
	40-59	05-06	****6.30**	2.32	6
		07-08	**4.47**	0.66	6
	60+	05-06	**13.0**	3.7	3
		07-08	**9.24**	1.82	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.2 and 0.6.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',6-Pentabromodiphenyl ether (BDE 100) (lipid adjusted) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	**3.93** (3.42-4.51)	**3.60** (3.10-4.10)	**7.80** (6.80-9.00)	**18.4** (15.4-22.0)	**36.5** (24.6-54.0)	2040
Age group							
12-19 years	03-04	**5.17** (4.46-6.00)	**4.90** (3.80-6.10)	**9.50** (7.90-12.8)	**19.3** (14.4-26.2)	**34.3** (25.2-45.0)	622
20 years and older	03-04	**3.77** (3.24-4.38)	**3.30** (2.90-4.00)	**7.40** (6.20-9.00)	**18.3** (15.0-22.2)	**36.6** (23.2-59.2)	1418
Gender							
Males	03-04	**4.16** (3.55-4.86)	**3.80** (3.10-4.50)	**8.50** (7.50-9.90)	**18.5** (14.9-25.1)	**44.1** (21.9-61.5)	994
Females	03-04	**3.72** (3.15-4.40)	**3.30** (2.80-4.10)	**7.10** (6.00-8.00)	**18.4** (14.4-23.1)	**33.3** (23.3-46.0)	1046
Race/ethnicity							
Mexican Americans	03-04	**4.58** (4.03-5.22)	**4.30** (3.80-5.20)	**8.10** (6.80-9.10)	**14.9** (11.4-20.3)	**26.7** (20.3-36.2)	488
Non-Hispanic blacks	03-04	**4.72** (4.01-5.55)	**4.30** (3.30-5.20)	**9.50** (7.80-10.9)	**24.1** (16.6-34.3)	**41.3** (26.0-79.2)	503
Non-Hispanic whites	03-04	**3.78** (3.17-4.51)	**3.30** (2.90-4.10)	**7.70** (6.20-9.70)	**18.6** (14.5-23.3)	**40.5** (22.6-59.2)	921

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 1.4.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',6-Pentabromodiphenyl ether (BDE 100) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	****13.1**	4.2	9
		07-08	**5.68**	0.92	6
	20-39	05-06	****8.98**	2.81	12
		07-08	**7.65**	1.18	15
	40-59	05-06	**4.07**	0.61	12
		07-08	**9.00**	2.08	16
	60+	05-06	**14.2**	2.6	15
		07-08	**7.76**	1.41	23
Non-Hispanic White Female	12-19	05-06	**10.8**	1.9	10
		07-08	**5.98**	0.69	7
	20-39	05-06	**9.89**	2.83	16
		07-08	**6.11**	1.05	13
	40-59	05-06	**4.06**	0.66	13
		07-08	**4.12**	0.55	17
	60+	05-06	****12.8**	5.3	17
		07-08	**8.12**	1.66	21
Non-Hispanic Black Male	12-19	05-06	**10.8**	1	13
		07-08	**6.45**	0.92	6
	20-39	05-06	**9.11**	2.32	6
		07-08	**7.18**	1.05	6
	40-59	05-06	**7.19**	1.91	5
		07-08	**7.41**	0.94	6
	60+	05-06	**12.1**	2.6	5
		07-08	**6.56**	0.9	8
Non-Hispanic Black Female	12-19	05-06	**14.2**	2.8	14
		07-08	****10.2**	3.6	5
	20-39	05-06	****11.7**	4.5	7
		07-08	**7.39**	1.17	8
	40-59	05-06	****10.4**	5	7
		07-08	**4.37**	0.48	8
	60+	05-06	**8.03**	2.35	5
		07-08	**8.54**	2.26	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',6-Pentabromodiphenyl ether (BDE 100) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**8.93**	1.09	11
		07-08	**11.0**	2.6	6
	20-39	05-06	**8.90**	1.44	9
		07-08	**7.71**	1.43	9
	40-59	05-06	**7.89**	1.25	4
		07-08	**8.15**	1.99	6
	60+	05-06	**6.74**	0.97	4
		07-08	****9.53**	3.21	5
Mexican American Female	12-19	05-06	**9.45**	1.14	16
		07-08	**6.40**	1.09	5
	20-39	05-06	**5.36**	0.72	9
		07-08	**7.45**	1.76	8
	40-59	05-06	**5.98**	1.15	6
		07-08	**4.87**	0.76	6
	60+	05-06	**10.2**	2.3	3
		07-08	**7.86**	1.53	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153) (lipid adjusted) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	**5.69** (5.11-6.34)	**4.80** (4.20-5.30)	**11.3** (9.90-12.8)	**32.6** (27.9-40.3)	**65.7** (54.9-88.4)	2039
Age group							
12-19 years	03-04	**8.05** (6.68-9.70)	**7.50** (6.10-9.90)	**15.3** (11.7-19.4)	**31.0** (22.9-44.2)	**52.9** (35.9-68.5)	621
20 years and older	03-04	**5.41** (4.83-6.05)	**4.40** (3.80-5.10)	**10.6** (9.00-12.3)	**32.8** (26.5-45.9)	**73.3** (58.2-90.4)	1418
Gender							
Males	03-04	**6.85** (5.99-7.84)	**5.50** (4.80-6.70)	**12.7** (11.2-16.5)	**49.3** (31.0-62.9)	**88.4** (63.4-115)	994
Females	03-04	**4.78** (4.20-5.43)	**4.10** (3.40-5.00)	**9.70** (7.40-11.9)	**26.0** (20.2-31.6)	**54.5** (34.6-62.9)	1045
Race/ethnicity							
Mexican Americans	03-04	**5.11** (4.32-6.06)	**4.80** (4.20-5.40)	**8.70** (6.50-11.0)	**17.2** (13.0-25.3)	**34.0** (18.3-55.1)	487
Non-Hispanic blacks	03-04	**6.05** (5.35-6.83)	**5.50** (4.80-6.20)	**12.9** (9.90-17.5)	**30.0** (21.0-44.2)	**53.1** (36.8-63.3)	503
Non-Hispanic whites	03-04	**5.85** (5.03-6.81)	**4.90** (3.90-5.70)	**11.9** (9.90-15.2)	**39.0** (28.5-54.9)	**75.9** (58.0-93.2)	921

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 2.2.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**18.0**	4.4	9
		07-08	**13.8**	2.3	6
	20-39	05-06	**15.4**	3.7	12
		07-08	**20.9**	3.1	15
	40-59	05-06	**7.53**	1.04	12
		07-08	**16.0**	3.1	16
	60+	05-06	**19.7**	4.7	15
		07-08	**14.7**	3.8	23
Non-Hispanic White Female	12-19	05-06	**12.8**	2.2	10
		07-08	**8.84**	0.94	7
	20-39	05-06	**11.1**	1.9	16
		07-08	**11.8**	1.7	13
	40-59	05-06	**10.4**	2.3	13
		07-08	**9.89**	1.77	17
	60+	05-06	****9.64**	2.9	17
		07-08	**13.2**	2.5	21
Non-Hispanic Black Male	12-19	05-06	**16.5**	1.5	13
		07-08	**20.7**	3.9	6
	20-39	05-06	**10.3**	1.6	6
		07-08	**13.4**	2.8	6
	40-59	05-06	**13.4**	3.6	5
		07-08	**10.2**	1.1	6
	60+	05-06	**14.7**	1.6	5
		07-08	**10.6**	1.8	8
Non-Hispanic Black Female	12-19	05-06	**12.1**	1.5	14
		07-08	**11.1**	2	5
	20-39	05-06	**9.55**	1.69	7
		07-08	**11.0**	1.7	8
	40-59	05-06	**7.41**	2.22	7
		07-08	**6.28**	1.03	8
	60+	05-06	****6.89**	2.52	5
		07-08	**7.91**	2.1	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**11.0**	1	11
		07-08	**17.2**	5	6
	20-39	05-06	**11.9**	2.6	9
		07-08	**10.7**	2.1	9
	40-59	05-06	****11.3**	3.7	4
		07-08	**11.9**	2.4	6
	60+	05-06	**8.00**	1.44	4
		07-08	**17.6**	4.5	5
Mexican American Female	12-19	05-06	**10.5**	1.4	16
		07-08	**7.14**	0.72	5
	20-39	05-06	**6.73**	1.42	9
		07-08	**11.1**	2.3	8
	40-59	05-06	**9.24**	2.16	6
		07-08	**6.55**	1.61	6
	60+	05-06	**11.0**	1.8	3
		07-08	****10.2**	3.7	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154) (lipid adjusted) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	*	**< LOD**	**.900** (.800-1.10)	**2.10** (1.70-2.70)	**4.20** (2.80-5.40)	2014
Age group							
12-19 years	03-04	*	**< LOD**	**1.20** (1.00-1.40)	**2.70** (2.00-3.00)	**4.00** (3.00-4.80)	614
20 years and older	03-04	*	**< LOD**	**.900** (.800-1.10)	**2.00** (1.60-2.60)	**4.20** (2.70-5.70)	1400
Gender							
Males	03-04	*	**< LOD**	**1.00** (.800-1.20)	**2.30** (1.80-3.00)	**4.30** (3.20-6.50)	976
Females	03-04	*	**< LOD**	**.900** (.800-1.00)	**1.80** (1.40-2.80)	**4.20** (2.50-5.70)	1038
Race/ethnicity							
Mexican Americans	03-04	*	**< LOD**	**1.00** (.900-1.10)	**1.80** (1.40-2.30)	**3.90** (2.30-4.50)	477
Non-Hispanic blacks	03-04	*	**< LOD**	**1.20** (.900-1.40)	**2.70** (2.30-4.40)	**5.30** (3.10-8.70)	498
Non-Hispanic whites	03-04	*	**< LOD**	**.900** (.800-1.10)	**2.00** (1.50-2.80)	**4.20** (2.50-6.70)	913

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.8.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	****1.30**	0.45	9
		07-08	*	*	6
	20-39	05-06	**.802**	0.237	12
		07-08	**.686**	0.089	15
	40-59	05-06	*	*	12
		07-08	**.974**	0.279	16
	60+	05-06	**1.36**	0.28	15
		07-08	**.833**	0.152	23
Non-Hispanic White Female	12-19	05-06	**1.23**	0.3	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	****1.30**	0.53	17
		07-08	**.753**	0.141	21
Non-Hispanic Black Male	12-19	05-06	**1.20**	0.16	13
		07-08	**.712**	0.108	6
	20-39	05-06	****1.24**	0.42	6
		07-08	**.637**	0.083	6
	40-59	05-06	**.623**	0.16	5
		07-08	**.733**	0.099	6
	60+	05-06	**1.40**	0.38	5
		07-08	**.693**	0.103	8
Non-Hispanic Black Female	12-19	05-06	**1.73**	0.39	14
		07-08	****1.25**	0.46	5
	20-39	05-06	****1.32**	0.55	7
		07-08	**.704**	0.088	8
	40-59	05-06	****1.26**	0.66	7
		07-08	*	*	8
	60+	05-06	****1.11**	0.46	5
		07-08	****.940**	0.329	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.902**	0.091	11
		07-08	**.973**	0.224	6
	20-39	05-06	**.827**	0.103	9
		07-08	**.789**	0.148	9
	40-59	05-06	**.870**	0.104	4
		07-08	**.732**	0.19	6
	60+	05-06	**.657**	0.135	4
		07-08	**.797**	0.177	5
Mexican American Female	12-19	05-06	**.965**	0.106	16
		07-08	**.649**	0.13	5
	20-39	05-06	**.609**	0.061	9
		07-08	**.671**	0.177	8
	40-59	05-06	****.710**	0.295	6
		07-08	*	*	6
	60+	05-06	**1.09**	0.25	3
		07-08	**.898**	0.201	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183) (lipid adjusted) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1993
Age group							
12-19 years	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	604
20 years and older	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1389
Gender							
Males	03-04	*	**< LOD**	**< LOD**	**< LOD**	**1.70** (<LOD-2.60)	962
Females	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1031
Race/ethnicity							
Mexican Americans	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	484
Non-Hispanic blacks	03-04	*	**< LOD**	**< LOD**	**< LOD**	**1.80** (<LOD-2.70)	482
Non-Hispanic whites	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	901

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 1.7.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	**.694	0.238	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	.611	0.077	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	.693	0.188	5
		07-08	.733	0.087	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://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 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 6.0 and 5.8.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://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 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 6.0 and 5.8.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153) (lipid adjusted) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	**2.29** (1.82-2.87)	**2.20** (2.00-2.60)	**4.40** (3.40-6.30)	**12.8** (6.60-25.5)	**27.2** (11.7-60.9)	2032
Age group							
12-19 years	03-04	*	**< LOD**	**1.10** (.900-1.60)	**2.70** (2.00-3.00)	**4.10** (2.90-4.70)	616
20 years and older	03-04	**2.72** (2.14-3.47)	**2.50** (2.20-2.80)	**4.90** (3.60-7.90)	**13.6** (7.20-34.6)	**34.6** (12.8-66.8)	1416
Gender							
Males	03-04	**2.76** (2.21-3.45)	**2.70** (2.30-3.20)	**5.40** (3.90-8.50)	**15.8** (9.30-27.8)	**35.4** (13.5-70.3)	987
Females	03-04	**1.92** (1.50-2.46)	**2.00** (1.60-2.30)	**3.60** (2.80-4.90)	**9.70** (4.60-27.5)	**23.9** (7.40-56.6)	1045
Race/ethnicity							
Mexican Americans	03-04	**1.11** (.917-1.33)	**1.10** (<LOD-1.30)	**2.60** (2.00-3.00)	**6.00** (3.50-8.60)	**10.0** (6.50-15.2)	484
Non-Hispanic blacks	03-04	**2.35** (1.64-3.37)	**2.10** (1.70-2.80)	**4.80** (3.00-12.1)	**13.9** (7.00-38.2)	**29.7** (12.1-70.2)	503
Non-Hispanic whites	03-04	**2.66** (2.06-3.42)	**2.50** (2.20-2.80)	**4.90** (3.40-7.80)	**13.5** (6.60-36.4)	**34.6** (11.6-70.3)	917

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.8.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	****1.90**	1.09	9
		07-08	**.824**	0.161	6
	20-39	05-06	****6.86**	3.02	12
		07-08	****3.58**	1.27	15
	40-59	05-06	****16.8**	11.2	12
		07-08	**8.92**	1.44	16
	60+	05-06	**8.95**	2.02	15
		07-08	**6.84**	0.74	23
Non-Hispanic White Female	12-19	05-06	**.826**	0.18	10
		07-08	*	*	7
	20-39	05-06	**2.63**	0.45	16
		07-08	**1.81**	0.34	13
	40-59	05-06	****9.35**	3.65	13
		07-08	**4.63**	1.07	17
	60+	05-06	**8.83**	1.74	17
		07-08	**6.74**	1.65	21
Non-Hispanic Black Male	12-19	05-06	**1.13**	0.18	13
		07-08	**.689**	0.111	6
	20-39	05-06	****4.08**	2.26	6
		07-08	**2.10**	0.56	6
	40-59	05-06	****17.1**	8.8	5
		07-08	****14.5**	6.6	6
	60+	05-06	**8.56**	1.13	5
		07-08	**7.25**	1.17	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**2.38**	0.55	7
		07-08	****3.36**	1.64	8
	40-59	05-06	****4.26**	1.69	7
		07-08	**6.31**	1.13	8
	60+	05-06	****6.84**	2.86	5
		07-08	**8.01**	1.65	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.601**	0.074	11
		07-08	*	*	6
	20-39	05-06	**1.69**	0.44	9
		07-08	**.962**	0.178	9
	40-59	05-06	**4.29**	1.26	4
		07-08	****22.7**	20.5	6
	60+	05-06	****19.7**	9.8	4
		07-08	****14.0**	8.8	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	****2.53**	1.14	9
		07-08	****1.30**	0.45	8
	40-59	05-06	**2.12**	0.4	6
		07-08	**1.64**	0.35	6
	60+	05-06	****4.16**	1.3	3
		07-08	****4.28**	1.44	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.6 and 0.6.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/PBDEs_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PBDEs_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin (HpCDD) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**58.2** (<LOD-63.6)	**86.0** (75.5-96.7)	**112** (101-131)	1894
	01-02	**39.0** (33.7-45.0)	**40.2** (34.9-46.9)	**68.7** (56.7-82.2)	**115** (88.2-138)	**147** (126-181)	1220
	03-04	**25.3** (23.4-27.3)	**24.9** (22.8-26.9)	**42.5** (38.8-48.1)	**70.4** (62.7-80.1)	**91.3** (73.5-117)	1874
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**63.6** (<LOD-75.6)	657
	01-02	†	†	†	†	†	†
	03-04	**16.7** (15.1-18.4)	**16.4** (15.1-18.3)	**23.6** (21.5-25.8)	**33.4** (28.6-36.8)	**46.7** (34.5-78.1)	586
20 years and older	99-00	*	**< LOD**	**62.0** (57.1-66.7)	**92.9** (81.2-101)	**120** (102-139)	1237
	01-02	**39.0** (33.7-45.0)	**40.2** (34.9-46.9)	**68.7** (56.7-82.2)	**115** (88.2-138)	**147** (126-181)	1220
	03-04	**26.8** (24.6-29.2)	**27.3** (24.6-29.0)	**45.6** (41.3-53.2)	**73.7** (64.1-88.6)	**95.0** (76.1-126)	1288
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**73.6** (69.0-80.8)	**94.7** (83.1-103)	910
	01-02	**36.6** (31.7-42.3)	**39.0** (33.3-42.6)	**62.1** (49.7-75.0)	**102** (75.8-132)	**138** (103-169)	553
	03-04	**24.2** (21.7-27.0)	**23.2** (21.1-25.6)	**40.6** (35.3-46.9)	**64.2** (58.8-73.7)	**85.0** (65.8-113)	920
Females	99-00	*	**< LOD**	**62.7** (<LOD-69.1)	**102** (86.0-118)	**131** (111-164)	984
	01-02	**41.2** (34.9-48.7)	**43.6** (35.3-52.4)	**76.0** (59.5-90.1)	**125** (93.4-150)	**158** (130-191)	667
	03-04	**26.3** (24.4-28.3)	**26.8** (24.3-28.3)	**44.4** (41.1-50.2)	**76.1** (65.3-89.1)	**95.7** (80.7-128)	954
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**61.4** (<LOD-69.0)	**97.7** (82.8-111)	**132** (108-159)	621
	01-02	**39.6** (35.7-43.9)	**39.7** (33.6-47.4)	**64.0** (55.8-74.7)	**107** (82.4-128)	**149** (111-171)	262
	03-04	**25.8** (22.6-29.4)	**26.1** (20.9-30.9)	**41.9** (36.7-44.7)	**61.0** (49.7-71.9)	**80.1** (65.0-89.1)	424
Non-Hispanic blacks	99-00	*	**< LOD**	**58.1** (<LOD-71.1)	**95.0** (75.1-110)	**125** (102-183)	408
	01-02	**43.7** (35.4-54.0)	**42.8** (32.2-59.8)	**80.6** (60.9-106)	**134** (101-166)	**167** (130-230)	218
	03-04	**25.8** (22.6-29.4)	**23.7** (20.7-27.1)	**41.2** (32.6-56.4)	**69.2** (54.6-115)	**115** (67.1-164)	454
Non-Hispanic whites	99-00	*	**< LOD**	**59.0** (<LOD-64.8)	**84.9** (72.0-97.0)	**106** (96.7-122)	709
	01-02	**39.3** (33.0-46.8)	**40.5** (34.0-50.1)	**71.0** (56.3-87.5)	**117** (87.1-147)	**147** (125-186)	657
	03-04	**25.0** (22.6-27.7)	**24.6** (22.3-27.4)	**42.6** (39.4-48.5)	**73.5** (60.4-86.7)	**93.7** (71.6-127)	875

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 55.9, 10.3, and 13.0, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin (HpCDD) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**19.2**	1.6	9
		07-08	**14.5**	0.4	6
	20-39	05-06	**19.4**	1.4	12
		07-08	**16.9**	1.6	15
	40-59	05-06	**36.1**	4.6	12
		07-08	**21.0**	1.8	16
	60+	05-06	**47.8**	4.3	15
		07-08	**36.5**	2.2	23
Non-Hispanic White Female	12-19	05-06	**15.0**	1	10
		07-08	**12.7**	1	7
	20-39	05-06	**20.5**	2.1	16
		07-08	**17.3**	0.9	13
	40-59	05-06	**32.2**	2.9	13
		07-08	**22.2**	1.8	17
	60+	05-06	**49.8**	3	17
		07-08	**41.6**	3.9	21
Non-Hispanic Black Male	12-19	05-06	**17.2**	0.7	13
		07-08	**11.9**	0.9	6
	20-39	05-06	**16.1**	1	6
		07-08	**16.0**	1.1	6
	40-59	05-06	**23.4**	1.6	5
		07-08	**20.8**	1.5	6
	60+	05-06	**44.9**	5.7	5
		07-08	**28.9**	5.1	8
Non-Hispanic Black Female	12-19	05-06	**15.9**	1.7	14
		07-08	**11.0**	1.1	5
	20-39	05-06	**20.8**	1.6	7
		07-08	**19.4**	1.7	8
	40-59	05-06	**36.3**	4.3	7
		07-08	**28.1**	2.1	8
	60+	05-06	**77.4**	12.5	5
		07-08	**55.1**	6	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 2.43 and 4.22.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin (HpCDD) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**15.3**	1.1	11
		07-08	**12.8**	1.1	6
	20-39	05-06	**26.0**	2.6	9
		07-08	**17.7**	1.4	9
	40-59	05-06	**34.5**	3.6	4
		07-08	**29.0**	2.2	6
	60+	05-06	**40.3**	5	4
		07-08	**27.5**	3.8	5
Mexican American Female	12-19	05-06	**13.2**	0.7	16
		07-08	**10.9**	2.3	5
	20-39	05-06	**25.1**	1.9	9
		07-08	**23.0**	2.9	8
	40-59	05-06	**41.8**	4.3	6
		07-08	**30.9**	3.6	6
	60+	05-06	**59.1**	6.9	3
		07-08	**52.8**	2.8	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 2.43 and 4.22.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin (HpCDD) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**354** (<LOD384)	**564** (501-617)	**749** (646-869)	1894
	01-02	**252** (219-289)	**267** (232-305)	**440** (376-529)	**779** (591-989)	**1030** (840-1290)	1220
	03-04	**155** (143-167)	**150** (134-163)	**288** (242-319)	**465** (399-550)	**618** (516-787)	1874
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**289** (<LOD340)	657
	01-02	†	†	†	†	†	†
	03-04	**84.6** (77.4-92.5)	**83.9** (76.1-92.0)	**118** (106-131)	**165** (139-185)	**210** (176-319)	586
20 years and older	99-00	*	**< LOD**	**385** (354-418)	**610** (534-677)	**802** (681-936)	1237
	01-02	**252** (219-289)	**267** (232-305)	**440** (376-529)	**779** (591-989)	**1030** (840-1290)	1220
	03-04	**169** (155-184)	**170** (150-186)	**314** (267-348)	**506** (419-576)	**628** (546-810)	1288
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**489** (436-543)	**613** (535-681)	910
	01-02	**243** (211-279)	**245** (213-291)	**422** (349-527)	**766** (536-976)	**983** (766-1260)	553
	03-04	**150** (135-167)	**144** (129-161)	**273** (236-305)	**424** (365-516)	**554** (440-667)	920
Females	99-00	*	**< LOD**	**373** (<LOD428)	**637** (562-802)	**907** (806-1040)	984
	01-02	**260** (221-306)	**281** (236-324)	**466** (386-551)	**795** (621-997)	**1140** (849-1330)	667
	03-04	**159** (147-172)	**158** (138-170)	**303** (249-345)	**520** (429-591)	**623** (545-848)	954
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**372** (<LOD404)	**598** (546-657)	**849** (657-1020)	621
	01-02	**254** (232-278)	**249** (229-286)	**403** (360-521)	**791** (643-929)	**988** (817-1240)	262
	03-04	**158** (139-180)	**159** (138-193)	**274** (241-299)	**414** (349-469)	**556** (451-592)	424
Non-Hispanic blacks	99-00	*	**< LOD**	**323** (<LOD391)	**567** (422-716)	**778** (574-1130)	408
	01-02	**258** (208-319)	**262** (180-339)	**478** (343-600)	**852** (578-1170)	**1170** (821-1660)	218
	03-04	**148** (128-170)	**137** (117-156)	**247** (188-344)	**434** (345-599)	**715** (405-1090)	454
Non-Hispanic whites	99-00	*	**< LOD**	**370** (<LOD401)	**565** (491-634)	**733** (637-816)	709
	01-02	**255** (216-302)	**277** (228-328)	**442** (374-547)	**782** (551-1020)	**1020** (803-1290)	657
	03-04	**155** (140-170)	**152** (131-171)	**292** (248-325)	**492** (390-571)	**621** (506-810)	875

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin (HpCDD) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**106**	10	9
		07-08	**72.5**	2.5	6
	20-39	05-06	**140**	12	12
		07-08	**111**	10	15
	40-59	05-06	**274**	39	12
		07-08	**154**	12	16
	60+	05-06	**325**	28	15
		07-08	**233**	13	23
Non-Hispanic White Female	12-19	05-06	**79.4**	5	10
		07-08	**59.1**	3.8	7
	20-39	05-06	**135**	17	16
		07-08	**103**	6	13
	40-59	05-06	**237**	23	13
		07-08	**146**	12	17
	60+	05-06	**365**	24	17
		07-08	**279**	27	21
Non-Hispanic Black Male	12-19	05-06	**86.6**	3.3	13
		07-08	**56.1**	3.8	6
	20-39	05-06	**95.6**	7.3	6
		07-08	**90.1**	7	6
	40-59	05-06	**149**	12	5
		07-08	**133**	9	6
	60+	05-06	**266**	30	5
		07-08	**174**	31	8
Non-Hispanic Black Female	12-19	05-06	**78.3**	7.7	14
		07-08	**52.6**	6.3	5
	20-39	05-06	**120**	10	7
		07-08	**98.6**	9.4	8
	40-59	05-06	**234**	31	7
		07-08	**169**	14	8
	60+	05-06	**522**	90	5
		07-08	**329**	29	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.

Biomonitoring Summary

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Serum 1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin (HpCDD) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**82.5**	5.3	11
		07-08	**67.4**	4.5	6
	20-39	05-06	**184**	16	9
		07-08	**123**	15	9
	40-59	05-06	**284**	41	4
		07-08	**207**	19	6
	60+	05-06	**286**	26	4
		07-08	**207**	44	5
Mexican American Female	12-19	05-06	**72.1**	4.2	16
		07-08	**52.9**	10.5	5
	20-39	05-06	**168**	15	9
		07-08	**133**	17	8
	40-59	05-06	**311**	37	6
		07-08	**210**	28	6
	60+	05-06	**458**	88	3
		07-08	**363**	25	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.

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Serum 1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD) (lipid adjusted) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**10.7** (<LOD-13.9)	**14.9** (11.7-20.0)	1239
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1861
Age group							
12-19 years	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	582
20 years and older	01-02	*	**< LOD**	**< LOD**	**10.7** (<LOD-13.9)	**14.9** (11.7-20.0)	1239
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1279
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**10.9** (<LOD-14.3)	**14.7** (11.5-17.6)	566
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	914
Females	01-02	*	**< LOD**	**< LOD**	**10.7** (<LOD-14.1)	**15.6** (11.1-23.0)	673
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	947
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**9.20** (<LOD-11.8)	263
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	421
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**13.9** (<LOD-17.6)	**18.3** (13.9-23.0)	220
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	450
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**11.3** (<LOD-14.4)	**15.1** (12.0-20.5)	672
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	870

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 9.0 and 11.9.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

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Serum 1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	**1.11**	0.25	6
	20-39	05-06	**1.44**	0.35	12
		07-08	**1.38**	0.25	15
	40-59	05-06	**4.47**	0.42	12
		07-08	**2.95**	0.17	16
	60+	05-06	**7.15**	0.76	15
		07-08	**5.65**	0.49	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	**1.10**	0.19	13
	40-59	05-06	**3.59**	0.2	13
		07-08	**2.45**	0.21	17
	60+	05-06	**6.40**	0.33	17
		07-08	**5.71**	0.44	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	**1.56**	0.33	6
		07-08	****1.06**	0.38	6
	40-59	05-06	**2.78**	0.37	5
		07-08	**2.93**	0.17	6
	60+	05-06	**6.65**	0.19	5
		07-08	**4.83**	0.8	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**1.87**	0.24	7
		07-08	*	*	8
	40-59	05-06	**3.83**	0.44	7
		07-08	**3.34**	0.44	8
	60+	05-06	**12.7**	1.7	5
		07-08	**9.88**	1.7	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.15 and 0.26.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

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Serum 1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	**1.41**	0.2	9
	40-59	05-06	****2.65**	0.93	4
		07-08	**2.91**	0.2	6
	60+	05-06	**4.96**	0.17	4
		07-08	**4.83**	0.34	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	**1.47**	0.27	8
	40-59	05-06	**3.64**	0.8	6
		07-08	**3.03**	0.47	6
	60+	05-06	**7.30**	0.67	3
		07-08	**6.19**	0.72	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.15 and 0.26.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

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Serum 1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD) (whole weight) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**74.7** (<LOD-90.7)	**105** (81.2-139)	1239
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1861
Age group							
12-19 years	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	582
20 years and older	01-02	*	**< LOD**	**< LOD**	**74.7** (<LOD-90.7)	**105** (81.2-139)	1239
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1279
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**73.6** (<LOD-90.7)	**105** (77.9-134)	566
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	914
Females	01-02	*	**< LOD**	**< LOD**	**74.7** (<LOD-90.7)	**102** (78.0-152)	673
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	947
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**71.2** (<LOD-118)	263
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	421
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**82.1** (<LOD-130)	**130** (75.7-184)	220
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	450
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**77.5** (<LOD-97.1)	**105** (78.8-143)	672
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	870

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	**5.49**	1.24	6
	20-39	05-06	**10.8**	2.9	12
		07-08	**9.33**	1.72	15
	40-59	05-06	**33.7**	3.5	12
		07-08	**21.5**	0.9	16
	60+	05-06	**48.4**	4.7	15
		07-08	**36.0**	2.7	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	**6.65**	1.23	13
	40-59	05-06	**26.6**	2.2	13
		07-08	**16.2**	1.4	17
	60+	05-06	**46.7**	2.5	17
		07-08	**38.5**	3.2	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	**9.31**	2.04	6
		07-08	****6.04**	2.2	6
	40-59	05-06	**17.8**	2.4	5
		07-08	**18.7**	0.9	6
	60+	05-06	**40.0**	2.1	5
		07-08	**29.2**	5	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**10.7**	1.4	7
		07-08	*	*	8
	40-59	05-06	**24.6**	3	7
		07-08	**20.0**	2.8	8
	60+	05-06	**83.9**	9.4	5
		07-08	**59.3**	10	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	**9.33**	1.39	9
	40-59	05-06	****21.7**	8.3	4
		07-08	**20.8**	2	6
	60+	05-06	**36.0**	2.7	4
		07-08	**35.1**	3.8	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	**8.36**	1.42	8
	40-59	05-06	**27.1**	5.7	6
		07-08	**20.4**	3.3	6
	60+	05-06	**55.9**	8.6	3
		07-08	**42.7**	5.7	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

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Factsheet

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Serum 1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**32.6** (28.3-38.2)	**56.9** (47.4-67.3)	**74.0** (68.3-82.4)	1885
	01-02	**34.6** (29.6-40.6)	**39.2** (32.7-44.7)	**60.8** (50.3-74.2)	**95.2** (76.2-120)	**128** (99.4-153)	1234
	03-04	**17.2** (15.7-18.9)	**20.0** (17.8-22.9)	**36.5** (32.2-40.0)	**53.0** (48.1-59.6)	**68.5** (59.6-74.9)	1871
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**26.7** (20.2-29.6)	648
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**16.1** (14.3-18.1)	**19.4** (16.4-27.7)	584
20 years and older	99-00	*	**< LOD**	**36.2** (31.5-40.7)	**62.8** (53.6-69.1)	**75.6** (70.5-84.2)	1237
	01-02	**34.6** (29.6-40.6)	**39.2** (32.7-44.7)	**60.8** (50.3-74.2)	**95.2** (76.2-120)	**128** (99.4-153)	1234
	03-04	**19.7** (17.8-21.8)	**23.8** (20.7-26.4)	**39.3** (35.4-42.2)	**56.6** (49.7-63.8)	**70.8** (60.7-82.2)	1287
Gender							
Males	99-00	*	**< LOD**	**31.5** (23.7-38.2)	**55.0** (45.7-64.2)	**71.3** (59.4-79.4)	908
	01-02	**34.1** (28.3-41.1)	**38.9** (32.1-44.7)	**61.9** (50.0-79.5)	**94.9** (70.8-131)	**130** (88.5-181)	564
	03-04	**17.5** (15.5-19.8)	**19.8** (17.8-21.6)	**35.5** (29.8-40.3)	**52.9** (45.4-63.2)	**70.2** (57.5-88.7)	920
Females	99-00	*	**< LOD**	**34.9** (29.1-39.7)	**61.2** (51.0-69.2)	**74.9** (68.4-92.2)	977
	01-02	**35.1** (29.9-41.2)	**40.1** (32.4-46.3)	**59.8** (49.8-72.3)	**97.6** (77.1-114)	**126** (108-142)	670
	03-04	**16.9** (15.3-18.6)	**20.5** (17.8-24.6)	**36.9** (33.2-41.0)	**53.6** (48.3-59.6)	**65.6** (60.0-73.4)	951
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**21.3** (<LOD-27.6)	**43.3** (34.1-52.3)	**58.0** (49.5-64.8)	624
	01-02	**18.3** (15.6-21.4)	**21.2** (19.4-25.0)	**31.9** (27.5-40.3)	**51.5** (40.3-69.9)	**68.3** (48.0-111)	260
	03-04	*	**< LOD**	**21.1** (16.3-26.5)	**32.2** (24.5-47.4)	**43.0** (31.5-65.3)	424
Non-Hispanic blacks	99-00	*	**< LOD**	**31.9** (26.6-41.2)	**56.7** (44.9-74.6)	**81.6** (72.2-91.7)	402
	01-02	**38.9** (33.6-45.0)	**40.3** (33.5-47.3)	**63.5** (54.6-76.9)	**93.9** (78.7-133)	**136** (92.6-185)	219
	03-04	**16.2** (12.9-20.4)	**18.1** (14.4-21.6)	**34.9** (28.4-42.9)	**54.5** (44.4-69.4)	**74.0** (54.3-122)	454
Non-Hispanic whites	99-00	*	**< LOD**	**35.5** (29.7-40.0)	**60.9** (51.4-68.3)	**74.3** (68.3-83.0)	703
	01-02	**37.8** (31.5-45.4)	**42.8** (33.9-51.2)	**65.0** (52.3-82.9)	**99.6** (78.4-130)	**131** (103-165)	671
	03-04	**18.7** (17.0-20.6)	**22.9** (19.9-26.2)	**38.0** (35.2-41.5)	**56.6** (48.7-63.8)	**69.0** (60.6-74.9)	872

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 20.1, 9.1, and 12.3, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

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Serum 1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**10.5**	0.8	9
		07-08	**9.78**	0.51	6
	20-39	05-06	**14.7**	1.4	12
		07-08	**14.2**	0.7	15
	40-59	05-06	**31.8**	3.4	12
		07-08	**23.0**	1.1	16
	60+	05-06	**46.6**	3.4	15
		07-08	**40.5**	2.6	23
Non-Hispanic White Female	12-19	05-06	**6.76**	0.95	10
		07-08	**6.74**	0.45	7
	20-39	05-06	**13.1**	1.4	16
		07-08	**12.5**	0.8	13
	40-59	05-06	**25.6**	1.2	13
		07-08	**23.7**	0.9	17
	60+	05-06	**47.4**	3.5	17
		07-08	**45.7**	2.9	21
Non-Hispanic Black Male	12-19	05-06	**9.16**	0.4	13
		07-08	**7.63**	0.94	6
	20-39	05-06	**12.7**	0.8	6
		07-08	**13.4**	1.2	6
	40-59	05-06	**20.4**	1.3	5
		07-08	**23.6**	2.6	6
	60+	05-06	**45.5**	6.1	5
		07-08	**36.3**	4.4	8
Non-Hispanic Black Female	12-19	05-06	**5.50**	0.65	14
		07-08	**6.07**	0.4	5
	20-39	05-06	**12.2**	0.8	7
		07-08	**13.4**	1.3	8
	40-59	05-06	**25.1**	2.6	7
		07-08	**25.8**	1.4	8
	60+	05-06	**69.4**	8	5
		07-08	**54.2**	5.4	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.12 and 0.2.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

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Factsheet

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Serum 1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**4.25**	1.01	11
		07-08	**7.12**	0.85	6
	20-39	05-06	**9.78**	0.77	9
		07-08	**10.2**	0.5	9
	40-59	05-06	**18.9**	2.8	4
		07-08	**19.4**	1.3	6
	60+	05-06	**34.5**	2.4	4
		07-08	**31.3**	2.6	5
Mexican American Female	12-19	05-06	**3.62**	0.73	16
		07-08	****4.01**	1.25	5
	20-39	05-06	**8.51**	0.79	9
		07-08	**9.61**	0.86	8
	40-59	05-06	**18.9**	1.5	6
		07-08	**19.5**	2	6
	60+	05-06	**36.4**	3.3	3
		07-08	**36.7**	4.6	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.12 and 0.2.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

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Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**202** (168-239)	**374** (314-426)	**496** (429-571)	1885
	01-02	**224** (192-261)	**247** (219-287)	**412** (347-498)	**663** (549-785)	**870** (696-1100)	1234
	03-04	**105** (95.7-116)	**123** (111-136)	**240** (219-263)	**357** (325-395)	**443** (395-487)	1871
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**126** (93.2-155)	648
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**77.6** (67.4-84.8)	**94.5** (77.6-122)	584
20 years and older	99-00	*	**< LOD**	**232** (196-268)	**403** (349-458)	**521** (458-607)	1237
	01-02	**224** (192-261)	**247** (219-287)	**412** (347-498)	**663** (549-785)	**870** (696-1100)	1234
	03-04	**124** (112-138)	**146** (125-172)	**259** (235-285)	**376** (334-422)	**466** (403-528)	1287
Gender							
Males	99-00	*	**< LOD**	**189** (134-239)	**353** (278-417)	**449** (378-526)	908
	01-02	**226** (190-270)	**263** (223-301)	**425** (347-540)	**678** (547-794)	**883** (666-1180)	564
	03-04	**108** (95.4-123)	**123** (108-141)	**231** (206-261)	**351** (286-424)	**450** (374-538)	920
Females	99-00	*	**< LOD**	**213** (174-263)	**400** (344-467)	**553** (467-651)	977
	01-02	**222** (190-260)	**239** (207-281)	**397** (338-474)	**644** (526-771)	**864** (720-1060)	670
	03-04	**103** (92.8-113)	**121** (101-142)	**249** (225-277)	**363** (336-395)	**429** (395-512)	951
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**128** (<LOD-167)	**284** (242-334)	**380** (328-419)	624
	01-02	**117** (99.4-139)	**130** (107-157)	**233** (198-270)	**409** (278-524)	**524** (384-731)	260
	03-04	*	**< LOD**	**141** (106-188)	**221** (188-337)	**327** (210-426)	424
Non-Hispanic blacks	99-00	*	**< LOD**	**191** (150-234)	**374** (267-424)	**477** (389-568)	402
	01-02	**229** (199-264)	**229** (190-284)	**371** (333-477)	**643** (480-799)	**821** (596-1260)	219
	03-04	**92.9** (73.3-118)	**106** (77.0-125)	**219** (165-260)	**362** (279-460)	**461** (372-689)	454
Non-Hispanic whites	99-00	*	**< LOD**	**222** (183-270)	**403** (346-460)	**520** (450-615)	703
	01-02	**246** (206-293)	**275** (233-325)	**443** (365-553)	**684** (549-870)	**897** (718-1150)	671
	03-04	**116** (105-127)	**136** (120-165)	**258** (231-286)	**375** (333-418)	**466** (402-519)	872

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**57.9**	5.2	9
		07-08	**48.6**	1.6	6
	20-39	05-06	**109**	14	12
		07-08	**93.4**	5	15
	40-59	05-06	**240**	27	12
		07-08	**169**	8	16
	60+	05-06	**316**	21	15
		07-08	**257**	14	23
Non-Hispanic White Female	12-19	05-06	**36.0**	4.9	10
		07-08	**31.5**	2.2	7
	20-39	05-06	**85.9**	10.4	16
		07-08	**74.7**	5.5	13
	40-59	05-06	**189**	13	13
		07-08	**157**	7	17
	60+	05-06	**344**	24	17
		07-08	**306**	19	21
Non-Hispanic Black Male	12-19	05-06	**46.0**	1.5	13
		07-08	**35.8**	3.9	6
	20-39	05-06	**75.2**	5.9	6
		07-08	**75.1**	6.4	6
	40-59	05-06	**130**	8	5
		07-08	**151**	16	6
	60+	05-06	**270**	32	5
		07-08	**219**	27	8
Non-Hispanic Black Female	12-19	05-06	**27.2**	3.2	14
		07-08	**28.9**	2.5	5
	20-39	05-06	**70.2**	4.3	7
		07-08	**67.9**	7.1	8
	40-59	05-06	**160**	17	7
		07-08	**156**	12	8
	60+	05-06	**461**	45	5
		07-08	**325**	27	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

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Serum 1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**22.8**	5.3	11
		07-08	**37.9**	4.9	6
	20-39	05-06	**68.7**	4.7	9
		07-08	**70.2**	4.8	9
	40-59	05-06	**156**	28	4
		07-08	**139**	12	6
	60+	05-06	**248**	17	4
		07-08	**227**	25	5
Mexican American Female	12-19	05-06	**20.3**	4.1	16
		07-08	****19.3**	5.8	5
	20-39	05-06	**56.7**	5.7	9
		07-08	**55.4**	5	8
	40-59	05-06	**140**	13	6
		07-08	**131**	14	6
	60+	05-06	**280**	43	3
		07-08	**252**	35	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

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Serum 1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin (HxCDD) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1870
	01-02	*	**< LOD**	**< LOD**	**12.5** (10.5-15.3)	**17.0** (14.3-20.0)	1238
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1869
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	642
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	585
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1228
	01-02	*	**< LOD**	**< LOD**	**12.5** (10.5-15.3)	**17.0** (14.3-20.0)	1238
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1284
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	895
	01-02	*	**< LOD**	**< LOD**	**12.1** (<LOD-14.8)	**15.1** (12.9-18.5)	567
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	918
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	975
	01-02	*	**< LOD**	**< LOD**	**13.0** (10.7-16.8)	**18.3** (15.7-21.1)	671
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	951
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	618
	01-02	*	**< LOD**	**< LOD**	**9.60** (<LOD-11.6)	**12.2** (<LOD-20.6)	262
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	396
	01-02	*	**< LOD**	**< LOD**	**14.6** (11.2-20.0)	**19.9** (14.6-23.9)	220
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	454
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	701
	01-02	*	**< LOD**	**< LOD**	**12.9** (9.90-15.9)	**17.3** (14.7-20.6)	672
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	871

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 20.3, 9.3, and 12.3, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

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Serum 1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin (HxCDD) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**1.68**	0.43	9
		07-08	**2.18**	0.11	6
	20-39	05-06	**1.92**	0.26	12
		07-08	**2.33**	0.29	15
	40-59	05-06	**3.99**	0.38	12
		07-08	**2.99**	0.16	16
	60+	05-06	**5.48**	0.47	15
		07-08	**4.80**	0.3	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	**1.61**	0.4	7
	20-39	05-06	**2.47**	0.2	16
		07-08	**2.29**	0.3	13
	40-59	05-06	**3.93**	0.25	13
		07-08	**3.29**	0.25	17
	60+	05-06	**6.02**	0.36	17
		07-08	**6.23**	0.41	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	**1.73**	0.31	6
	20-39	05-06	**2.08**	0.11	6
		07-08	****1.37**	0.47	6
	40-59	05-06	**2.57**	0.18	5
		07-08	**3.26**	0.33	6
	60+	05-06	**5.18**	0.91	5
		07-08	**4.15**	0.53	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**2.44**	0.23	7
		07-08	*	*	8
	40-59	05-06	**3.84**	0.36	7
		07-08	**3.97**	0.29	8
	60+	05-06	**9.10**	1.09	5
		07-08	**8.05**	0.9	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.08 and 0.13.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

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http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

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Serum 1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin (HxCDD) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**2.20**	0.29	9
		07-08	**1.54**	0.34	9
	40-59	05-06	**3.37**	0.53	4
		07-08	**2.47**	0.61	6
	60+	05-06	**4.52**	0.22	4
		07-08	**4.55**	0.44	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	****1.41**	0.43	5
	20-39	05-06	**1.81**	0.32	9
		07-08	*	*	8
	40-59	05-06	**4.02**	0.32	6
		07-08	**3.94**	0.35	6
	60+	05-06	**6.50**	0.96	3
		07-08	**7.38**	0.68	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.08 and 0.13.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

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Serum 1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin (HxCDD) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1870
	01-02	*	**< LOD**	**< LOD**	**86.5** (68.8-108)	**121** (99.5-146)	1238
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1869
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	642
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	585
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1228
	01-02	*	**< LOD**	**< LOD**	**86.5** (68.8-108)	**121** (99.5-146)	1238
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1284
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	895
	01-02	*	**< LOD**	**< LOD**	**84.1** (<LOD-104)	**108** (90.6-142)	567
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	918
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	975
	01-02	*	**< LOD**	**< LOD**	**89.8** (67.9-121)	**123** (102-157)	671
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	951
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	618
	01-02	*	**< LOD**	**< LOD**	**74.7** (<LOD-104)	**107** (<LOD-167)	262
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	396
	01-02	*	**< LOD**	**< LOD**	**92.6** (62.8-126)	**123** (82.6-169)	220
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	454
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	701
	01-02	*	**< LOD**	**< LOD**	**88.1** (67.9-119)	**124** (96.6-152)	672
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	871

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin (HxCDD) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**9.49**	2.41	9
		07-08	**10.9**	0.7	6
	20-39	05-06	**13.8**	2	12
		07-08	**15.4**	1.7	15
	40-59	05-06	**30.2**	3.2	12
		07-08	**21.9**	1	16
	60+	05-06	**37.3**	3	15
		07-08	**30.5**	1.6	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	**7.48**	1.85	7
	20-39	05-06	**16.1**	1.5	16
		07-08	**13.8**	1.8	13
	40-59	05-06	**29.1**	2.3	13
		07-08	**21.8**	1.7	17
	60+	05-06	**44.0**	2.6	17
		07-08	**41.8**	2.9	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	**8.07**	1.37	6
	20-39	05-06	**12.3**	0.8	6
		07-08	****8.05**	2.77	6
	40-59	05-06	**16.4**	1.2	5
		07-08	**20.8**	2	6
	60+	05-06	**30.7**	5	5
		07-08	**25.0**	3.1	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**14.0**	1.3	7
		07-08	*	*	8
	40-59	05-06	**24.6**	2.4	7
		07-08	**23.9**	2.1	8
	60+	05-06	**60.7**	6.7	5
		07-08	**48.1**	4.7	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

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Serum 1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin (HxCDD) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**15.7**	2	9
		07-08	**10.0**	2.2	9
	40-59	05-06	**27.8**	5.5	4
		07-08	**17.2**	4.2	6
	60+	05-06	**32.5**	1.2	4
		07-08	**33.1**	4.3	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	**6.79**	1.99	5
	20-39	05-06	**12.3**	2.2	9
		07-08	*	*	8
	40-59	05-06	**29.8**	2.8	6
		07-08	**26.6**	2.8	6
	60+	05-06	**49.7**	9.5	3
		07-08	**50.8**	5.6	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

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Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-*p*-dioxin (OCDD) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**406** (359-453)	**674** (597-767)	**913** (787-1010)	1921
	01-02	**346** (<LOD-394)	**333** (<LOD-402)	**573** (498-668)	**944** (780-1090)	**1260** (998-1610)	1171
	03-04	*	**< LOD**	**336** (283-389)	**582** (490-658)	**767** (645-913)	1851
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**421** (363-517)	667
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**244** (<LOD-330)	**352** (264-458)	581
20 years and older	99-00	*	**< LOD**	**445** (389-496)	**710** (624-802)	**948** (822-1080)	1254
	01-02	**346** (<LOD-394)	**333** (<LOD-402)	**573** (498-668)	**944** (780-1090)	**1260** (998-1610)	1171
	03-04	**220** (<LOD-244)	**223** (<LOD-243)	**358** (297-421)	**597** (502-719)	**794** (665-978)	1270
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**517** (447-580)	**704** (563-838)	919
	01-02	*	**< LOD**	**442** (346-579)	**767** (593-968)	**1030** (837-1240)	517
	03-04	*	**< LOD**	**270** (244-320)	**457** (377-559)	**668** (501-856)	910
Females	99-00	*	**< LOD**	**504** (422-579)	**802** (674-928)	**1010** (928-1180)	1002
	01-02	**410** (356-472)	**405** (335-502)	**647** (574-751)	**1020** (858-1360)	**1450** (1060-1780)	654
	03-04	**235** (<LOD-256)	**238** (225-248)	**402** (321-486)	**640** (551-749)	**829** (675-1020)	941
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**418** (365-502)	**703** (610-873)	**940** (737-1230)	632
	01-02	*	**< LOD**	**432** (394-545)	**755** (578-1220)	**1150** (696-1640)	250
	03-04	*	**< LOD**	**296** (225-356)	**452** (363-540)	**588** (417-861)	419
Non-Hispanic blacks	99-00	*	**< LOD**	**444** (371-519)	**741** (566-983)	**1120** (799-1560)	411
	01-02	**421** (352-503)	**420** (339-509)	**682** (537-907)	**1110** (956-1520)	**1640** (1130-1900)	210
	03-04	*	**< LOD**	**345** (276-455)	**642** (513-883)	**926** (636-1310)	448
Non-Hispanic whites	99-00	*	**< LOD**	**391** (333-452)	**625** (562-754)	**861** (676-1010)	721
	01-02	**349** (<LOD-409)	**335** (<LOD-421)	**574** (496-679)	**945** (764-1170)	**1290** (972-1660)	632
	03-04	*	**< LOD**	**343** (282-403)	**585** (464-674)	**758** (635-922)	865

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 329.0, 319.0, and 218.0, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-*p*-dioxin (OCDD) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**123**	13	9
		07-08	**114**	8	6
	20-39	05-06	**129**	8	12
		07-08	**125**	12	15
	40-59	05-06	**238**	25	12
		07-08	**164**	11	16
	60+	05-06	**379**	38	15
		07-08	**306**	24	23
Non-Hispanic White Female	12-19	05-06	**106**	9	10
		07-08	**103**	7	7
	20-39	05-06	**179**	19	16
		07-08	**139**	7	13
	40-59	05-06	**304**	22	13
		07-08	**222**	15	17
	60+	05-06	**546**	66	17
		07-08	**435**	51	21
Non-Hispanic Black Male	12-19	05-06	**142**	12	13
		07-08	**111**	12	6
	20-39	05-06	**127**	9	6
		07-08	**136**	10	6
	40-59	05-06	**200**	32	5
		07-08	**190**	17	6
	60+	05-06	**420**	82	5
		07-08	**314**	32	8
Non-Hispanic Black Female	12-19	05-06	**153**	22	14
		07-08	**100**	12	5
	20-39	05-06	**188**	18	7
		07-08	**193**	26	8
	40-59	05-06	**381**	43	7
		07-08	**303**	25	8
	60+	05-06	**927**	135	5
		07-08	**660**	88	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 13.0 and 22.6.

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Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-*p*-dioxin (OCDD) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**111**	9	11
		07-08	**117**	10	6
	20-39	05-06	**180**	21	9
		07-08	**130**	9	9
	40-59	05-06	**220**	19	4
		07-08	**217**	14	6
	60+	05-06	**350**	46	4
		07-08	**266**	23	5
Mexican American Female	12-19	05-06	**111**	5	16
		07-08	**107**	12	5
	20-39	05-06	**184**	12	9
		07-08	**174**	14	8
	40-59	05-06	**410**	60	6
		07-08	**290**	20	6
	60+	05-06	**540**	65	3
		07-08	**426**	34	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 13.0 and 22.6.

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Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-*p*-dioxin (OCDD) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**2530** (2230-2880)	**4260** (3770-4760)	**5950** (5090-6790)	1921
	01-02	**2230** (<LOD-2540)	**2170** (<LOD-2550)	**3860** (3180-4520)	**6460** (5140-8290)	**9110** (6940-11400)	1171
	03-04	*	**< LOD**	**2180** (1830-2540)	**3760** (3100-4540)	**5020** (4190-6070)	1851
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**1910** (1600-2340)	667
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**1160** (<LOD1590)	**1780** (1160-2850)	581
20 years and older	99-00	*	**< LOD**	**2810** (2480-3110)	**4570** (4100-5020)	**6200** (5340-7300)	1254
	01-02	**2230** (<LOD-2540)	**2170** (<LOD-2550)	**3860** (3180-4520)	**6460** (5140-8290)	**9110** (6940-11400)	1171
	03-04	**1380** (<LOD-1540)	**1360** (<LOD-1470)	**2350** (1970-2900)	**4030** (3370-4700)	**5340** (4490-6370)	1270
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**3160** (2760-3760)	**4160** (3320-5570)	919
	01-02	*	**< LOD**	**3160** (2410-4070)	**5270** (4070-7140)	**7620** (6020-9760)	517
	03-04	*	**< LOD**	**1780** (1540-2070)	**3090** (2410-4020)	**4190** (3410-5350)	910
Females	99-00	*	**< LOD**	**3110** (2680-3560)	**5090** (4610-5740)	**6760** (5870-8710)	1002
	01-02	**2590** (2250-2980)	**2620** (2160-3000)	**4340** (3880-4860)	**6990** (5870-9040)	**10000** (7070-	654
	03-04	**1420** (<LOD-1560)	**1410** (1300-1510)	**2700** (2210-3030)	**4340** (3750-4830)	**5770** (4590-6740)	941
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**2470** (2240-2990)	**4350** (3660-5570)	**6560** (5340-7590)	632
	01-02	*	**< LOD**	**3410** (2760-3860)	**5810** (4250-7670)	**8050** (5760-11800)	250
	03-04	*	**< LOD**	**1880** (1560-2220)	**3240** (2450-3880)	**3910** (3240-4630)	419
Non-Hispanic blacks	99-00	*	**< LOD**	**2520** (2090-2950)	**4770** (4040-5740)	**7140** (4740-10700)	411
	01-02	**2480** (2050-3000)	**2460** (2060-2970)	**4170** (3160-5560)	**7250** (5470-9920)	**9920** (7990-12000)	210
	03-04	*	**< LOD**	**2150** (1780-2880)	**3860** (3080-5640)	**5720** (3750-7830)	448
Non-Hispanic whites	99-00	*	**< LOD**	**2560** (2160-2910)	**4120** (3580-4780)	**5800** (4740-6790)	721
	01-02	**2270** (<LOD-2660)	**2200** (<LOD-2770)	**3860** (3090-4720)	**6530** (4890-8860)	**9150** (6630-12300)	632
	03-04	*	**< LOD**	**2220** (1830-2700)	**3770** (3040-4680)	**5050** (4190-6350)	865

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-*p*-dioxin (OCDD) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**674**	73	9
		07-08	**570**	41	6
	20-39	05-06	**936**	79	12
		07-08	**809**	66	15
	40-59	05-06	**1800**	219	12
		07-08	**1210**	84	16
	60+	05-06	**2580**	245	15
		07-08	**1950**	134	23
Non-Hispanic White Female	12-19	05-06	**562**	44	10
		07-08	**476**	26	7
	20-39	05-06	**1180**	153	16
		07-08	**829**	50	13
	40-59	05-06	**2240**	191	13
		07-08	**1470**	107	17
	60+	05-06	**3970**	469	17
		07-08	**2920**	348	21
Non-Hispanic Black Male	12-19	05-06	**712**	59	13
		07-08	**523**	48	6
	20-39	05-06	**761**	71	6
		07-08	**771**	71	6
	40-59	05-06	**1270**	183	5
		07-08	**1210**	109	6
	60+	05-06	**2470**	424	5
		07-08	**1900**	184	8
Non-Hispanic Black Female	12-19	05-06	**753**	106	14
		07-08	**483**	75	5
	20-39	05-06	**1080**	109	7
		07-08	**978**	136	8
	40-59	05-06	**2450**	300	7
		07-08	**1830**	184	8
	60+	05-06	**6220**	925	5
		07-08	**3920**	407	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.

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Serum 1,2,3,4,6,7,8,9-Octachlorodibenzo-*p*-dioxin (OCDD) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**606**	47	11
		07-08	**614**	32	6
	20-39	05-06	**1280**	156	9
		07-08	**906**	109	9
	40-59	05-06	**1800**	216	4
		07-08	**1540**	138	6
	60+	05-06	**2500**	251	4
		07-08	**1970**	302	5
Mexican American Female	12-19	05-06	**605**	23	16
		07-08	**524**	56	5
	20-39	05-06	**1240**	104	9
		07-08	**1000**	69	8
	40-59	05-06	**3050**	469	6
		07-08	**1960**	171	6
	60+	05-06	**4190**	843	3
		07-08	**2900**	189	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.

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Serum 1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin (PeCDD) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1915
	01-02	*	**< LOD**	**< LOD**	**11.3** (9.30-13.6)	**15.8** (13.3-19.8)	1236
	03-04	*	**< LOD**	**6.10** (5.50-6.80)	**9.00** (8.30-9.70)	**11.0** (9.90-12.2)	1878
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	659
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**4.80** (<LOD-5.90)	588
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1256
	01-02	*	**< LOD**	**< LOD**	**11.3** (9.30-13.6)	**15.8** (13.3-19.8)	1236
	03-04	*	**< LOD**	**6.60** (5.90-7.20)	**9.30** (8.60-10.1)	**11.3** (10.1-12.7)	1290
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	920
	01-02	*	**< LOD**	**< LOD**	**10.8** (9.10-13.3)	**14.5** (11.7-19.4)	564
	03-04	*	**< LOD**	**5.90** (5.30-6.40)	**8.90** (7.90-9.60)	**11.0** (9.60-12.7)	923
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	995
	01-02	*	**< LOD**	**6.10** (<LOD-7.80)	**11.8** (9.40-14.3)	**16.6** (13.7-20.8)	672
	03-04	*	**< LOD**	**6.50** (5.70-7.20)	**9.10** (8.30-10.1)	**11.0** (10.0-12.2)	955
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	632
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**8.70** (<LOD-12.7)	262
	03-04	*	**< LOD**	**< LOD**	**6.50** (5.20-7.90)	**7.80** (6.70-9.20)	425
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	408
	01-02	*	**< LOD**	**7.70** (<LOD-9.30)	**13.9** (9.60-18.4)	**18.4** (14.2-24.0)	218
	03-04	*	**< LOD**	**6.40** (5.30-8.20)	**9.90** (8.50-13.4)	**14.4** (9.60-20.1)	455
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	717
	01-02	*	**< LOD**	**< LOD**	**11.7** (9.50-14.3)	**16.7** (13.6-20.2)	672
	03-04	*	**< LOD**	**6.50** (5.80-7.10)	**9.30** (8.60-10.0)	**11.1** (10.1-12.2)	877

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 14.2, 6.0, and 4.5, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin (PeCDD) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**2.55**	0.14	9
		07-08	**2.31**	0.31	6
	20-39	05-06	**2.49**	0.23	12
		07-08	**2.93**	0.18	15
	40-59	05-06	**4.48**	0.54	12
		07-08	**3.96**	0.13	16
	60+	05-06	**7.26**	0.4	15
		07-08	**7.08**	0.78	23
Non-Hispanic White Female	12-19	05-06	**1.55**	0.22	10
		07-08	**1.61**	0.36	7
	20-39	05-06	**2.57**	0.23	16
		07-08	**2.40**	0.18	13
	40-59	05-06	**4.25**	0.2	13
		07-08	**4.12**	0.16	17
	60+	05-06	**7.83**	0.56	17
		07-08	**8.09**	0.42	21
Non-Hispanic Black Male	12-19	05-06	**2.34**	0.15	13
		07-08	**2.14**	0.46	6
	20-39	05-06	**2.95**	0.16	6
		07-08	**2.94**	0.28	6
	40-59	05-06	**4.00**	0.24	5
		07-08	**4.41**	0.38	6
	60+	05-06	**8.16**	1.26	5
		07-08	**6.56**	0.86	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**2.52**	0.1	7
		07-08	**2.55**	0.32	8
	40-59	05-06	**4.64**	0.44	7
		07-08	**4.40**	0.5	8
	60+	05-06	**12.5**	1.7	5
		07-08	**11.4**	1.1	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.62 and 1.08.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin (PeCDD) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	**1.84**	0.13	6
	20-39	05-06	**2.13**	0.26	9
		07-08	**2.44**	0.31	9
	40-59	05-06	**3.61**	0.63	4
		07-08	**3.96**	0.38	6
	60+	05-06	**5.59**	0.16	4
		07-08	**5.92**	0.34	5
Mexican American Female	12-19	05-06	**1.14**	0.16	16
		07-08	**1.50**	0.29	5
	20-39	05-06	**1.65**	0.23	9
		07-08	**2.81**	0.33	8
	40-59	05-06	**3.23**	0.62	6
		07-08	**4.15**	0.81	6
	60+	05-06	**6.48**	0.82	3
		07-08	**6.35**	0.75	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.62 and 1.08.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin (PeCDD) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1915
	01-02	*	**< LOD**	**< LOD**	**77.8** (62.8-96.3)	**117** (90.3-133)	1236
	03-04	*	**< LOD**	**40.7** (37.4-43.0)	**60.3** (53.2-67.4)	**76.1** (66.9-87.4)	1878
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	659
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**23.8** (<LOD-27.2)	588
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1256
	01-02	*	**< LOD**	**< LOD**	**77.8** (62.8-96.3)	**117** (90.3-133)	1236
	03-04	*	**< LOD**	**43.0** (39.2-47.8)	**63.5** (55.6-71.5)	**80.7** (67.9-89.9)	1290
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	920
	01-02	*	**< LOD**	**< LOD**	**76.1** (54.7-93.7)	**107** (83.5-133)	564
	03-04	*	**< LOD**	**39.3** (35.1-43.4)	**57.3** (49.3-66.1)	**67.8** (58.7-90.4)	923
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	995
	01-02	*	**< LOD**	**37.8** (<LOD-50.2)	**80.4** (62.9-107)	**121** (85.7-167)	672
	03-04	*	**< LOD**	**41.8** (37.7-45.2)	**63.6** (55.9-72.9)	**80.7** (70.5-88.3)	955
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	632
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**66.0** (<LOD-111)	262
	03-04	*	**< LOD**	**< LOD**	**44.5** (34.2-52.0)	**52.8** (44.5-76.6)	425
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	408
	01-02	*	**< LOD**	**43.8** (<LOD-53.8)	**81.9** (58.2-117)	**123** (81.9-169)	218
	03-04	*	**< LOD**	**39.7** (30.6-48.0)	**67.3** (48.0-93.0)	**93.0** (66.7-137)	455
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	717
	01-02	*	**< LOD**	**< LOD**	**80.8** (61.6-107)	**121** (88.6-142)	672
	03-04	*	**< LOD**	**42.6** (38.6-45.1)	**63.4** (55.4-67.9)	**78.8** (67.9-84.7)	877

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin (PeCDD) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**13.8**	0.6	9
		07-08	**11.6**	1.6	6
	20-39	05-06	**18.0**	2.1	12
		07-08	**19.3**	1.1	15
	40-59	05-06	**34.2**	4.3	12
		07-08	**29.2**	1.1	16
	60+	05-06	**49.2**	2.3	15
		07-08	**45.3**	4.5	23
Non-Hispanic White Female	12-19	05-06	**8.26**	1.17	10
		07-08	**7.53**	1.75	7
	20-39	05-06	**16.8**	1.7	16
		07-08	**14.4**	1.2	13
	40-59	05-06	**31.4**	2.2	13
		07-08	**27.2**	1.2	17
	60+	05-06	**56.9**	3.7	17
		07-08	**54.3**	3	21
Non-Hispanic Black Male	12-19	05-06	**11.7**	0.6	13
		07-08	**10.1**	2.1	6
	20-39	05-06	**17.5**	1	6
		07-08	**16.4**	1.4	6
	40-59	05-06	**25.5**	1.5	5
		07-08	**28.3**	2.7	6
	60+	05-06	**48.9**	7.8	5
		07-08	**39.5**	5.1	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**14.5**	0.7	7
		07-08	**12.9**	1.6	8
	40-59	05-06	**29.8**	3.1	7
		07-08	**26.6**	3.4	8
	60+	05-06	**83.0**	10	5
		07-08	**68.3**	5.7	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin (PeCDD) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	**9.76**	0.73	6
	20-39	05-06	**15.0**	1.9	9
		07-08	**16.0**	1.9	9
	40-59	05-06	**29.7**	6.3	4
		07-08	**28.3**	3.4	6
	60+	05-06	**40.5**	2.9	4
		07-08	**42.9**	3.8	5
Mexican American Female	12-19	05-06	**6.29**	0.9	16
		07-08	**7.29**	1.35	5
	20-39	05-06	**11.1**	1.7	9
		07-08	**16.0**	1.5	8
	40-59	05-06	**24.1**	4.6	6
		07-08	**27.9**	5.5	6
	60+	05-06	**49.3**	8.2	3
		07-08	**43.7**	5.7	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Factsheet

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Serum 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1898
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1228
	03-04	*	**< LOD**	**< LOD**	**4.10** (<LOD-4.40)	**5.20** (4.30-5.80)	1876
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	658
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	588
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1240
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1228
	03-04	*	**< LOD**	**< LOD**	**4.30** (3.90-4.60)	**5.30** (4.50-6.10)	1288
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	912
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	559
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**4.60** (3.80-5.30)	921
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	986
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**6.40** (<LOD-9.20)	669
	03-04	*	**< LOD**	**< LOD**	**4.40** (4.00-4.90)	**5.50** (4.50-6.60)	955
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	630
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	262
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**3.80** (<LOD-5.50)	424
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	404
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**7.50** (<LOD-10.0)	217
	03-04	*	**< LOD**	**< LOD**	**4.50** (<LOD-6.10)	**6.20** (4.40-10.3)	454
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	709
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	665
	03-04	*	**< LOD**	**< LOD**	**4.10** (<LOD-4.50)	**5.20** (4.30-5.90)	877

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.1, 5.8, and 3.8, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	**1.21**	0.16	12
		07-08	**.931**	0.089	16
	60+	05-06	**2.34**	0.19	15
		07-08	**2.13**	0.23	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	**1.31**	0.19	13
		07-08	**1.32**	0.07	17
	60+	05-06	**2.86**	0.21	17
		07-08	**2.98**	0.21	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	**1.26**	0.18	5
		07-08	**1.32**	0.1	6
	60+	05-06	****3.47**	1.25	5
		07-08	**2.04**	0.45	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**.712**	0.117	7
		07-08	*	*	8
	40-59	05-06	**1.81**	0.21	7
		07-08	**1.68**	0.17	8
	60+	05-06	**6.40**	1.64	5
		07-08	**4.50**	0.52	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.42 and 0.74.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

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Serum 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	**1.01**	0.24	4
		07-08	**.984**	0.206	6
	60+	05-06	**1.29**	0.25	4
		07-08	**1.74**	0.22	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	**.925**	0.133	8
	40-59	05-06	**1.08**	0.3	6
		07-08	*	*	6
	60+	05-06	**2.34**	0.3	3
		07-08	**2.92**	0.38	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.42 and 0.74.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

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Serum 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1898
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1228
	03-04	*	**< LOD**	**< LOD**	**27.5** (<LOD-30.1)	**34.1** (30.2-39.6)	1876
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	658
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	588
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1240
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1228
	03-04	*	**< LOD**	**< LOD**	**28.6** (26.4-31.2)	**36.4** (31.5-42.7)	1288
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	912
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	559
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**28.8** (25.4-34.5)	921
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	986
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**50.7** (<LOD-74.3)	669
	03-04	*	**< LOD**	**< LOD**	**30.2** (27.4-33.1)	**38.7** (32.3-44.5)	955
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	630
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	262
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**23.6** (<LOD-32.5)	424
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	404
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**55.6** (<LOD-72.0)	217
	03-04	*	**< LOD**	**< LOD**	**31.1** (<LOD-42.0)	**42.4** (29.5-67.8)	454
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	709
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	665
	03-04	*	**< LOD**	**< LOD**	**28.0** (<LOD-30.0)	**33.6** (31.1-38.8)	877

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	**9.21**	1.29	12
		07-08	**6.91**	0.75	16
	60+	05-06	**15.8**	1.1	15
		07-08	**13.7**	1.4	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	**10.0**	1.6	13
		07-08	**8.72**	0.54	17
	60+	05-06	**20.7**	1.4	17
		07-08	**19.9**	1.4	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	**7.96**	1.02	5
		07-08	**8.41**	0.65	6
	60+	05-06	****20.7**	7.7	5
		07-08	**12.0**	2.3	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**4.10**	0.69	7
		07-08	*	*	8
	40-59	05-06	**11.7**	1.5	7
		07-08	**10.2**	1.3	8
	60+	05-06	**42.6**	10.8	5
		07-08	**26.9**	2.7	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

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Serum 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	**8.36**	2.32	4
		07-08	**7.12**	1.5	6
	60+	05-06	**9.23**	1.8	4
		07-08	**12.6**	1.8	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	**5.31**	0.73	8
	40-59	05-06	**7.85**	2.09	6
		07-08	*	*	6
	60+	05-06	**17.9**	3.2	3
		07-08	**20.1**	2.9	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

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Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**14.7** (<LOD-18.0)	**19.5** (17.4-23.0)	1709
	01-02	**9.64** (8.53-10.9)	**10.3** (8.80-11.7)	**14.6** (12.7-16.7)	**21.3** (18.0-25.5)	**27.1** (22.5-32.0)	1219
	03-04	*	**< LOD**	**10.6** (9.90-11.4)	**14.6** (13.1-16.5)	**18.7** (16.5-24.2)	1858
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**18.4** (16.2-20.9)	**24.7** (20.9-28.1)	600
	01-02	†	†	†	†	†	†
	03-04	**9.36** (8.60-10.2)	**8.80** (<LOD-9.80)	**13.4** (12.3-14.6)	**19.3** (16.2-29.6)	**33.2** (21.2-54.2)	583
20 years and older	99-00	*	**< LOD**	**< LOD**	**14.2** (<LOD-17.5)	**18.4** (15.0-23.8)	1109
	01-02	**9.64** (8.53-10.9)	**10.3** (8.80-11.7)	**14.6** (12.7-16.7)	**21.3** (18.0-25.5)	**27.1** (22.5-32.0)	1219
	03-04	*	**< LOD**	**10.3** (9.60-11.1)	**13.8** (12.5-16.0)	**18.0** (16.0-20.9)	1275
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**16.4** (<LOD-20.0)	**21.0** (18.1-26.8)	815
	01-02	**10.1** (8.74-11.6)	**11.0** (9.30-12.6)	**15.2** (12.9-17.2)	**20.8** (17.2-27.8)	**28.9** (22.0-34.8)	557
	03-04	*	**< LOD**	**11.3** (10.1-12.9)	**17.1** (14.3-19.1)	**23.9** (18.3-30.9)	913
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**17.5** (14.3-20.3)	894
	01-02	**9.28** (8.20-10.5)	**9.40** (8.20-11.2)	**14.1** (12.4-16.6)	**21.3** (17.4-25.5)	**26.5** (22.3-31.9)	662
	03-04	*	**< LOD**	**9.90** (9.30-10.5)	**13.0** (12.2-14.3)	**16.0** (14.3-18.4)	945
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**19.7** (<LOD-25.4)	570
	01-02	**7.73** (7.19-8.31)	**8.20** (7.80-8.70)	**11.2** (10.6-12.5)	**16.5** (14.5-19.6)	**20.8** (17.2-26.8)	260
	03-04	*	**< LOD**	**9.10** (<LOD-10.6)	**12.0** (10.1-16.8)	**15.1** (11.6-20.0)	420
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**22.4** (15.2-28.2)	**28.2** (26.5-29.6)	359
	01-02	**12.3** (10.6-14.4)	**12.8** (10.9-15.2)	**17.4** (15.4-21.0)	**25.5** (22.4-31.2)	**32.1** (25.7-37.6)	214
	03-04	*	**< LOD**	**11.3** (10.7-12.2)	**16.1** (13.4-19.0)	**20.4** (16.7-26.8)	454
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**17.5** (14.9-18.9)	636
	01-02	**9.50** (8.30-10.9)	**10.1** (8.40-12.0)	**14.4** (12.6-16.6)	**20.5** (16.9-25.5)	**25.8** (20.5-31.7)	665
	03-04	*	**< LOD**	**10.5** (9.60-11.5)	**14.6** (12.9-17.4)	**19.0** (16.3-26.2)	864

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 13.5, 7.0, and 8.6, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**12.5**	1.6	9
		07-08	**12.0**	0.8	6
	20-39	05-06	**7.09**	0.32	12
		07-08	**8.07**	0.6	15
	40-59	05-06	**8.33**	0.86	12
		07-08	**7.42**	0.49	16
	60+	05-06	**8.16**	0.85	15
		07-08	**7.24**	0.3	23
Non-Hispanic White Female	12-19	05-06	**7.63**	0.43	10
		07-08	**8.52**	0.32	7
	20-39	05-06	**6.94**	0.58	16
		07-08	**8.22**	0.62	13
	40-59	05-06	**6.85**	0.46	13
		07-08	**7.00**	0.51	17
	60+	05-06	**7.74**	0.6	17
		07-08	**8.12**	0.93	21
Non-Hispanic Black Male	12-19	05-06	**10.8**	1.2	13
		07-08	**10.0**	1	6
	20-39	05-06	**8.24**	1.31	6
		07-08	**7.61**	0.91	6
	40-59	05-06	**7.85**	1.02	5
		07-08	**7.10**	0.76	6
	60+	05-06	**10.6**	2.5	5
		07-08	**7.78**	0.88	8
Non-Hispanic Black Female	12-19	05-06	**8.80**	1.47	14
		07-08	**8.73**	1.2	5
	20-39	05-06	**6.20**	0.58	7
		07-08	**7.65**	0.48	8
	40-59	05-06	**6.35**	0.74	7
		07-08	**9.30**	0.8	8
	60+	05-06	**10.5**	1.2	5
		07-08	**8.95**	0.94	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.03 and 1.78.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

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Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**9.25**	1.4	11
		07-08	**8.38**	0.7	6
	20-39	05-06	**6.57**	0.48	9
		07-08	**8.03**	0.74	9
	40-59	05-06	**7.45**	1.52	4
		07-08	**6.77**	0.23	6
	60+	05-06	**7.18**	0.99	4
		07-08	**6.15**	0.38	5
Mexican American Female	12-19	05-06	**5.61**	0.33	16
		07-08	**8.86**	0.85	5
	20-39	05-06	**6.00**	0.4	9
		07-08	**7.42**	0.67	8
	40-59	05-06	**8.74**	1.09	6
		07-08	**6.36**	0.69	6
	60+	05-06	**6.28**	1.42	3
		07-08	**6.56**	0.63	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.03 and 1.78.

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Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**85.3** (<LOD-95.8)	**108** (95.8-120)	1709
	01-02	**62.2** (55.4-69.9)	**64.5** (58.0-71.6)	**94.1** (82.3-110)	**134** (119-165)	**181** (147-206)	1219
	03-04	*	**< LOD**	**63.6** (59.9-67.7)	**88.3** (81.0-100)	**116** (101-137)	1858
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**79.3** (69.5-84.2)	**102** (83.4-120)	600
	01-02	†	†	†	†	†	†
	03-04	**47.5** (44.0-51.3)	**43.7** (<LOD-49.3)	**63.7** (59.1-72.3)	**102** (85.3-114)	**175** (113-222)	583
20 years and older	99-00	*	**< LOD**	**< LOD**	**85.7** (<LOD-97.7)	**108** (93.6-127)	1109
	01-02	**62.2** (55.4-69.9)	**64.5** (58.0-71.6)	**94.1** (82.3-110)	**134** (119-165)	**181** (147-206)	1219
	03-04	*	**< LOD**	**63.5** (59.6-67.6)	**86.5** (78.8-100)	**112** (94.9-135)	1275
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**91.4** (<LOD-108)	**112** (99.3-133)	815
	01-02	**66.3** (58.2-75.6)	**70.4** (59.8-81.8)	**99.3** (85.5-120)	**143** (120-181)	**182** (146-237)	557
	03-04	*	**< LOD**	**69.7** (62.9-76.0)	**100** (85.9-116)	**135** (113-193)	913
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**97.8** (86.2-130)	894
	01-02	**58.8** (52.0-66.4)	**60.2** (53.5-67.6)	**89.5** (74.7-107)	**131** (108-165)	**169** (131-225)	662
	03-04	*	**< LOD**	**58.5** (54.5-62.4)	**83.5** (74.7-87.7)	**102** (87.7-116)	945
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**113** (<LOD-133)	570
	01-02	**49.5** (46.0-53.4)	**50.4** (45.7-57.2)	**76.9** (67.1-82.1)	**99.7** (90.9-124)	**133** (94.8-202)	260
	03-04	*	**< LOD**	**56.0** (<LOD-64.6)	**74.2** (62.6-91.4)	**90.5** (76.4-107)	420
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**117** (89.0-143)	**153** (109-197)	359
	01-02	**72.6** (61.9-85.2)	**70.9** (62.4-85.2)	**107** (91.5-128)	**147** (131-177)	**193** (154-259)	214
	03-04	*	**< LOD**	**66.2** (60.2-75.5)	**91.3** (80.3-112)	**119** (102-151)	454
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**97.7** (89.3-104)	636
	01-02	**61.8** (54.3-70.4)	**65.4** (57.4-72.2)	**94.3** (78.1-112)	**133** (114-166)	**180** (137-222)	665
	03-04	*	**< LOD**	**63.9** (59.6-69.2)	**87.8** (79.8-100)	**116** (102-139)	864

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**68.5**	9.8	9
		07-08	**59.8**	4.7	6
	20-39	05-06	**51.2**	3.2	12
		07-08	**52.5**	3.2	15
	40-59	05-06	**63.0**	7.1	12
		07-08	**54.3**	3.3	16
	60+	05-06	**55.4**	5.5	15
		07-08	**46.4**	1.9	23
Non-Hispanic White Female	12-19	05-06	**40.7**	2.6	10
		07-08	**40.0**	2.2	7
	20-39	05-06	**45.0**	3.8	16
		07-08	**49.0**	4	13
	40-59	05-06	**50.3**	3.7	13
		07-08	**46.4**	3.8	17
	60+	05-06	**56.3**	4.2	17
		07-08	**54.4**	6.1	21
Non-Hispanic Black Male	12-19	05-06	**54.8**	6.7	13
		07-08	**47.2**	3.9	6
	20-39	05-06	**49.7**	9.1	6
		07-08	**42.9**	5.2	6
	40-59	05-06	**50.1**	6.7	5
		07-08	**45.3**	4.5	6
	60+	05-06	**62.2**	13.6	5
		07-08	**46.9**	5.3	8
Non-Hispanic Black Female	12-19	05-06	**43.4**	7.2	14
		07-08	**41.9**	7.2	5
	20-39	05-06	**35.6**	3.3	7
		07-08	**38.7**	2.7	8
	40-59	05-06	**40.3**	4.1	7
		07-08	**55.7**	4.9	8
	60+	05-06	**69.9**	7.9	5
		07-08	**53.5**	4.3	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

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Serum 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**49.7**	7.2	11
		07-08	**44.5**	3.8	6
	20-39	05-06	**46.5**	3.4	9
		07-08	**54.2**	4.6	9
	40-59	05-06	**59.9**	11.2	4
		07-08	**48.4**	3.7	6
	60+	05-06	**50.8**	4.8	4
		07-08	**44.3**	3.1	5
Mexican American Female	12-19	05-06	**30.5**	1.6	16
		07-08	**43.7**	4.8	5
	20-39	05-06	**39.8**	2.8	9
		07-08	**42.4**	3	8
	40-59	05-06	**64.2**	7.8	6
		07-08	**42.8**	5	6
	60+	05-06	****49.6**	15.4	3
		07-08	**45.1**	4.9	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

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Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	< LOD	< LOD	< LOD	< LOD	1224
	03-04	*	< LOD	< LOD	< LOD	< LOD	1852
Age group							
12-19 years	01-02	†	†	†	†	†	†
	03-04	*	< LOD	< LOD	< LOD	< LOD	583
20 years and older	01-02	*	< LOD	< LOD	< LOD	< LOD	1224
	03-04	*	< LOD	< LOD	< LOD	< LOD	1269
Gender							
Males	01-02	*	< LOD	< LOD	< LOD	< LOD	558
	03-04	*	< LOD	< LOD	< LOD	< LOD	908
Females	01-02	*	< LOD	< LOD	< LOD	< LOD	666
	03-04	*	< LOD	< LOD	< LOD	< LOD	944
Race/ethnicity							
Mexican Americans	01-02	*	< LOD	< LOD	< LOD	< LOD	262
	03-04	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks	01-02	*	< LOD	< LOD	< LOD	< LOD	217
	03-04	*	< LOD	< LOD	< LOD	< LOD	452
Non-Hispanic whites	01-02	*	< LOD	< LOD	< LOD	< LOD	661
	03-04	*	< LOD	< LOD	< LOD	< LOD	856

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 7.0 and 8.6.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.19 and 0.33.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.19 and 0.33.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (whole weight) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	< LOD	< LOD	< LOD	< LOD	1224
	03-04	*	< LOD	< LOD	< LOD	< LOD	1852
Age group							
12-19 years	01-02	†	†	†	†	†	†
	03-04	*	< LOD	< LOD	< LOD	< LOD	583
20 years and older	01-02	*	< LOD	< LOD	< LOD	< LOD	1224
	03-04	*	< LOD	< LOD	< LOD	< LOD	1269
Gender							
Males	01-02	*	< LOD	< LOD	< LOD	< LOD	558
	03-04	*	< LOD	< LOD	< LOD	< LOD	908
Females	01-02	*	< LOD	< LOD	< LOD	< LOD	666
	03-04	*	< LOD	< LOD	< LOD	< LOD	944
Race/ethnicity							
Mexican Americans	01-02	*	< LOD	< LOD	< LOD	< LOD	262
	03-04	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks	01-02	*	< LOD	< LOD	< LOD	< LOD	217
	03-04	*	< LOD	< LOD	< LOD	< LOD	452
Non-Hispanic whites	01-02	*	< LOD	< LOD	< LOD	< LOD	661
	03-04	*	< LOD	< LOD	< LOD	< LOD	856

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1890
	01-02	*	**< LOD**	**8.00** (6.90-9.60)	**12.1** (9.40-14.9)	**15.4** (12.9-18.6)	1223
	03-04	*	**< LOD**	**< LOD**	**7.50** (<LOD-7.90)	**8.90** (7.90-10.2)	1866
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	657
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	583
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**12.8** (<LOD-14.5)	1233
	01-02	*	**< LOD**	**8.00** (6.90-9.60)	**12.1** (9.40-14.9)	**15.4** (12.9-18.6)	1223
	03-04	*	**< LOD**	**< LOD**	**7.60** (<LOD-8.20)	**9.50** (8.00-10.5)	1283
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	908
	01-02	*	**< LOD**	**8.20** (7.10-10.0)	**12.8** (9.50-15.9)	**15.9** (12.2-20.9)	562
	03-04	*	**< LOD**	**< LOD**	**7.40** (<LOD-8.00)	**8.50** (7.80-10.0)	916
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**12.9** (<LOD-16.4)	982
	01-02	*	**< LOD**	**7.90** (6.70-9.00)	**11.7** (9.40-13.8)	**14.5** (12.2-18.6)	661
	03-04	*	**< LOD**	**< LOD**	**7.50** (<LOD-8.40)	**9.30** (7.80-10.4)	950
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	631
	01-02	*	**< LOD**	**< LOD**	**7.30** (<LOD-8.00)	**8.00** (7.00-10.9)	261
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**14.3** (<LOD-15.1)	399
	01-02	*	**< LOD**	**8.90** (7.70-10.1)	**13.6** (11.1-17.1)	**18.6** (14.6-22.6)	214
	03-04	*	**< LOD**	**< LOD**	**7.80** (<LOD-10.9)	**10.9** (7.50-19.4)	453
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	703
	01-02	*	**< LOD**	**8.30** (7.10-10.2)	**12.5** (10.0-15.9)	**15.9** (13.1-19.0)	664
	03-04	*	**< LOD**	**< LOD**	**7.60** (<LOD-8.10)	**9.40** (8.00-10.2)	869

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.7, 6.5, and 7.4, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**2.18**	0.17	9
		07-08	**2.58**	0.24	6
	20-39	05-06	**2.51**	0.29	12
		07-08	**3.13**	0.17	15
	40-59	05-06	**4.55**	0.3	12
		07-08	**3.78**	0.14	16
	60+	05-06	**5.40**	0.45	15
		07-08	**4.80**	0.21	23
Non-Hispanic White Female	12-19	05-06	**1.71**	0.15	10
		07-08	**1.74**	0.14	7
	20-39	05-06	**2.36**	0.1	16
		07-08	**2.29**	0.11	13
	40-59	05-06	**3.58**	0.18	13
		07-08	**3.24**	0.16	17
	60+	05-06	**5.54**	0.34	17
		07-08	**5.29**	0.31	21
Non-Hispanic Black Male	12-19	05-06	**1.79**	0.17	13
		07-08	**1.83**	0.15	6
	20-39	05-06	**2.61**	0.23	6
		07-08	**2.68**	0.13	6
	40-59	05-06	**3.33**	0.33	5
		07-08	**3.69**	0.53	6
	60+	05-06	**5.35**	0.88	5
		07-08	**4.49**	0.44	8
Non-Hispanic Black Female	12-19	05-06	**1.25**	0.15	14
		07-08	**1.53**	0.18	5
	20-39	05-06	**2.14**	0.13	7
		07-08	**2.12**	0.43	8
	40-59	05-06	**3.37**	0.37	7
		07-08	**3.61**	0.41	8
	60+	05-06	**8.98**	1.22	5
		07-08	**6.88**	0.72	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.3 and 0.51.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**1.67**	0.12	11
		07-08	**1.30**	0.36	6
	20-39	05-06	**2.29**	0.22	9
		07-08	**2.63**	0.22	9
	40-59	05-06	**3.28**	0.58	4
		07-08	**2.97**	0.24	6
	60+	05-06	**4.09**	0.28	4
		07-08	**3.41**	0.23	5
Mexican American Female	12-19	05-06	**1.30**	0.05	16
		07-08	*	*	5
	20-39	05-06	**1.83**	0.17	9
		07-08	**2.06**	0.12	8
	40-59	05-06	**3.15**	0.22	6
		07-08	**2.71**	0.23	6
	60+	05-06	**4.45**	0.38	3
		07-08	**4.64**	0.44	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.3 and 0.51.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1890
	01-02	*	**< LOD**	**54.0** (46.5-63.6)	**82.3** (65.5-104)	**108** (88.0-138)	1223
	03-04	*	**< LOD**	**< LOD**	**49.1** (<LOD-54.5)	**60.1** (53.4-68.8)	1866
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	657
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	583
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**84.2** (<LOD-97.2)	1233
	01-02	*	**< LOD**	**54.0** (46.5-63.6)	**82.3** (65.5-104)	**108** (88.0-138)	1223
	03-04	*	**< LOD**	**< LOD**	**51.0** (<LOD-57.2)	**62.2** (56.2-72.7)	1283
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	908
	01-02	*	**< LOD**	**56.9** (48.6-71.4)	**90.1** (71.1-108)	**108** (87.4-144)	562
	03-04	*	**< LOD**	**< LOD**	**49.3** (<LOD-54.9)	**59.3** (52.9-68.8)	916
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**82.8** (<LOD-102)	982
	01-02	*	**< LOD**	**51.6** (43.7-59.6)	**76.1** (62.6-97.0)	**105** (81.6-140)	661
	03-04	*	**< LOD**	**< LOD**	**48.9** (<LOD-57.2)	**61.9** (53.3-72.7)	950
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	631
	01-02	*	**< LOD**	**< LOD**	**48.4** (<LOD-56.3)	**65.3** (48.6-79.4)	261
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**90.8** (<LOD-105)	399
	01-02	*	**< LOD**	**52.7** (45.0-62.7)	**87.1** (63.7-108)	**122** (85.2-147)	214
	03-04	*	**< LOD**	**< LOD**	**56.9** (<LOD-71.7)	**71.7** (53.8-112)	453
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	703
	01-02	*	**< LOD**	**56.0** (48.6-66.1)	**84.2** (64.5-115)	**112** (88.6-142)	664
	03-04	*	**< LOD**	**< LOD**	**50.6** (<LOD-56.3)	**61.4** (54.0-71.8)	869

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**12.1**	1.1	9
		07-08	**12.9**	1.2	6
	20-39	05-06	**18.1**	2.4	12
		07-08	**20.8**	1.5	15
	40-59	05-06	**34.3**	2.6	12
		07-08	**27.9**	1.2	16
	60+	05-06	**36.8**	2.8	15
		07-08	**30.6**	1.2	23
Non-Hispanic White Female	12-19	05-06	**9.07**	0.73	10
		07-08	**8.11**	0.64	7
	20-39	05-06	**15.3**	0.8	16
		07-08	**13.7**	0.8	13
	40-59	05-06	**26.5**	1.9	13
		07-08	**21.4**	1.1	17
	60+	05-06	**40.4**	2.4	17
		07-08	**35.5**	2.2	21
Non-Hispanic Black Male	12-19	05-06	**9.18**	0.88	13
		07-08	**8.65**	0.7	6
	20-39	05-06	**15.5**	1.5	6
		07-08	**15.2**	1	6
	40-59	05-06	**21.2**	2.1	5
		07-08	**23.7**	3.5	6
	60+	05-06	**31.5**	4.4	5
		07-08	**27.0**	2.6	8
Non-Hispanic Black Female	12-19	05-06	**6.19**	0.73	14
		07-08	**7.18**	0.67	5
	20-39	05-06	**12.2**	0.7	7
		07-08	**10.9**	2.3	8
	40-59	05-06	**21.5**	2.4	7
		07-08	**21.8**	2.8	8
	60+	05-06	**60.0**	7.8	5
		07-08	**41.1**	3.3	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**9.02**	0.49	11
		07-08	****7.21**	2.2	6
	20-39	05-06	**16.0**	1.1	9
		07-08	**18.0**	1.9	9
	40-59	05-06	**27.2**	5.9	4
		07-08	**21.4**	2.6	6
	60+	05-06	**29.3**	0.9	4
		07-08	**24.4**	0.9	5
Mexican American Female	12-19	05-06	**7.08**	0.27	16
		07-08	*	*	5
	20-39	05-06	**12.2**	1.2	9
		07-08	**11.9**	0.9	8
	40-59	05-06	**23.3**	2.1	6
		07-08	**18.2**	1.5	6
	60+	05-06	**34.2**	5.3	3
		07-08	**31.9**	3.5	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1898
	01-02	*	**< LOD**	**7.10** (<LOD-8.20)	**10.4** (9.00-13.1)	**14.0** (11.0-17.1)	1236
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**8.80** (<LOD-9.80)	1868
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	656
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	585
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1242
	01-02	*	**< LOD**	**7.10** (<LOD-8.20)	**10.4** (9.00-13.1)	**14.0** (11.0-17.1)	1236
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**9.00** (8.00-10.1)	1283
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	913
	01-02	*	**< LOD**	**7.10** (<LOD-8.60)	**11.3** (8.50-13.8)	**15.1** (11.3-18.7)	566
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**9.10** (7.90-10.8)	918
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	985
	01-02	*	**< LOD**	**7.00** (6.20-8.00)	**10.0** (9.20-11.4)	**13.1** (10.5-15.6)	670
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**8.50** (<LOD-9.20)	950
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	625
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**6.90** (<LOD-11.1)	262
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	408
	01-02	*	**< LOD**	**7.60** (6.10-9.10)	**12.1** (10.0-14.1)	**16.0** (12.3-21.0)	219
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**8.50** (<LOD-12.1)	453
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	708
	01-02	*	**< LOD**	**7.40** (6.20-9.00)	**10.7** (9.20-14.3)	**14.8** (11.6-17.2)	670
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**9.10** (8.00-10.6)	871

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.6, 6.1, and 7.9, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**2.46**	0.17	9
		07-08	**3.09**	0.14	6
	20-39	05-06	**2.68**	0.31	12
		07-08	**2.98**	0.19	15
	40-59	05-06	**4.91**	0.42	12
		07-08	**3.97**	0.18	16
	60+	05-06	**5.44**	0.36	15
		07-08	**4.82**	0.21	23
Non-Hispanic White Female	12-19	05-06	**1.91**	0.12	10
		07-08	**1.68**	0.36	7
	20-39	05-06	**2.43**	0.11	16
		07-08	**2.44**	0.12	13
	40-59	05-06	**3.68**	0.2	13
		07-08	**3.30**	0.15	17
	60+	05-06	**5.51**	0.31	17
		07-08	**5.04**	0.28	21
Non-Hispanic Black Male	12-19	05-06	**1.81**	0.19	13
		07-08	**1.98**	0.22	6
	20-39	05-06	**2.28**	0.19	6
		07-08	**2.32**	0.16	6
	40-59	05-06	**3.00**	0.32	5
		07-08	**3.42**	0.36	6
	60+	05-06	**5.27**	0.86	5
		07-08	**4.38**	0.36	8
Non-Hispanic Black Female	12-19	05-06	**1.26**	0.18	14
		07-08	****1.19**	0.36	5
	20-39	05-06	**2.02**	0.1	7
		07-08	**2.15**	0.21	8
	40-59	05-06	**2.97**	0.34	7
		07-08	**3.17**	0.26	8
	60+	05-06	**7.44**	0.97	5
		07-08	**5.96**	0.52	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.1 and 0.18.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

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Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**1.68**	0.26	11
		07-08	**1.80**	0.34	6
	20-39	05-06	**2.25**	0.28	9
		07-08	**2.05**	0.38	9
	40-59	05-06	**3.18**	0.44	4
		07-08	**3.00**	0.22	6
	60+	05-06	**4.31**	0.37	4
		07-08	**3.93**	0.3	5
Mexican American Female	12-19	05-06	**1.42**	0.07	16
		07-08	*	*	5
	20-39	05-06	**1.87**	0.19	9
		07-08	**2.13**	0.13	8
	40-59	05-06	**2.88**	0.13	6
		07-08	**2.82**	0.38	6
	60+	05-06	**4.10**	0.35	3
		07-08	**4.69**	0.54	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.1 and 0.18.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

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http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1898
	01-02	*	**< LOD**	**46.2** (<LOD-56.5)	**70.3** (58.4-90.7)	**101** (77.6-120)	1236
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**59.8** (<LOD-65.4)	1868
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	656
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	585
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1242
	01-02	*	**< LOD**	**46.2** (<LOD-56.5)	**70.3** (58.4-90.7)	**101** (77.6-120)	1236
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**61.0** (57.6-65.7)	1283
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	913
	01-02	*	**< LOD**	**47.9** (<LOD-60.5)	**72.3** (57.5-105)	**104** (73.5-133)	566
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**61.0** (54.0-67.7)	918
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	985
	01-02	*	**< LOD**	**45.0** (37.0-54.3)	**66.2** (58.3-79.1)	**90.7** (71.9-115)	670
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**58.1** (<LOD-65.0)	950
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	625
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**52.7** (<LOD-65.9)	262
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	408
	01-02	*	**< LOD**	**44.4** (37.2-57.3)	**71.5** (59.8-90.9)	**107** (70.7-142)	219
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**58.4** (<LOD-73.0)	453
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	708
	01-02	*	**< LOD**	**49.6** (41.9-57.9)	**72.8** (58.4-102)	**103** (82.6-121)	670
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**63.4** (57.3-67.7)	871

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**13.5**	1.1	9
		07-08	**15.4**	0.5	6
	20-39	05-06	**19.4**	2.6	12
		07-08	**19.8**	1.5	15
	40-59	05-06	**37.2**	3.6	12
		07-08	**29.1**	1.2	16
	60+	05-06	**37.0**	2.2	15
		07-08	**30.7**	1.1	23
Non-Hispanic White Female	12-19	05-06	**10.1**	0.6	10
		07-08	**7.82**	1.67	7
	20-39	05-06	**15.8**	0.8	16
		07-08	**14.6**	0.8	13
	40-59	05-06	**27.2**	1.9	13
		07-08	**21.8**	1.1	17
	60+	05-06	**40.2**	2.3	17
		07-08	**33.8**	2	21
Non-Hispanic Black Male	12-19	05-06	**9.30**	0.95	13
		07-08	**9.32**	0.9	6
	20-39	05-06	**13.6**	1.3	6
		07-08	**13.1**	1.2	6
	40-59	05-06	**19.1**	2.1	5
		07-08	**21.8**	2.1	6
	60+	05-06	**31.3**	5	5
		07-08	**26.4**	2.1	8
Non-Hispanic Black Female	12-19	05-06	**6.16**	0.89	14
		07-08	**5.62**	1.68	5
	20-39	05-06	**11.6**	0.4	7
		07-08	**10.9**	1.2	8
	40-59	05-06	**19.1**	2.3	7
		07-08	**19.2**	2	8
	60+	05-06	**49.5**	5.8	5
		07-08	**35.7**	2	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**8.94**	1.33	11
		07-08	**9.32**	1.79	6
	20-39	05-06	**15.7**	1.5	9
		07-08	**13.9**	2.6	9
	40-59	05-06	**26.1**	4.6	4
		07-08	**21.6**	2.5	6
	60+	05-06	**30.8**	1.2	4
		07-08	**28.4**	2.6	5
Mexican American Female	12-19	05-06	**7.68**	0.31	16
		07-08	*	*	5
	20-39	05-06	**12.5**	1.4	9
		07-08	**12.2**	0.6	8
	40-59	05-06	**21.3**	1.5	6
		07-08	**19.0**	2.6	6
	60+	05-06	**31.5**	5	3
		07-08	**32.3**	4.2	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1875
	01-02	*	< LOD	< LOD	< LOD	< LOD	1223
	03-04	*	< LOD	< LOD	< LOD	< LOD	1864
Age group							
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	645
	01-02	†	†	†	†	†	†
	03-04	*	< LOD	< LOD	< LOD	< LOD	583
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1230
	01-02	*	< LOD	< LOD	< LOD	< LOD	1223
	03-04	*	< LOD	< LOD	< LOD	< LOD	1281
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	894
	01-02	*	< LOD	< LOD	< LOD	< LOD	559
	03-04	*	< LOD	< LOD	< LOD	< LOD	914
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	981
	01-02	*	< LOD	< LOD	< LOD	< LOD	664
	03-04	*	< LOD	< LOD	< LOD	< LOD	950
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	620
	01-02	*	< LOD	< LOD	< LOD	< LOD	261
	03-04	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	400
	01-02	*	< LOD	< LOD	< LOD	< LOD	216
	03-04	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	699
	01-02	*	< LOD	< LOD	< LOD	< LOD	665
	03-04	*	< LOD	< LOD	< LOD	< LOD	866

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.7, 6.0, and 8.3, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.2 and 0.35.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.2 and 0.35.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1875
	01-02	*	< LOD	< LOD	< LOD	< LOD	1223
	03-04	*	< LOD	< LOD	< LOD	< LOD	1864
Age group							
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	645
	01-02	†	†	†	†	†	†
	03-04	*	< LOD	< LOD	< LOD	< LOD	583
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1230
	01-02	*	< LOD	< LOD	< LOD	< LOD	1223
	03-04	*	< LOD	< LOD	< LOD	< LOD	1281
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	894
	01-02	*	< LOD	< LOD	< LOD	< LOD	559
	03-04	*	< LOD	< LOD	< LOD	< LOD	914
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	981
	01-02	*	< LOD	< LOD	< LOD	< LOD	664
	03-04	*	< LOD	< LOD	< LOD	< LOD	950
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	620
	01-02	*	< LOD	< LOD	< LOD	< LOD	261
	03-04	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	400
	01-02	*	< LOD	< LOD	< LOD	< LOD	216
	03-04	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	699
	01-02	*	< LOD	< LOD	< LOD	< LOD	665
	03-04	*	< LOD	< LOD	< LOD	< LOD	866

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 - 2008)

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.

See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1884
	01-02	*	< LOD	< LOD	< LOD	< LOD	1230
	03-04	*	< LOD	< LOD	< LOD	< LOD	1866
Age group							
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	652
	01-02	†	†	†	†	†	†
	03-04	*	< LOD	< LOD	< LOD	< LOD	584
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1232
	01-02	*	< LOD	< LOD	< LOD	< LOD	1230
	03-04	*	< LOD	< LOD	< LOD	< LOD	1282
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	900
	01-02	*	< LOD	< LOD	< LOD	< LOD	565
	03-04	*	< LOD	< LOD	< LOD	< LOD	916
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	984
	01-02	*	< LOD	< LOD	< LOD	< LOD	665
	03-04	*	< LOD	< LOD	< LOD	< LOD	950
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	614
	01-02	*	< LOD	< LOD	< LOD	< LOD	260
	03-04	*	< LOD	< LOD	< LOD	< LOD	422
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	408
	01-02	*	< LOD	< LOD	< LOD	< LOD	218
	03-04	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	704
	01-02	*	< LOD	< LOD	< LOD	< LOD	671
	03-04	*	< LOD	< LOD	< LOD	< LOD	869

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.9, 5.8, and 8.2, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.555**	0.142	9
		07-08	*	*	6
	20-39	05-06	**.882**	0.14	12
		07-08	**.782**	0.172	15
	40-59	05-06	**1.40**	0.17	12
		07-08	**1.08**	0.14	16
	60+	05-06	**1.31**	0.07	15
		07-08	**1.09**	0.14	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	**.714**	0.087	16
		07-08	*	*	13
	40-59	05-06	**1.00**	0.13	13
		07-08	*	*	17
	60+	05-06	**1.18**	0.07	17
		07-08	**.803**	0.127	21
Non-Hispanic Black Male	12-19	05-06	**.418**	0.081	13
		07-08	*	*	6
	20-39	05-06	****1.23**	0.68	6
		07-08	*	*	6
	40-59	05-06	**.794**	0.114	5
		07-08	**.650**	0.182	6
	60+	05-06	**.969**	0.082	5
		07-08	**.699**	0.2	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**.528**	0.108	7
		07-08	*	*	8
	40-59	05-06	**.773**	0.099	7
		07-08	*	*	8
	60+	05-06	**1.11**	0.18	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.11 and 0.2.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estiamte is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.481**	0.12	11
		07-08	*	*	6
	20-39	05-06	**.825**	0.155	9
		07-08	*	*	9
	40-59	05-06	**1.15**	0.17	4
		07-08	*	*	6
	60+	05-06	**1.16**	0.16	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	**.784**	0.102	9
		07-08	*	*	8
	40-59	05-06	**1.09**	0.09	6
		07-08	*	*	6
	60+	05-06	**.926**	0.18	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.11 and 0.2.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estiamte is > 30%.

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Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1884
	01-02	*	< LOD	< LOD	< LOD	< LOD	1230
	03-04	*	< LOD	< LOD	< LOD	< LOD	1866
Age group							
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	652
	01-02	†	†	†	†	†	†
	03-04	*	< LOD	< LOD	< LOD	< LOD	584
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1232
	01-02	*	< LOD	< LOD	< LOD	< LOD	1230
	03-04	*	< LOD	< LOD	< LOD	< LOD	1282
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	900
	01-02	*	< LOD	< LOD	< LOD	< LOD	565
	03-04	*	< LOD	< LOD	< LOD	< LOD	916
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	984
	01-02	*	< LOD	< LOD	< LOD	< LOD	665
	03-04	*	< LOD	< LOD	< LOD	< LOD	950
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	614
	01-02	*	< LOD	< LOD	< LOD	< LOD	260
	03-04	*	< LOD	< LOD	< LOD	< LOD	422
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	408
	01-02	*	< LOD	< LOD	< LOD	< LOD	218
	03-04	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	704
	01-02	*	< LOD	< LOD	< LOD	< LOD	671
	03-04	*	< LOD	< LOD	< LOD	< LOD	869

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**3.03**	0.8	9
		07-08	*	*	6
	20-39	05-06	**6.39**	1.09	12
		07-08	**5.50**	1.3	15
	40-59	05-06	**10.6**	1.4	12
		07-08	**7.76**	1.03	16
	60+	05-06	**8.97**	0.52	15
		07-08	**6.78**	0.88	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	**4.63**	0.57	16
		07-08	*	*	13
	40-59	05-06	**7.32**	0.98	13
		07-08	*	*	17
	60+	05-06	**8.72**	0.57	17
		07-08	**5.25**	0.82	21
Non-Hispanic Black Male	12-19	05-06	**2.18**	0.43	13
		07-08	*	*	6
	20-39	05-06	****7.38**	4.18	6
		07-08	*	*	6
	40-59	05-06	**5.11**	0.79	5
		07-08	**4.20**	1.16	6
	60+	05-06	**5.80**	0.53	5
		07-08	**4.28**	1.21	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**3.05**	0.64	7
		07-08	*	*	8
	40-59	05-06	**4.93**	0.62	7
		07-08	*	*	8
	60+	05-06	**7.48**	1.3	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

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http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**2.60**	0.65	11
		07-08	*	*	6
	20-39	05-06	**5.74**	0.94	9
		07-08	*	*	9
	40-59	05-06	**9.51**	1.79	4
		07-08	*	*	6
	60+	05-06	**8.23**	0.86	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	**5.22**	0.65	9
		07-08	*	*	8
	40-59	05-06	**8.07**	0.72	6
		07-08	*	*	6
	60+	05-06	**7.32**	1.98	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

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Factsheet

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Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1884
	01-02	*	< LOD	< LOD	< LOD	< LOD	1202
	03-04	*	< LOD	< LOD	< LOD	< LOD	1849
Age group							
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	652
	01-02	†	†	†	†	†	†
	03-04	*	< LOD	< LOD	< LOD	< LOD	581
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1232
	01-02	*	< LOD	< LOD	< LOD	< LOD	1202
	03-04	*	< LOD	< LOD	< LOD	< LOD	1268
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	904
	01-02	*	< LOD	< LOD	< LOD	< LOD	541
	03-04	*	< LOD	< LOD	< LOD	< LOD	905
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	980
	01-02	*	< LOD	< LOD	< LOD	< LOD	661
	03-04	*	< LOD	< LOD	< LOD	< LOD	944
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	623
	01-02	*	< LOD	< LOD	< LOD	< LOD	257
	03-04	*	< LOD	< LOD	< LOD	< LOD	420
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	404
	01-02	*	< LOD	< LOD	< LOD	< LOD	212
	03-04	*	< LOD	< LOD	< LOD	< LOD	453
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	705
	01-02	*	< LOD	< LOD	< LOD	< LOD	653
	03-04	*	< LOD	< LOD	< LOD	< LOD	857

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 35.6, 21.0, and 12.0, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

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Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	**3.27**	0.88	6
	20-39	05-06	**1.80**	0.41	12
		07-08	**2.48**	0.23	15
	40-59	05-06	**1.44**	0.33	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	**1.83**	0.44	10
		07-08	**2.84**	0.45	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	**1.55**	0.37	13
		07-08	*	*	17
	60+	05-06	**1.95**	0.38	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	**3.03**	0.29	6
	20-39	05-06	*	*	6
		07-08	****4.10**	1.97	6
	40-59	05-06	**2.25**	0.66	5
		07-08	*	*	6
	60+	05-06	****2.72**	0.93	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	**2.95**	0.57	14
		07-08	*	*	5
	20-39	05-06	**3.42**	0.31	7
		07-08	**2.77**	0.44	8
	40-59	05-06	**3.09**	0.53	7
		07-08	**2.93**	0.38	8
	60+	05-06	**3.28**	0.36	5
		07-08	**2.37**	0.4	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.37 and 2.37.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estiamte is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

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Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	**2.65**	0.32	6
	20-39	05-06	*	*	9
		07-08	**2.86**	0.31	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	**3.07**	0.24	5
	20-39	05-06	*	*	9
		07-08	**3.04**	0.44	8
	40-59	05-06	****2.06**	0.71	6
		07-08	**2.78**	0.46	6
	60+	05-06	*	*	3
		07-08	**2.59**	0.21	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.37 and 2.37.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estiamte is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1884
	01-02	*	< LOD	< LOD	< LOD	< LOD	1202
	03-04	*	< LOD	< LOD	< LOD	< LOD	1849
Age group							
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	652
	01-02	†	†	†	†	†	†
	03-04	*	< LOD	< LOD	< LOD	< LOD	581
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1232
	01-02	*	< LOD	< LOD	< LOD	< LOD	1202
	03-04	*	< LOD	< LOD	< LOD	< LOD	1268
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	904
	01-02	*	< LOD	< LOD	< LOD	< LOD	541
	03-04	*	< LOD	< LOD	< LOD	< LOD	905
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	980
	01-02	*	< LOD	< LOD	< LOD	< LOD	661
	03-04	*	< LOD	< LOD	< LOD	< LOD	944
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	623
	01-02	*	< LOD	< LOD	< LOD	< LOD	257
	03-04	*	< LOD	< LOD	< LOD	< LOD	420
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	404
	01-02	*	< LOD	< LOD	< LOD	< LOD	212
	03-04	*	< LOD	< LOD	< LOD	< LOD	453
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	705
	01-02	*	< LOD	< LOD	< LOD	< LOD	653
	03-04	*	< LOD	< LOD	< LOD	< LOD	857

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

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Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	**16.0**	3.9	6
	20-39	05-06	**12.1**	2.6	12
		07-08	**16.1**	1.4	15
	40-59	05-06	**11.0**	2.6	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	**9.51**	2.14	10
		07-08	**13.1**	1.9	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	**11.5**	2.9	13
		07-08	*	*	17
	60+	05-06	**14.1**	2.7	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	**14.3**	1.4	6
	20-39	05-06	*	*	6
		07-08	****24.1**	12.1	6
	40-59	05-06	**14.1**	4.1	5
		07-08	*	*	6
	60+	05-06	****15.7**	5.1	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	**14.4**	2.7	14
		07-08	*	*	5
	20-39	05-06	**19.7**	1.7	7
		07-08	**13.9**	2.2	8
	40-59	05-06	**19.7**	3.4	7
		07-08	**17.7**	2.7	8
	60+	05-06	**21.7**	1.8	5
		07-08	**14.6**	2.6	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

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http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	**14.5**	2.4	6
	20-39	05-06	*	*	9
		07-08	**19.8**	2.6	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	**15.1**	1.4	5
	20-39	05-06	*	*	9
		07-08	**17.2**	1.9	8
	40-59	05-06	****14.9**	4.9	6
		07-08	**18.6**	3.1	6
	60+	05-06	*	*	3
		07-08	**17.7**	1.5	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

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Factsheet

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Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1922
	01-02	*	< LOD	< LOD	< LOD	< LOD	1235
	03-04	*	< LOD	< LOD	< LOD	< LOD	1867
Age group							
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	663
	01-02	†	†	†	†	†	†
	03-04	*	< LOD	< LOD	< LOD	< LOD	586
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1259
	01-02	*	< LOD	< LOD	< LOD	< LOD	1235
	03-04	*	< LOD	< LOD	< LOD	< LOD	1281
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	920
	01-02	*	< LOD	< LOD	< LOD	< LOD	565
	03-04	*	< LOD	< LOD	< LOD	< LOD	917
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	1002
	01-02	*	< LOD	< LOD	< LOD	< LOD	670
	03-04	*	< LOD	< LOD	< LOD	< LOD	950
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	637
	01-02	*	< LOD	< LOD	< LOD	< LOD	263
	03-04	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	409
	01-02	*	< LOD	< LOD	< LOD	< LOD	217
	03-04	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	717
	01-02	*	< LOD	< LOD	< LOD	< LOD	670
	03-04	*	< LOD	< LOD	< LOD	< LOD	869

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 13.2, 5.8, and 7.1, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

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http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.47 and 0.81.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.47 and 0.81.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1922
	01-02	*	< LOD	< LOD	< LOD	< LOD	1235
	03-04	*	< LOD	< LOD	< LOD	< LOD	1867
Age group							
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	663
	01-02	†	†	†	†	†	†
	03-04	*	< LOD	< LOD	< LOD	< LOD	586
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1259
	01-02	*	< LOD	< LOD	< LOD	< LOD	1235
	03-04	*	< LOD	< LOD	< LOD	< LOD	1281
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	920
	01-02	*	< LOD	< LOD	< LOD	< LOD	565
	03-04	*	< LOD	< LOD	< LOD	< LOD	917
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	1002
	01-02	*	< LOD	< LOD	< LOD	< LOD	670
	03-04	*	< LOD	< LOD	< LOD	< LOD	950
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	637
	01-02	*	< LOD	< LOD	< LOD	< LOD	263
	03-04	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	409
	01-02	*	< LOD	< LOD	< LOD	< LOD	217
	03-04	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	717
	01-02	*	< LOD	< LOD	< LOD	< LOD	670
	03-04	*	< LOD	< LOD	< LOD	< LOD	869

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**15.9** (13.7-17.1)	1895
	01-02	*	**< LOD**	**9.20** (7.50-11.1)	**14.3** (12.3-16.2)	**18.1** (16.1-21.1)	1230
	03-04	*	**< LOD**	**6.80** (<LOD-7.20)	**9.90** (8.90-10.7)	**12.3** (11.0-13.3)	1871
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	656
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	586
20 years and older	99-00	*	**< LOD**	**< LOD**	**12.7** (<LOD-13.9)	**16.1** (14.1-17.6)	1239
	01-02	*	**< LOD**	**9.20** (7.50-11.1)	**14.3** (12.3-16.2)	**18.1** (16.1-21.1)	1230
	03-04	*	**< LOD**	**7.20** (<LOD-7.70)	**10.3** (9.40-11.2)	**13.0** (11.4-14.7)	1285
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**13.9** (12.8-15.4)	906
	01-02	*	**< LOD**	**9.40** (7.30-11.6)	**14.1** (11.6-16.7)	**16.7** (14.0-22.8)	560
	03-04	*	**< LOD**	**7.00** (<LOD-7.30)	**9.80** (8.70-10.6)	**12.2** (10.4-14.8)	920
Females	99-00	*	**< LOD**	**< LOD**	**13.1** (<LOD-16.1)	**16.7** (14.3-19.2)	989
	01-02	*	**< LOD**	**9.10** (7.50-10.7)	**14.5** (13.0-16.1)	**18.5** (16.4-21.2)	670
	03-04	*	**< LOD**	**< LOD**	**10.3** (8.90-11.0)	**12.6** (11.0-13.7)	951
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	632
	01-02	*	**< LOD**	**< LOD**	**7.80** (6.10-9.80)	**9.80** (7.80-12.5)	264
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**7.90** (<LOD-10.5)	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**16.3** (13.4-19.0)	400
	01-02	*	**< LOD**	**8.40** (6.80-9.30)	**14.1** (11.7-16.4)	**19.1** (15.1-23.0)	216
	03-04	*	**< LOD**	**< LOD**	**9.80** (8.00-13.9)	**15.9** (9.70-23.9)	454
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**15.6** (13.8-17.1)	706
	01-02	*	**5.90** (<LOD-6.90)	**10.3** (8.10-12.0)	**15.5** (13.0-17.6)	**18.5** (16.5-22.2)	665
	03-04	*	**< LOD**	**7.10** (<LOD-7.70)	**10.3** (9.10-11.2)	**12.4** (11.0-13.7)	873

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.7, 5.5, and 6.8, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**2.26**	0.14	9
		07-08	**3.20**	0.23	6
	20-39	05-06	**3.45**	0.3	12
		07-08	**3.76**	0.19	15
	40-59	05-06	**5.82**	0.26	12
		07-08	**5.40**	0.23	16
	60+	05-06	**8.03**	0.43	15
		07-08	**7.32**	0.47	23
Non-Hispanic White Female	12-19	05-06	**1.79**	0.11	10
		07-08	**1.95**	0.25	7
	20-39	05-06	**2.70**	0.16	16
		07-08	**2.99**	0.22	13
	40-59	05-06	**4.56**	0.17	13
		07-08	**4.59**	0.2	17
	60+	05-06	**8.49**	0.5	17
		07-08	**7.82**	0.43	21
Non-Hispanic Black Male	12-19	05-06	**1.84**	0.1	13
		07-08	**1.95**	0.15	6
	20-39	05-06	**3.48**	1	6
		07-08	**2.61**	0.22	6
	40-59	05-06	**3.83**	0.29	5
		07-08	**4.78**	0.47	6
	60+	05-06	**7.19**	0.95	5
		07-08	**6.78**	0.64	8
Non-Hispanic Black Female	12-19	05-06	**1.19**	0.1	14
		07-08	**1.41**	0.09	5
	20-39	05-06	**2.13**	0.15	7
		07-08	**2.03**	0.19	8
	40-59	05-06	**3.98**	0.4	7
		07-08	**4.58**	0.53	8
	60+	05-06	**12.7**	2.5	5
		07-08	**9.57**	0.86	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.51 and 0.88.

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Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**1.67**	0.24	11
		07-08	**2.36**	0.38	6
	20-39	05-06	**2.65**	0.26	9
		07-08	**2.97**	0.28	9
	40-59	05-06	**3.82**	0.39	4
		07-08	**4.45**	0.69	6
	60+	05-06	**5.90**	0.43	4
		07-08	**5.51**	0.51	5
Mexican American Female	12-19	05-06	**1.00**	0.15	16
		07-08	**1.34**	0.32	5
	20-39	05-06	**2.05**	0.23	9
		07-08	**2.10**	0.24	8
	40-59	05-06	**3.51**	0.19	6
		07-08	**3.79**	0.36	6
	60+	05-06	**6.10**	0.41	3
		07-08	**7.21**	0.84	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.51 and 0.88.

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Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**103** (96.0-113)	1895
	01-02	*	**< LOD**	**60.8** (51.3-70.6)	**99.4** (83.4-114)	**134** (113-152)	1230
	03-04	*	**< LOD**	**44.2** (<LOD-46.9)	**65.7** (60.5-71.1)	**83.9** (74.9-92.9)	1871
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	656
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	586
20 years and older	99-00	*	**< LOD**	**< LOD**	**85.2** (<LOD-96.0)	**107** (98.3-125)	1239
	01-02	*	**< LOD**	**60.8** (51.3-70.6)	**99.4** (83.4-114)	**134** (113-152)	1230
	03-04	*	**< LOD**	**46.5** (<LOD-50.6)	**69.3** (62.2-74.6)	**86.8** (78.3-99.8)	1285
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**95.7** (80.1-101)	906
	01-02	*	**< LOD**	**62.7** (49.3-76.6)	**98.5** (76.6-134)	**135** (105-160)	560
	03-04	*	**< LOD**	**43.4** (<LOD-46.3)	**62.0** (56.8-71.9)	**83.2** (72.4-95.0)	920
Females	99-00	*	**< LOD**	**< LOD**	**90.0** (<LOD-101)	**111** (97.2-129)	989
	01-02	*	**< LOD**	**59.8** (52.0-67.6)	**100** (90.5-105)	**126** (107-146)	670
	03-04	*	**< LOD**	**< LOD**	**66.9** (59.7-74.3)	**84.4** (74.7-95.7)	951
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	632
	01-02	*	**< LOD**	**< LOD**	**55.8** (48.7-69.7)	**76.3** (61.9-92.4)	264
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**57.1** (<LOD-70.2)	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**105** (82.7-116)	400
	01-02	*	**< LOD**	**50.0** (41.3-60.4)	**89.5** (72.3-107)	**121** (92.0-154)	216
	03-04	*	**< LOD**	**< LOD**	**66.8** (48.5-93.2)	**97.4** (79.1-129)	454
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**103** (96.8-122)	706
	01-02	*	**37.5** (<LOD-44.1)	**65.7** (52.9-78.2)	**104** (90.7-118)	**136** (118-154)	665
	03-04	*	**< LOD**	**45.9** (<LOD-50.6)	**68.3** (61.3-73.6)	**85.0** (74.6-102)	873

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**12.4**	0.9	9
		07-08	**15.9**	1	6
	20-39	05-06	**25.6**	3.2	12
		07-08	**24.9**	1.6	15
	40-59	05-06	**43.9**	2.4	12
		07-08	**39.9**	2	16
	60+	05-06	**54.6**	2.6	15
		07-08	**46.3**	2.4	23
Non-Hispanic White Female	12-19	05-06	**9.51**	0.56	10
		07-08	**9.09**	1.25	7
	20-39	05-06	**17.7**	1.3	16
		07-08	**17.7**	1.3	13
	40-59	05-06	**33.7**	2.2	13
		07-08	**30.4**	1.5	17
	60+	05-06	**62.0**	3.8	17
		07-08	**52.4**	2.9	21
Non-Hispanic Black Male	12-19	05-06	**9.24**	0.4	13
		07-08	**9.22**	0.52	6
	20-39	05-06	****20.7**	6.2	6
		07-08	**14.8**	1.4	6
	40-59	05-06	**24.5**	2.1	5
		07-08	**30.6**	2.9	6
	60+	05-06	**42.9**	5.6	5
		07-08	**40.9**	3.6	8
Non-Hispanic Black Female	12-19	05-06	**5.91**	0.52	14
		07-08	**6.68**	0.43	5
	20-39	05-06	**12.2**	0.9	7
		07-08	**10.3**	1	8
	40-59	05-06	**25.4**	2.5	7
		07-08	**28.0**	4	8
	60+	05-06	**84.3**	16	5
		07-08	**57.2**	3.5	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

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Serum 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**8.95**	1.21	11
		07-08	**12.9**	2.7	6
	20-39	05-06	**18.5**	1.4	9
		07-08	**20.4**	2.3	9
	40-59	05-06	**31.2**	4.2	4
		07-08	**31.2**	4.1	6
	60+	05-06	**42.4**	2.1	4
		07-08	**39.8**	4.3	5
Mexican American Female	12-19	05-06	**5.53**	0.81	16
		07-08	**6.50**	1.49	5
	20-39	05-06	**13.8**	1.7	9
		07-08	**12.3**	1.6	8
	40-59	05-06	**26.0**	2	6
		07-08	**25.4**	2.2	6
	60+	05-06	**46.7**	6.2	3
		07-08	**49.5**	6.2	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

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Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1903
	01-02	*	< LOD	< LOD	< LOD	< LOD	1229
	03-04	*	< LOD	< LOD	< LOD	< LOD	1868
Age group							
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	660
	01-02	†	†	†	†	†	†
	03-04	*	< LOD	< LOD	< LOD	< LOD	586
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1243
	01-02	*	< LOD	< LOD	< LOD	< LOD	1229
	03-04	*	< LOD	< LOD	< LOD	< LOD	1282
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	912
	01-02	*	< LOD	< LOD	< LOD	< LOD	558
	03-04	*	< LOD	< LOD	< LOD	< LOD	917
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	991
	01-02	*	< LOD	< LOD	< LOD	< LOD	671
	03-04	*	< LOD	< LOD	< LOD	< LOD	951
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	628
	01-02	*	< LOD	< LOD	< LOD	< LOD	262
	03-04	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	409
	01-02	*	< LOD	< LOD	< LOD	< LOD	217
	03-04	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	707
	01-02	*	< LOD	< LOD	< LOD	< LOD	667
	03-04	*	< LOD	< LOD	< LOD	< LOD	870

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 11.9, 5.2, and 6.0, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	**.502**	0.103	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.26 and 0.45.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.26 and 0.45.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1903
	01-02	*	< LOD	< LOD	< LOD	< LOD	1229
	03-04	*	< LOD	< LOD	< LOD	< LOD	1868
Age group							
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	660
	01-02	†	†	†	†	†	†
	03-04	*	< LOD	< LOD	< LOD	< LOD	586
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1243
	01-02	*	< LOD	< LOD	< LOD	< LOD	1229
	03-04	*	< LOD	< LOD	< LOD	< LOD	1282
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	912
	01-02	*	< LOD	< LOD	< LOD	< LOD	558
	03-04	*	< LOD	< LOD	< LOD	< LOD	917
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	991
	01-02	*	< LOD	< LOD	< LOD	< LOD	671
	03-04	*	< LOD	< LOD	< LOD	< LOD	951
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	628
	01-02	*	< LOD	< LOD	< LOD	< LOD	262
	03-04	*	< LOD	< LOD	< LOD	< LOD	423
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	409
	01-02	*	< LOD	< LOD	< LOD	< LOD	217
	03-04	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	707
	01-02	*	< LOD	< LOD	< LOD	< LOD	667
	03-04	*	< LOD	< LOD	< LOD	< LOD	870

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	**3.65**	0.72	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1883
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1215
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**13.4** (<LOD-16.4)	1860
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	651
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**14.7** (<LOD-16.5)	579
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1232
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1215
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**13.1** (<LOD-16.5)	1281
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	900
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	554
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**14.4** (<LOD-17.9)	913
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	983
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	661
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	947
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	621
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	259
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**18.7** (<LOD-25.2)	420
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	405
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	218
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	453
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	699
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	657
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**13.1** (<LOD-16.4)	867

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 68.4, 26.8, and 13.1, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Factsheet

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Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	**2.50**	0.44	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	**2.65**	0.23	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	**2.21**	0.2	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	**2.74**	0.26	5
		07-08	**3.60**	0.7	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.86 and 3.23.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estiamte is > 30%.

Biomonitoring Summary

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http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**2.14**	0.29	11
		07-08	****3.33**	2.08	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	**2.05**	0.3	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	**2.10**	0.11	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.86 and 3.23.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estiamte is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1883
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1215
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**80.3** (<LOD-96.2)	1860
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	651
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**71.4** (<LOD-82.8)	579
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1232
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1215
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**80.7** (<LOD-99.3)	1281
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	900
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	554
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**81.1** (<LOD-104)	913
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	983
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	661
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	947
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	621
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	259
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**103** (<LOD-199)	420
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	405
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	218
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	453
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	699
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	657
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**80.5** (<LOD-106)	867

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

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Factsheet

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Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	**17.0**	3	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	**19.4**	1.6	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	**13.1**	0.9	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	**18.3**	1.6	5
		07-08	**21.8**	4.5	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,4,4',5-Tetrachlorobiphenyl (PCB 81) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**11.6**	1.6	11
		07-08	****16.6**	9.6	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	**14.6**	1.9	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	**16.1**	2.3	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**28.5** (24.9-32.8)	**53.2** (45.7-59.9)	**80.5** (62.8-100)	1896
	01-02	**22.7** (20.9-24.7)	**24.5** (22.2-26.8)	**40.8** (36.1-47.5)	**69.3** (61.6-80.8)	**108** (92.7-116)	1226
	03-04	**16.3** (14.9-17.9)	**14.7** (<LOD-16.5)	**24.8** (22.4-27.4)	**46.7** (41.6-51.9)	**68.7** (58.1-84.4)	1860
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**24.3** (<LOD-27.5)	**31.1** (26.4-36.4)	658
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**17.0** (15.2-20.2)	**21.2** (17.3-25.6)	577
20 years and older	99-00	*	**< LOD**	**30.8** (27.2-36.3)	**57.1** (50.5-65.8)	**89.5** (66.1-110)	1238
	01-02	**22.7** (20.9-24.7)	**24.5** (22.2-26.8)	**40.8** (36.1-47.5)	**69.3** (61.6-80.8)	**108** (92.7-116)	1226
	03-04	**17.6** (16.0-19.3)	**16.0** (14.2-18.6)	**26.8** (24.2-30.3)	**49.8** (43.5-59.1)	**74.8** (60.2-94.4)	1283
Gender							
Males	99-00	*	**< LOD**	**25.8** (<LOD-28.9)	**41.6** (36.1-45.7)	**62.0** (49.7-75.0)	911
	01-02	**20.3** (18.5-22.3)	**23.1** (20.8-25.4)	**36.6** (32.8-39.4)	**52.7** (46.4-62.3)	**81.9** (61.0-101)	561
	03-04	**14.9** (<LOD-16.4)	**< LOD**	**21.8** (20.1-25.4)	**38.5** (31.0-46.1)	**51.5** (46.5-60.5)	912
Females	99-00	*	**< LOD**	**33.6** (27.4-41.4)	**59.4** (53.0-78.7)	**98.1** (69.9-120)	985
	01-02	**25.1** (22.9-27.4)	**26.1** (23.0-28.8)	**48.6** (41.4-54.4)	**82.9** (71.1-96.8)	**116** (98.6-128)	665
	03-04	**17.8** (16.0-19.7)	**15.7** (<LOD-18.4)	**27.6** (24.3-33.4)	**57.1** (46.0-67.1)	**82.5** (63.0-109)	948
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**23.8** (<LOD-30.3)	**43.2** (37.0-52.6)	**66.1** (52.4-79.2)	631
	01-02	**17.8** (15.5-20.4)	**19.9** (18.3-21.2)	**28.5** (26.5-34.2)	**47.9** (39.7-54.9)	**69.2** (49.3-103)	262
	03-04	**15.5** (<LOD-17.9)	**14.2** (<LOD-17.5)	**22.5** (18.9-26.8)	**31.2** (27.4-37.8)	**42.0** (33.5-48.0)	420
Non-Hispanic blacks	99-00	*	**< LOD**	**30.6** (25.2-43.1)	**67.4** (45.0-126)	**126** (67.4-224)	404
	01-02	**22.2** (18.2-27.0)	**22.1** (19.6-25.4)	**44.3** (37.9-51.5)	**88.4** (59.0-111)	**115** (96.1-153)	217
	03-04	**16.5** (13.9-19.5)	**< LOD**	**23.5** (18.9-34.6)	**63.4** (41.5-126)	**142** (52.1-292)	452
Non-Hispanic whites	99-00	*	**< LOD**	**28.3** (<LOD-34.0)	**50.5** (41.6-57.0)	**67.8** (57.0-94.1)	704
	01-02	**23.1** (20.9-25.4)	**24.7** (22.0-27.6)	**42.0** (35.4-49.6)	**72.3** (63.9-82.9)	**114** (91.0-128)	663
	03-04	**16.0** (14.3-17.8)	**14.5** (<LOD-16.9)	**24.3** (21.4-28.2)	**46.5** (41.6-50.9)	**64.0** (52.1-76.1)	869

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 23.2, 10.8, and 13.9, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**6.23**	0.47	9
		07-08	**5.53**	0.66	6
	20-39	05-06	**8.12**	0.78	12
		07-08	**7.73**	0.54	15
	40-59	05-06	**17.6**	2.4	12
		07-08	**12.3**	0.8	16
	60+	05-06	**26.8**	3.3	15
		07-08	**27.0**	2.7	23
Non-Hispanic White Female	12-19	05-06	**5.62**	0.27	10
		07-08	**5.53**	0.66	7
	20-39	05-06	**9.55**	1.07	16
		07-08	**10.2**	1.2	13
	40-59	05-06	**16.4**	2	13
		07-08	**14.4**	1.3	17
	60+	05-06	**35.6**	2.6	17
		07-08	**31.5**	3.3	21
Non-Hispanic Black Male	12-19	05-06	**5.76**	0.42	13
		07-08	**5.11**	0.38	6
	20-39	05-06	**6.77**	1	6
		07-08	**6.42**	0.67	6
	40-59	05-06	**15.0**	3.4	5
		07-08	**13.4**	2.2	6
	60+	05-06	**30.9**	5.4	5
		07-08	**25.0**	4.5	8
Non-Hispanic Black Female	12-19	05-06	**5.64**	0.31	14
		07-08	**4.62**	0.28	5
	20-39	05-06	**9.74**	1.07	7
		07-08	**7.62**	0.68	8
	40-59	05-06	**20.2**	2.5	7
		07-08	****23.9**	7.7	8
	60+	05-06	****83.7**	31.4	5
		07-08	**56.2**	5.1	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.32 and 2.29.
** Standard error of the mean estimate is > 30%.

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Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**6.00**	0.34	11
		07-08	**6.29**	0.92	6
	20-39	05-06	**8.96**	0.46	9
		07-08	**8.95**	0.61	9
	40-59	05-06	**15.9**	2.2	4
		07-08	**17.5**	3.3	6
	60+	05-06	**26.4**	4.8	4
		07-08	**28.9**	5.8	5
Mexican American Female	12-19	05-06	**5.86**	0.43	16
		07-08	**5.80**	0.53	5
	20-39	05-06	**8.20**	0.62	9
		07-08	**8.42**	0.63	8
	40-59	05-06	**19.2**	2.6	6
		07-08	**16.5**	2.1	6
	60+	05-06	**40.2**	7.1	3
		07-08	**36.3**	5.7	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.32 and 2.29.
** Standard error of the mean estimate is > 30%.

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Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**177** (151-212)	**336** (294-404)	**564** (455-663)	1896
	01-02	**147** (135-160)	**158** (143-175)	**270** (249-298)	**482** (436-541)	**738** (625-840)	1226
	03-04	**100** (91.0-110)	**89.8** (<LOD-101)	**159** (146-178)	**308** (273-349)	**475** (378-590)	1860
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**108** (<LOD-126)	**144** (116-196)	658
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**88.2** (78.8-106)	**109** (89.2-135)	577
20 years and older	99-00	*	**< LOD**	**204** (173-232)	**381** (319-451)	**596** (479-709)	1238
	01-02	**147** (135-160)	**158** (143-175)	**270** (249-298)	**482** (436-541)	**738** (625-840)	1226
	03-04	**111** (100-122)	**100** (88.7-115)	**176** (158-194)	**326** (286-394)	**534** (394-668)	1283
Gender							
Males	99-00	*	**< LOD**	**154** (<LOD182)	**260** (241-274)	**382** (308-509)	911
	01-02	**134** (121-149)	**152** (130-169)	**249** (233-267)	**399** (346-467)	**566** (467-693)	561
	03-04	**92.3** (<LOD-102)	**< LOD**	**148** (131-168)	**245** (203-296)	**360** (296-442)	912
Females	99-00	*	**< LOD**	**212** (159-250)	**429** (350-531)	**648** (534-744)	985
	01-02	**159** (146-172)	**160** (149-186)	**301** (270-348)	**550** (483-637)	**818** (658-958)	665
	03-04	**108** (96.2-121)	**94.5** (<LOD-110)	**180** (153-212)	**370** (303-455)	**559** (438-843)	948
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**146** (<LOD213)	**285** (229-364)	**424** (361-534)	631
	01-02	**114** (97.8-133)	**125** (106-150)	**217** (175-257)	**335** (272-460)	**593** (354-784)	262
	03-04	**95.3** (<LOD-111)	**91.4** (<LOD-99.4)	**145** (116-180)	**238** (172-288)	**298** (238-461)	420
Non-Hispanic blacks	99-00	*	**< LOD**	**192** (147-258)	**457** (308-691)	**786** (457-1520)	404
	01-02	**131** (106-161)	**128** (110-158)	**266** (214-304)	**532** (361-662)	**779** (585-1060)	217
	03-04	**94.3** (79.0-112)	**< LOD**	**143** (106-254)	**483** (254-847)	**976** (483-1430)	452
Non-Hispanic whites	99-00	*	**< LOD**	**175** (<LOD215)	**311** (274-356)	**508** (394-660)	704
	01-02	**150** (136-164)	**160** (146-179)	**276** (249-301)	**486** (431-553)	**746** (600-937)	663
	03-04	**98.4** (87.5-111)	**89.4** (<LOD-104)	**158** (142-182)	**297** (260-346)	**431** (365-541)	869

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

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Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**34.3**	3.1	9
		07-08	**27.5**	3.1	6
	20-39	05-06	**59.8**	7.5	12
		07-08	**51.2**	4.1	15
	40-59	05-06	**134**	21	12
		07-08	**90.7**	5.6	16
	60+	05-06	**181**	19	15
		07-08	**172**	16	23
Non-Hispanic White Female	12-19	05-06	**30.0**	1.6	10
		07-08	**26.0**	3.3	7
	20-39	05-06	**62.7**	8.1	16
		07-08	**61.2**	8.7	13
	40-59	05-06	**123**	17	13
		07-08	**95.4**	9.7	17
	60+	05-06	**259**	18	17
		07-08	**211**	22	21
Non-Hispanic Black Male	12-19	05-06	**29.2**	2.3	13
		07-08	**24.1**	1.4	6
	20-39	05-06	**40.3**	6.6	6
		07-08	**36.5**	4.5	6
	40-59	05-06	**96.2**	22.6	5
		07-08	**85.7**	13.5	6
	60+	05-06	**184**	31	5
		07-08	**150**	24	8
Non-Hispanic Black Female	12-19	05-06	**27.9**	1.5	14
		07-08	**22.1**	2.1	5
	20-39	05-06	**56.3**	6.6	7
		07-08	**38.5**	3.5	8
	40-59	05-06	**129**	16	7
		07-08	****147**	51	8
	60+	05-06	****558**	211	5
		07-08	**338**	29	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

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Serum 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**32.6**	1.7	11
		07-08	**33.4**	4.9	6
	20-39	05-06	**63.0**	2.2	9
		07-08	**62.3**	7.4	9
	40-59	05-06	**131**	22	4
		07-08	**126**	24	6
	60+	05-06	**188**	32	4
		07-08	**211**	48	5
Mexican American Female	12-19	05-06	**32.0**	2.3	16
		07-08	**28.4**	2.7	5
	20-39	05-06	**54.9**	4.8	9
		07-08	**49.3**	5.4	8
	40-59	05-06	**143**	21	6
		07-08	**112**	16	6
	60+	05-06	**301**	54	3
		07-08	**250**	42	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

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Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in pg/g lipid or parts per trillion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**34.4** (31.0-38.7)	**44.9** (40.6-48.9)	1888
	01-02	**17.9** (16.0-19.9)	**19.0** (17.0-22.0)	**33.1** (27.7-38.6)	**50.0** (43.9-55.0)	**60.9** (56.1-65.8)	1223
	03-04	*	**< LOD**	**19.5** (16.8-22.7)	**31.0** (27.9-36.0)	**40.6** (36.5-47.3)	1866
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	648
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	581
20 years and older	99-00	*	**< LOD**	**< LOD**	**36.4** (33.8-40.3)	**47.8** (42.8-51.0)	1240
	01-02	**17.9** (16.0-19.9)	**19.0** (17.0-22.0)	**33.1** (27.7-38.6)	**50.0** (43.9-55.0)	**60.9** (56.1-65.8)	1223
	03-04	*	**< LOD**	**21.9** (19.0-24.2)	**32.7** (28.6-37.3)	**43.2** (37.3-49.5)	1285
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**36.2** (31.9-40.1)	**44.3** (39.0-51.3)	908
	01-02	**20.2** (17.8-22.8)	**22.1** (18.5-25.3)	**36.0** (29.5-43.2)	**53.7** (46.5-57.3)	**60.9** (55.7-69.0)	559
	03-04	*	**< LOD**	**22.3** (17.7-24.8)	**36.3** (29.3-41.1)	**46.1** (38.8-52.0)	917
Females	99-00	*	**< LOD**	**< LOD**	**34.0** (29.4-38.6)	**46.5** (37.9-51.1)	980
	01-02	**16.0** (14.2-18.1)	**17.0** (14.7-19.2)	**30.2** (24.5-36.5)	**46.4** (40.7-51.9)	**60.9** (52.2-70.0)	664
	03-04	*	**< LOD**	**18.4** (<LOD-20.4)	**28.4** (27.2-30.6)	**35.8** (31.0-41.1)	949
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**31.9** (28.8-35.2)	622
	01-02	*	**< LOD**	**15.0** (11.3-18.3)	**25.4** (18.3-32.3)	**32.5** (26.7-41.9)	260
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**20.9** (16.5-30.2)	420
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**40.3** (28.7-48.6)	**52.2** (44.3-63.6)	403
	01-02	**17.2** (15.4-19.1)	**18.5** (15.7-20.0)	**31.7** (25.8-35.4)	**47.5** (42.0-54.0)	**57.3** (48.3-64.5)	217
	03-04	*	**< LOD**	**17.3** (<LOD-22.6)	**31.5** (26.8-36.9)	**58.7** (31.5-97.9)	453
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**34.6** (31.7-40.1)	**45.3** (40.1-50.9)	709
	01-02	**19.5** (17.2-22.2)	**21.4** (17.4-24.7)	**36.0** (29.8-41.1)	**53.5** (47.0-58.3)	**64.3** (59.2-72.8)	662
	03-04	*	**< LOD**	**21.2** (17.4-24.5)	**32.6** (27.3-38.8)	**41.1** (35.9-50.2)	873

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 27.0, 11.0, and 15.9, respectively.
† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (lipid adjusted) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**5.13**	0.42	9
		07-08	**4.59**	0.53	6
	20-39	05-06	**8.17**	0.77	12
		07-08	**7.16**	0.34	15
	40-59	05-06	**19.9**	1.4	12
		07-08	**16.6**	0.7	16
	60+	05-06	**35.7**	1.8	15
		07-08	**32.6**	1.9	23
Non-Hispanic White Female	12-19	05-06	**3.68**	0.19	10
		07-08	**3.10**	0.58	7
	20-39	05-06	**6.72**	0.58	16
		07-08	**5.05**	0.45	13
	40-59	05-06	**14.2**	0.7	13
		07-08	**14.1**	0.7	17
	60+	05-06	**31.4**	2.2	17
		07-08	**28.1**	1.6	21
Non-Hispanic Black Male	12-19	05-06	**5.18**	0.31	13
		07-08	**3.96**	0.38	6
	20-39	05-06	**7.95**	0.57	6
		07-08	**6.68**	0.59	6
	40-59	05-06	**17.5**	0.7	5
		07-08	**18.8**	2.1	6
	60+	05-06	**39.1**	3.8	5
		07-08	**31.4**	3.4	8
Non-Hispanic Black Female	12-19	05-06	**3.19**	0.11	14
		07-08	*	*	5
	20-39	05-06	**6.20**	0.44	7
		07-08	**4.66**	0.29	8
	40-59	05-06	**13.8**	1.6	7
		07-08	**14.0**	1.6	8
	60+	05-06	**45.0**	8.5	5
		07-08	**36.8**	2.7	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.33 and 2.31.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**3.79**	0.46	11
		07-08	**3.89**	0.6	6
	20-39	05-06	**6.10**	0.14	9
		07-08	**5.71**	0.4	9
	40-59	05-06	**11.1**	0.3	4
		07-08	**13.2**	1.2	6
	60+	05-06	**27.2**	2.5	4
		07-08	**24.6**	2.6	5
Mexican American Female	12-19	05-06	**3.17**	0.15	16
		07-08	*	*	5
	20-39	05-06	**4.42**	0.3	9
		07-08	**3.90**	0.25	8
	40-59	05-06	**10.2**	1.5	6
		07-08	**10.9**	1.8	6
	60+	05-06	**18.7**	1.8	3
		07-08	**21.5**	3.5	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 1.33 and 2.31.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in fg/g of serum or parts per quadrillion) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**230** (219-244)	**287** (274-319)	1888
	01-02	**115** (103-129)	**125** (108-146)	**217** (189-253)	**344** (300-376)	**416** (379-490)	1223
	03-04	*	**< LOD**	**133** (114-149)	**203** (191-226)	**269** (243-305)	1866
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	648
	01-02	†	†	†	†	†	†
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	581
20 years and older	99-00	*	**< LOD**	**< LOD**	**241** (227-261)	**303** (281-339)	1240
	01-02	**115** (103-129)	**125** (108-146)	**217** (189-253)	**344** (300-376)	**416** (379-490)	1223
	03-04	*	**< LOD**	**146** (130-160)	**216** (198-242)	**287** (245-325)	1285
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**229** (215-258)	**286** (256-338)	908
	01-02	**133** (117-152)	**151** (130-168)	**244** (198-293)	**363** (309-409)	**449** (372-529)	559
	03-04	*	**< LOD**	**143** (122-159)	**225** (190-259)	**291** (245-334)	917
Females	99-00	*	**< LOD**	**< LOD**	**234** (197-257)	**293** (261-346)	980
	01-02	**102** (90.0-115)	**107** (91.0-123)	**195** (170-234)	**319** (282-368)	**402** (373-462)	664
	03-04	*	**< LOD**	**120** (<LOD140)	**194** (182-203)	**249** (222-284)	949
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**215** (181-261)	622
	01-02	*	**< LOD**	**98.1** (79.3-138)	**184** (143-250)	**266** (179-341)	260
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**168** (109-237)	420
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**251** (190-299)	**320** (262-410)	403
	01-02	**101** (91.2-113)	**104** (88.0-118)	**190** (147-234)	**299** (267-335)	**362** (309-423)	217
	03-04	*	**< LOD**	**110** (<LOD-144)	**216** (162-257)	**338** (221-556)	453
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**238** (222-257)	**286** (267-340)	709
	01-02	**127** (112-144)	**145** (124-157)	**229** (195-275)	**368** (317-388)	**438** (388-515)	662
	03-04	*	**< LOD**	**141** (116-165)	**210** (189-242)	**277** (239-324)	873

† Data not collected for this age group for Survey year 01-02.
< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**28.1**	2.4	9
		07-08	**22.6**	2.3	6
	20-39	05-06	**59.9**	7.1	12
		07-08	**47.2**	2.7	15
	40-59	05-06	**150**	13	12
		07-08	**122**	6	16
	60+	05-06	**242**	10	15
		07-08	**209**	12	23
Non-Hispanic White Female	12-19	05-06	**19.7**	1.3	10
		07-08	**14.7**	3.1	7
	20-39	05-06	**44.1**	4.5	16
		07-08	**30.2**	3	13
	40-59	05-06	**106**	9	13
		07-08	**93.6**	5.1	17
	60+	05-06	**228**	16	17
		07-08	**188**	11	21
Non-Hispanic Black Male	12-19	05-06	**26.0**	1.3	13
		07-08	**18.7**	1.5	6
	20-39	05-06	**46.9**	3.4	6
		07-08	**37.4**	2.6	6
	40-59	05-06	**112**	5	5
		07-08	**120**	13	6
	60+	05-06	**235**	26	5
		07-08	**189**	19	8
Non-Hispanic Black Female	12-19	05-06	**15.8**	0.5	14
		07-08	*	*	5
	20-39	05-06	**35.8**	2.8	7
		07-08	**23.5**	1.5	8
	40-59	05-06	**88.8**	10.6	7
		07-08	**85.2**	11.9	8
	60+	05-06	**299**	54	5
		07-08	**222**	18	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

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Serum 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**20.2**	2.3	11
		07-08	**21.0**	4.2	6
	20-39	05-06	**43.3**	1.7	9
		07-08	**39.3**	3.5	9
	40-59	05-06	**90.6**	5.2	4
		07-08	**94.5**	10.7	6
	60+	05-06	**194**	9	4
		07-08	**176**	18	5
Mexican American Female	12-19	05-06	**17.3**	0.8	16
		07-08	*	*	5
	20-39	05-06	**29.6**	2.4	9
		07-08	**22.8**	2.1	8
	40-59	05-06	**75.8**	11.9	6
		07-08	**73.3**	12.2	6
	60+	05-06	**144**	23	3
		07-08	**149**	27	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

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Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1915
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2307
	03-04	**1.20** (1.09-1.31)	**1.09** (1.00-1.20)	**1.90** (1.75-2.20)	**4.04** (3.40-4.89)	**6.24** (5.20-7.79)	1879
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	665
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**.686** (.603-.781)	**.700** (.600-.720)	**1.00** (.900-1.11)	**1.50** (1.20-2.00)	**2.26** (1.50-3.50)	593
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1250
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1549
	03-04	**1.30** (1.18-1.43)	**1.15** (1.04-1.30)	**2.10** (1.86-2.40)	**4.44** (3.80-5.20)	**6.82** (5.70-8.30)	1286
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	913
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1075
	03-04	**1.02** (.923-1.12)	**.980** (.850-1.08)	**1.60** (1.40-1.80)	**3.20** (2.76-3.42)	**4.70** (3.83-5.50)	937
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1002
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1232
	03-04	**1.40** (1.25-1.57)	**1.20** (1.05-1.40)	**2.30** (2.00-2.79)	**5.17** (4.47-5.90)	**7.70** (6.00-9.55)	942
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	635
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	567
	03-04	**.719** (.624-.829)	**.700** (.600-.800)	**1.10** (.900-1.36)	**1.90** (1.80-2.20)	**2.90** (1.98-3.52)	427
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**12.8** (<LOD-18.0)	409
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	**1.41** (1.15-1.74)	**1.14** (.980-1.32)	**2.47** (1.70-3.90)	**6.70** (4.09-10.1)	**11.9** (6.40-18.1)	456
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	714
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1061
	03-04	**1.21** (1.08-1.36)	**1.10** (1.00-1.20)	**1.90** (1.74-2.28)	**3.91** (3.22-4.85)	**5.93** (4.98-7.79)	878

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.507**	0.097	9
		07-08	*	*	6
	20-39	05-06	**.671**	0.134	12
		07-08	**.808**	0.058	15
	40-59	05-06	****1.64**	0.5	12
		07-08	**1.02**	0.07	16
	60+	05-06	**2.15**	0.26	15
		07-08	**3.01**	0.36	23
Non-Hispanic White Female	12-19	05-06	**.482**	0.041	10
		07-08	**.555**	0.065	7
	20-39	05-06	**.598**	0.044	16
		07-08	**1.06**	0.16	13
	40-59	05-06	**1.29**	0.15	13
		07-08	**1.36**	0.13	17
	60+	05-06	**3.84**	0.41	17
		07-08	**4.09**	0.7	21
Non-Hispanic Black Male	12-19	05-06	**.524**	0.041	13
		07-08	*	*	6
	20-39	05-06	**.517**	0.083	6
		07-08	**.580**	0.117	6
	40-59	05-06	**1.31**	0.33	5
		07-08	**1.52**	0.31	6
	60+	05-06	**3.46**	0.76	5
		07-08	**3.00**	0.32	8
Non-Hispanic Black Female	12-19	05-06	**.431**	0.026	14
		07-08	*	*	5
	20-39	05-06	**.728**	0.102	7
		07-08	**.698**	0.129	8
	40-59	05-06	**2.19**	0.26	7
		07-08	**2.43**	0.42	8
	60+	05-06	****8.54**	3.02	5
		07-08	**7.46**	1.29	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

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http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.341**	0.032	11
		07-08	*	*	6
	20-39	05-06	**.484**	0.031	9
		07-08	**.745**	0.085	9
	40-59	05-06	**.835**	0.076	4
		07-08	**1.45**	0.34	6
	60+	05-06	**1.34**	0.12	4
		07-08	**1.78**	0.2	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	**.421**	0.043	9
		07-08	**.669**	0.027	8
	40-59	05-06	**1.32**	0.14	6
		07-08	**1.33**	0.16	6
	60+	05-06	**2.81**	0.51	3
		07-08	**2.89**	0.44	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1915
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2307
	03-04	**.007** (.007-.008)	**.007** (.006-.007)	**.012** (.011-.014)	**.027** (.023-.031)	**.043** (.037-.049)	1879
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	665
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**.003** (.003-.004)	**.003** (.003-.004)	**.005** (.005-.006)	**.008** (.006-.010)	**.011** (.008-.020)	593
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1250
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1549
	03-04	**.008** (.007-.009)	**.007** (.006-.008)	**.014** (.012-.015)	**.030** (.026-.035)	**.047** (.039-.053)	1286
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	913
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1075
	03-04	**.006** (.006-.007)	**.006** (.005-.007)	**.010** (.009-.011)	**.019** (.016-.023)	**.030** (.027-.039)	937
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1002
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1232
	03-04	**.008** (.007-.010)	**.007** (.006-.009)	**.015** (.013-.017)	**.033** (.029-.040)	**.049** (.043-.067)	942
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	635
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	567
	03-04	**.004** (.004-.005)	**.004** (.004-.005)	**.007** (.006-.009)	**.014** (.011-.017)	**.019** (.015-.023)	427
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.090** (<LOD-.110)	409
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	**.008** (.007-.010)	**.007** (.005-.008)	**.015** (.010-.020)	**.041** (.027-.067)	**.082** (.041-.116)	456
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	714
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1061
	03-04	**.007** (.007-.008)	**.007** (.006-.007)	**.012** (.011-.014)	**.027** (.022-.031)	**.043** (.035-.049)	878

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.003**	0.001	9
		07-08	*	*	6
	20-39	05-06	**.005**	0.001	12
		07-08	**.005**	0	15
	40-59	05-06	****.013**	0.004	12
		07-08	**.007**	0.001	16
	60+	05-06	**.014**	0.001	15
		07-08	**.019**	0.002	23
Non-Hispanic White Female	12-19	05-06	**.003**	0	10
		07-08	**.003**	0	7
	20-39	05-06	**.004**	0	16
		07-08	**.006**	0.001	13
	40-59	05-06	**.010**	0.001	13
		07-08	**.009**	0.001	17
	60+	05-06	**.028**	0.003	17
		07-08	**.027**	0.005	21
Non-Hispanic Black Male	12-19	05-06	**.003**	0	13
		07-08	*	*	6
	20-39	05-06	**.003**	0.001	6
		07-08	**.003**	0.001	6
	40-59	05-06	**.008**	0.002	5
		07-08	**.010**	0.002	6
	60+	05-06	**.020**	0.005	5
		07-08	**.018**	0.002	8
Non-Hispanic Black Female	12-19	05-06	**.002**	0	14
		07-08	*	*	5
	20-39	05-06	**.004**	0.001	7
		07-08	**.004**	0.001	8
	40-59	05-06	**.014**	0.002	7
		07-08	**.015**	0.003	8
	60+	05-06	****.057**	0.02	5
		07-08	**.044**	0.006	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.002**	0	11
		07-08	*	*	6
	20-39	05-06	**.003**	0	9
		07-08	**.005**	0.001	9
	40-59	05-06	**.007**	0.001	4
		07-08	**.010**	0.003	6
	60+	05-06	**.010**	0.001	4
		07-08	**.013**	0.002	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	**.003**	0	9
		07-08	**.004**	0	8
	40-59	05-06	**.010**	0.001	6
		07-08	**.009**	0.001	6
	60+	05-06	**.021**	0.003	3
		07-08	**.020**	0.003	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

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Serum 2,3,4,4',5-Pentachlorobiphenyl (PCB 114) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	**.597**	0.052	12
		07-08	**.686**	0.062	16
	60+	05-06	**1.22**	0.09	15
		07-08	**1.60**	0.16	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	**.723**	0.058	13
		07-08	**.798**	0.095	17
	60+	05-06	**1.62**	0.13	17
		07-08	**1.99**	0.18	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	**.458**	0.059	5
		07-08	**.572**	0.129	6
	60+	05-06	**1.52**	0.18	5
		07-08	**1.48**	0.17	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	**.712**	0.092	7
		07-08	*	*	8
	60+	05-06	**2.83**	0.57	5
		07-08	**2.32**	0.21	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

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Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,4',5-Pentachlorobiphenyl (PCB 114) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	**.689**	0.113	4
		07-08	**.934**	0.076	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**.361**	0.059	6
		07-08	**.450**	0.125	6
	60+	05-06	**.869**	0.068	3
		07-08	**.992**	0.121	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

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Factsheet

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Serum 2,3,4,4',5-Pentachlorobiphenyl (PCB 114) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	**.005**	0	12
		07-08	**.005**	0	16
	60+	05-06	**.008**	0.001	15
		07-08	**.010**	0.001	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	**.005**	0.001	13
		07-08	**.005**	0.001	17
	60+	05-06	**.012**	0.001	17
		07-08	**.013**	0.001	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	**.003**	0	5
		07-08	**.004**	0.001	6
	60+	05-06	**.009**	0.001	5
		07-08	**.009**	0.001	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	**.005**	0.001	7
		07-08	*	*	8
	60+	05-06	**.019**	0.004	5
		07-08	**.014**	0.001	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

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Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,4,4',5-Pentachlorobiphenyl (PCB 114) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	**.005**	0.001	4
		07-08	**.007**	0	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**.003**	0	6
		07-08	**.003**	0.001	6
	60+	05-06	**.007**	0	3
		07-08	**.007**	0.001	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

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Factsheet

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Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**13.1** (<LOD-15.1)	**27.0** (22.1-30.3)	**40.8** (32.8-48.6)	1926
	01-02	*	**< LOD**	**15.1** (13.0-17.5)	**29.0** (26.1-33.7)	**44.6** (39.6-48.9)	2307
	03-04	**6.00** (5.54-6.50)	**5.19** (4.80-5.61)	**10.4** (9.70-11.6)	**21.8** (19.3-23.8)	**31.3** (28.2-36.6)	1887
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	667
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**3.06** (2.76-3.39)	**2.83** (2.70-3.10)	**4.15** (3.60-4.56)	**6.80** (4.70-9.60)	**9.60** (6.80-13.2)	596
20 years and older	99-00	*	**< LOD**	**14.9** (12.9-17.4)	**28.1** (24.8-33.8)	**43.8** (35.6-52.3)	1259
	01-02	*	**< LOD**	**16.9** (15.1-19.0)	**32.4** (28.3-37.3)	**46.5** (41.1-51.0)	1549
	03-04	**6.62** (6.10-7.18)	**5.65** (5.21-6.40)	**11.5** (10.2-12.6)	**22.8** (20.7-25.9)	**34.3** (29.6-39.6)	1291
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**19.6** (16.6-24.4)	**28.0** (24.4-38.1)	919
	01-02	*	**< LOD**	**12.0** (<LOD-14.9)	**22.0** (17.6-27.1)	**32.7** (25.4-47.5)	1075
	03-04	**5.11** (4.70-5.57)	**4.71** (4.16-5.06)	**8.72** (7.30-9.70)	**16.4** (14.0-18.9)	**23.2** (20.7-25.1)	940
Females	99-00	*	**< LOD**	**16.7** (13.6-19.7)	**32.0** (27.1-40.3)	**46.8** (41.2-57.8)	1007
	01-02	*	**< LOD**	**18.7** (16.5-21.0)	**36.4** (31.6-40.9)	**48.9** (44.5-54.3)	1232
	03-04	**6.99** (6.32-7.73)	**6.02** (5.31-6.84)	**12.3** (11.1-14.4)	**27.3** (22.7-30.0)	**37.8** (31.3-45.0)	947
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**17.3** (14.5-19.6)	**23.7** (20.9-27.1)	636
	01-02	*	**< LOD**	**< LOD**	**16.8** (12.5-21.7)	**26.4** (19.3-33.2)	567
	03-04	**3.56** (3.04-4.18)	**3.15** (2.60-3.82)	**5.02** (4.26-6.66)	**9.37** (7.45-11.7)	**14.0** (10.0-17.6)	426
Non-Hispanic blacks	99-00	*	**< LOD**	**19.0** (13.6-21.7)	**38.7** (28.4-54.4)	**59.7** (45.7-80.8)	413
	01-02	*	**< LOD**	**15.6** (12.6-19.9)	**37.3** (26.1-46.4)	**54.9** (40.0-66.6)	515
	03-04	**6.70** (5.52-8.14)	**5.25** (4.40-6.10)	**12.7** (8.80-18.0)	**35.1** (21.1-45.0)	**57.8** (33.5-110)	462
Non-Hispanic whites	99-00	*	**< LOD**	**13.1** (<LOD-15.6)	**25.6** (20.8-32.0)	**40.3** (30.4-46.8)	720
	01-02	*	**< LOD**	**15.9** (13.6-18.1)	**31.1** (27.1-35.9)	**45.3** (38.7-50.1)	1061
	03-04	**6.19** (5.57-6.87)	**5.46** (4.85-6.20)	**10.9** (9.62-12.1)	**22.0** (19.3-24.4)	**30.7** (26.2-36.6)	878

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.6, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

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Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**2.24**	0.31	9
		07-08	**2.29**	0.32	6
	20-39	05-06	**3.30**	0.67	12
		07-08	**3.30**	0.22	15
	40-59	05-06	**7.56**	1.56	12
		07-08	**5.16**	0.23	16
	60+	05-06	**13.3**	1.4	15
		07-08	**15.5**	1.6	23
Non-Hispanic White Female	12-19	05-06	**2.07**	0.15	10
		07-08	**2.41**	0.23	7
	20-39	05-06	**2.99**	0.19	16
		07-08	**4.18**	0.58	13
	40-59	05-06	**7.83**	0.8	13
		07-08	**7.56**	0.73	17
	60+	05-06	**21.9**	2	17
		07-08	**21.5**	2.8	21
Non-Hispanic Black Male	12-19	05-06	**2.47**	0.24	13
		07-08	**2.04**	0.2	6
	20-39	05-06	**2.62**	0.49	6
		07-08	**2.85**	0.35	6
	40-59	05-06	**7.30**	1.8	5
		07-08	**7.31**	1.3	6
	60+	05-06	**19.9**	3.6	5
		07-08	**16.1**	1.7	8
Non-Hispanic Black Female	12-19	05-06	**2.02**	0.11	14
		07-08	**1.92**	0.24	5
	20-39	05-06	**3.70**	0.44	7
		07-08	**3.37**	0.3	8
	40-59	05-06	**11.7**	1.3	7
		07-08	**11.2**	1.9	8
	60+	05-06	**45.0**	13.5	5
		07-08	**35.1**	5	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.72 and 0.3.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

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Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**1.50**	0.11	11
		07-08	**1.52**	0.18	6
	20-39	05-06	**2.17**	0.14	9
		07-08	**2.66**	0.22	9
	40-59	05-06	**4.06**	0.35	4
		07-08	**6.03**	0.93	6
	60+	05-06	**8.12**	0.99	4
		07-08	**8.69**	0.8	5
Mexican American Female	12-19	05-06	**1.36**	0.08	16
		07-08	****1.21**	0.37	5
	20-39	05-06	**1.94**	0.2	9
		07-08	**2.50**	0.17	8
	40-59	05-06	**6.79**	0.67	6
		07-08	**6.11**	0.85	6
	60+	05-06	**15.3**	2.7	3
		07-08	**14.0**	2.5	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.72 and 0.3.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

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Factsheet

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Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (whole weight) (1999-2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**.090** (<LOD-.100)	**.180** (.150-.200)	**.260** (.220-.320)	1926
	01-02	*	**< LOD**	**.100** (.090-.110)	**.190** (.160-.220)	**.300** (.270-.320)	2307
	03-04	**.037** (.034-.040)	**.032** (.029-.036)	**.066** (.061-.073)	**.143** (.127-.160)	**.216** (.192-.233)	1887
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	667
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**.015** (.014-.017)	**.014** (.013-.016)	**.021** (.018-.023)	**.036** (.024-.046)	**.047** (.035-.076)	596
20 years and older	99-00	*	**< LOD**	**.100** (.090-.110)	**.190** (.170-.220)	**.280** (.230-.360)	1259
	01-02	*	**< LOD**	**.110** (.100-.130)	**.210** (.180-.250)	**.310** (.280-.370)	1549
	03-04	**.041** (.038-.045)	**.036** (.032-.041)	**.072** (.066-.081)	**.159** (.137-.174)	**.226** (.202-.249)	1291
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**.130** (.110-.140)	**.190** (.160-.220)	919
	01-02	*	**< LOD**	**.080** (<LOD-.100)	**.140** (.120-.170)	**.210** (.160-.300)	1075
	03-04	**.032** (.029-.035)	**.030** (.026-.033)	**.054** (.046-.062)	**.110** (.083-.125)	**.160** (.136-.180)	940
Females	99-00	*	**< LOD**	**.110** (.090-.130)	**.210** (.180-.260)	**.320** (.260-.410)	1007
	01-02	*	**< LOD**	**.130** (.100-.140)	**.240** (.210-.260)	**.360** (.300-.380)	1232
	03-04	**.042** (.038-.047)	**.036** (.030-.043)	**.081** (.068-.097)	**.176** (.152-.206)	**.242** (.217-.290)	947
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**.110** (.090-.130)	**.140** (.130-.180)	636
	01-02	*	**< LOD**	**< LOD**	**.120** (.080-.160)	**.180** (.130-.220)	567
	03-04	**.022** (.018-.026)	**.019** (.016-.024)	**.034** (.029-.039)	**.069** (.046-.086)	**.094** (.075-.117)	426
Non-Hispanic blacks	99-00	*	**< LOD**	**.120** (.080-.150)	**.220** (.180-.320)	**.400** (.260-.500)	413
	01-02	*	**< LOD**	**.100** (.070-.120)	**.210** (.170-.270)	**.320** (.230-.460)	515
	03-04	**.038** (.031-.046)	**.030** (.026-.034)	**.074** (.054-.106)	**.218** (.133-.277)	**.370** (.218-.618)	462
Non-Hispanic whites	99-00	*	**< LOD**	**.090** (<LOD-.100)	**.180** (.150-.200)	**.250** (.200-.330)	720
	01-02	*	**< LOD**	**.100** (.090-.120)	**.210** (.170-.240)	**.300** (.270-.360)	1061
	03-04	**.038** (.034-.043)	**.034** (.029-.040)	**.067** (.062-.076)	**.143** (.127-.165)	**.209** (.178-.234)	878

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.012**	0.002	9
		07-08	**.011**	0.002	6
	20-39	05-06	**.025**	0.006	12
		07-08	**.022**	0.002	15
	40-59	05-06	**.058**	0.013	12
		07-08	**.038**	0.002	16
	60+	05-06	**.090**	0.008	15
		07-08	**.099**	0.009	23
Non-Hispanic White Female	12-19	05-06	**.011**	0.001	10
		07-08	**.011**	0.001	7
	20-39	05-06	**.019**	0.001	16
		07-08	**.025**	0.004	13
	40-59	05-06	**.058**	0.007	13
		07-08	**.050**	0.005	17
	60+	05-06	**.158**	0.013	17
		07-08	**.145**	0.019	21
Non-Hispanic Black Male	12-19	05-06	**.012**	0.001	13
		07-08	**.010**	0.001	6
	20-39	05-06	**.016**	0.003	6
		07-08	**.016**	0.002	6
	40-59	05-06	**.047**	0.012	5
		07-08	**.047**	0.008	6
	60+	05-06	**.117**	0.02	5
		07-08	**.098**	0.011	8
Non-Hispanic Black Female	12-19	05-06	**.010**	0.001	14
		07-08	**.009**	0.001	5
	20-39	05-06	**.021**	0.003	7
		07-08	**.017**	0.002	8
	40-59	05-06	**.075**	0.01	7
		07-08	**.068**	0.012	8
	60+	05-06	****.300**	0.091	5
		07-08	**.208**	0.024	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

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Serum 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.008**	0.001	11
		07-08	**.008**	0.001	6
	20-39	05-06	**.015**	0.001	9
		07-08	**.018**	0.002	9
	40-59	05-06	**.033**	0.003	4
		07-08	**.043**	0.007	6
	60+	05-06	**.059**	0.007	4
		07-08	**.063**	0.007	5
Mexican American Female	12-19	05-06	**.007**	0	16
		07-08	**.006**	0.002	5
	20-39	05-06	**.013**	0.001	9
		07-08	**.015**	0.001	8
	40-59	05-06	**.050**	0.005	6
		07-08	**.041**	0.006	6
	60+	05-06	**.114**	0.016	3
		07-08	**.096**	0.018	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

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Serum 2',3,4,4',5-Pentachlorobiphenyl (PCB 123) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.

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Serum 2',3,4,4',5-Pentachlorobiphenyl (PCB 123) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.

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Serum 2',3,4,4',5-Pentachlorobiphenyl (PCB 123) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

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Serum 2',3,4,4',5-Pentachlorobiphenyl (PCB 123) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

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Factsheet

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Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**12.6** (<LOD-13.8)	**17.0** (15.5-18.0)	1907
	01-02	*	**< LOD**	**< LOD**	**14.3** (12.1-16.0)	**18.3** (15.6-21.1)	2296
	03-04	**2.54** (2.36-2.74)	**3.29** (2.90-3.80)	**7.00** (6.20-8.07)	**11.4** (10.4-12.6)	**15.3** (13.8-17.5)	1880
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	665
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	756
	03-04	*	**.500** (<LOD-.660)	**1.20** (1.00-1.43)	**2.30** (2.06-2.45)	**3.00** (2.37-3.60)	586
20 years and older	99-00	*	**< LOD**	**< LOD**	**13.6** (<LOD-14.7)	**17.5** (16.0-20.1)	1242
	01-02	*	**< LOD**	**< LOD**	**15.0** (13.3-17.0)	**19.7** (17.0-22.1)	1540
	03-04	**3.31** (3.05-3.60)	**4.10** (3.40-4.66)	**7.81** (6.80-8.70)	**12.0** (10.9-13.5)	**16.8** (14.7-18.6)	1294
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**12.6** (<LOD-14.0)	**17.0** (14.6-18.0)	912
	01-02	*	**< LOD**	**< LOD**	**13.7** (11.3-16.4)	**18.4** (14.3-22.1)	1069
	03-04	**2.57** (2.34-2.82)	**3.10** (2.80-3.80)	**6.92** (5.82-8.00)	**11.8** (9.79-14.2)	**17.1** (14.7-19.3)	940
Females	99-00	*	**< LOD**	**< LOD**	**12.8** (<LOD-14.7)	**16.5** (15.4-20.7)	995
	01-02	*	**< LOD**	**< LOD**	**14.8** (13.2-15.5)	**18.2** (16.2-21.0)	1227
	03-04	**2.51** (2.28-2.76)	**3.42** (2.80-4.10)	**7.09** (6.35-8.10)	**11.1** (10.4-12.0)	**14.1** (12.7-16.8)	940
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	631
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	566
	03-04	**.858** (.640-1.15)	**1.00** (.700-1.40)	**2.48** (1.50-3.60)	**4.78** (4.00-5.68)	**6.40** (5.40-7.70)	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**14.6** (<LOD-20.5)	**23.1** (17.2-32.1)	412
	01-02	*	**< LOD**	**< LOD**	**15.5** (12.7-21.0)	**23.5** (16.4-31.4)	511
	03-04	**2.32** (1.87-2.89)	**3.04** (2.40-3.60)	**7.40** (5.48-9.80)	**14.7** (11.5-18.6)	**24.8** (15.0-33.0)	456
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**13.6** (<LOD-15.2)	**17.4** (16.0-18.9)	711
	01-02	*	**< LOD**	**< LOD**	**15.0** (13.2-17.5)	**19.4** (16.2-22.1)	1056
	03-04	**3.03** (2.70-3.39)	**4.03** (3.15-4.66)	**7.76** (6.51-8.79)	**11.7** (10.5-13.1)	**15.7** (13.5-18.5)	880

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.4, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.822**	0.123	9
		07-08	**.985**	0.283	6
	20-39	05-06	**1.61**	0.26	12
		07-08	**1.73**	0.21	15
	40-59	05-06	**5.40**	0.36	12
		07-08	**5.41**	0.32	16
	60+	05-06	**8.93**	0.48	15
		07-08	**11.9**	1	23
Non-Hispanic White Female	12-19	05-06	**.614**	0.064	10
		07-08	**.751**	0.136	7
	20-39	05-06	**1.08**	0.09	16
		07-08	**1.50**	0.16	13
	40-59	05-06	**4.72**	0.39	13
		07-08	**5.33**	0.33	17
	60+	05-06	**9.10**	0.84	17
		07-08	**10.5**	0.7	21
Non-Hispanic Black Male	12-19	05-06	**.659**	0.077	13
		07-08	*	*	6
	20-39	05-06	**1.35**	0.23	6
		07-08	**1.35**	0.19	6
	40-59	05-06	**4.39**	0.48	5
		07-08	**5.13**	0.48	6
	60+	05-06	**13.5**	1.9	5
		07-08	**12.5**	1.4	8
Non-Hispanic Black Female	12-19	05-06	**.383**	0.036	14
		07-08	*	*	5
	20-39	05-06	**1.17**	0.17	7
		07-08	**1.03**	0.15	8
	40-59	05-06	**4.73**	0.62	7
		07-08	**5.20**	0.37	8
	60+	05-06	**17.1**	3.9	5
		07-08	**13.0**	0.7	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.

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http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.435**	0.073	11
		07-08	**.436**	0.091	6
	20-39	05-06	**.809**	0.117	9
		07-08	**.914**	0.147	9
	40-59	05-06	**2.48**	0.24	4
		07-08	**4.17**	0.83	6
	60+	05-06	**5.39**	1.05	4
		07-08	**5.80**	0.39	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	**.524**	0.07	9
		07-08	**.700**	0.062	8
	40-59	05-06	**2.45**	0.26	6
		07-08	**3.02**	0.47	6
	60+	05-06	**4.81**	0.26	3
		07-08	**5.07**	0.65	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**.090** (<LOD-.090)	**.110** (.100-.130)	1907
	01-02	*	**< LOD**	**< LOD**	**.100** (.080-.110)	**.130** (.110-.140)	2296
	03-04	**.016** (.014-.017)	**.021** (.018-.024)	**.048** (.041-.052)	**.075** (.069-.085)	**.103** (.094-.112)	1880
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	665
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	756
	03-04	*	**.003** (<LOD-.003)	**.006** (.005-.007)	**.012** (.011-.012)	**.015** (.012-.018)	586
20 years and older	99-00	*	**< LOD**	**< LOD**	**.090** (<LOD-.100)	**.120** (.100-.140)	1242
	01-02	*	**< LOD**	**< LOD**	**.100** (.090-.120)	**.130** (.120-.140)	1540
	03-04	**.021** (.019-.023)	**.026** (.021-.030)	**.051** (.045-.057)	**.082** (.072-.093)	**.109** (.098-.121)	1294
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**.090** (<LOD-.100)	**.110** (.090-.130)	912
	01-02	*	**< LOD**	**< LOD**	**.090** (.080-.120)	**.120** (.110-.150)	1069
	03-04	**.016** (.014-.018)	**.021** (.017-.025)	**.045** (.037-.054)	**.076** (.068-.094)	**.108** (.094-.123)	940
Females	99-00	*	**< LOD**	**< LOD**	**.090** (<LOD-.090)	**.110** (.090-.140)	995
	01-02	*	**< LOD**	**< LOD**	**.100** (.090-.100)	**.130** (.110-.140)	1227
	03-04	**.015** (.014-.017)	**.020** (.017-.025)	**.049** (.044-.052)	**.073** (.064-.085)	**.101** (.089-.112)	940
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	631
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	566
	03-04	**.005** (.004-.007)	**.007** (.004-.009)	**.015** (.011-.022)	**.036** (.025-.041)	**.046** (.037-.070)	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**.090** (<LOD-.120)	**.150** (.110-.190)	412
	01-02	*	**< LOD**	**< LOD**	**.100** (.080-.130)	**.150** (.100-.180)	511
	03-04	**.013** (.010-.017)	**.018** (.014-.022)	**.044** (.032-.056)	**.099** (.067-.127)	**.166** (.108-.198)	456
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**.090** (<LOD-.100)	**.110** (.100-.130)	711
	01-02	*	**< LOD**	**< LOD**	**.100** (.090-.120)	**.130** (.120-.140)	1056
	03-04	**.019** (.017-.021)	**.025** (.020-.031)	**.051** (.044-.057)	**.078** (.069-.089)	**.104** (.094-.119)	880

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.005**	0.001	9
		07-08	**.005**	0.001	6
	20-39	05-06	**.012**	0.002	12
		07-08	**.012**	0.002	15
	40-59	05-06	**.041**	0.003	12
		07-08	**.039**	0.002	16
	60+	05-06	**.061**	0.003	15
		07-08	**.075**	0.006	23
Non-Hispanic White Female	12-19	05-06	**.003**	0	10
		07-08	**.004**	0.001	7
	20-39	05-06	**.007**	0.001	16
		07-08	**.009**	0.001	13
	40-59	05-06	**.035**	0.004	13
		07-08	**.035**	0.002	17
	60+	05-06	**.066**	0.005	17
		07-08	**.070**	0.004	21
Non-Hispanic Black Male	12-19	05-06	**.003**	0	13
		07-08	*	*	6
	20-39	05-06	**.008**	0.001	6
		07-08	**.008**	0.001	6
	40-59	05-06	**.028**	0.003	5
		07-08	**.033**	0.003	6
	60+	05-06	**.080**	0.012	5
		07-08	**.076**	0.009	8
Non-Hispanic Black Female	12-19	05-06	**.002**	0	14
		07-08	*	*	5
	20-39	05-06	**.007**	0.001	7
		07-08	**.005**	0.001	8
	40-59	05-06	**.030**	0.004	7
		07-08	**.031**	0.003	8
	60+	05-06	**.114**	0.026	5
		07-08	**.078**	0.004	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.002**	0	11
		07-08	**.002**	0.001	6
	20-39	05-06	**.006**	0.001	9
		07-08	**.006**	0.001	9
	40-59	05-06	**.020**	0.002	4
		07-08	**.030**	0.006	6
	60+	05-06	**.039**	0.007	4
		07-08	**.042**	0.003	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	**.004**	0.001	9
		07-08	**.004**	0	8
	40-59	05-06	**.018**	0.002	6
		07-08	**.020**	0.003	6
	60+	05-06	**.037**	0.004	3
		07-08	**.035**	0.005	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

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Factsheet

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Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1897
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2294
	03-04	**.605** (.554-.661)	**.800** (.700-.940)	**1.73** (1.47-1.93)	**2.80** (2.50-3.10)	**3.80** (3.36-4.30)	1858
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	654
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	755
	03-04	*	**< LOD**	**< LOD**	**.690** (.540-.760)	**.980** (.750-1.12)	580
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1243
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1539
	03-04	**.743** (.675-.817)	**.980** (.800-1.10)	**1.88** (1.69-2.05)	**2.98** (2.68-3.30)	**3.97** (3.51-4.59)	1278
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	901
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1068
	03-04	**.594** (.541-.653)	**.750** (.700-.900)	**1.65** (1.38-1.88)	**2.90** (2.39-3.50)	**4.00** (3.57-4.87)	928
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	996
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1226
	03-04	**.615** (.552-.685)	**.890** (.700-1.00)	**1.79** (1.60-1.99)	**2.70** (2.50-2.91)	**3.40** (3.20-3.93)	930
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	622
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	566
	03-04	*	**< LOD**	**.600** (<LOD-.820)	**1.12** (.960-1.32)	**1.59** (1.20-1.80)	422
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	405
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	510
	03-04	**.568** (.488-.662)	**.720** (.600-.930)	**1.80** (1.39-2.26)	**3.55** (3.10-4.40)	**5.35** (3.60-8.80)	448
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	716
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1055
	03-04	**.713** (.635-.801)	**.980** (.760-1.12)	**1.81** (1.58-2.06)	**2.86** (2.54-3.27)	**3.80** (3.27-4.73)	869

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.4, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.367**	0.055	12
		07-08	*	*	15
	40-59	05-06	**1.15**	0.07	12
		07-08	**1.31**	0.09	16
	60+	05-06	**2.03**	0.11	15
		07-08	**2.91**	0.27	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	**1.06**	0.09	13
		07-08	**1.38**	0.09	17
	60+	05-06	**2.15**	0.21	17
		07-08	**2.72**	0.19	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	**.988**	0.12	5
		07-08	**1.30**	0.12	6
	60+	05-06	**3.25**	0.45	5
		07-08	**3.26**	0.39	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	**1.13**	0.16	7
		07-08	**1.38**	0.11	8
	60+	05-06	**4.31**	1.09	5
		07-08	**3.41**	0.19	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

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Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	**.561**	0.072	4
		07-08	**.979**	0.195	6
	60+	05-06	**1.13**	0.2	4
		07-08	**1.30**	0.07	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**.567**	0.057	6
		07-08	**.756**	0.101	6
	60+	05-06	**1.08**	0.08	3
		07-08	**1.46**	0.26	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

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Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1897
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2294
	03-04	**.004** (.003-.004)	**.005** (.004-.006)	**.011** (.010-.013)	**.018** (.016-.021)	**.024** (.022-.027)	1858
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	654
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	755
	03-04	*	**< LOD**	**< LOD**	**.004** (.003-.004)	**.005** (.004-.005)	580
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1243
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1539
	03-04	**.005** (.004-.005)	**.006** (.005-.007)	**.012** (.011-.014)	**.019** (.017-.022)	**.026** (.023-.031)	1278
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	901
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1068
	03-04	**.004** (.003-.004)	**.005** (.004-.006)	**.011** (.009-.012)	**.018** (.016-.022)	**.025** (.022-.027)	928
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	996
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1226
	03-04	**.004** (.003-.004)	**.005** (.004-.006)	**.012** (.010-.013)	**.017** (.016-.020)	**.024** (.021-.027)	930
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	622
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	566
	03-04	*	**< LOD**	**.004** (<LOD-.006)	**.008** (.006-.009)	**.011** (.009-.014)	422
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	405
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	510
	03-04	**.003** (.003-.004)	**.004** (.003-.006)	**.011** (.008-.014)	**.025** (.016-.031)	**.040** (.026-.050)	448
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	716
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1055
	03-04	**.004** (.004-.005)	**.006** (.005-.008)	**.012** (.010-.014)	**.018** (.016-.021)	**.025** (.022-.027)	869

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

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Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

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

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	**.005**	0	4
		07-08	**.007**	0.001	6
	60+	05-06	**.008**	0.001	4
		07-08	**.009**	0	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**.004**	0	6
		07-08	**.005**	0.001	6
	60+	05-06	**.008**	0	3
		07-08	**.010**	0.002	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1908
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2298
	03-04	**.494** (.441-.553)	**.700** (.560-.800)	**1.60** (1.40-1.70)	**2.99** (2.74-3.36)	**4.10** (3.80-4.47)	1864
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	666
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	*	**< LOD**	**< LOD**	**.640** (.500-.770)	**.870** (.700-1.10)	584
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1242
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1540
	03-04	**.592** (.521-.673)	**.860** (.700-1.00)	**1.72** (1.55-2.03)	**3.30** (2.90-3.60)	**4.30** (3.90-4.81)	1280
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	908
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1069
	03-04	**.423** (<LOD-.471)	**.500** (.440-.600)	**1.33** (1.16-1.60)	**2.70** (2.25-3.50)	**3.80** (3.50-4.70)	931
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1000
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1229
	03-04	**.573** (.492-.669)	**.880** (.660-1.06)	**1.71** (1.51-2.10)	**3.21** (2.82-3.62)	**4.30** (3.80-4.70)	933
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	627
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	564
	03-04	*	**< LOD**	**.600** (.400-.800)	**1.20** (.960-1.44)	**1.70** (1.30-1.94)	419
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	411
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	**.521** (.432-.628)	**.560** (.460-.800)	**1.95** (1.25-2.40)	**4.30** (3.27-6.79)	**7.90** (4.70-11.8)	451
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	715
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1056
	03-04	**.538** (.458-.632)	**.800** (.600-.990)	**1.66** (1.42-1.90)	**2.98** (2.70-3.45)	**3.94** (3.62-4.47)	875

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.397**	0.087	12
		07-08	*	*	15
	40-59	05-06	**1.07**	0.12	12
		07-08	**.967**	0.07	16
	60+	05-06	**2.30**	0.16	15
		07-08	**2.73**	0.23	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	**.334**	0.026	16
		07-08	*	*	13
	40-59	05-06	**1.19**	0.12	13
		07-08	**1.30**	0.1	17
	60+	05-06	**2.67**	0.23	17
		07-08	**2.93**	0.23	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	**.346**	0.065	6
		07-08	*	*	6
	40-59	05-06	**1.05**	0.16	5
		07-08	**1.28**	0.2	6
	60+	05-06	**3.71**	0.57	5
		07-08	**3.44**	0.44	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**.388**	0.047	7
		07-08	*	*	8
	40-59	05-06	**1.57**	0.19	7
		07-08	**1.60**	0.21	8
	60+	05-06	**6.11**	1.71	5
		07-08	**4.73**	0.3	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

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Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	**.589**	0.034	4
		07-08	**1.08**	0.2	6
	60+	05-06	**1.35**	0.26	4
		07-08	**1.55**	0.18	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**.893**	0.088	6
		07-08	**1.00**	0.13	6
	60+	05-06	**1.69**	0.17	3
		07-08	**1.92**	0.25	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

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Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1908
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2298
	03-04	**.003** (.003-.003)	**.004** (.003-.005)	**.010** (.009-.012)	**.020** (.018-.022)	**.026** (.024-.027)	1864
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	666
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	*	**< LOD**	**< LOD**	**.004** (.003-.004)	**.005** (.004-.005)	584
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1242
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1540
	03-04	**.004** (.003-.004)	**.005** (.004-.006)	**.012** (.010-.013)	**.021** (.019-.023)	**.027** (.025-.030)	1280
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	908
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1069
	03-04	**.003** (<LOD-.003)	**.003** (.003-.004)	**.009** (.008-.010)	**.018** (.015-.021)	**.023** (.021-.026)	931
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1000
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1229
	03-04	**.003** (.003-.004)	**.005** (.004-.006)	**.012** (.010-.013)	**.022** (.019-.024)	**.027** (.025-.031)	933
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	627
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	564
	03-04	*	**< LOD**	**.004** (.003-.004)	**.009** (.007-.011)	**.013** (.010-.015)	419
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	411
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	**.003** (.002-.004)	**.003** (.003-.005)	**.012** (.008-.015)	**.028** (.019-.042)	**.051** (.030-.072)	451
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	715
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1056
	03-04	**.003** (.003-.004)	**.005** (.004-.006)	**.011** (.009-.013)	**.020** (.018-.022)	**.025** (.023-.027)	875

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.003**	0.001	12
		07-08	*	*	15
	40-59	05-06	**.008**	0.001	12
		07-08	**.007**	0	16
	60+	05-06	**.016**	0.001	15
		07-08	**.017**	0.001	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	**.002**	0	16
		07-08	*	*	13
	40-59	05-06	**.009**	0.001	13
		07-08	**.009**	0.001	17
	60+	05-06	**.019**	0.001	17
		07-08	**.020**	0.001	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	**.002**	0	6
		07-08	*	*	6
	40-59	05-06	**.007**	0.001	5
		07-08	**.008**	0.001	6
	60+	05-06	**.022**	0.003	5
		07-08	**.021**	0.003	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**.002**	0	7
		07-08	*	*	8
	40-59	05-06	**.010**	0.001	7
		07-08	**.010**	0.001	8
	60+	05-06	**.041**	0.011	5
		07-08	**.028**	0.002	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	**.005**	0	4
		07-08	**.008**	0.001	6
	60+	05-06	**.010**	0.002	4
		07-08	**.011**	0.001	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**.007**	0.001	6
		07-08	**.007**	0.001	6
	60+	05-06	**.013**	0	3
		07-08	**.013**	0.002	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (lipid adjusted) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2298
	03-04	*	**< LOD**	**< LOD**	**.900** (.700-1.16)	**1.47** (1.10-2.18)	1817
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	752
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**1.00** (<LOD-3.09)	570
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1546
	03-04	*	**< LOD**	**< LOD**	**1.00** (.760-1.20)	**1.50** (1.10-2.14)	1247
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1070
	03-04	*	**< LOD**	**< LOD**	**1.00** (.800-1.20)	**1.54** (1.20-2.23)	903
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1228
	03-04	*	**< LOD**	**< LOD**	**.830** (.600-1.14)	**1.39** (.890-2.18)	914
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	564
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.700** (<LOD-1.00)	406
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	514
	03-04	*	**< LOD**	**< LOD**	**1.20** (.840-1.60)	**1.85** (1.20-2.83)	444
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1057
	03-04	*	**< LOD**	**< LOD**	**.900** (.700-1.26)	**1.51** (1.04-2.19)	851

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

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Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	**.474**	0.075	12
		07-08	**.525**	0.041	16
	60+	05-06	**.799**	0.047	15
		07-08	**1.04**	0.06	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	**.386**	0.05	17
	60+	05-06	**.615**	0.059	17
		07-08	**.856**	0.056	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	**.423**	0.022	5
		07-08	**.626**	0.056	6
	60+	05-06	**1.11**	0.05	5
		07-08	**1.42**	0.18	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	**.373**	0.073	7
		07-08	**.538**	0.041	8
	60+	05-06	**1.24**	0.24	5
		07-08	**1.21**	0.1	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	**.445**	0.128	6
	60+	05-06	**.506**	0.146	4
		07-08	**.729**	0.068	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	**.407**	0.015	3
		07-08	****.819**	0.305	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (whole weight) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2298
	03-04	*	**< LOD**	**< LOD**	**.006** (.005-.008)	**.010** (.007-.014)	1817
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	752
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.005** (<LOD-.017)	570
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1546
	03-04	*	**< LOD**	**< LOD**	**.006** (.005-.008)	**.010** (.007-.014)	1247
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1070
	03-04	*	**< LOD**	**< LOD**	**.006** (.005-.009)	**.011** (.008-.014)	903
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1228
	03-04	*	**< LOD**	**< LOD**	**.005** (.004-.008)	**.009** (.006-.014)	914
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	564
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.005** (<LOD-.007)	406
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	514
	03-04	*	**< LOD**	**< LOD**	**.008** (.005-.010)	**.012** (.007-.016)	444
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1057
	03-04	*	**< LOD**	**< LOD**	**.006** (.005-.008)	**.010** (.007-.014)	851

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (whole weight) (2005 - 2008)

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.

See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	**.004**	0.001	12
		07-08	**.004**	0	16
	60+	05-06	**.005**	0	15
		07-08	**.007**	0	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	**.003**	0	17
	60+	05-06	**.004**	0	17
		07-08	**.006**	0	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	**.003**	0	5
		07-08	**.004**	0	6
	60+	05-06	**.007**	0	5
		07-08	**.009**	0.001	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	**.002**	0	7
		07-08	**.003**	0	8
	60+	05-06	**.008**	0.002	5
		07-08	**.007**	0.001	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	**.003	0.001	6
	60+	05-06	.004	0.001	4
		07-08	.005	0	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	.003	0	3
		07-08	**.006	0.002	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1849
	03-04	**4.90** (4.60-5.22)	**4.96** (4.65-5.26)	**6.79** (6.40-7.31)	**9.39** (8.70-10.1)	**11.3** (10.7-11.8)	1866
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	647
	03-04	**5.02** (4.48-5.63)	**4.88** (4.26-5.48)	**7.20** (5.90-8.60)	**10.2** (8.40-11.5)	**11.7** (10.7-13.3)	590
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1202
	03-04	**4.88** (4.61-5.17)	**4.98** (4.67-5.26)	**6.78** (6.40-7.25)	**9.10** (8.70-9.87)	**11.1** (10.6-11.8)	1276
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	886
	03-04	**4.81** (4.47-5.16)	**4.86** (4.45-5.20)	**6.70** (6.07-7.50)	**9.39** (8.34-10.4)	**10.8** (10.5-11.4)	926
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	963
	03-04	**4.99** (4.66-5.35)	**5.07** (4.73-5.37)	**6.90** (6.49-7.40)	**9.37** (8.72-10.1)	**11.6** (10.7-13.1)	940
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	618
	03-04	**4.95** (4.55-5.38)	**4.90** (4.40-5.70)	**6.70** (6.07-7.90)	**8.94** (8.17-9.70)	**10.5** (9.02-14.7)	413
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	392
	03-04	**4.95** (4.20-5.84)	**5.03** (4.10-5.60)	**7.20** (5.62-8.80)	**10.2** (8.51-12.4)	**13.1** (10.8-15.3)	459
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	687
	03-04	**4.89** (4.58-5.22)	**4.90** (4.61-5.26)	**6.76** (6.33-7.32)	**9.40** (8.70-10.3)	**11.1** (10.6-11.8)	876

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00 and 03-04 are 32.4 and 1.7.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (lipid adjusted)
(2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	**.726**	0.065	15
	40-59	05-06	*	*	12
		07-08	**1.05**	0.17	16
	60+	05-06	*	*	15
		07-08	**1.73**	0.15	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	**1.36**	0.38	7
	20-39	05-06	*	*	16
		07-08	**.942**	0.095	13
	40-59	05-06	*	*	13
		07-08	**1.12**	0.1	17
	60+	05-06	**2.93**	0.33	17
		07-08	**2.64**	0.32	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	**.865**	0.089	6
	60+	05-06	**2.74**	0.55	5
		07-08	**1.40**	0.19	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	**.832**	0.115	8
	40-59	05-06	*	*	7
		07-08	**1.38**	0.17	8
	60+	05-06	**3.81**	0.59	5
		07-08	****5.42**	3.06	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 2.54 and 0.7.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (lipid adjusted)
(2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	**.715**	0.091	9
	40-59	05-06	*	*	4
		07-08	**.988**	0.109	6
	60+	05-06	*	*	4
		07-08	**1.26**	0.15	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	**1.13**	0.24	8
	40-59	05-06	*	*	6
		07-08	**1.04**	0.06	6
	60+	05-06	*	*	3
		07-08	**1.69**	0.19	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 2.54 and 0.7.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1849
	03-04	**.030** (.028-.032)	**.030** (.028-.032)	**.041** (.039-.043)	**.057** (.055-.060)	**.067** (.063-.071)	1866
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	647
	03-04	**.025** (.023-.028)	**.025** (.021-.028)	**.035** (.030-.042)	**.051** (.042-.061)	**.061** (.051-.070)	590
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1202
	03-04	**.031** (.029-.033)	**.031** (.029-.032)	**.042** (.040-.043)	**.058** (.055-.061)	**.067** (.063-.071)	1276
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	886
	03-04	**.030** (.028-.032)	**.030** (.027-.032)	**.041** (.037-.044)	**.056** (.051-.061)	**.065** (.061-.070)	926
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	963
	03-04	**.030** (.028-.032)	**.030** (.028-.032)	**.042** (.039-.044)	**.058** (.055-.061)	**.070** (.064-.075)	940
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	618
	03-04	**.030** (.028-.033)	**.031** (.027-.035)	**.041** (.036-.044)	**.053** (.048-.059)	**.063** (.054-.070)	413
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	392
	03-04	**.028** (.024-.033)	**.029** (.024-.033)	**.039** (.034-.047)	**.059** (.047-.070)	**.070** (.064-.082)	459
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	687
	03-04	**.030** (.028-.032)	**.030** (.028-.032)	**.041** (.039-.043)	**.058** (.055-.061)	**.068** (.062-.075)	876

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (whole weight)
(2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	**.005**	0	15
	40-59	05-06	*	*	12
		07-08	**.008**	0.001	16
	60+	05-06	*	*	15
		07-08	**.011**	0.001	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	**.006**	0.002	7
	20-39	05-06	*	*	16
		07-08	**.006**	0.001	13
	40-59	05-06	*	*	13
		07-08	**.007**	0.001	17
	60+	05-06	**.021**	0.002	17
		07-08	**.018**	0.002	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	**.005**	0.001	6
	60+	05-06	**.016**	0.003	5
		07-08	**.008**	0.001	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	**.004**	0.001	8
	40-59	05-06	*	*	7
		07-08	**.008**	0.001	8
	60+	05-06	**.025**	0.004	5
		07-08	****.033**	0.019	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4'-Trichlorobiphenyl (PCB 28) (whole weight)
(2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	**.005**	0.001	9
	40-59	05-06	*	*	4
		07-08	**.007**	0.001	6
	60+	05-06	*	*	4
		07-08	**.009**	0.001	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	**.006**	0.001	8
	40-59	05-06	*	*	6
		07-08	**.007**	0	6
	60+	05-06	*	*	3
		07-08	**.012**	0.001	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2'3,5'-Tetrachlorobiphenyl (PCB 44) (lipid adjusted) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	**2.06** (1.93-2.19)	**2.05** (1.90-2.20)	**3.03** (2.90-3.20)	**4.40** (4.10-4.86)	**5.70** (5.40-6.10)	1890
Age group							
12-19 years	03-04	**2.45** (2.22-2.70)	**2.44** (2.10-2.70)	**3.68** (3.19-4.37)	**5.78** (5.13-6.30)	**7.99** (6.20-9.10)	597
20 years and older	03-04	**2.00** (1.88-2.13)	**2.00** (1.90-2.11)	**2.97** (2.80-3.20)	**4.27** (3.85-4.70)	**5.44** (5.00-5.89)	1293
Gender							
Males	03-04	**2.12** (2.01-2.25)	**2.12** (2.00-2.30)	**3.11** (2.97-3.31)	**4.52** (4.10-5.20)	**5.89** (5.38-6.80)	942
Females	03-04	**1.99** (1.82-2.18)	**1.98** (1.80-2.20)	**2.94** (2.72-3.21)	**4.30** (3.77-5.05)	**5.60** (5.00-6.20)	948
Race/ethnicity							
Mexican Americans	03-04	**2.09** (1.88-2.31)	**2.10** (1.90-2.39)	**3.10** (2.52-3.73)	**4.20** (3.30-6.10)	**5.69** (3.80-7.40)	427
Non-Hispanic blacks	03-04	**2.21** (1.94-2.52)	**2.12** (1.80-2.56)	**3.18** (2.72-3.94)	**4.90** (3.90-6.32)	**6.32** (5.01-9.62)	464
Non-Hispanic whites	03-04	**2.03** (1.87-2.19)	**2.01** (1.90-2.20)	**3.07** (2.90-3.29)	**4.40** (4.01-4.95)	**5.70** (5.25-6.35)	877

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.4.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2'3,5'-Tetrachlorobiphenyl (PCB 44) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2'3,5'-Tetrachlorobiphenyl (PCB 44) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2'3,5'-Tetrachlorobiphenyl (PCB 44) (whole weight) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	**.013** (.012-.013)	**.013** (.012-.014)	**.018** (.017-.020)	**.026** (.024-.028)	**.032** (.030-.034)	1890
Age group							
12-19 years	03-04	**.012** (.011-.014)	**.013** (.011-.014)	**.019** (.016-.021)	**.029** (.024-.031)	**.037** (.030-.042)	597
20 years and older	03-04	**.013** (.012-.013)	**.013** (.012-.014)	**.018** (.017-.020)	**.025** (.023-.027)	**.031** (.029-.034)	1293
Gender							
Males	03-04	**.013** (.012-.014)	**.013** (.012-.014)	**.018** (.017-.020)	**.026** (.024-.028)	**.034** (.030-.038)	942
Females	03-04	**.012** (.011-.013)	**.012** (.011-.013)	**.018** (.016-.020)	**.025** (.023-.028)	**.030** (.028-.032)	948
Race/ethnicity							
Mexican Americans	03-04	**.013** (.011-.014)	**.013** (.011-.014)	**.017** (.015-.020)	**.023** (.018-.031)	**.027** (.021-.049)	427
Non-Hispanic blacks	03-04	**.013** (.011-.014)	**.012** (.010-.014)	**.018** (.015-.022)	**.026** (.021-.034)	**.035** (.026-.040)	464
Non-Hispanic whites	03-04	**.012** (.012-.014)	**.012** (.011-.014)	**.019** (.017-.020)	**.026** (.024-.028)	**.032** (.029-.035)	877

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

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2'3,5'-Tetrachlorobiphenyl (PCB 44) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2'3,5'-Tetrachlorobiphenyl (PCB 44) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5'-Tetrachlorobiphenyl (PCB 49) (lipid adjusted) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	**1.29** (1.20-1.39)	**1.35** (1.24-1.45)	**1.90** (1.80-2.10)	**2.80** (2.60-3.08)	**3.53** (3.33-3.80)	1876
Age group							
12-19 years	03-04	**1.54** (1.37-1.72)	**1.59** (1.33-1.80)	**2.30** (2.00-2.84)	**3.60** (3.10-4.13)	**4.66** (3.80-5.73)	590
20 years and older	03-04	**1.26** (1.17-1.35)	**1.33** (1.22-1.40)	**1.90** (1.78-2.03)	**2.69** (2.50-2.80)	**3.36** (3.15-3.63)	1286
Gender							
Males	03-04	**1.36** (1.27-1.45)	**1.40** (1.30-1.50)	**2.00** (1.90-2.20)	**3.00** (2.60-3.23)	**3.79** (3.36-4.10)	932
Females	03-04	**1.23** (1.12-1.35)	**1.30** (1.13-1.40)	**1.80** (1.70-2.04)	**2.66** (2.38-3.01)	**3.39** (3.02-3.73)	944
Race/ethnicity							
Mexican Americans	03-04	**1.33** (1.20-1.48)	**1.46** (1.20-1.57)	**2.00** (1.67-2.30)	**2.70** (2.17-3.80)	**3.56** (2.63-4.20)	426
Non-Hispanic blacks	03-04	**1.40** (1.23-1.59)	**1.40** (1.20-1.64)	**2.06** (1.70-2.80)	**3.23** (2.80-3.70)	**3.88** (3.33-5.53)	453
Non-Hispanic whites	03-04	**1.26** (1.15-1.38)	**1.32** (1.20-1.40)	**1.90** (1.78-2.11)	**2.77** (2.50-3.10)	**3.45** (3.20-3.90)	876

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.4.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5'-Tetrachlorobiphenyl (PCB 49) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5'-Tetrachlorobiphenyl (PCB 49) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5'-Tetrachlorobiphenyl (PCB 49) (whole weight) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	**.008** (.007-.008)	**.008** (.007-.009)	**.012** (.011-.012)	**.016** (.015-.017)	**.019** (.018-.021)	1876
Age group							
12-19 years	03-04	**.008** (.007-.009)	**.008** (.007-.009)	**.012** (.010-.013)	**.018** (.015-.019)	**.022** (.018-.025)	590
20 years and older	03-04	**.008** (.007-.008)	**.008** (.007-.009)	**.012** (.011-.013)	**.015** (.015-.017)	**.019** (.018-.021)	1286
Gender							
Males	03-04	**.008** (.008-.009)	**.008** (.008-.009)	**.012** (.011-.013)	**.017** (.015-.018)	**.021** (.019-.022)	932
Females	03-04	**.007** (.007-.008)	**.008** (.007-.008)	**.011** (.010-.012)	**.015** (.014-.017)	**.018** (.017-.019)	944
Race/ethnicity							
Mexican Americans	03-04	**.008** (.007-.009)	**.008** (.007-.009)	**.011** (.010-.014)	**.015** (.012-.018)	**.018** (.015-.023)	426
Non-Hispanic blacks	03-04	**.008** (.007-.009)	**.008** (.007-.009)	**.012** (.010-.014)	**.017** (.015-.020)	**.021** (.017-.026)	453
Non-Hispanic whites	03-04	**.008** (.007-.009)	**.008** (.007-.009)	**.012** (.011-.013)	**.016** (.015-.017)	**.019** (.018-.021)	876

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

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5'-Tetrachlorobiphenyl (PCB 49) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5'-Tetrachlorobiphenyl (PCB 49) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1912
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**16.5** (14.3-17.2)	1537
	03-04	**2.66** (2.43-2.91)	**2.74** (2.50-3.00)	**4.17** (3.72-4.60)	**5.91** (5.40-6.67)	**7.60** (7.01-8.00)	1897
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	664
	01-02	*	**< LOD**	**< LOD**	**16.2** (<LOD-23.8)	**22.9** (16.9-32.3)	291
	03-04	**3.16** (2.81-3.56)	**3.22** (2.60-3.96)	**5.15** (4.46-5.79)	**7.60** (6.55-8.33)	**9.20** (7.80-12.5)	597
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1248
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**16.0** (13.5-16.9)	1246
	03-04	**2.59** (2.36-2.84)	**2.70** (2.46-2.92)	**4.06** (3.60-4.43)	**5.70** (5.16-6.49)	**7.15** (6.62-7.80)	1300
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	908
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**16.0** (<LOD-17.5)	716
	03-04	**2.75** (2.54-2.98)	**2.80** (2.55-3.20)	**4.36** (3.90-4.88)	**5.94** (5.51-6.80)	**7.80** (7.29-8.49)	946
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1004
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**16.6** (14.0-18.2)	821
	03-04	**2.57** (2.30-2.87)	**2.70** (2.40-2.96)	**3.96** (3.52-4.30)	**5.86** (4.96-6.67)	**7.15** (6.57-8.10)	951
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	631
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**16.9** (<LOD-20.6)	366
	03-04	**2.88** (2.56-3.24)	**3.00** (2.70-3.30)	**4.41** (3.60-5.30)	**6.00** (4.71-8.11)	**7.83** (5.70-12.0)	426
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	408
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**16.6** (<LOD-20.9)	282
	03-04	**2.74** (2.35-3.19)	**2.58** (2.08-3.40)	**4.11** (3.30-5.60)	**6.92** (5.10-8.70)	**8.70** (7.10-10.2)	464
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	716
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**16.6** (14.7-17.5)	773
	03-04	**2.60** (2.35-2.88)	**2.70** (2.40-2.98)	**4.17** (3.70-4.60)	**5.79** (5.20-6.75)	**7.37** (6.80-7.87)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 12.4, and 0.8, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	**.348**	0.071	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	**.562**	0.135	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	**.807**	0.149	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.33 and 0.3.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.33 and 0.3.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1912
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.090** (.080-.100)	1537
	03-04	**.016** (.015-.018)	**.017** (.015-.019)	**.024** (.022-.028)	**.035** (.032-.037)	**.043** (.039-.046)	1897
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	664
	01-02	*	**< LOD**	**< LOD**	**.080** (<LOD-.100)	**.100** (.080-.140)	291
	03-04	**.016** (.014-.018)	**.017** (.014-.019)	**.026** (.022-.029)	**.037** (.032-.041)	**.042** (.037-.056)	597
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1248
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.090** (.080-.090)	1246
	03-04	**.016** (.015-.018)	**.017** (.015-.019)	**.024** (.022-.028)	**.034** (.031-.036)	**.043** (.038-.045)	1300
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	908
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.090** (<LOD-.110)	716
	03-04	**.017** (.016-.018)	**.018** (.016-.020)	**.025** (.023-.029)	**.036** (.032-.039)	**.044** (.040-.048)	946
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1004
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.090** (.080-.100)	821
	03-04	**.016** (.014-.017)	**.016** (.014-.018)	**.024** (.021-.028)	**.033** (.030-.036)	**.042** (.036-.046)	951
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	631
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.090** (<LOD-.110)	366
	03-04	**.018** (.016-.020)	**.018** (.016-.021)	**.025** (.022-.030)	**.035** (.028-.044)	**.044** (.032-.064)	426
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	408
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.090** (<LOD-.110)	282
	03-04	**.016** (.014-.018)	**.015** (.012-.019)	**.022** (.019-.031)	**.035** (.029-.043)	**.043** (.035-.049)	464
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	716
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.090** (.080-.100)	773
	03-04	**.016** (.014-.018)	**.017** (.014-.019)	**.024** (.022-.028)	**.035** (.032-.037)	**.043** (.038-.047)	885

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) (whole weight) (2005 - 2008)

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.

See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	**.003**	0	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	**.003**	0.001	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	**.005**	0.001	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1931
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2250
	03-04	**1.39** (1.32-1.47)	**1.37** (1.30-1.40)	**1.97** (1.90-2.10)	**3.10** (2.94-3.26)	**4.10** (3.90-4.55)	1898
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	671
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	724
	03-04	**1.24** (1.14-1.34)	**1.20** (1.10-1.26)	**1.76** (1.62-2.00)	**2.40** (2.30-2.70)	**3.25** (2.70-4.10)	598
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1260
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1526
	03-04	**1.42** (1.34-1.49)	**1.40** (1.30-1.43)	**2.00** (1.90-2.12)	**3.10** (2.97-3.40)	**4.20** (3.90-4.71)	1300
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	919
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1047
	03-04	**1.29** (1.20-1.39)	**1.30** (1.20-1.38)	**1.87** (1.72-2.01)	**2.70** (2.50-3.00)	**3.30** (2.96-3.82)	947
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1012
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1203
	03-04	**1.50** (1.42-1.58)	**1.41** (1.38-1.50)	**2.10** (1.92-2.30)	**3.70** (3.20-4.00)	**5.08** (4.10-5.46)	951
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	636
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	548
	03-04	**1.19** (1.09-1.30)	**1.14** (1.00-1.30)	**1.60** (1.48-1.73)	**2.23** (1.80-3.20)	**3.20** (2.46-3.60)	427
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	414
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	495
	03-04	**1.50** (1.34-1.68)	**1.38** (1.21-1.50)	**2.31** (1.80-2.80)	**3.80** (3.10-4.80)	**5.46** (4.30-8.60)	464
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	723
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1047
	03-04	**1.39** (1.31-1.47)	**1.39** (1.30-1.45)	**1.96** (1.90-2.10)	**3.01** (2.71-3.28)	**4.09** (3.70-4.33)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 12.4, and 0.8, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.415**	0.061	12
		07-08	**.389**	0.063	15
	40-59	05-06	**.827**	0.138	12
		07-08	**.657**	0.066	16
	60+	05-06	****1.42**	0.44	15
		07-08	**1.27**	0.18	23
Non-Hispanic White Female	12-19	05-06	**.421**	0.04	10
		07-08	**.605**	0.146	7
	20-39	05-06	**.471**	0.054	16
		07-08	**.629**	0.157	13
	40-59	05-06	**.671**	0.091	13
		07-08	**.750**	0.066	17
	60+	05-06	**1.91**	0.21	17
		07-08	**1.84**	0.21	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	**.784**	0.154	5
		07-08	**.645**	0.155	6
	60+	05-06	**1.49**	0.23	5
		07-08	**1.29**	0.18	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**.677**	0.112	7
		07-08	*	*	8
	40-59	05-06	**1.09**	0.1	7
		07-08	**1.13**	0.21	8
	60+	05-06	**3.40**	0.95	5
		07-08	**2.49**	0.63	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.4 and 0.3.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**.459**	0.074	9
		07-08	**.414**	0.088	9
	40-59	05-06	**.585**	0.103	4
		07-08	****.713**	0.223	6
	60+	05-06	**.702**	0.057	4
		07-08	**.869**	0.051	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	**.597**	0.07	8
	40-59	05-06	**.751**	0.095	6
		07-08	**.684**	0.073	6
	60+	05-06	**1.32**	0.36	3
		07-08	**1.18**	0.14	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.4 and 0.3.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1931
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2250
	03-04	**.008** (.008-.009)	**.008** (.008-.009)	**.012** (.012-.013)	**.019** (.018-.021)	**.025** (.024-.030)	1898
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	671
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	724
	03-04	**.006** (.006-.007)	**.006** (.005-.007)	**.009** (.008-.010)	**.013** (.012-.014)	**.017** (.013-.019)	598
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1260
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1526
	03-04	**.009** (.008-.009)	**.008** (.008-.009)	**.013** (.012-.013)	**.020** (.019-.022)	**.026** (.024-.032)	1300
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	919
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1047
	03-04	**.008** (.007-.009)	**.008** (.007-.008)	**.011** (.010-.013)	**.017** (.016-.019)	**.020** (.019-.022)	947
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1012
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1203
	03-04	**.009** (.009-.010)	**.009** (.008-.009)	**.013** (.012-.014)	**.022** (.021-.024)	**.032** (.026-.034)	951
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	636
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	548
	03-04	**.007** (.007-.008)	**.007** (.006-.008)	**.010** (.009-.011)	**.015** (.011-.018)	**.018** (.014-.020)	427
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	414
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	495
	03-04	**.009** (.008-.009)	**.008** (.007-.009)	**.013** (.011-.015)	**.022** (.019-.030)	**.036** (.024-.070)	464
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	723
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1047
	03-04	**.009** (.008-.009)	**.008** (.008-.009)	**.012** (.012-.013)	**.019** (.018-.022)	**.025** (.023-.030)	885

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.003**	0.001	12
		07-08	**.003**	0	15
	40-59	05-06	**.006**	0.001	12
		07-08	**.005**	0.001	16
	60+	05-06	**.010**	0.003	15
		07-08	**.008**	0.001	23
Non-Hispanic White Female	12-19	05-06	**.002**	0	10
		07-08	**.003**	0.001	7
	20-39	05-06	**.003**	0	16
		07-08	**.004**	0.001	13
	40-59	05-06	**.005**	0.001	13
		07-08	**.005**	0	17
	60+	05-06	**.014**	0.001	17
		07-08	**.012**	0.001	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	**.005**	0.001	5
		07-08	**.004**	0.001	6
	60+	05-06	**.009**	0.001	5
		07-08	**.008**	0.001	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**.004**	0.001	7
		07-08	*	*	8
	40-59	05-06	**.007**	0.001	7
		07-08	**.007**	0.001	8
	60+	05-06	**.023**	0.006	5
		07-08	**.015**	0.004	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3',4,4'-Tetrachlorobiphenyl (PCB 66) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**.003**	0.001	9
		07-08	**.003**	0.001	9
	40-59	05-06	**.005**	0.001	4
		07-08	****.005**	0.002	6
	60+	05-06	**.005**	0.001	4
		07-08	**.006**	0	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	**.003**	0	8
	40-59	05-06	**.006**	0.001	6
		07-08	**.005**	0	6
	60+	05-06	**.010**	0.002	3
		07-08	**.008**	0.001	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**20.8** (17.9-23.4)	**29.0** (24.5-32.3)	1924
	01-02	*	**< LOD**	**13.2** (11.0-15.7)	**23.5** (20.2-27.7)	**33.0** (26.9-38.7)	2307
	03-04	**4.81** (4.63-4.99)	**4.36** (3.90-4.88)	**8.72** (8.30-9.28)	**15.8** (14.7-17.7)	**22.3** (19.7-25.5)	1898
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	671
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**2.20** (2.02-2.39)	**2.20** (2.03-2.33)	**2.98** (2.80-3.30)	**4.19** (3.60-4.73)	**5.32** (4.20-6.90)	598
20 years and older	99-00	*	**< LOD**	**12.6** (<LOD-14.4)	**22.4** (19.5-25.6)	**30.0** (26.2-35.8)	1253
	01-02	*	**< LOD**	**14.7** (12.4-17.1)	**25.2** (21.4-28.9)	**34.8** (28.8-41.4)	1549
	03-04	**5.38** (5.16-5.62)	**5.00** (4.60-5.50)	**9.60** (8.90-10.6)	**17.1** (15.7-18.5)	**24.1** (20.8-27.7)	1300
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**15.4** (13.0-17.8)	**21.6** (18.3-24.4)	915
	01-02	*	**< LOD**	**10.6** (<LOD-12.3)	**20.2** (15.4-24.9)	**28.8** (20.8-38.2)	1075
	03-04	**4.06** (3.82-4.31)	**3.62** (3.30-4.00)	**6.71** (6.20-7.77)	**12.4** (10.8-13.1)	**15.8** (14.6-18.5)	947
Females	99-00	*	**< LOD**	**13.9** (<LOD-16.4)	**24.6** (21.9-28.5)	**31.9** (28.8-40.3)	1009
	01-02	*	**< LOD**	**15.8** (13.5-18.7)	**26.1** (23.2-29.3)	**35.9** (31.4-41.4)	1232
	03-04	**5.65** (5.33-5.98)	**5.38** (4.84-5.95)	**10.9** (9.30-12.1)	**19.1** (17.4-21.1)	**27.4** (22.9-29.6)	951
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**15.8** (12.8-18.2)	636
	01-02	*	**< LOD**	**< LOD**	**13.3** (<LOD-18.1)	**19.6** (16.2-23.0)	567
	03-04	**2.43** (2.10-2.80)	**2.12** (1.90-2.40)	**3.34** (2.90-4.16)	**6.10** (5.25-7.40)	**10.4** (6.61-12.2)	427
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**29.0** (18.6-38.4)	**43.8** (35.4-64.0)	411
	01-02	*	**< LOD**	**12.0** (<LOD-14.2)	**21.7** (16.4-26.9)	**31.9** (24.5-41.0)	515
	03-04	**4.96** (4.21-5.83)	**4.00** (3.45-4.65)	**9.17** (6.80-12.4)	**23.0** (14.6-35.1)	**40.2** (23.0-68.2)	464
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**21.6** (18.9-24.0)	**29.0** (24.3-32.3)	719
	01-02	*	**< LOD**	**14.7** (12.2-17.3)	**25.8** (21.3-30.1)	**35.9** (29.0-42.5)	1061
	03-04	**5.23** (4.98-5.50)	**4.91** (4.38-5.65)	**9.30** (8.60-10.4)	**16.1** (15.1-18.2)	**21.9** (19.2-25.2)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.8, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**1.84**	0.15	9
		07-08	**1.75**	0.27	6
	20-39	05-06	**2.63**	0.45	12
		07-08	**2.22**	0.08	15
	40-59	05-06	**5.30**	0.32	12
		07-08	**4.09**	0.24	16
	60+	05-06	**11.7**	1.1	15
		07-08	**10.5**	0.9	23
Non-Hispanic White Female	12-19	05-06	**1.82**	0.15	10
		07-08	**1.65**	0.11	7
	20-39	05-06	**2.64**	0.17	16
		07-08	**2.45**	0.3	13
	40-59	05-06	**7.21**	0.59	13
		07-08	**6.25**	0.52	17
	60+	05-06	**17.8**	1.7	17
		07-08	**15.8**	1.1	21
Non-Hispanic Black Male	12-19	05-06	**2.03**	0.16	13
		07-08	**1.37**	0.2	6
	20-39	05-06	**2.30**	0.31	6
		07-08	**1.82**	0.17	6
	40-59	05-06	**4.49**	0.6	5
		07-08	**4.41**	0.74	6
	60+	05-06	**16.5**	2.4	5
		07-08	**11.5**	1.4	8
Non-Hispanic Black Female	12-19	05-06	**1.34**	0.17	14
		07-08	**1.03**	0.15	5
	20-39	05-06	**2.89**	0.34	7
		07-08	**1.83**	0.16	8
	40-59	05-06	**8.74**	1.02	7
		07-08	**8.01**	1.27	8
	60+	05-06	**36.0**	9.3	5
		07-08	**21.5**	2.1	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.8.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**1.22**	0.17	11
		07-08	**.992**	0.124	6
	20-39	05-06	**1.57**	0.1	9
		07-08	**1.55**	0.14	9
	40-59	05-06	**2.94**	0.34	4
		07-08	**3.13**	0.29	6
	60+	05-06	**6.38**	0.49	4
		07-08	**6.54**	0.59	5
Mexican American Female	12-19	05-06	**1.08**	0.12	16
		07-08	*	*	5
	20-39	05-06	**1.46**	0.17	9
		07-08	**1.60**	0.14	8
	40-59	05-06	**4.28**	0.43	6
		07-08	**4.65**	0.82	6
	60+	05-06	**11.9**	2.1	3
		07-08	**9.71**	2.27	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.8.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**.140** (.120-.150)	**.180** (.160-.220)	1924
	01-02	*	**< LOD**	**.090** (.070-.100)	**.150** (.140-.180)	**.210** (.180-.270)	2307
	03-04	**.029** (.028-.031)	**.027** (.024-.029)	**.058** (.053-.062)	**.104** (.093-.121)	**.153** (.135-.171)	1898
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	671
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**.011** (.010-.012)	**.011** (.010-.012)	**.015** (.014-.018)	**.021** (.019-.025)	**.026** (.021-.033)	598
20 years and older	99-00	*	**< LOD**	**.080** (<LOD-.100)	**.150** (.140-.160)	**.200** (.170-.230)	1253
	01-02	*	**< LOD**	**.100** (.080-.110)	**.170** (.140-.190)	**.230** (.200-.280)	1549
	03-04	**.034** (.032-.035)	**.031** (.028-.033)	**.064** (.059-.068)	**.115** (.103-.128)	**.167** (.143-.186)	1300
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**.100** (.090-.120)	**.150** (.130-.170)	915
	01-02	*	**< LOD**	**.070** (<LOD-.080)	**.130** (.100-.170)	**.190** (.140-.250)	1075
	03-04	**.025** (.023-.027)	**.023** (.021-.027)	**.043** (.040-.050)	**.077** (.067-.087)	**.103** (.092-.118)	947
Females	99-00	*	**< LOD**	**.100** (<LOD-.110)	**.160** (.140-.180)	**.220** (.190-.250)	1009
	01-02	*	**< LOD**	**.100** (.090-.110)	**.170** (.150-.190)	**.240** (.210-.290)	1232
	03-04	**.034** (.032-.037)	**.031** (.027-.036)	**.071** (.062-.085)	**.130** (.120-.143)	**.186** (.154-.216)	951
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.110** (.080-.130)	636
	01-02	*	**< LOD**	**< LOD**	**.090** (<LOD-.120)	**.140** (.110-.160)	567
	03-04	**.015** (.013-.017)	**.013** (.011-.016)	**.022** (.019-.026)	**.042** (.032-.054)	**.071** (.049-.097)	427
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**.170** (.110-.250)	**.280** (.220-.420)	411
	01-02	*	**< LOD**	**.070** (<LOD-.080)	**.130** (.100-.170)	**.200** (.150-.250)	515
	03-04	**.028** (.024-.033)	**.022** (.019-.025)	**.055** (.038-.077)	**.153** (.090-.215)	**.236** (.143-.337)	464
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**.150** (.130-.160)	**.190** (.160-.210)	719
	01-02	*	**< LOD**	**.100** (.080-.110)	**.170** (.140-.200)	**.230** (.190-.280)	1061
	03-04	**.032** (.030-.034)	**.030** (.027-.033)	**.064** (.058-.067)	**.113** (.096-.123)	**.153** (.131-.176)	885

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.010**	0.001	9
		07-08	**.009**	0.001	6
	20-39	05-06	**.020**	0.004	12
		07-08	**.015**	0.001	15
	40-59	05-06	**.040**	0.003	12
		07-08	**.030**	0.002	16
	60+	05-06	**.079**	0.007	15
		07-08	**.066**	0.005	23
Non-Hispanic White Female	12-19	05-06	**.010**	0.001	10
		07-08	**.008**	0	7
	20-39	05-06	**.017**	0.001	16
		07-08	**.015**	0.002	13
	40-59	05-06	**.054**	0.006	13
		07-08	**.041**	0.004	17
	60+	05-06	**.129**	0.011	17
		07-08	**.106**	0.007	21
Non-Hispanic Black Male	12-19	05-06	**.010**	0.001	13
		07-08	**.006**	0.001	6
	20-39	05-06	**.014**	0.002	6
		07-08	**.010**	0.001	6
	40-59	05-06	**.029**	0.004	5
		07-08	**.028**	0.005	6
	60+	05-06	**.098**	0.013	5
		07-08	**.070**	0.009	8
Non-Hispanic Black Female	12-19	05-06	**.007**	0.001	14
		07-08	**.005**	0.001	5
	20-39	05-06	**.017**	0.002	7
		07-08	**.009**	0.001	8
	40-59	05-06	**.057**	0.008	7
		07-08	**.049**	0.008	8
	60+	05-06	**.239**	0.062	5
		07-08	**.128**	0.01	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,4,4',5-Tetrachlorobiphenyl (PCB 74) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.007**	0.001	11
		07-08	**.005**	0.001	6
	20-39	05-06	**.011**	0.001	9
		07-08	**.011**	0.001	9
	40-59	05-06	**.024**	0.003	4
		07-08	**.022**	0.002	6
	60+	05-06	**.046**	0.005	4
		07-08	**.046**	0.002	5
Mexican American Female	12-19	05-06	**.006**	0.001	16
		07-08	*	*	5
	20-39	05-06	**.010**	0.001	9
		07-08	**.009**	0.001	8
	40-59	05-06	**.031**	0.003	6
		07-08	**.031**	0.006	6
	60+	05-06	**.088**	0.008	3
		07-08	**.067**	0.016	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87) (lipid adjusted) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2298
	03-04	**.656** (.579-.744)	**.900** (.800-.980)	**1.32** (1.24-1.46)	**2.02** (1.90-2.17)	**2.70** (2.40-3.03)	1892
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**.706** (.629-.792)	**.860** (.800-1.00)	**1.56** (1.32-1.69)	**2.25** (2.05-2.60)	**3.44** (2.27-3.98)	596
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1540
	03-04	**.650** (.568-.742)	**.900** (.800-.970)	**1.30** (1.22-1.40)	**2.00** (1.85-2.17)	**2.60** (2.35-2.91)	1296
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1069
	03-04	**.665** (.606-.730)	**.900** (.800-.970)	**1.40** (1.30-1.50)	**2.05** (1.90-2.27)	**2.70** (2.33-3.08)	945
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1229
	03-04	**.648** (.545-.771)	**.870** (.780-1.00)	**1.30** (1.20-1.41)	**2.00** (1.84-2.23)	**2.60** (2.35-3.08)	947
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	564
	03-04	**.693** (.569-.843)	**.840** (.700-1.00)	**1.49** (1.14-1.70)	**2.00** (1.64-2.40)	**2.30** (2.00-3.10)	427
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	**.824** (.723-.939)	**1.05** (.950-1.10)	**1.70** (1.32-2.10)	**2.81** (2.48-3.09)	**3.42** (3.00-4.14)	462
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1056
	03-04	**.625** (.531-.735)	**.830** (.780-.940)	**1.30** (1.20-1.40)	**1.97** (1.85-2.17)	**2.49** (2.30-2.80)	882

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	**.416**	0.073	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	**.847**	0.265	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87) (whole weight) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2298
	03-04	**.004** (.004-.005)	**.005** (.005-.006)	**.008** (.008-.009)	**.012** (.012-.013)	**.017** (.015-.017)	1892
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**.004** (.003-.004)	**.005** (.004-.005)	**.008** (.007-.008)	**.011** (.010-.013)	**.016** (.011-.021)	596
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1540
	03-04	**.004** (.004-.005)	**.006** (.005-.006)	**.008** (.008-.009)	**.012** (.011-.014)	**.017** (.014-.018)	1296
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1069
	03-04	**.004** (.004-.005)	**.006** (.005-.006)	**.009** (.008-.009)	**.013** (.012-.014)	**.017** (.015-.018)	945
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1229
	03-04	**.004** (.003-.005)	**.005** (.005-.006)	**.008** (.007-.009)	**.012** (.011-.013)	**.016** (.014-.017)	947
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	564
	03-04	**.004** (.003-.005)	**.005** (.004-.006)	**.008** (.007-.010)	**.011** (.009-.014)	**.014** (.011-.022)	427
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	**.005** (.004-.005)	**.006** (.006-.006)	**.009** (.008-.012)	**.015** (.014-.017)	**.020** (.017-.027)	462
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1056
	03-04	**.004** (.003-.005)	**.005** (.005-.006)	**.008** (.007-.009)	**.012** (.011-.013)	**.016** (.014-.017)	882

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87) (whole weight) (2005 - 2008)

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.

See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	**.003**	0	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	**.005**	0.001	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**13.1** (<LOD-14.7)	**19.1** (16.2-20.6)	1897
	01-02	*	**< LOD**	**< LOD**	**17.6** (15.3-21.0)	**26.3** (22.1-30.5)	2281
	03-04	**4.16** (3.82-4.54)	**3.79** (3.43-4.10)	**6.53** (5.76-7.56)	**13.0** (10.5-16.1)	**18.0** (16.7-19.4)	1877
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	654
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**2.34** (2.08-2.64)	**2.30** (2.05-2.60)	**3.20** (2.80-3.86)	**5.16** (3.80-6.12)	**6.00** (4.77-10.0)	587
20 years and older	99-00	*	**< LOD**	**< LOD**	**13.9** (<LOD-16.0)	**20.0** (17.2-21.6)	1243
	01-02	*	**< LOD**	**10.8** (<LOD-12.3)	**19.4** (16.7-22.3)	**29.0** (23.5-32.1)	1523
	03-04	**4.52** (4.14-4.94)	**4.08** (3.75-4.45)	**7.10** (6.08-8.53)	**14.7** (10.9-17.0)	**18.6** (17.1-21.3)	1290
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**16.7** (13.8-20.5)	905
	01-02	*	**< LOD**	**< LOD**	**17.0** (13.8-21.0)	**24.9** (19.8-30.1)	1061
	03-04	**3.97** (3.64-4.33)	**3.69** (3.31-4.00)	**6.11** (5.44-7.00)	**11.1** (9.40-14.3)	**16.8** (12.9-19.0)	936
Females	99-00	*	**< LOD**	**< LOD**	**13.9** (<LOD-16.2)	**20.3** (17.3-23.5)	992
	01-02	*	**< LOD**	**< LOD**	**18.0** (15.8-22.2)	**28.5** (22.5-33.2)	1220
	03-04	**4.35** (3.94-4.81)	**3.90** (3.43-4.70)	**7.05** (6.00-8.46)	**15.3** (11.5-17.3)	**18.9** (17.5-22.8)	941
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	624
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**13.8** (10.7-17.4)	562
	03-04	**2.33** (2.08-2.62)	**2.20** (1.90-2.47)	**3.35** (2.80-4.02)	**5.21** (4.50-6.10)	**6.35** (5.53-7.55)	426
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**21.1** (17.0-31.1)	**32.0** (22.9-57.4)	400
	01-02	*	**< LOD**	**11.7** (10.6-13.1)	**22.5** (18.8-25.8)	**29.0** (23.0-37.2)	510
	03-04	**5.54** (4.53-6.77)	**4.81** (3.80-5.80)	**10.4** (7.20-15.3)	**23.1** (16.7-29.7)	**31.7** (24.2-49.1)	447
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**12.5** (<LOD-14.5)	**18.2** (14.3-20.8)	715
	01-02	*	**< LOD**	**< LOD**	**18.5** (15.3-22.3)	**28.5** (22.1-32.4)	1046
	03-04	**4.23** (3.80-4.72)	**3.90** (3.40-4.44)	**6.70** (5.70-8.00)	**12.6** (9.73-15.8)	**17.3** (15.5-18.1)	883

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.6, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**1.51**	0.17	9
		07-08	**1.47**	0.16	6
	20-39	05-06	**2.60**	0.41	12
		07-08	**2.29**	0.19	15
	40-59	05-06	**4.29**	0.4	12
		07-08	**3.80**	0.32	16
	60+	05-06	**8.00**	0.53	15
		07-08	**8.46**	0.78	23
Non-Hispanic White Female	12-19	05-06	**1.30**	0.07	10
		07-08	**.931**	0.206	7
	20-39	05-06	**1.86**	0.1	16
		07-08	**2.06**	0.32	13
	40-59	05-06	**4.50**	0.3	13
		07-08	**3.93**	0.29	17
	60+	05-06	**10.0**	1	17
		07-08	**8.84**	0.87	21
Non-Hispanic Black Male	12-19	05-06	**2.09**	0.22	13
		07-08	**1.43**	0.13	6
	20-39	05-06	**2.46**	0.25	6
		07-08	**2.18**	0.19	6
	40-59	05-06	**5.47**	0.79	5
		07-08	**6.22**	1.22	6
	60+	05-06	**14.2**	1.8	5
		07-08	**11.5**	1.2	8
Non-Hispanic Black Female	12-19	05-06	**1.37**	0.09	14
		07-08	**1.20**	0.16	5
	20-39	05-06	**2.39**	0.25	7
		07-08	**1.94**	0.26	8
	40-59	05-06	**7.60**	0.79	7
		07-08	**6.43**	0.75	8
	60+	05-06	**21.5**	5.7	5
		07-08	**17.9**	2.9	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.912**	0.089	11
		07-08	**.810**	0.143	6
	20-39	05-06	**1.46**	0.09	9
		07-08	**1.52**	0.13	9
	40-59	05-06	**2.39**	0.15	4
		07-08	**3.19**	0.52	6
	60+	05-06	**4.19**	0.31	4
		07-08	**4.50**	0.45	5
Mexican American Female	12-19	05-06	**.816**	0.043	16
		07-08	**.722**	0.075	5
	20-39	05-06	**1.13**	0.12	9
		07-08	**1.27**	0.07	8
	40-59	05-06	**3.32**	0.33	6
		07-08	**2.74**	0.26	6
	60+	05-06	**5.65**	0.74	3
		07-08	**5.21**	1.01	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**.090** (<LOD-.100)	**.120** (.100-.150)	1897
	01-02	*	**< LOD**	**< LOD**	**.120** (.100-.140)	**.180** (.150-.210)	2281
	03-04	**.025** (.023-.028)	**.024** (.021-.026)	**.042** (.038-.049)	**.082** (.067-.102)	**.119** (.102-.140)	1877
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	654
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**.012** (.011-.013)	**.012** (.010-.013)	**.017** (.015-.019)	**.025** (.019-.032)	**.032** (.025-.045)	587
20 years and older	99-00	*	**< LOD**	**< LOD**	**.090** (<LOD-.100)	**.130** (.110-.150)	1243
	01-02	*	**< LOD**	**.070** (<LOD-.080)	**.130** (.110-.160)	**.190** (.160-.210)	1523
	03-04	**.028** (.026-.031)	**.026** (.024-.028)	**.046** (.041-.054)	**.093** (.073-.110)	**.127** (.110-.153)	1290
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.110** (.090-.130)	905
	01-02	*	**< LOD**	**< LOD**	**.110** (.090-.140)	**.160** (.120-.200)	1061
	03-04	**.025** (.022-.027)	**.023** (.021-.025)	**.040** (.036-.045)	**.070** (.059-.090)	**.110** (.078-.132)	936
Females	99-00	*	**< LOD**	**< LOD**	**.100** (<LOD-.110)	**.130** (.100-.170)	992
	01-02	*	**< LOD**	**< LOD**	**.130** (.110-.160)	**.200** (.160-.210)	1220
	03-04	**.026** (.024-.029)	**.024** (.020-.028)	**.045** (.040-.053)	**.095** (.078-.111)	**.130** (.110-.158)	941
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	624
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.100** (.070-.120)	562
	03-04	**.014** (.012-.016)	**.013** (.011-.016)	**.022** (.019-.026)	**.036** (.030-.040)	**.046** (.036-.058)	426
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**.140** (.110-.180)	**.210** (.150-.400)	400
	01-02	*	**< LOD**	**.070** (.060-.090)	**.140** (.110-.150)	**.190** (.140-.230)	510
	03-04	**.032** (.026-.039)	**.027** (.023-.033)	**.060** (.042-.086)	**.149** (.112-.172)	**.211** (.150-.306)	447
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**.090** (<LOD-.100)	**.110** (.090-.150)	715
	01-02	*	**< LOD**	**< LOD**	**.120** (.100-.160)	**.190** (.160-.210)	1046
	03-04	**.026** (.023-.029)	**.025** (.022-.027)	**.043** (.038-.051)	**.081** (.065-.102)	**.112** (.098-.127)	883

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.008**	0.001	9
		07-08	**.007**	0.001	6
	20-39	05-06	**.019**	0.004	12
		07-08	**.015**	0.002	15
	40-59	05-06	**.032**	0.003	12
		07-08	**.028**	0.002	16
	60+	05-06	**.054**	0.003	15
		07-08	**.054**	0.005	23
Non-Hispanic White Female	12-19	05-06	**.007**	0	10
		07-08	**.004**	0.001	7
	20-39	05-06	**.012**	0.001	16
		07-08	**.012**	0.002	13
	40-59	05-06	**.033**	0.003	13
		07-08	**.026**	0.002	17
	60+	05-06	**.072**	0.007	17
		07-08	**.059**	0.006	21
Non-Hispanic Black Male	12-19	05-06	**.010**	0.001	13
		07-08	**.007**	0.001	6
	20-39	05-06	**.015**	0.002	6
		07-08	**.012**	0.001	6
	40-59	05-06	**.035**	0.005	5
		07-08	**.040**	0.008	6
	60+	05-06	**.084**	0.009	5
		07-08	**.070**	0.008	8
Non-Hispanic Black Female	12-19	05-06	**.007**	0	14
		07-08	**.006**	0.001	5
	20-39	05-06	**.014**	0.002	7
		07-08	**.010**	0.001	8
	40-59	05-06	**.049**	0.006	7
		07-08	**.039**	0.005	8
	60+	05-06	**.144**	0.039	5
		07-08	**.106**	0.014	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5-Pentachlorobiphenyl (PCB 99) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.005**	0	11
		07-08	**.004**	0.001	6
	20-39	05-06	**.010**	0.001	9
		07-08	**.010**	0.001	9
	40-59	05-06	**.019**	0.002	4
		07-08	**.023**	0.004	6
	60+	05-06	**.031**	0.004	4
		07-08	**.032**	0.003	5
Mexican American Female	12-19	05-06	**.004**	0	16
		07-08	**.003**	0	5
	20-39	05-06	**.008**	0.001	9
		07-08	**.007**	0.001	8
	40-59	05-06	**.024**	0.002	6
		07-08	**.019**	0.002	6
	60+	05-06	**.042**	0.005	3
		07-08	**.036**	0.007	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1929
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2307
	03-04	**1.65** (1.51-1.81)	**1.70** (1.50-1.80)	**2.70** (2.50-2.94)	**4.40** (3.97-4.82)	**5.83** (5.29-6.66)	1897
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	669
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**1.93** (1.76-2.11)	**1.73** (1.51-2.10)	**3.20** (3.00-3.60)	**5.05** (4.23-5.87)	**7.25** (5.10-8.30)	598
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1260
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1549
	03-04	**1.62** (1.46-1.78)	**1.67** (1.50-1.80)	**2.64** (2.40-2.90)	**4.40** (3.88-4.75)	**5.51** (5.00-6.60)	1299
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	918
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1075
	03-04	**1.71** (1.59-1.84)	**1.75** (1.60-1.90)	**2.80** (2.60-3.10)	**4.50** (3.97-5.06)	**6.00** (5.35-6.75)	947
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1011
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1232
	03-04	**1.60** (1.41-1.81)	**1.61** (1.41-1.82)	**2.57** (2.30-2.98)	**4.40** (3.71-4.94)	**5.60** (4.88-7.25)	950
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	634
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	567
	03-04	**1.72** (1.55-1.92)	**1.70** (1.50-1.96)	**3.00** (2.30-3.80)	**4.40** (3.56-5.38)	**5.38** (4.10-6.60)	427
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	413
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	**1.69** (1.38-2.07)	**1.70** (1.50-2.16)	**3.00** (2.57-3.80)	**5.88** (3.88-7.39)	**7.68** (6.60-11.9)	464
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	724
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1061
	03-04	**1.61** (1.46-1.79)	**1.61** (1.41-1.80)	**2.60** (2.37-2.90)	**4.40** (3.75-4.61)	**5.50** (5.00-6.15)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 25.7, 10.5, and 0.6, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	**.632**	0.15	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	****.608**	0.187	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	****.954**	0.346	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.59 and 0.3.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.59 and 0.3.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1929
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2307
	03-04	**.010** (.009-.011)	**.010** (.009-.012)	**.016** (.015-.018)	**.027** (.024-.028)	**.033** (.031-.037)	1897
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	669
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**.010** (.009-.011)	**.009** (.008-.011)	**.016** (.014-.018)	**.024** (.021-.028)	**.030** (.025-.044)	598
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1260
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1549
	03-04	**.010** (.009-.011)	**.011** (.009-.012)	**.016** (.015-.018)	**.027** (.024-.029)	**.034** (.031-.037)	1299
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	918
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1075
	03-04	**.011** (.010-.011)	**.011** (.010-.012)	**.017** (.016-.019)	**.025** (.024-.029)	**.037** (.031-.041)	947
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1011
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1232
	03-04	**.010** (.009-.011)	**.010** (.009-.011)	**.015** (.014-.018)	**.027** (.022-.029)	**.032** (.030-.036)	950
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	634
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	567
	03-04	**.011** (.009-.012)	**.011** (.009-.012)	**.018** (.014-.021)	**.024** (.020-.030)	**.029** (.022-.052)	427
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	413
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	**.010** (.008-.012)	**.011** (.008-.013)	**.016** (.013-.022)	**.032** (.023-.041)	**.045** (.032-.059)	464
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	724
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1061
	03-04	**.010** (.009-.011)	**.010** (.009-.011)	**.016** (.014-.018)	**.025** (.024-.027)	**.031** (.029-.037)	885

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (whole weight) (2005 - 2008)

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.

See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	**.005**	0.001	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	**.004**	0.001	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	*	*	5
		07-08	****.006**	0.002	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3,3',4',6-Pentachlorobiphenyl (PCB 110) (lipid adjusted) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2298
	03-04	**1.22** (1.11-1.33)	**1.20** (1.10-1.36)	**1.96** (1.80-2.20)	**3.40** (3.10-3.57)	**4.42** (3.88-4.95)	1882
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**1.44** (1.30-1.59)	**1.30** (1.20-1.50)	**2.50** (2.19-2.91)	**4.13** (3.40-4.90)	**5.40** (4.30-7.68)	593
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1540
	03-04	**1.19** (1.08-1.30)	**1.20** (1.09-1.33)	**1.88** (1.71-2.11)	**3.30** (2.95-3.50)	**4.18** (3.66-4.94)	1289
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1069
	03-04	**1.26** (1.18-1.35)	**1.30** (1.19-1.40)	**2.05** (1.80-2.30)	**3.42** (3.07-3.70)	**4.61** (3.80-5.00)	939
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1229
	03-04	**1.17** (1.04-1.32)	**1.20** (1.00-1.36)	**1.82** (1.70-2.20)	**3.40** (2.77-3.57)	**4.40** (3.57-5.54)	943
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	564
	03-04	**1.33** (1.18-1.51)	**1.29** (1.13-1.50)	**2.30** (1.80-2.95)	**3.40** (2.70-4.30)	**4.10** (3.30-5.50)	420
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	**1.36** (1.20-1.53)	**1.30** (1.14-1.50)	**2.10** (1.72-3.00)	**4.19** (2.91-5.10)	**5.32** (4.40-6.89)	464
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1056
	03-04	**1.17** (1.05-1.31)	**1.20** (1.00-1.33)	**1.86** (1.70-2.16)	**3.40** (2.93-3.57)	**4.19** (3.69-4.95)	877

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.8.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3,3',4',6-Pentachlorobiphenyl (PCB 110) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	**.374**	0.077	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	**.315**	0.082	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3,3',4',6-Pentachlorobiphenyl (PCB 110) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3,3',4',6-Pentachlorobiphenyl (PCB 110) (whole weight) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2298
	03-04	**.007** (.007-.008)	**.007** (.007-.008)	**.012** (.011-.013)	**.019** (.018-.021)	**.026** (.023-.028)	1882
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**.007** (.007-.008)	**.007** (.006-.008)	**.013** (.010-.015)	**.020** (.017-.022)	**.026** (.019-.037)	593
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1540
	03-04	**.007** (.007-.008)	**.007** (.007-.008)	**.012** (.011-.013)	**.019** (.017-.021)	**.025** (.023-.028)	1289
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1069
	03-04	**.008** (.007-.008)	**.008** (.007-.009)	**.013** (.011-.014)	**.019** (.018-.021)	**.028** (.022-.031)	939
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1229
	03-04	**.007** (.006-.008)	**.007** (.006-.008)	**.011** (.010-.013)	**.019** (.016-.022)	**.024** (.021-.027)	943
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	564
	03-04	**.008** (.007-.009)	**.008** (.007-.010)	**.014** (.011-.016)	**.019** (.016-.022)	**.022** (.017-.043)	420
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	**.008** (.007-.009)	**.008** (.006-.009)	**.012** (.010-.016)	**.023** (.017-.028)	**.028** (.023-.032)	464
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1056
	03-04	**.007** (.006-.008)	**.007** (.006-.008)	**.012** (.010-.013)	**.019** (.017-.021)	**.026** (.022-.029)	877

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3,3',4',6-Pentachlorobiphenyl (PCB 110) (whole weight) (2005 - 2008)

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.

See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	**.002**	0	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	**.002**	0	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,3,3',4',6-Pentachlorobiphenyl (PCB 110) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1927
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2298
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.600** (.500-.700)	1877
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	668
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.510** (<LOD-.700)	589
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1259
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1540
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.620** (.490-.800)	1288
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	917
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1069
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.600** (.420-.770)	937
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1010
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1229
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.630** (.500-.800)	940
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	636
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	564
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	424
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	409
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	*	**< LOD**	**< LOD**	**.670** (.500-.800)	**1.00** (.770-2.10)	455
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	725
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1056
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.500** (.420-.600)	878

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	**.410**	0.103	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	**.367	0.133	5
		07-08	**.822	0.258	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1927
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2298
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.004** (.003-.004)	1877
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	668
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.003** (<LOD-.004)	589
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1259
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1540
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.004** (.004-.005)	1288
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	917
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1069
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.004** (.003-.005)	937
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1010
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1229
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.004** (.003-.005)	940
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	636
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	564
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	424
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	409
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	*	**< LOD**	**< LOD**	**.004** (.003-.005)	**.006** (.005-.013)	455
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	725
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1056
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.003** (.002-.004)	878

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	**.003**	0.001	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	****.002**	0.001	5
		07-08	**.005**	0.001	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://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) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**49.3** (42.9-55.8)	**71.2** (59.8-82.7)	1930
	01-02	**19.9** (18.0-22.0)	**20.2** (18.2-23.1)	**40.4** (35.3-45.1)	**70.1** (61.8-78.8)	**94.6** (82.5-107)	2293
	03-04	**15.1** (14.1-16.1)	**15.1** (13.6-16.6)	**30.5** (28.1-34.0)	**55.4** (47.3-63.3)	**75.3** (69.0-81.8)	1896
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	669
	01-02	*	**< LOD**	**< LOD**	**17.0** (13.7-20.2)	**23.1** (17.7-41.2)	748
	03-04	**4.97** (4.45-5.55)	**4.57** (4.10-5.02)	**7.39** (6.35-8.63)	**12.7** (10.4-14.5)	**15.2** (13.1-21.3)	598
20 years and older	99-00	*	**< LOD**	**< LOD**	**54.7** (47.4-60.8)	**72.8** (66.0-88.9)	1261
	01-02	**23.3** (21.1-25.8)	**24.0** (21.4-26.8)	**44.6** (40.4-49.2)	**73.9** (66.2-83.0)	**100** (88.8-109)	1545
	03-04	**17.7** (16.5-19.0)	**17.6** (15.5-20.4)	**34.3** (30.0-38.8)	**59.6** (50.6-66.9)	**77.4** (72.3-87.7)	1298
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**47.2** (<LOD-55.7)	**68.2** (55.7-83.8)	918
	01-02	**20.1** (17.9-22.6)	**20.5** (17.6-23.5)	**39.2** (32.2-46.0)	**69.2** (58.1-82.5)	**94.6** (77.8-109)	1066
	03-04	**14.9** (13.8-15.9)	**14.4** (12.9-15.8)	**29.6** (26.6-33.8)	**56.3** (45.3-62.3)	**75.8** (63.3-87.7)	947
Females	99-00	*	**< LOD**	**< LOD**	**53.7** (44.7-61.2)	**72.1** (61.2-88.9)	1012
	01-02	**19.7** (17.8-21.7)	**20.2** (18.2-23.1)	**41.8** (37.5-45.9)	**70.1** (63.4-78.5)	**93.9** (80.2-109)	1227
	03-04	**15.3** (14.0-16.8)	**15.8** (14.2-17.8)	**31.8** (28.3-36.6)	**54.6** (47.3-64.4)	**72.5** (68.4-80.9)	949
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	636
	01-02	*	**< LOD**	**18.6** (13.6-23.4)	**33.3** (26.5-44.2)	**51.8** (42.3-57.6)	559
	03-04	**7.06** (6.02-8.28)	**6.52** (5.20-7.60)	**12.3** (8.91-16.0)	**23.6** (18.9-28.3)	**29.2** (24.7-36.1)	427
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**72.6** (61.7-89.4)	**122** (86.5-185)	412
	01-02	**22.3** (19.3-25.6)	**22.0** (18.4-27.1)	**46.5** (38.0-55.6)	**91.5** (70.1-112)	**122** (91.5-169)	513
	03-04	**17.8** (14.9-21.3)	**15.9** (12.5-21.0)	**41.2** (30.6-57.3)	**86.5** (69.4-110)	**153** (94.6-191)	464
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**49.3** (41.4-55.8)	**70.1** (55.7-85.2)	727
	01-02	**21.5** (19.2-24.0)	**22.1** (19.6-24.9)	**43.0** (37.7-48.0)	**70.7** (62.3-79.7)	**96.1** (79.1-110)	1057
	03-04	**16.0** (14.5-17.7)	**15.8** (14.6-18.4)	**31.4** (28.2-36.6)	**55.1** (47.2-62.3)	**71.6** (64.0-75.8)	883

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 41.1, 10.5, and 0.4, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://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 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**4.13**	0.65	9
		07-08	**4.81**	0.89	6
	20-39	05-06	**7.98**	1.5	12
		07-08	**8.74**	0.84	15
	40-59	05-06	**19.6**	2.5	12
		07-08	**20.7**	1.6	16
	60+	05-06	**32.6**	1.5	15
		07-08	**47.5**	3.9	23
Non-Hispanic White Female	12-19	05-06	**3.24**	0.3	10
		07-08	**3.53**	0.73	7
	20-39	05-06	**5.23**	0.28	16
		07-08	**7.85**	1.28	13
	40-59	05-06	**16.5**	1.2	13
		07-08	**21.5**	1.2	17
	60+	05-06	**33.5**	3.1	17
		07-08	**45.0**	3.3	21
Non-Hispanic Black Male	12-19	05-06	**4.83**	0.62	13
		07-08	**4.63**	0.64	6
	20-39	05-06	**7.69**	1.17	6
		07-08	**7.95**	0.77	6
	40-59	05-06	**20.9**	2.4	5
		07-08	**28.6**	4.5	6
	60+	05-06	**56.5**	7.5	5
		07-08	**68.2**	8	8
Non-Hispanic Black Female	12-19	05-06	**2.97**	0.19	14
		07-08	**3.25**	0.5	5
	20-39	05-06	**6.94**	0.87	7
		07-08	**7.16**	0.93	8
	40-59	05-06	**25.5**	2.5	7
		07-08	**28.2**	2.8	8
	60+	05-06	**81.1**	23.7	5
		07-08	**79.9**	7.1	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

Biomonitoring Summary

http://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 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**2.68**	0.35	11
		07-08	**2.58**	0.55	6
	20-39	05-06	**4.46**	0.27	9
		07-08	**5.67**	0.55	9
	40-59	05-06	**9.75**	0.58	4
		07-08	**15.2**	2	6
	60+	05-06	**19.6**	3	4
		07-08	**23.9**	3.3	5
Mexican American Female	12-19	05-06	**1.92**	0.19	16
		07-08	**1.84**	0.53	5
	20-39	05-06	**3.22**	0.4	9
		07-08	**4.41**	0.22	8
	40-59	05-06	**12.5**	1	6
		07-08	**14.6**	1.9	6
	60+	05-06	**21.7**	2.3	3
		07-08	**25.6**	4	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.

Biomonitoring Summary

http://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) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**.340** (.300-.370)	**.460** (.390-.530)	1930
	01-02	**.122** (.110-.135)	**.120** (.110-.140)	**.270** (.230-.290)	**.460** (.410-.510)	**.650** (.560-.700)	2293
	03-04	**.092** (.086-.099)	**.095** (.082-.105)	**.206** (.180-.231)	**.359** (.326-.392)	**.477** (.450-.528)	1896
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	669
	01-02	*	**< LOD**	**< LOD**	**.090** (.060-.110)	**.110** (.090-.210)	748
	03-04	**.025** (.023-.028)	**.023** (.020-.027)	**.037** (.030-.047)	**.062** (.049-.074)	**.079** (.067-.103)	598
20 years and older	99-00	*	**< LOD**	**< LOD**	**.360** (.320-.390)	**.490** (.400-.560)	1261
	01-02	**.148** (.133-.163)	**.150** (.140-.170)	**.290** (.270-.320)	**.510** (.450-.550)	**.680** (.610-.720)	1545
	03-04	**.111** (.103-.120)	**.114** (.099-.128)	**.232** (.204-.256)	**.383** (.354-.416)	**.506** (.467-.594)	1298
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**.320** (<LOD-.370)	**.420** (.370-.530)	918
	01-02	**.125** (.112-.140)	**.130** (.110-.140)	**.260** (.230-.290)	**.460** (.370-.540)	**.630** (.510-.710)	1066
	03-04	**.092** (.085-.099)	**.091** (.079-.103)	**.198** (.172-.229)	**.354** (.316-.379)	**.474** (.389-.562)	947
Females	99-00	*	**< LOD**	**< LOD**	**.340** (.300-.370)	**.490** (.390-.540)	1012
	01-02	**.119** (.107-.132)	**.120** (.110-.150)	**.270** (.230-.300)	**.460** (.420-.500)	**.660** (.590-.700)	1227
	03-04	**.093** (.084-.102)	**.098** (.085-.115)	**.212** (.178-.244)	**.373** (.325-.417)	**.482** (.450-.568)	949
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	636
	01-02	*	**< LOD**	**.110** (.090-.150)	**.240** (.170-.330)	**.350** (.270-.430)	559
	03-04	**.043** (.036-.051)	**.040** (.032-.049)	**.080** (.068-.100)	**.148** (.122-.203)	**.239** (.147-.346)	427
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**.470** (.360-.670)	**.830** (.530-1.22)	412
	01-02	**.125** (.108-.146)	**.130** (.090-.160)	**.290** (.230-.350)	**.560** (.420-.680)	**.770** (.560-1.06)	513
	03-04	**.101** (.084-.122)	**.087** (.068-.113)	**.239** (.186-.326)	**.568** (.424-.811)	**.965** (.698-1.09)	464
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**.340** (.300-.370)	**.440** (.370-.530)	727
	01-02	**.133** (.119-.149)	**.140** (.120-.160)	**.280** (.250-.300)	**.460** (.420-.530)	**.650** (.550-.720)	1057
	03-04	**.099** (.089-.109)	**.104** (.091-.121)	**.216** (.179-.252)	**.355** (.320-.390)	**.467** (.410-.520)	883

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://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 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.023**	0.003	9
		07-08	**.024**	0.004	6
	20-39	05-06	**.060**	0.013	12
		07-08	**.058**	0.006	15
	40-59	05-06	**.150**	0.022	12
		07-08	**.150**	0.01	16
	60+	05-06	**.221**	0.008	15
		07-08	**.303**	0.023	23
Non-Hispanic White Female	12-19	05-06	**.017**	0.002	10
		07-08	**.017**	0.004	7
	20-39	05-06	**.034**	0.002	16
		07-08	**.047**	0.009	13
	40-59	05-06	**.123**	0.011	13
		07-08	**.143**	0.009	17
	60+	05-06	**.242**	0.02	17
		07-08	**.302**	0.022	21
Non-Hispanic Black Male	12-19	05-06	**.024**	0.003	13
		07-08	**.022**	0.003	6
	20-39	05-06	**.046**	0.007	6
		07-08	**.045**	0.005	6
	40-59	05-06	**.133**	0.016	5
		07-08	**.183**	0.028	6
	60+	05-06	**.335**	0.042	5
		07-08	**.416**	0.054	8
Non-Hispanic Black Female	12-19	05-06	**.015**	0.001	14
		07-08	**.016**	0.003	5
	20-39	05-06	**.040**	0.005	7
		07-08	**.036**	0.005	8
	40-59	05-06	**.165**	0.019	7
		07-08	**.171**	0.02	8
	60+	05-06	**.541**	0.16	5
		07-08	**.477**	0.035	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.

Biomonitoring Summary

http://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 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.014**	0.002	11
		07-08	**.014**	0.003	6
	20-39	05-06	**.032**	0.003	9
		07-08	**.039**	0.004	9
	40-59	05-06	**.079**	0.004	4
		07-08	**.108**	0.015	6
	60+	05-06	**.142**	0.023	4
		07-08	**.174**	0.025	5
Mexican American Female	12-19	05-06	**.010**	0.001	16
		07-08	**.009**	0.002	5
	20-39	05-06	**.022**	0.003	9
		07-08	**.026**	0.001	8
	40-59	05-06	**.091**	0.007	6
		07-08	**.099**	0.014	6
	60+	05-06	**.162**	0.011	3
		07-08	**.177**	0.029	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**13.3** (<LOD-16.1)	1923
	01-02	*	**< LOD**	**< LOD**	**11.0** (<LOD-12.5)	**15.4** (13.6-16.9)	2299
	03-04	**2.17** (2.02-2.32)	**2.21** (2.03-2.54)	**4.80** (4.38-5.21)	**8.27** (7.10-9.50)	**11.7** (10.2-13.3)	1894
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	667
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**.620** (.562-.685)	**.600** (.520-.690)	**1.02** (.870-1.20)	**1.67** (1.50-1.80)	**2.30** (1.79-2.97)	594
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**14.3** (<LOD-17.1)	1256
	01-02	*	**< LOD**	**< LOD**	**11.8** (10.7-13.5)	**16.5** (14.6-18.1)	1541
	03-04	**2.60** (2.41-2.79)	**2.60** (2.40-2.90)	**5.27** (4.82-5.88)	**8.81** (8.00-9.80)	**12.7** (10.7-15.2)	1300
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**13.1** (<LOD-17.1)	915
	01-02	*	**< LOD**	**< LOD**	**11.0** (<LOD-13.0)	**15.4** (13.0-17.2)	1069
	03-04	**2.16** (1.97-2.37)	**2.10** (1.90-2.50)	**4.80** (4.09-5.30)	**8.30** (6.90-10.1)	**12.4** (10.0-14.9)	945
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**13.9** (<LOD-16.3)	1008
	01-02	*	**< LOD**	**< LOD**	**11.0** (<LOD-12.2)	**15.2** (13.2-17.3)	1230
	03-04	**2.17** (2.02-2.34)	**2.35** (2.04-2.63)	**4.83** (4.47-5.37)	**8.00** (7.04-9.10)	**11.3** (9.95-13.2)	949
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	633
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	567
	03-04	**.940** (.826-1.07)	**.820** (.780-1.00)	**1.74** (1.21-2.60)	**3.31** (2.80-4.00)	**4.60** (3.47-6.00)	425
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**17.0** (13.4-22.9)	**29.8** (20.2-42.2)	412
	01-02	*	**< LOD**	**< LOD**	**16.6** (12.8-21.4)	**23.8** (16.9-31.6)	515
	03-04	**2.81** (2.37-3.34)	**2.60** (2.05-3.50)	**7.10** (4.97-8.90)	**16.8** (11.5-23.2)	**28.5** (17.8-41.6)	463
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	723
	01-02	*	**< LOD**	**< LOD**	**10.8** (<LOD-12.0)	**15.2** (12.8-16.8)	1054
	03-04	**2.25** (2.06-2.45)	**2.35** (2.10-2.60)	**4.82** (4.37-5.41)	**7.76** (6.94-8.70)	**10.5** (9.51-11.3)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.633**	0.079	9
		07-08	*	*	6
	20-39	05-06	**1.41**	0.24	12
		07-08	**1.21**	0.11	15
	40-59	05-06	**3.69**	0.22	12
		07-08	**3.32**	0.21	16
	60+	05-06	**7.11**	0.38	15
		07-08	**7.67**	0.73	23
Non-Hispanic White Female	12-19	05-06	**.514**	0.05	10
		07-08	*	*	7
	20-39	05-06	**.908**	0.06	16
		07-08	**1.09**	0.25	13
	40-59	05-06	**3.13**	0.19	13
		07-08	**3.20**	0.16	17
	60+	05-06	**7.04**	0.65	17
		07-08	**7.10**	0.53	21
Non-Hispanic Black Male	12-19	05-06	**.890**	0.147	13
		07-08	**.694**	0.182	6
	20-39	05-06	**1.73**	0.33	6
		07-08	**1.26**	0.15	6
	40-59	05-06	**5.46**	0.74	5
		07-08	**5.79**	0.97	6
	60+	05-06	**14.3**	1.5	5
		07-08	**14.7**	2	8
Non-Hispanic Black Female	12-19	05-06	**.517**	0.047	14
		07-08	*	*	5
	20-39	05-06	**1.36**	0.19	7
		07-08	**1.17**	0.13	8
	40-59	05-06	**5.30**	0.61	7
		07-08	**4.78**	0.53	8
	60+	05-06	**21.0**	5.7	5
		07-08	**15.5**	1.5	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.358**	0.042	11
		07-08	*	*	6
	20-39	05-06	**.828**	0.059	9
		07-08	**.841**	0.079	9
	40-59	05-06	**1.94**	0.1	4
		07-08	**3.10**	0.43	6
	60+	05-06	**4.17**	0.84	4
		07-08	**4.91**	0.43	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	**.538**	0.075	9
		07-08	**.610**	0.092	8
	40-59	05-06	**2.21**	0.19	6
		07-08	**2.49**	0.31	6
	60+	05-06	**4.29**	0.14	3
		07-08	**4.67**	0.82	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.080** (<LOD-.110)	1923
	01-02	*	**< LOD**	**< LOD**	**.070** (<LOD-.080)	**.110** (.090-.120)	2299
	03-04	**.013** (.012-.014)	**.014** (.013-.016)	**.032** (.028-.035)	**.054** (.047-.062)	**.077** (.069-.090)	1894
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	667
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**.003** (.003-.003)	**.003** (.003-.003)	**.006** (.004-.007)	**.008** (.007-.010)	**.011** (.009-.014)	594
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.090** (<LOD-.120)	1256
	01-02	*	**< LOD**	**< LOD**	**.080** (.070-.090)	**.110** (.100-.120)	1541
	03-04	**.016** (.015-.018)	**.017** (.015-.020)	**.035** (.032-.038)	**.058** (.053-.064)	**.084** (.073-.099)	1300
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.080** (<LOD-.110)	915
	01-02	*	**< LOD**	**< LOD**	**.070** (<LOD-.090)	**.100** (.090-.120)	1069
	03-04	**.013** (.012-.015)	**.014** (.012-.016)	**.032** (.027-.036)	**.054** (.045-.063)	**.074** (.064-.096)	945
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.090** (<LOD-.110)	1008
	01-02	*	**< LOD**	**< LOD**	**.070** (<LOD-.080)	**.110** (.090-.120)	1230
	03-04	**.013** (.012-.014)	**.015** (.013-.016)	**.032** (.028-.036)	**.054** (.047-.065)	**.079** (.069-.088)	949
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	633
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	567
	03-04	**.006** (.005-.007)	**.005** (.004-.007)	**.012** (.008-.016)	**.024** (.017-.033)	**.034** (.024-.046)	425
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**.110** (.080-.130)	**.180** (.120-.270)	412
	01-02	*	**< LOD**	**< LOD**	**.100** (.080-.130)	**.150** (.110-.200)	515
	03-04	**.016** (.013-.019)	**.016** (.012-.019)	**.041** (.030-.061)	**.100** (.069-.167)	**.180** (.126-.224)	463
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	723
	01-02	*	**< LOD**	**< LOD**	**.070** (<LOD-.080)	**.100** (.090-.120)	1054
	03-04	**.014** (.013-.015)	**.015** (.013-.018)	**.033** (.028-.036)	**.053** (.047-.057)	**.069** (.064-.075)	885

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.004**	0	9
		07-08	*	*	6
	20-39	05-06	**.010**	0.002	12
		07-08	**.008**	0.001	15
	40-59	05-06	**.028**	0.002	12
		07-08	**.024**	0.001	16
	60+	05-06	**.048**	0.002	15
		07-08	**.049**	0.004	23
Non-Hispanic White Female	12-19	05-06	**.003**	0	10
		07-08	*	*	7
	20-39	05-06	**.006**	0	16
		07-08	**.007**	0.002	13
	40-59	05-06	**.023**	0.002	13
		07-08	**.021**	0.001	17
	60+	05-06	**.051**	0.004	17
		07-08	**.048**	0.003	21
Non-Hispanic Black Male	12-19	05-06	**.004**	0.001	13
		07-08	**.003**	0.001	6
	20-39	05-06	**.010**	0.002	6
		07-08	**.007**	0.001	6
	40-59	05-06	**.035**	0.005	5
		07-08	**.037**	0.006	6
	60+	05-06	**.086**	0.009	5
		07-08	**.090**	0.013	8
Non-Hispanic Black Female	12-19	05-06	**.003**	0	14
		07-08	*	*	5
	20-39	05-06	**.008**	0.001	7
		07-08	**.006**	0.001	8
	40-59	05-06	**.034**	0.004	7
		07-08	**.029**	0.004	8
	60+	05-06	**.140**	0.038	5
		07-08	**.093**	0.009	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.002**	0	11
		07-08	*	*	6
	20-39	05-06	**.006**	0.001	9
		07-08	**.006**	0.001	9
	40-59	05-06	**.016**	0.001	4
		07-08	**.022**	0.003	6
	60+	05-06	**.030**	0.006	4
		07-08	**.035**	0.002	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	**.004**	0.001	9
		07-08	**.004**	0.001	8
	40-59	05-06	**.016**	0.001	6
		07-08	**.017**	0.002	6
	60+	05-06	**.033**	0.003	3
		07-08	**.032**	0.006	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149) (lipid adjusted) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2307
	03-04	**.598** (.556-.642)	**.600** (.550-.680)	**.900** (.830-1.00)	**1.45** (1.28-1.60)	**1.90** (1.68-2.20)	1873
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**.650** (.605-.698)	**.640** (.600-.700)	**1.00** (.900-1.10)	**1.70** (1.40-2.15)	**2.40** (1.80-2.98)	590
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1549
	03-04	**.590** (.546-.638)	**.600** (.540-.680)	**.900** (.800-1.00)	**1.40** (1.20-1.60)	**1.89** (1.60-2.17)	1283
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1075
	03-04	**.623** (.578-.671)	**.650** (.600-.700)	**.960** (.880-1.06)	**1.50** (1.30-1.66)	**1.90** (1.60-2.40)	930
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1232
	03-04	**.575** (.521-.634)	**.600** (.500-.620)	**.890** (.800-.950)	**1.40** (1.20-1.67)	**1.90** (1.69-2.20)	943
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	567
	03-04	**.549** (.496-.608)	**.530** (.500-.600)	**.900** (.700-1.04)	**1.28** (1.03-1.60)	**1.60** (1.26-2.30)	408
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	**.760** (.678-.853)	**.800** (.700-.880)	**1.20** (1.00-1.58)	**1.98** (1.70-2.59)	**2.90** (2.20-4.20)	463
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1061
	03-04	**.574** (.524-.628)	**.600** (.510-.670)	**.880** (.800-.950)	**1.33** (1.19-1.50)	**1.80** (1.50-2.02)	881

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	**.373**	0.106	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149) (whole weight) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2307
	03-04	**.004** (.003-.004)	**.004** (.004-.004)	**.006** (.005-.006)	**.009** (.008-.009)	**.011** (.010-.013)	1873
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**.003** (.003-.004)	**.003** (.003-.003)	**.005** (.004-.006)	**.008** (.007-.009)	**.012** (.008-.016)	590
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1549
	03-04	**.004** (.003-.004)	**.004** (.004-.004)	**.006** (.005-.006)	**.009** (.007-.010)	**.011** (.010-.013)	1283
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1075
	03-04	**.004** (.004-.004)	**.004** (.004-.004)	**.006** (.005-.007)	**.009** (.008-.010)	**.011** (.010-.013)	930
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1232
	03-04	**.003** (.003-.004)	**.004** (.003-.004)	**.005** (.005-.006)	**.008** (.007-.010)	**.011** (.009-.013)	943
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	567
	03-04	**.003** (.003-.004)	**.003** (.003-.004)	**.005** (.004-.006)	**.007** (.006-.008)	**.009** (.007-.014)	408
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	**.004** (.004-.005)	**.004** (.004-.005)	**.007** (.006-.008)	**.012** (.010-.013)	**.019** (.013-.022)	463
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1061
	03-04	**.004** (.003-.004)	**.004** (.003-.004)	**.005** (.005-.006)	**.008** (.007-.009)	**.010** (.009-.012)	881

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	*	*	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	**.002	0.001	5
		07-08	*	*	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151) (lipid adjusted) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2307
	03-04	*	**< LOD**	**.420** (.400-.500)	**.700** (.640-.820)	**1.00** (.840-1.30)	1870
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	*	**< LOD**	**.400** (<LOD-.470)	**.700** (.510-.820)	**.880** (.700-1.10)	588
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1549
	03-04	*	**< LOD**	**.440** (.400-.500)	**.720** (.650-.850)	**1.02** (.850-1.40)	1282
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1075
	03-04	*	**< LOD**	**.430** (.400-.500)	**.720** (.620-.900)	**1.10** (.830-1.50)	931
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1232
	03-04	*	**< LOD**	**.410** (.400-.500)	**.700** (.600-.820)	**1.00** (.830-1.20)	939
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	567
	03-04	*	**< LOD**	**< LOD**	**.500** (.400-.700)	**.700** (.530-.700)	426
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	*	**.400** (<LOD-.500)	**.700** (.500-.900)	**1.30** (.900-1.90)	**2.20** (1.40-4.55)	461
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1061
	03-04	*	**< LOD**	**.400** (<LOD-.450)	**.650** (.590-.700)	**.850** (.750-1.00)	864

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	**.439**	0.048	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	**.468**	0.07	5
		07-08	**.580**	0.148	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151) (whole weight) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2307
	03-04	*	**< LOD**	**.003** (.002-.003)	**.004** (.004-.005)	**.006** (.005-.008)	1870
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	*	**< LOD**	**.002** (<LOD-.002)	**.003** (.003-.004)	**.004** (.003-.006)	588
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1549
	03-04	*	**< LOD**	**.003** (.003-.003)	**.004** (.004-.006)	**.007** (.005-.010)	1282
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1075
	03-04	*	**< LOD**	**.003** (.003-.003)	**.005** (.004-.006)	**.006** (.005-.010)	931
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1232
	03-04	*	**< LOD**	**.003** (.002-.003)	**.004** (.004-.005)	**.006** (.005-.008)	939
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	567
	03-04	*	**< LOD**	**< LOD**	**.003** (.003-.004)	**.004** (.003-.005)	426
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	*	**.002** (<LOD-.003)	**.004** (.003-.006)	**.008** (.006-.010)	**.013** (.008-.028)	461
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1061
	03-04	*	**< LOD**	**.003** (<LOD-.003)	**.004** (.004-.004)	**.005** (.004-.006)	864

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	*	*	12
		07-08	*	*	15
	40-59	05-06	*	*	12
		07-08	*	*	16
	60+	05-06	*	*	15
		07-08	*	*	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	*	*	13
		07-08	*	*	17
	60+	05-06	*	*	17
		07-08	*	*	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	*	*	6
		07-08	*	*	6
	40-59	05-06	*	*	5
		07-08	*	*	6
	60+	05-06	**.003**	0	5
		07-08	*	*	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	*	*	7
		07-08	*	*	8
	60+	05-06	**.003**	0	5
		07-08	**.004**	0.001	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	*	*	4
		07-08	*	*	6
	60+	05-06	*	*	4
		07-08	*	*	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	*	*	6
		07-08	*	*	6
	60+	05-06	*	*	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**77.8** (70.2-87.3)	**114** (93.0-133)	1926
	01-02	**27.2** (24.7-30.1)	**30.1** (26.1-34.3)	**57.8** (52.1-63.2)	**94.7** (86.5-104)	**126** (109-142)	2306
	03-04	**19.8** (18.8-20.9)	**20.8** (18.4-22.2)	**43.3** (39.1-46.9)	**71.8** (64.4-82.8)	**97.1** (88.8-111)	1896
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	668
	01-02	*	**< LOD**	**12.5** (11.1-14.1)	**21.2** (17.4-26.7)	**31.9** (23.1-64.7)	757
	03-04	**5.86** (5.25-6.55)	**5.40** (4.70-6.21)	**8.50** (7.80-9.85)	**15.7** (12.9-18.4)	**20.7** (16.9-28.3)	596
20 years and older	99-00	*	**< LOD**	**< LOD**	**83.2** (75.9-91.8)	**122** (100-139)	1258
	01-02	**32.6** (29.5-36.1)	**35.1** (31.1-39.0)	**62.8** (57.6-68.0)	**99.5** (90.7-110)	**132** (116-146)	1549
	03-04	**23.7** (22.3-25.1)	**24.2** (21.8-27.4)	**47.1** (43.3-50.5)	**77.5** (68.0-87.9)	**101** (92.9-119)	1300
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**75.0** (66.7-86.2)	**111** (87.7-128)	917
	01-02	**28.5** (25.5-32.0)	**31.5** (26.7-35.2)	**57.7** (48.3-66.2)	**97.5** (82.1-110)	**126** (104-150)	1074
	03-04	**20.0** (18.7-21.3)	**19.7** (17.7-21.2)	**42.9** (37.4-47.6)	**72.7** (60.4-88.8)	**107** (86.8-122)	947
Females	99-00	*	**< LOD**	**< LOD**	**79.0** (70.2-92.0)	**119** (91.4-142)	1009
	01-02	**26.1** (23.6-28.8)	**29.0** (25.1-33.4)	**57.9** (52.1-62.9)	**94.3** (87.8-98.2)	**128** (105-145)	1232
	03-04	**19.7** (18.4-21.1)	**21.9** (19.0-24.1)	**43.8** (39.4-47.7)	**70.9** (63.0-81.5)	**93.3** (83.8-100)	949
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**67.5** (59.5-71.8)	634
	01-02	**12.5** (10.8-14.4)	**11.1** (<LOD-13.3)	**24.5** (18.2-33.9)	**47.4** (36.2-60.3)	**66.7** (55.2-72.3)	567
	03-04	**8.75** (7.39-10.4)	**7.86** (6.17-9.40)	**15.6** (11.4-22.2)	**30.3** (25.2-34.9)	**37.8** (31.1-45.2)	425
Non-Hispanic blacks	99-00	*	**< LOD**	**59.4** (<LOD-82.0)	**121** (90.3-159)	**176** (130-287)	412
	01-02	**30.0** (26.2-34.4)	**31.0** (25.8-36.4)	**65.1** (54.2-82.7)	**127** (97.1-152)	**170** (126-246)	515
	03-04	**22.8** (19.1-27.2)	**20.9** (17.0-28.7)	**54.1** (37.3-69.2)	**126** (92.9-158)	**194** (126-294)	464
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**76.4** (69.3-83.9)	**102** (87.8-127)	725
	01-02	**29.9** (26.8-33.4)	**33.0** (28.7-37.1)	**61.2** (55.8-66.7)	**96.3** (86.5-109)	**126** (104-142)	1061
	03-04	**21.3** (19.7-23.1)	**22.2** (20.4-25.9)	**44.9** (39.7-49.5)	**70.9** (60.4-82.1)	**91.3** (82.1-103)	885

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 55.6, 10.5, and 1.1, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**6.27**	1.11	9
		07-08	**5.80**	1.04	6
	20-39	05-06	**13.2**	2.6	12
		07-08	**11.0**	1	15
	40-59	05-06	**36.4**	5.1	12
		07-08	**28.2**	1.6	16
	60+	05-06	**60.4**	2.7	15
		07-08	**63.9**	4.8	23
Non-Hispanic White Female	12-19	05-06	**4.59**	0.49	10
		07-08	**4.34**	0.99	7
	20-39	05-06	**8.47**	0.59	16
		07-08	**9.36**	1.4	13
	40-59	05-06	**27.8**	1.4	13
		07-08	**27.7**	1.3	17
	60+	05-06	**58.0**	5.1	17
		07-08	**56.4**	3.7	21
Non-Hispanic Black Male	12-19	05-06	**7.42**	1	13
		07-08	**5.74**	0.81	6
	20-39	05-06	**13.8**	2.1	6
		07-08	**10.3**	0.9	6
	40-59	05-06	**38.8**	4.2	5
		07-08	**41.0**	5.5	6
	60+	05-06	**103**	13	5
		07-08	**94.5**	11	8
Non-Hispanic Black Female	12-19	05-06	**4.20**	0.29	14
		07-08	**3.76**	0.52	5
	20-39	05-06	**10.8**	1.4	7
		07-08	**8.99**	1.17	8
	40-59	05-06	**41.2**	4	7
		07-08	**35.7**	3.2	8
	60+	05-06	**130**	33	5
		07-08	**102**	8	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**3.70**	0.45	11
		07-08	**3.32**	0.69	6
	20-39	05-06	**6.93**	0.31	9
		07-08	**6.85**	0.64	9
	40-59	05-06	**16.5**	0.8	4
		07-08	**22.4**	2.5	6
	60+	05-06	**37.3**	6.8	4
		07-08	**39.5**	4.1	5
Mexican American Female	12-19	05-06	**2.83**	0.2	16
		07-08	****2.88**	1.29	5
	20-39	05-06	**4.75**	0.67	9
		07-08	**5.58**	0.41	8
	40-59	05-06	**19.1**	1.5	6
		07-08	**20.9**	2.8	6
	60+	05-06	**36.2**	1.6	3
		07-08	**40.9**	8.5	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**.530** (.490-.560)	**.750** (.610-.840)	1926
	01-02	**.167** (.151-.185)	**.190** (.170-.210)	**.380** (.340-.410)	**.620** (.560-.690)	**.860** (.760-.950)	2306
	03-04	**.121** (.114-.128)	**.135** (.120-.144)	**.283** (.258-.310)	**.477** (.439-.518)	**.624** (.575-.733)	1896
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	668
	01-02	*	**< LOD**	**.060** (.050-.070)	**.110** (.080-.140)	**.150** (.110-.310)	757
	03-04	**.030** (.027-.033)	**.027** (.025-.031)	**.044** (.039-.055)	**.076** (.062-.098)	**.101** (.079-.129)	596
20 years and older	99-00	*	**< LOD**	**< LOD**	**.560** (.510-.610)	**.790** (.670-.880)	1258
	01-02	**.206** (.187-.228)	**.220** (.200-.250)	**.410** (.380-.450)	**.670** (.600-.740)	**.900** (.820-1.04)	1549
	03-04	**.148** (.139-.158)	**.156** (.141-.179)	**.313** (.283-.339)	**.512** (.452-.563)	**.671** (.603-.756)	1300
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**.530** (.470-.560)	**.690** (.580-.850)	917
	01-02	**.177** (.159-.198)	**.200** (.170-.220)	**.380** (.340-.430)	**.610** (.510-.730)	**.850** (.700-1.04)	1074
	03-04	**.123** (.115-.133)	**.127** (.111-.146)	**.277** (.253-.310)	**.474** (.413-.522)	**.608** (.533-.794)	947
Females	99-00	*	**< LOD**	**< LOD**	**.530** (.480-.590)	**.770** (.610-.880)	1009
	01-02	**.158** (.142-.175)	**.180** (.150-.210)	**.380** (.340-.400)	**.630** (.570-.710)	**.860** (.760-.950)	1232
	03-04	**.119** (.110-.128)	**.138** (.113-.149)	**.291** (.253-.319)	**.492** (.439-.541)	**.624** (.578-.689)	949
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.470** (.380-.540)	634
	01-02	**.075** (.063-.089)	**.060** (<LOD-.080)	**.150** (.120-.210)	**.330** (.270-.420)	**.470** (.380-.550)	567
	03-04	**.053** (.044-.064)	**.047** (.038-.057)	**.100** (.078-.144)	**.205** (.164-.241)	**.323** (.213-.435)	425
Non-Hispanic blacks	99-00	*	**< LOD**	**.370** (<LOD-.510)	**.750** (.620-.890)	**1.27** (.820-1.64)	412
	01-02	**.169** (.146-.195)	**.180** (.140-.200)	**.390** (.330-.490)	**.780** (.580-.950)	**1.05** (.830-1.43)	515
	03-04	**.129** (.108-.156)	**.126** (.098-.149)	**.330** (.236-.425)	**.734** (.562-1.06)	**1.26** (.892-1.60)	464
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**.520** (.480-.560)	**.740** (.580-.850)	725
	01-02	**.185** (.165-.207)	**.210** (.180-.230)	**.390** (.370-.430)	**.640** (.570-.720)	**.840** (.740-.990)	1061
	03-04	**.131** (.121-.143)	**.144** (.127-.170)	**.295** (.268-.329)	**.474** (.412-.518)	**.600** (.519-.689)	885

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.034**	0.006	9
		07-08	**.028**	0.005	6
	20-39	05-06	**.099**	0.023	12
		07-08	**.074**	0.008	15
	40-59	05-06	**.279**	0.045	12
		07-08	**.205**	0.011	16
	60+	05-06	**.409**	0.015	15
		07-08	**.407**	0.028	23
Non-Hispanic White Female	12-19	05-06	**.025**	0.003	10
		07-08	**.021**	0.005	7
	20-39	05-06	**.055**	0.004	16
		07-08	**.057**	0.009	13
	40-59	05-06	**.207**	0.016	13
		07-08	**.184**	0.01	17
	60+	05-06	**.420**	0.033	17
		07-08	**.378**	0.024	21
Non-Hispanic Black Male	12-19	05-06	**.037**	0.005	13
		07-08	**.027**	0.003	6
	20-39	05-06	**.082**	0.013	6
		07-08	**.058**	0.006	6
	40-59	05-06	**.247**	0.027	5
		07-08	**.263**	0.037	6
	60+	05-06	**.614**	0.073	5
		07-08	**.576**	0.073	8
Non-Hispanic Black Female	12-19	05-06	**.021**	0.002	14
		07-08	**.018**	0.003	5
	20-39	05-06	**.062**	0.009	7
		07-08	**.045**	0.006	8
	40-59	05-06	**.264**	0.029	7
		07-08	**.216**	0.023	8
	60+	05-06	**.865**	0.218	5
		07-08	**.614**	0.045	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.020**	0.002	11
		07-08	**.018**	0.004	6
	20-39	05-06	**.049**	0.003	9
		07-08	**.047**	0.005	9
	40-59	05-06	**.134**	0.01	4
		07-08	**.160**	0.02	6
	60+	05-06	**.268**	0.045	4
		07-08	**.281**	0.022	5
Mexican American Female	12-19	05-06	**.015**	0.001	16
		07-08	****.014**	0.006	5
	20-39	05-06	**.032**	0.005	9
		07-08	**.033**	0.003	8
	40-59	05-06	**.140**	0.01	6
		07-08	**.141**	0.018	6
	60+	05-06	**.274**	0.023	3
		07-08	**.283**	0.061	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**23.6** (22.0-25.4)	**30.9** (28.1-35.1)	1798
	01-02	*	**< LOD**	**17.5** (15.7-19.3)	**26.7** (24.9-29.0)	**35.0** (32.4-37.3)	2301
	03-04	**5.46** (5.22-5.71)	**6.30** (5.96-7.10)	**12.9** (12.3-13.9)	**21.7** (19.2-23.5)	**28.2** (25.8-29.8)	1888
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	645
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	756
	03-04	**1.12** (.974-1.30)	**1.12** (1.00-1.30)	**1.90** (1.70-2.50)	**4.00** (3.53-4.37)	**5.60** (4.35-6.69)	592
20 years and older	99-00	*	**< LOD**	**< LOD**	**24.9** (23.3-26.4)	**33.9** (29.6-37.5)	1153
	01-02	**10.5** (<LOD-11.3)	**11.1** (<LOD-12.2)	**19.1** (17.3-20.9)	**28.4** (26.2-30.9)	**36.8** (33.4-39.4)	1545
	03-04	**6.86** (6.48-7.26)	**7.83** (6.87-8.70)	**14.2** (13.1-14.9)	**22.7** (20.7-24.9)	**29.5** (26.7-32.2)	1296
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**24.1** (22.0-27.0)	**32.6** (28.1-37.0)	863
	01-02	*	**10.9** (<LOD-11.9)	**18.4** (16.3-20.9)	**28.1** (24.7-31.9)	**36.1** (32.1-38.3)	1073
	03-04	**5.81** (5.43-6.22)	**6.40** (5.61-7.68)	**13.8** (12.4-14.4)	**23.4** (20.4-25.6)	**29.4** (26.0-32.7)	942
Females	99-00	*	**< LOD**	**< LOD**	**22.4** (20.7-25.4)	**29.7** (25.8-36.3)	935
	01-02	*	**< LOD**	**16.4** (15.0-18.0)	**25.9** (24.0-28.4)	**34.0** (30.6-38.4)	1228
	03-04	**5.14** (4.82-5.48)	**6.28** (5.81-7.18)	**12.5** (11.5-13.8)	**19.2** (17.9-21.7)	**26.1** (24.0-29.8)	946
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**23.2** (20.3-26.5)	606
	01-02	*	**< LOD**	**< LOD**	**15.4** (11.4-18.7)	**21.1** (17.1-25.1)	565
	03-04	**2.34** (1.91-2.86)	**2.20** (1.54-3.20)	**4.91** (3.40-8.17)	**10.4** (8.40-13.5)	**13.9** (10.8-20.1)	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**30.9** (23.1-36.3)	**41.9** (33.7-59.1)	382
	01-02	*	**< LOD**	**19.0** (14.9-23.2)	**32.5** (25.5-43.9)	**44.4** (32.5-61.7)	514
	03-04	**5.42** (4.63-6.35)	**6.28** (5.11-7.75)	**14.3** (10.7-18.3)	**31.7** (23.1-40.7)	**48.5** (32.1-66.1)	461
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**24.1** (22.1-25.9)	**31.0** (26.8-37.3)	658
	01-02	*	**10.9** (<LOD-12.0)	**18.4** (16.8-20.4)	**27.7** (25.4-30.2)	**35.0** (32.3-38.1)	1059
	03-04	**6.13** (5.74-6.56)	**7.40** (6.40-8.18)	**13.8** (12.6-14.6)	**21.7** (19.2-24.2)	**27.0** (24.9-29.5)	882

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 17.2, 10.5, and 0.4, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**1.41**	0.32	9
		07-08	**1.52**	0.29	6
	20-39	05-06	**3.93**	0.94	12
		07-08	**3.36**	0.28	15
	40-59	05-06	**13.7**	2.6	12
		07-08	**10.3**	0.4	16
	60+	05-06	**20.5**	1.3	15
		07-08	**22.4**	1.4	23
Non-Hispanic White Female	12-19	05-06	**.896**	0.155	10
		07-08	**1.14**	0.32	7
	20-39	05-06	**2.28**	0.35	16
		07-08	**2.75**	0.41	13
	40-59	05-06	**8.44**	0.46	13
		07-08	**9.09**	0.45	17
	60+	05-06	**17.2**	1.4	17
		07-08	**18.1**	0.9	21
Non-Hispanic Black Male	12-19	05-06	**1.44**	0.28	13
		07-08	**1.12**	0.28	6
	20-39	05-06	**3.71**	0.52	6
		07-08	**2.82**	0.3	6
	40-59	05-06	**11.4**	1	5
		07-08	**13.1**	1.5	6
	60+	05-06	**30.9**	3.4	5
		07-08	**30.6**	3.4	8
Non-Hispanic Black Female	12-19	05-06	**.589**	0.099	14
		07-08	**.828**	0.105	5
	20-39	05-06	**2.15**	0.52	7
		07-08	**2.29**	0.35	8
	40-59	05-06	**11.1**	1.2	7
		07-08	**10.8**	1	8
	60+	05-06	**33.3**	6.7	5
		07-08	**29.0**	1.7	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.575**	0.138	11
		07-08	**.891**	0.17	6
	20-39	05-06	**2.01**	0.11	9
		07-08	**2.19**	0.24	9
	40-59	05-06	**6.41**	0.43	4
		07-08	**8.71**	0.91	6
	60+	05-06	**14.0**	3.2	4
		07-08	**16.1**	1.9	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	**1.39**	0.21	9
		07-08	**1.62**	0.11	8
	40-59	05-06	**5.93**	0.46	6
		07-08	**7.50**	1.08	6
	60+	05-06	**11.7**	0.1	3
		07-08	**13.5**	2.5	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**.160** (.140-.180)	**.210** (.200-.230)	1798
	01-02	*	**< LOD**	**.110** (.110-.120)	**.180** (.170-.200)	**.250** (.210-.270)	2301
	03-04	**.033** (.032-.035)	**.041** (.037-.045)	**.087** (.080-.092)	**.144** (.134-.149)	**.188** (.173-.202)	1888
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	645
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	756
	03-04	**.006** (.005-.006)	**.006** (.005-.007)	**.010** (.009-.012)	**.020** (.017-.022)	**.029** (.022-.033)	592
20 years and older	99-00	*	**< LOD**	**< LOD**	**.170** (.150-.190)	**.220** (.200-.250)	1153
	01-02	**.067** (<LOD-.072)	**.070** (<LOD-.080)	**.120** (.110-.130)	**.200** (.180-.210)	**.250** (.230-.290)	1545
	03-04	**.043** (.040-.046)	**.051** (.045-.054)	**.093** (.089-.099)	**.149** (.141-.160)	**.199** (.180-.223)	1296
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**.170** (.140-.200)	**.220** (.200-.250)	863
	01-02	*	**.070** (<LOD-.080)	**.120** (.110-.130)	**.190** (.170-.210)	**.250** (.210-.280)	1073
	03-04	**.036** (.033-.039)	**.043** (.036-.051)	**.089** (.080-.093)	**.148** (.132-.164)	**.200** (.173-.225)	942
Females	99-00	*	**< LOD**	**< LOD**	**.150** (.130-.170)	**.210** (.190-.230)	935
	01-02	*	**< LOD**	**.110** (.100-.120)	**.180** (.160-.200)	**.250** (.210-.280)	1228
	03-04	**.031** (.029-.033)	**.040** (.034-.044)	**.083** (.075-.092)	**.140** (.121-.149)	**.176** (.160-.194)	946
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.170** (.130-.190)	606
	01-02	*	**< LOD**	**< LOD**	**.110** (.080-.130)	**.150** (.120-.190)	565
	03-04	**.014** (.012-.018)	**.015** (.010-.018)	**.032** (.025-.047)	**.073** (.054-.113)	**.119** (.078-.134)	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**.190** (.150-.210)	**.260** (.190-.370)	382
	01-02	*	**< LOD**	**.110** (.090-.140)	**.210** (.150-.270)	**.290** (.210-.390)	514
	03-04	**.031** (.026-.037)	**.038** (.027-.044)	**.087** (.069-.117)	**.210** (.136-.280)	**.338** (.221-.380)	461
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**.160** (.140-.200)	**.210** (.200-.240)	658
	01-02	*	**.070** (<LOD-.080)	**.120** (.110-.130)	**.190** (.170-.210)	**.250** (.210-.280)	1059
	03-04	**.038** (.035-.041)	**.046** (.042-.052)	**.091** (.083-.096)	**.145** (.132-.151)	**.180** (.164-.207)	882

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (whole weight) (2005 - 2008)

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.

See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.008**	0.002	9
		07-08	**.007**	0.001	6
	20-39	05-06	**.030**	0.008	12
		07-08	**.022**	0.002	15
	40-59	05-06	**.105**	0.022	12
		07-08	**.075**	0.003	16
	60+	05-06	**.139**	0.008	15
		07-08	**.143**	0.008	23
Non-Hispanic White Female	12-19	05-06	**.005**	0.001	10
		07-08	**.006**	0.002	7
	20-39	05-06	**.015**	0.002	16
		07-08	**.017**	0.003	13
	40-59	05-06	**.063**	0.005	13
		07-08	**.060**	0.003	17
	60+	05-06	**.125**	0.009	17
		07-08	**.122**	0.006	21
Non-Hispanic Black Male	12-19	05-06	**.007**	0.001	13
		07-08	**.005**	0.001	6
	20-39	05-06	**.022**	0.003	6
		07-08	**.016**	0.002	6
	40-59	05-06	**.072**	0.007	5
		07-08	**.084**	0.009	6
	60+	05-06	**.185**	0.021	5
		07-08	**.186**	0.022	8
Non-Hispanic Black Female	12-19	05-06	**.003**	0	14
		07-08	**.004**	0.001	5
	20-39	05-06	**.012**	0.003	7
		07-08	**.011**	0.002	8
	40-59	05-06	**.071**	0.008	7
		07-08	**.066**	0.007	8
	60+	05-06	**.222**	0.044	5
		07-08	**.175**	0.011	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.003**	0.001	11
		07-08	**.005**	0.001	6
	20-39	05-06	**.014**	0.001	9
		07-08	**.015**	0.002	9
	40-59	05-06	**.052**	0.005	4
		07-08	**.062**	0.007	6
	60+	05-06	**.100**	0.021	4
		07-08	**.115**	0.01	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	**.009**	0.001	9
		07-08	**.010**	0.001	8
	40-59	05-06	**.043**	0.003	6
		07-08	**.050**	0.007	6
	60+	05-06	**.089**	0.009	3
		07-08	**.094**	0.018	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1901
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2199
	03-04	**.647** (.606-.691)	**.900** (.800-1.00)	**1.80** (1.69-1.90)	**2.98** (2.70-3.30)	**4.16** (3.65-4.55)	1878
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	660
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	679
	03-04	*	**< LOD**	**< LOD**	**.610** (.460-.840)	**1.10** (.700-1.43)	585
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1241
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1520
	03-04	**.805** (.746-.869)	**1.08** (1.00-1.16)	**1.95** (1.80-2.10)	**3.20** (2.87-3.60)	**4.38** (3.79-5.00)	1293
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	911
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1027
	03-04	**.668** (.612-.730)	**.900** (.800-1.01)	**1.82** (1.70-2.00)	**3.30** (2.80-3.80)	**4.43** (3.76-5.50)	937
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	990
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1172
	03-04	**.627** (.581-.678)	**.900** (.800-1.03)	**1.72** (1.51-1.90)	**2.80** (2.50-3.11)	**3.70** (3.37-4.26)	941
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	630
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	519
	03-04	*	**< LOD**	**.700** (.470-1.20)	**1.40** (1.20-1.95)	**2.00** (1.40-2.91)	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	409
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	494
	03-04	**.688** (.579-.818)	**.900** (.700-1.10)	**2.20** (1.70-2.60)	**5.00** (3.38-6.53)	**7.60** (5.00-11.3)	458
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	706
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1027
	03-04	**.720** (.665-.781)	**1.00** (.870-1.10)	**1.80** (1.69-2.00)	**2.94** (2.70-3.20)	**3.90** (3.53-4.20)	877

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.4, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.480**	0.126	12
		07-08	*	*	15
	40-59	05-06	**1.57**	0.18	12
		07-08	**1.29**	0.07	16
	60+	05-06	**2.61**	0.16	15
		07-08	**2.98**	0.2	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	**1.03**	0.06	13
		07-08	**1.13**	0.06	17
	60+	05-06	**2.19**	0.17	17
		07-08	**2.31**	0.13	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	**.404**	0.074	6
		07-08	*	*	6
	40-59	05-06	**1.57**	0.11	5
		07-08	**1.85**	0.24	6
	60+	05-06	**4.16**	0.33	5
		07-08	**4.64**	0.61	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	**1.48**	0.16	7
		07-08	**1.48**	0.15	8
	60+	05-06	**4.61**	0.95	5
		07-08	**4.09**	0.3	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	**.808**	0.073	4
		07-08	**1.32**	0.18	6
	60+	05-06	**1.86**	0.45	4
		07-08	**2.34**	0.29	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**.789**	0.059	6
		07-08	**.967**	0.118	6
	60+	05-06	**1.50**	0.09	3
		07-08	**1.90**	0.37	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1901
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2199
	03-04	**.004** (.004-.004)	**.006** (.005-.006)	**.012** (.011-.012)	**.021** (.019-.022)	**.027** (.024-.031)	1878
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	660
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	679
	03-04	*	**< LOD**	**< LOD**	**.003** (.002-.004)	**.005** (.004-.009)	585
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1241
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1520
	03-04	**.005** (.005-.005)	**.007** (.006-.007)	**.013** (.012-.014)	**.022** (.020-.024)	**.028** (.025-.033)	1293
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	911
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1027
	03-04	**.004** (.004-.005)	**.006** (.005-.007)	**.012** (.011-.013)	**.021** (.018-.024)	**.029** (.024-.036)	937
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	990
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1172
	03-04	**.004** (.003-.004)	**.006** (.005-.006)	**.012** (.010-.012)	**.019** (.017-.021)	**.026** (.023-.028)	941
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	630
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	519
	03-04	*	**< LOD**	**.005** (.003-.007)	**.010** (.007-.015)	**.017** (.011-.022)	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	409
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	494
	03-04	**.004** (.003-.005)	**.006** (.004-.006)	**.013** (.010-.017)	**.030** (.020-.048)	**.052** (.028-.067)	458
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	706
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1027
	03-04	**.004** (.004-.005)	**.006** (.005-.007)	**.012** (.011-.013)	**.020** (.018-.022)	**.026** (.023-.029)	877

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.004**	0.001	12
		07-08	*	*	15
	40-59	05-06	**.012**	0.002	12
		07-08	**.009**	0.001	16
	60+	05-06	**.018**	0.001	15
		07-08	**.019**	0.001	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	**.008**	0.001	13
		07-08	**.007**	0	17
	60+	05-06	**.016**	0.001	17
		07-08	**.015**	0.001	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	**.002**	0	6
		07-08	*	*	6
	40-59	05-06	**.010**	0.001	5
		07-08	**.012**	0.002	6
	60+	05-06	**.025**	0.002	5
		07-08	**.028**	0.004	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	*	*	7
		07-08	*	*	8
	40-59	05-06	**.009**	0.001	7
		07-08	**.009**	0.001	8
	60+	05-06	**.031**	0.006	5
		07-08	**.025**	0.002	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	**.007**	0.001	4
		07-08	**.009**	0.001	6
	60+	05-06	**.013**	0.003	4
		07-08	**.017**	0.002	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**.006**	0	6
		07-08	**.007**	0.001	6
	60+	05-06	**.011**	0.002	3
		07-08	**.013**	0.003	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1873
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2287
	03-04	**1.13** (1.07-1.20)	**1.30** (1.20-1.40)	**2.77** (2.50-3.09)	**5.30** (4.70-5.90)	**7.20** (6.38-8.50)	1882
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	653
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	756
	03-04	*	**< LOD**	**.600** (.500-.720)	**1.04** (.800-1.40)	**1.70** (1.20-1.95)	588
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1220
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1531
	03-04	**1.40** (1.30-1.50)	**1.50** (1.40-1.71)	**3.10** (2.80-3.44)	**5.70** (4.99-6.22)	**7.80** (6.50-9.50)	1294
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	887
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1065
	03-04	**1.12** (1.03-1.21)	**1.30** (1.17-1.41)	**2.70** (2.40-3.00)	**5.30** (4.72-5.80)	**7.82** (6.22-9.50)	940
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	986
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1222
	03-04	**1.15** (1.06-1.23)	**1.30** (1.18-1.49)	**2.80** (2.57-3.19)	**5.30** (4.50-6.06)	**6.97** (6.15-7.92)	942
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	622
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	562
	03-04	**.500** (<LOD-.649)	**.550** (.400-.700)	**1.36** (1.00-1.63)	**2.40** (1.86-3.30)	**3.40** (2.33-4.63)	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	399
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**10.6** (<LOD-12.4)	515
	03-04	**1.52** (1.25-1.84)	**1.56** (1.29-2.05)	**4.40** (3.20-5.70)	**9.80** (6.30-13.3)	**15.8** (10.0-25.7)	458
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	698
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1048
	03-04	**1.16** (1.08-1.25)	**1.34** (1.20-1.50)	**2.74** (2.41-3.09)	**5.00** (4.57-5.56)	**6.50** (5.98-7.40)	880

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.5, 10.5, and 0.4, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.606**	0.123	12
		07-08	**.469**	0.065	15
	40-59	05-06	**1.59**	0.2	12
		07-08	**1.26**	0.07	16
	60+	05-06	**2.92**	0.19	15
		07-08	**3.26**	0.37	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	**.369**	0.022	16
		07-08	*	*	13
	40-59	05-06	**1.24**	0.1	13
		07-08	**1.16**	0.08	17
	60+	05-06	**2.65**	0.21	17
		07-08	**2.81**	0.2	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	**.684**	0.098	6
		07-08	**.553**	0.065	6
	40-59	05-06	**2.09**	0.29	5
		07-08	**2.36**	0.33	6
	60+	05-06	**5.62**	0.59	5
		07-08	**5.17**	0.63	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**.556**	0.07	7
		07-08	*	*	8
	40-59	05-06	**2.36**	0.22	7
		07-08	**2.18**	0.31	8
	60+	05-06	**7.31**	1.57	5
		07-08	**6.47**	0.57	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**.420**	0.032	9
		07-08	**.360**	0.068	9
	40-59	05-06	**1.02**	0.13	4
		07-08	**1.48**	0.22	6
	60+	05-06	**2.10**	0.4	4
		07-08	**2.34**	0.27	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**1.20**	0.08	6
		07-08	**1.23**	0.15	6
	60+	05-06	**2.48**	0.21	3
		07-08	**2.64**	0.53	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1873
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2287
	03-04	**.007** (.007-.007)	**.008** (.008-.009)	**.018** (.016-.021)	**.034** (.031-.037)	**.047** (.043-.056)	1882
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	653
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	756
	03-04	*	**< LOD**	**.003** (.003-.004)	**.006** (.005-.007)	**.007** (.006-.011)	588
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1220
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1531
	03-04	**.009** (.008-.009)	**.010** (.009-.011)	**.021** (.018-.023)	**.036** (.033-.041)	**.053** (.045-.058)	1294
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	887
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1065
	03-04	**.007** (.006-.007)	**.009** (.008-.009)	**.018** (.016-.021)	**.032** (.030-.036)	**.045** (.039-.062)	940
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	986
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1222
	03-04	**.007** (.006-.008)	**.008** (.007-.009)	**.018** (.017-.021)	**.035** (.032-.042)	**.051** (.043-.056)	942
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	622
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	562
	03-04	**.003** (<LOD-.004)	**.003** (.002-.005)	**.008** (.006-.011)	**.018** (.012-.025)	**.025** (.018-.032)	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	399
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.070** (<LOD-.100)	515
	03-04	**.009** (.007-.011)	**.009** (.007-.012)	**.026** (.018-.036)	**.057** (.044-.090)	**.105** (.058-.143)	458
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	698
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1048
	03-04	**.007** (.007-.008)	**.009** (.008-.010)	**.018** (.016-.021)	**.032** (.029-.036)	**.044** (.040-.052)	880

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.005**	0.001	12
		07-08	**.003**	0	15
	40-59	05-06	**.012**	0.002	12
		07-08	**.009**	0.001	16
	60+	05-06	**.020**	0.001	15
		07-08	**.021**	0.002	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	**.002**	0	16
		07-08	*	*	13
	40-59	05-06	**.009**	0.001	13
		07-08	**.008**	0.001	17
	60+	05-06	**.019**	0.001	17
		07-08	**.019**	0.001	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	**.004**	0.001	6
		07-08	**.003**	0	6
	40-59	05-06	**.013**	0.002	5
		07-08	**.015**	0.002	6
	60+	05-06	**.033**	0.003	5
		07-08	**.032**	0.004	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**.003**	0	7
		07-08	*	*	8
	40-59	05-06	**.015**	0.001	7
		07-08	**.013**	0.002	8
	60+	05-06	**.049**	0.011	5
		07-08	**.039**	0.004	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**.003**	0	9
		07-08	**.002**	0	9
	40-59	05-06	**.008**	0.001	4
		07-08	**.010**	0.002	6
	60+	05-06	**.015**	0.003	4
		07-08	**.016**	0.002	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**.009**	0	6
		07-08	**.008**	0.001	6
	60+	05-06	**.019**	0.003	3
		07-08	**.018**	0.004	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1932
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2299
	03-04	**.933** (.894-.974)	**1.20** (1.10-1.30)	**2.50** (2.30-2.67)	**4.24** (3.90-4.47)	**6.10** (5.13-7.10)	1887
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	669
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	*	**< LOD**	**.400** (<LOD-.480)	**.850** (.620-1.04)	**1.12** (1.00-1.32)	590
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1263
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1541
	03-04	**1.18** (1.11-1.25)	**1.46** (1.30-1.60)	**2.74** (2.60-2.90)	**4.41** (4.10-4.80)	**6.50** (5.69-7.58)	1297
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	919
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1069
	03-04	**.991** (.918-1.07)	**1.20** (1.10-1.37)	**2.66** (2.45-2.80)	**4.50** (3.80-5.10)	**6.40** (5.30-7.70)	940
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1013
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1230
	03-04	**.881** (.835-.930)	**1.20** (1.10-1.30)	**2.30** (2.20-2.59)	**4.01** (3.71-4.34)	**5.40** (4.47-6.70)	947
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	635
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	567
	03-04	*	**< LOD**	**.900** (.600-1.34)	**1.99** (1.37-2.60)	**3.10** (2.00-3.60)	424
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	415
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	**1.09** (.911-1.30)	**1.30** (.910-1.65)	**3.10** (2.30-4.21)	**7.10** (5.13-10.1)	**11.4** (6.80-16.5)	460
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	724
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1054
	03-04	**1.03** (.963-1.10)	**1.30** (1.19-1.50)	**2.61** (2.40-2.80)	**4.20** (3.80-4.40)	**5.33** (4.58-6.30)	882

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.735**	0.151	12
		07-08	**.591**	0.067	15
	40-59	05-06	**2.39**	0.22	12
		07-08	**1.81**	0.09	16
	60+	05-06	**4.18**	0.26	15
		07-08	**4.07**	0.3	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	**.460**	0.036	16
		07-08	*	*	13
	40-59	05-06	**1.59**	0.12	13
		07-08	**1.49**	0.08	17
	60+	05-06	**3.55**	0.29	17
		07-08	**3.44**	0.17	21
Non-Hispanic Black Male	12-19	05-06	**.351**	0.049	13
		07-08	*	*	6
	20-39	05-06	**.854**	0.136	6
		07-08	**.564**	0.098	6
	40-59	05-06	**2.78**	0.15	5
		07-08	**2.85**	0.3	6
	60+	05-06	**7.22**	0.75	5
		07-08	**6.82**	0.77	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**.545**	0.092	7
		07-08	*	*	8
	40-59	05-06	**2.39**	0.27	7
		07-08	**2.11**	0.23	8
	60+	05-06	**7.83**	1.63	5
		07-08	**6.33**	0.56	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**.382**	0.039	9
		07-08	*	*	9
	40-59	05-06	**1.14**	0.08	4
		07-08	**1.58**	0.21	6
	60+	05-06	**2.79**	0.67	4
		07-08	**3.23**	0.45	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**1.12**	0.08	6
		07-08	**1.37**	0.23	6
	60+	05-06	**2.42**	0.2	3
		07-08	**3.00**	0.59	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1932
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2299
	03-04	**.006** (.005-.006)	**.008** (.007-.008)	**.016** (.015-.018)	**.029** (.026-.032)	**.041** (.035-.045)	1887
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	669
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	*	**< LOD**	**.002** (<LOD-.002)	**.004** (.003-.005)	**.006** (.004-.007)	590
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1263
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1541
	03-04	**.007** (.007-.008)	**.009** (.008-.010)	**.018** (.017-.019)	**.031** (.028-.034)	**.043** (.038-.048)	1297
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	919
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1069
	03-04	**.006** (.006-.007)	**.008** (.007-.009)	**.017** (.016-.018)	**.030** (.025-.034)	**.042** (.034-.050)	940
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1013
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1230
	03-04	**.005** (.005-.006)	**.008** (.006-.008)	**.016** (.014-.017)	**.028** (.025-.031)	**.040** (.034-.045)	947
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	635
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	567
	03-04	*	**< LOD**	**.005** (.004-.008)	**.013** (.009-.020)	**.022** (.014-.028)	424
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	415
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	515
	03-04	**.006** (.005-.008)	**.008** (.006-.008)	**.019** (.016-.027)	**.044** (.032-.061)	**.077** (.045-.089)	460
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	724
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1054
	03-04	**.006** (.006-.007)	**.008** (.007-.010)	**.017** (.015-.018)	**.028** (.025-.031)	**.037** (.033-.045)	882

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.006**	0.001	12
		07-08	**.004**	0	15
	40-59	05-06	**.018**	0.002	12
		07-08	**.013**	0.001	16
	60+	05-06	**.028**	0.002	15
		07-08	**.026**	0.002	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	**.003**	0	16
		07-08	*	*	13
	40-59	05-06	**.012**	0.001	13
		07-08	**.010**	0.001	17
	60+	05-06	**.026**	0.002	17
		07-08	**.023**	0.001	21
Non-Hispanic Black Male	12-19	05-06	**.002**	0	13
		07-08	*	*	6
	20-39	05-06	**.005**	0.001	6
		07-08	**.003**	0.001	6
	40-59	05-06	**.018**	0.001	5
		07-08	**.018**	0.002	6
	60+	05-06	**.043**	0.005	5
		07-08	**.041**	0.005	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**.003**	0.001	7
		07-08	*	*	8
	40-59	05-06	**.015**	0.002	7
		07-08	**.013**	0.002	8
	60+	05-06	**.052**	0.011	5
		07-08	**.038**	0.004	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**.003**	0	9
		07-08	*	*	9
	40-59	05-06	**.009**	0.001	4
		07-08	**.011**	0.001	6
	60+	05-06	**.020**	0.004	4
		07-08	**.023**	0.002	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**.008**	0	6
		07-08	**.009**	0.002	6
	60+	05-06	**.019**	0.003	3
		07-08	**.021**	0.005	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**37.5** (32.7-41.8)	**62.0** (56.6-66.6)	**79.3** (72.1-89.2)	1924
	01-02	**19.2** (17.4-21.1)	**21.8** (19.0-24.6)	**42.2** (38.3-47.5)	**69.7** (63.7-75.9)	**87.3** (83.3-93.0)	2302
	03-04	**15.1** (14.5-15.7)	**18.0** (16.4-18.9)	**37.1** (34.9-39.5)	**63.7** (56.2-68.2)	**81.5** (75.8-89.9)	1896
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	667
	01-02	*	**< LOD**	**< LOD**	**12.2** (<LOD-14.8)	**21.3** (14.2-26.0)	755
	03-04	**3.06** (2.65-3.54)	**2.97** (2.57-3.41)	**5.00** (4.20-5.80)	**11.1** (8.70-13.0)	**14.7** (13.0-18.8)	598
20 years and older	99-00	*	**< LOD**	**41.1** (37.6-45.2)	**65.6** (60.6-69.4)	**84.8** (75.6-96.1)	1257
	01-02	**23.0** (20.8-25.5)	**26.5** (22.7-28.6)	**46.7** (41.4-51.3)	**74.5** (66.7-79.8)	**91.4** (85.0-99.5)	1547
	03-04	**19.0** (17.9-20.1)	**21.5** (18.9-24.3)	**40.4** (37.9-42.8)	**66.7** (61.0-70.1)	**88.0** (77.8-96.7)	1298
Gender							
Males	99-00	*	**< LOD**	**40.6** (34.5-45.0)	**65.1** (58.6-71.4)	**83.8** (75.8-96.3)	919
	01-02	**21.1** (18.8-23.7)	**25.1** (21.2-30.0)	**46.7** (39.8-51.8)	**73.8** (63.2-79.8)	**86.9** (78.0-99.4)	1073
	03-04	**16.1** (14.8-17.4)	**18.5** (15.8-21.3)	**39.6** (35.8-41.7)	**68.6** (63.7-75.0)	**88.3** (76.8-96.7)	947
Females	99-00	*	**< LOD**	**34.4** (29.8-39.3)	**56.7** (52.2-62.6)	**74.6** (66.6-90.5)	1005
	01-02	**17.5** (15.9-19.3)	**18.5** (16.0-21.6)	**39.7** (34.8-43.9)	**64.3** (58.0-74.8)	**87.9** (79.1-98.1)	1229
	03-04	**14.2** (13.4-15.0)	**17.8** (15.8-19.2)	**35.4** (31.8-38.5)	**55.7** (51.2-59.9)	**74.3** (64.8-87.6)	949
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**41.7** (33.2-50.5)	**57.8** (49.7-63.8)	633
	01-02	*	**< LOD**	**18.0** (11.5-22.7)	**36.9** (28.2-45.7)	**54.2** (42.2-60.0)	566
	03-04	**6.14** (4.91-7.67)	**5.80** (3.80-7.50)	**12.6** (8.97-21.5)	**27.2** (22.3-35.4)	**38.8** (27.2-60.7)	427
Non-Hispanic blacks	99-00	*	**< LOD**	**39.3** (32.2-48.4)	**78.4** (64.3-93.7)	**117** (89.6-144)	414
	01-02	**19.5** (16.5-23.1)	**21.0** (16.9-23.8)	**48.4** (36.7-57.9)	**90.5** (73.7-101)	**116** (96.1-167)	514
	03-04	**15.1** (12.8-17.7)	**18.1** (12.6-20.8)	**39.0** (29.7-51.1)	**89.9** (64.4-122)	**137** (91.4-206)	464
Non-Hispanic whites	99-00	*	**< LOD**	**39.9** (34.5-45.3)	**62.3** (56.5-68.6)	**79.0** (71.3-91.4)	719
	01-02	**21.4** (19.1-23.9)	**24.8** (21.5-28.1)	**45.6** (40.2-51.0)	**72.4** (63.8-78.0)	**87.9** (83.8-94.3)	1059
	03-04	**16.9** (15.9-18.0)	**19.8** (18.4-23.1)	**39.3** (35.8-42.0)	**63.7** (55.0-69.1)	**79.8** (70.1-89.3)	883

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 28.2, 10.5, and 0.4, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**4.20**	0.71	9
		07-08	**3.50**	0.65	6
	20-39	05-06	**10.7**	2.6	12
		07-08	**8.43**	0.64	15
	40-59	05-06	**37.8**	6.8	12
		07-08	**25.8**	1	16
	60+	05-06	**58.6**	3.4	15
		07-08	**57.6**	3.4	23
Non-Hispanic White Female	12-19	05-06	**2.70**	0.27	10
		07-08	**2.82**	0.82	7
	20-39	05-06	**6.45**	0.74	16
		07-08	**6.65**	0.93	13
	40-59	05-06	**22.4**	1.2	13
		07-08	**22.3**	1.1	17
	60+	05-06	**48.3**	3.7	17
		07-08	**45.7**	2.2	21
Non-Hispanic Black Male	12-19	05-06	**4.06**	0.56	13
		07-08	**3.54**	0.68	6
	20-39	05-06	**10.5**	1.3	6
		07-08	**7.36**	0.82	6
	40-59	05-06	**32.8**	2.3	5
		07-08	**34.2**	3.9	6
	60+	05-06	**88.0**	8.6	5
		07-08	**82.5**	9.9	8
Non-Hispanic Black Female	12-19	05-06	**2.10**	0.16	14
		07-08	**2.02**	0.3	5
	20-39	05-06	**6.93**	1.06	7
		07-08	**5.69**	0.88	8
	40-59	05-06	**30.5**	3.1	7
		07-08	**26.4**	2.5	8
	60+	05-06	**88.6**	17.3	5
		07-08	**73.1**	4.2	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**2.04**	0.29	11
		07-08	**2.24**	0.37	6
	20-39	05-06	**5.12**	0.28	9
		07-08	**5.47**	0.6	9
	40-59	05-06	**15.9**	1.3	4
		07-08	**20.9**	2.6	6
	60+	05-06	**39.3**	10.1	4
		07-08	**42.0**	5.5	5
Mexican American Female	12-19	05-06	**1.78**	0.18	16
		07-08	****2.10**	1.27	5
	20-39	05-06	**3.45**	0.6	9
		07-08	**3.88**	0.21	8
	40-59	05-06	**15.5**	1.4	6
		07-08	**18.2**	2.6	6
	60+	05-06	**30.9**	0.3	3
		07-08	**33.7**	6.7	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
Limit of detection (LOD, see Data Analysis section) for Survey years 05-06 and 07-08 are 0.31 and 0.3.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**.250** (.220-.270)	**.410** (.370-.450)	**.540** (.490-.600)	1924
	01-02	**.118** (.106-.130)	**.140** (.120-.160)	**.280** (.250-.300)	**.460** (.400-.510)	**.610** (.540-.690)	2302
	03-04	**.092** (.088-.096)	**.114** (.102-.127)	**.246** (.230-.253)	**.409** (.386-.438)	**.534** (.495-.598)	1896
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	667
	01-02	*	**< LOD**	**< LOD**	**.060** (<LOD-.080)	**.090** (.070-.140)	755
	03-04	**.016** (.014-.018)	**.015** (.013-.017)	**.025** (.022-.030)	**.050** (.046-.056)	**.076** (.056-.096)	598
20 years and older	99-00	*	**< LOD**	**.270** (.240-.300)	**.440** (.410-.480)	**.560** (.500-.620)	1257
	01-02	**.146** (.131-.162)	**.170** (.150-.190)	**.300** (.280-.340)	**.490** (.430-.560)	**.640** (.570-.740)	1547
	03-04	**.119** (.112-.126)	**.138** (.125-.151)	**.270** (.249-.284)	**.433** (.402-.474)	**.572** (.511-.635)	1298
Gender							
Males	99-00	*	**< LOD**	**.260** (.220-.300)	**.460** (.370-.510)	**.570** (.500-.650)	919
	01-02	**.131** (.117-.147)	**.170** (.140-.200)	**.300** (.260-.340)	**.480** (.410-.550)	**.620** (.530-.720)	1073
	03-04	**.099** (.091-.108)	**.117** (.098-.148)	**.250** (.231-.274)	**.422** (.388-.495)	**.596** (.499-.654)	947
Females	99-00	*	**< LOD**	**.230** (.200-.270)	**.380** (.340-.410)	**.510** (.430-.560)	1005
	01-02	**.106** (.096-.117)	**.120** (.100-.140)	**.260** (.230-.280)	**.420** (.380-.470)	**.610** (.520-.700)	1229
	03-04	**.085** (.080-.092)	**.110** (.094-.123)	**.230** (.209-.252)	**.386** (.349-.421)	**.494** (.459-.541)	949
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**.280** (.200-.320)	**.390** (.320-.450)	633
	01-02	*	**< LOD**	**.110** (.080-.160)	**.260** (.200-.310)	**.360** (.280-.420)	566
	03-04	**.037** (.030-.047)	**.035** (.024-.051)	**.086** (.059-.118)	**.191** (.138-.313)	**.343** (.191-.405)	427
Non-Hispanic blacks	99-00	*	**< LOD**	**.250** (.190-.300)	**.500** (.350-.660)	**.730** (.530-1.04)	414
	01-02	**.110** (.092-.131)	**.120** (.090-.140)	**.290** (.220-.350)	**.580** (.440-.650)	**.720** (.520-1.01)	514
	03-04	**.086** (.072-.102)	**.098** (.070-.126)	**.248** (.194-.327)	**.580** (.373-.824)	**.919** (.592-1.12)	464
Non-Hispanic whites	99-00	*	**< LOD**	**.260** (.240-.300)	**.430** (.380-.470)	**.540** (.480-.600)	719
	01-02	**.132** (.118-.148)	**.160** (.140-.180)	**.290** (.260-.330)	**.470** (.410-.530)	**.620** (.530-.730)	1059
	03-04	**.104** (.097-.112)	**.132** (.115-.151)	**.253** (.235-.280)	**.409** (.382-.449)	**.512** (.478-.572)	883

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.023**	0.004	9
		07-08	**.017**	0.003	6
	20-39	05-06	**.081**	0.023	12
		07-08	**.056**	0.005	15
	40-59	05-06	**.288**	0.058	12
		07-08	**.188**	0.008	16
	60+	05-06	**.397**	0.02	15
		07-08	**.369**	0.021	23
Non-Hispanic White Female	12-19	05-06	**.014**	0.002	10
		07-08	****.014**	0.004	7
	20-39	05-06	**.042**	0.005	16
		07-08	**.040**	0.006	13
	40-59	05-06	**.167**	0.014	13
		07-08	**.147**	0.008	17
	60+	05-06	**.350**	0.025	17
		07-08	**.306**	0.015	21
Non-Hispanic Black Male	12-19	05-06	**.020**	0.003	13
		07-08	**.017**	0.003	6
	20-39	05-06	**.062**	0.008	6
		07-08	**.041**	0.004	6
	40-59	05-06	**.209**	0.015	5
		07-08	**.219**	0.025	6
	60+	05-06	**.527**	0.054	5
		07-08	**.501**	0.063	8
Non-Hispanic Black Female	12-19	05-06	**.010**	0.001	14
		07-08	**.010**	0.002	5
	20-39	05-06	**.040**	0.006	7
		07-08	**.029**	0.005	8
	40-59	05-06	**.196**	0.021	7
		07-08	**.160**	0.018	8
	60+	05-06	**.589**	0.113	5
		07-08	**.439**	0.028	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.011**	0.001	11
		07-08	**.012**	0.002	6
	20-39	05-06	**.036**	0.002	9
		07-08	**.037**	0.004	9
	40-59	05-06	**.130**	0.015	4
		07-08	**.148**	0.018	6
	60+	05-06	**.281**	0.066	4
		07-08	**.298**	0.029	5
Mexican American Female	12-19	05-06	**.010**	0.001	16
		07-08	****.010**	0.006	5
	20-39	05-06	**.023**	0.004	9
		07-08	**.023**	0.002	8
	40-59	05-06	**.113**	0.009	6
		07-08	**.122**	0.017	6
	60+	05-06	**.236**	0.025	3
		07-08	**.233**	0.049	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1928
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2306
	03-04	**1.45** (1.38-1.54)	**1.60** (1.50-1.77)	**3.29** (3.15-3.54)	**5.86** (5.50-6.29)	**7.90** (7.50-8.74)	1886
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	668
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	757
	03-04	*	**.440** (<LOD-.500)	**.730** (.660-.840)	**1.30** (.990-1.62)	**1.91** (1.50-2.24)	590
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1260
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1549
	03-04	**1.77** (1.67-1.88)	**1.88** (1.73-2.09)	**3.70** (3.34-4.00)	**6.25** (5.71-6.83)	**8.40** (7.70-9.55)	1296
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	919
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1074
	03-04	**1.47** (1.34-1.61)	**1.54** (1.40-1.77)	**3.29** (3.10-3.54)	**5.80** (5.30-6.50)	**7.90** (7.20-9.20)	940
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1009
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1232
	03-04	**1.44** (1.34-1.55)	**1.69** (1.50-1.82)	**3.30** (3.05-3.80)	**5.88** (5.21-6.30)	**7.90** (7.31-9.24)	946
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	635
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	567
	03-04	**.703** (.579-.854)	**.700** (.600-.890)	**1.40** (1.19-1.90)	**2.62** (2.20-3.47)	**3.73** (2.60-5.60)	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**12.7** (<LOD-23.1)	413
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**13.0** (<LOD-14.9)	514
	03-04	**1.64** (1.41-1.90)	**1.60** (1.20-2.00)	**4.31** (3.25-5.63)	**11.0** (6.69-13.7)	**14.8** (11.3-17.4)	459
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	722
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1061
	03-04	**1.56** (1.43-1.69)	**1.74** (1.55-1.90)	**3.30** (3.14-3.73)	**5.71** (5.20-6.29)	**7.59** (6.70-8.04)	883

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.443**	0.059	9
		07-08	*	*	6
	20-39	05-06	**1.17**	0.31	12
		07-08	**.964**	0.069	15
	40-59	05-06	**3.14**	0.76	12
		07-08	**2.15**	0.08	16
	60+	05-06	**4.82**	0.23	15
		07-08	**5.17**	0.41	23
Non-Hispanic White Female	12-19	05-06	**.311**	0.03	10
		07-08	*	*	7
	20-39	05-06	**.694**	0.043	16
		07-08	**.839**	0.194	13
	40-59	05-06	**2.04**	0.11	13
		07-08	**2.08**	0.12	17
	60+	05-06	**4.13**	0.34	17
		07-08	**4.20**	0.26	21
Non-Hispanic Black Male	12-19	05-06	**.598**	0.087	13
		07-08	*	*	6
	20-39	05-06	**1.10**	0.13	6
		07-08	**.927**	0.087	6
	40-59	05-06	**3.05**	0.33	5
		07-08	**3.92**	0.7	6
	60+	05-06	**7.74**	0.74	5
		07-08	**8.16**	1.05	8
Non-Hispanic Black Female	12-19	05-06	**.335**	0.035	14
		07-08	*	*	5
	20-39	05-06	**.861**	0.111	7
		07-08	**.801**	0.164	8
	40-59	05-06	**3.48**	0.24	7
		07-08	**3.14**	0.33	8
	60+	05-06	**9.38**	2.28	5
		07-08	**9.22**	0.69	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**.686**	0.053	9
		07-08	**.781**	0.056	9
	40-59	05-06	**1.52**	0.12	4
		07-08	**2.22**	0.34	6
	60+	05-06	**3.05**	0.58	4
		07-08	**3.84**	0.67	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	**.476**	0.076	9
		07-08	**.475**	0.087	8
	40-59	05-06	**1.86**	0.13	6
		07-08	**2.09**	0.25	6
	60+	05-06	**3.36**	0.07	3
		07-08	**4.27**	1.05	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1928
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2306
	03-04	**.009** (.008-.009)	**.010** (.009-.011)	**.021** (.019-.024)	**.039** (.036-.042)	**.054** (.048-.059)	1886
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	668
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	757
	03-04	*	**.002** (<LOD-.003)	**.004** (.004-.004)	**.007** (.005-.009)	**.009** (.007-.010)	590
20 years and older	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1260
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1549
	03-04	**.011** (.010-.012)	**.012** (.011-.014)	**.024** (.022-.027)	**.042** (.038-.045)	**.057** (.052-.064)	1296
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	919
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1074
	03-04	**.009** (.008-.010)	**.010** (.009-.011)	**.022** (.019-.025)	**.038** (.035-.042)	**.052** (.043-.064)	940
Females	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1009
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1232
	03-04	**.009** (.008-.009)	**.010** (.009-.012)	**.021** (.019-.023)	**.042** (.036-.044)	**.055** (.049-.061)	946
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	635
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	567
	03-04	**.004** (.003-.005)	**.005** (.004-.006)	**.009** (.007-.013)	**.019** (.013-.029)	**.029** (.017-.044)	423
Non-Hispanic blacks	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.070** (<LOD-.150)	413
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.080** (<LOD-.110)	514
	03-04	**.009** (.008-.011)	**.009** (.008-.012)	**.027** (.019-.037)	**.065** (.043-.084)	**.090** (.058-.120)	459
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	722
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1061
	03-04	**.010** (.009-.010)	**.011** (.010-.012)	**.022** (.019-.025)	**.038** (.035-.042)	**.049** (.046-.055)	883

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (whole weight) (2005 - 2008)

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.

See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.002**	0	9
		07-08	*	*	6
	20-39	05-06	**.009	0.003	12
		07-08	**.006**	0.001	15
	40-59	05-06	**.024**	0.006	12
		07-08	**.016**	0.001	16
	60+	05-06	**.033**	0.001	15
		07-08	**.033**	0.003	23
Non-Hispanic White Female	12-19	05-06	**.002**	0	10
		07-08	*	*	7
	20-39	05-06	**.005**	0	16
		07-08	**.005**	0.001	13
	40-59	05-06	**.015**	0.001	13
		07-08	**.014**	0.001	17
	60+	05-06	**.030**	0.002	17
		07-08	**.028**	0.002	21
Non-Hispanic Black Male	12-19	05-06	**.003**	0	13
		07-08	*	*	6
	20-39	05-06	**.007**	0.001	6
		07-08	**.005**	0.001	6
	40-59	05-06	**.019**	0.002	5
		07-08	**.025**	0.005	6
	60+	05-06	**.046**	0.004	5
		07-08	**.050**	0.007	8
Non-Hispanic Black Female	12-19	05-06	**.002**	0	14
		07-08	*	*	5
	20-39	05-06	**.005**	0.001	7
		07-08	**.004**	0.001	8
	40-59	05-06	**.022**	0.002	7
		07-08	**.019**	0.002	8
	60+	05-06	**.063**	0.015	5
		07-08	**.055**	0.004	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**.005**	0	9
		07-08	**.005**	0	9
	40-59	05-06	**.012**	0.001	4
		07-08	**.016**	0.002	6
	60+	05-06	**.022**	0.004	4
		07-08	**.027**	0.004	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	**.003**	0.001	9
		07-08	**.003**	0	8
	40-59	05-06	**.014**	0.001	6
		07-08	**.014**	0.002	6
	60+	05-06	**.026**	0.003	3
		07-08	**.030**	0.008	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (lipid adjusted) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**17.7** (15.6-20.4)	**24.8** (22.0-27.7)	1930
	01-02	*	**< LOD**	**12.2** (10.6-13.8)	**21.7** (19.6-23.7)	**28.1** (26.8-29.7)	2307
	03-04	**4.23** (3.96-4.50)	**4.60** (4.20-5.23)	**10.1** (9.42-10.5)	**17.2** (16.1-18.1)	**24.3** (20.5-27.8)	1889
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	667
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**1.00** (.859-1.17)	**1.00** (.880-1.10)	**1.66** (1.50-1.99)	**3.20** (2.50-4.34)	**5.00** (3.70-6.07)	594
20 years and older	99-00	*	**< LOD**	**< LOD**	**19.3** (16.8-21.8)	**26.0** (24.1-29.0)	1263
	01-02	*	**< LOD**	**13.3** (12.0-15.2)	**23.0** (20.9-24.7)	**29.2** (27.3-32.0)	1549
	03-04	**5.20** (4.83-5.60)	**5.71** (5.01-6.19)	**10.9** (10.3-11.7)	**18.1** (16.9-19.5)	**25.9** (22.1-32.1)	1295
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**17.8** (15.8-19.6)	**25.9** (21.6-29.8)	917
	01-02	*	**< LOD**	**12.7** (<LOD-15.8)	**22.5** (19.4-24.1)	**27.7** (25.2-30.3)	1075
	03-04	**4.34** (3.97-4.75)	**4.50** (4.00-5.40)	**10.4** (9.21-10.9)	**17.9** (16.1-19.5)	**25.1** (20.4-30.9)	939
Females	99-00	*	**< LOD**	**< LOD**	**17.7** (15.1-21.7)	**24.2** (21.6-27.0)	1013
	01-02	*	**< LOD**	**11.9** (<LOD-13.0)	**21.3** (18.5-23.5)	**28.5** (26.2-31.3)	1232
	03-04	**4.12** (3.84-4.41)	**4.67** (4.10-5.30)	**9.85** (8.83-10.5)	**16.4** (15.3-17.9)	**24.2** (19.1-27.8)	950
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**17.6** (15.1-19.1)	636
	01-02	*	**< LOD**	**< LOD**	**10.8** (<LOD-13.4)	**15.7** (12.7-18.2)	567
	03-04	**1.79** (1.47-2.20)	**1.58** (1.26-2.00)	**3.96** (2.70-5.90)	**7.86** (5.96-10.3)	**11.6** (9.41-14.9)	426
Non-Hispanic blacks	99-00	*	**< LOD**	**15.5** (<LOD-21.1)	**31.6** (26.0-39.0)	**47.1** (36.6-72.1)	412
	01-02	*	**< LOD**	**16.5** (12.3-21.0)	**30.3** (22.9-40.6)	**44.8** (30.3-61.9)	515
	03-04	**5.09** (4.39-5.90)	**5.40** (4.20-6.21)	**13.9** (10.6-17.7)	**31.7** (22.7-46.4)	**51.5** (31.7-76.5)	458
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**16.8** (14.9-18.6)	**22.0** (19.1-25.2)	727
	01-02	*	**< LOD**	**12.5** (10.8-14.6)	**21.7** (18.9-23.7)	**27.4** (25.2-29.5)	1061
	03-04	**4.47** (4.17-4.79)	**5.00** (4.40-5.70)	**10.1** (9.26-10.8)	**16.5** (15.3-17.9)	**21.1** (19.1-24.2)	884

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 12.4, 10.5, and 0.4, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**1.15**	0.17	9
		07-08	**.986**	0.243	6
	20-39	05-06	**3.08**	0.71	12
		07-08	**2.65**	0.22	15
	40-59	05-06	**8.32**	0.66	12
		07-08	**6.81**	0.33	16
	60+	05-06	**16.6**	1	15
		07-08	**16.8**	1.3	23
Non-Hispanic White Female	12-19	05-06	**.832**	0.069	10
		07-08	*	*	7
	20-39	05-06	**1.77**	0.13	16
		07-08	**2.19**	0.54	13
	40-59	05-06	**6.07**	0.42	13
		07-08	**5.76**	0.32	17
	60+	05-06	**14.0**	1.1	17
		07-08	**13.8**	0.8	21
Non-Hispanic Black Male	12-19	05-06	**1.68**	0.29	13
		07-08	**1.56**	0.3	6
	20-39	05-06	**3.61**	0.61	6
		07-08	**2.73**	0.31	6
	40-59	05-06	**12.3**	1	5
		07-08	**12.8**	1.9	6
	60+	05-06	**32.1**	3.5	5
		07-08	**31.5**	4.1	8
Non-Hispanic Black Female	12-19	05-06	**.956**	0.08	14
		07-08	**.872**	0.162	5
	20-39	05-06	**2.57**	0.42	7
		07-08	**2.20**	0.31	8
	40-59	05-06	**11.3**	1.1	7
		07-08	**9.55**	1.07	8
	60+	05-06	**37.6**	9.4	5
		07-08	**32.7**	3.2	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.633**	0.083	11
		07-08	**.656**	0.133	6
	20-39	05-06	**1.72**	0.15	9
		07-08	**1.92**	0.22	9
	40-59	05-06	**4.78**	0.5	4
		07-08	**6.80**	0.92	6
	60+	05-06	**10.6**	2.5	4
		07-08	**13.1**	1.9	5
Mexican American Female	12-19	05-06	**.615**	0.063	16
		07-08	*	*	5
	20-39	05-06	**1.05**	0.2	9
		07-08	**1.40**	0.13	8
	40-59	05-06	**4.80**	0.3	6
		07-08	**5.66**	0.8	6
	60+	05-06	**10.4**	0.6	3
		07-08	**12.7**	2.8	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (whole weight) (1999 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	99-00	*	**< LOD**	**< LOD**	**.120** (.110-.130)	**.170** (.140-.180)	1930
	01-02	*	**< LOD**	**.080** (.070-.090)	**.140** (.130-.160)	**.200** (.180-.220)	2307
	03-04	**.026** (.024-.028)	**.029** (.027-.032)	**.065** (.061-.069)	**.115** (.106-.125)	**.167** (.139-.197)	1889
Age group							
12-19 years	99-00	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	667
	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	758
	03-04	**.005** (.004-.006)	**.005** (.004-.006)	**.009** (.007-.010)	**.016** (.013-.019)	**.023** (.016-.029)	594
20 years and older	99-00	*	**< LOD**	**< LOD**	**.130** (.110-.140)	**.180** (.160-.190)	1263
	01-02	*	**< LOD**	**.090** (.080-.100)	**.150** (.130-.180)	**.210** (.190-.230)	1549
	03-04	**.033** (.030-.035)	**.036** (.032-.040)	**.071** (.067-.075)	**.124** (.112-.139)	**.172** (.143-.215)	1295
Gender							
Males	99-00	*	**< LOD**	**< LOD**	**.120** (.100-.140)	**.180** (.140-.200)	917
	01-02	*	**< LOD**	**.080** (<LOD-.100)	**.150** (.130-.160)	**.190** (.170-.230)	1075
	03-04	**.027** (.024-.030)	**.030** (.026-.035)	**.067** (.061-.072)	**.116** (.102-.137)	**.160** (.137-.215)	939
Females	99-00	*	**< LOD**	**< LOD**	**.120** (.110-.130)	**.160** (.140-.180)	1013
	01-02	*	**< LOD**	**.080** (<LOD-.090)	**.140** (.120-.150)	**.200** (.180-.220)	1232
	03-04	**.025** (.023-.027)	**.029** (.026-.033)	**.063** (.056-.070)	**.115** (.104-.125)	**.168** (.141-.191)	950
Race/ethnicity							
Mexican Americans	99-00	*	**< LOD**	**< LOD**	**< LOD**	**.120** (.100-.130)	636
	01-02	*	**< LOD**	**< LOD**	**.080** (<LOD-.100)	**.100** (.090-.120)	567
	03-04	**.011** (.009-.013)	**.010** (.007-.015)	**.025** (.018-.038)	**.057** (.042-.079)	**.094** (.059-.110)	426
Non-Hispanic blacks	99-00	*	**< LOD**	**.090** (<LOD-.130)	**.200** (.160-.230)	**.290** (.210-.530)	412
	01-02	*	**< LOD**	**.100** (.070-.120)	**.190** (.150-.260)	**.290** (.190-.380)	515
	03-04	**.029** (.025-.034)	**.032** (.024-.037)	**.083** (.070-.109)	**.191** (.140-.273)	**.330** (.228-.468)	458
Non-Hispanic whites	99-00	*	**< LOD**	**< LOD**	**.110** (.100-.130)	**.150** (.130-.170)	727
	01-02	*	**< LOD**	**.080** (.070-.090)	**.140** (.120-.160)	**.190** (.170-.220)	1061
	03-04	**.028** (.026-.030)	**.032** (.029-.036)	**.065** (.061-.071)	**.111** (.101-.124)	**.153** (.132-.172)	884

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (whole weight) (2005 - 2008)

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.

See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.006**	0.001	9
		07-08	**.005**	0.001	6
	20-39	05-06	**.023**	0.006	12
		07-08	**.018**	0.002	15
	40-59	05-06	**.063**	0.005	12
		07-08	**.049**	0.002	16
	60+	05-06	**.112**	0.006	15
		07-08	**.107**	0.008	23
Non-Hispanic White Female	12-19	05-06	**.004**	0	10
		07-08	*	*	7
	20-39	05-06	**.011**	0.001	16
		07-08	**.013**	0.004	13
	40-59	05-06	**.045**	0.004	13
		07-08	**.038**	0.002	17
	60+	05-06	**.102**	0.008	17
		07-08	**.093**	0.005	21
Non-Hispanic Black Male	12-19	05-06	**.008**	0.001	13
		07-08	**.007**	0.001	6
	20-39	05-06	**.021**	0.004	6
		07-08	**.015**	0.002	6
	40-59	05-06	**.078**	0.006	5
		07-08	**.082**	0.012	6
	60+	05-06	**.191**	0.02	5
		07-08	**.193**	0.028	8
Non-Hispanic Black Female	12-19	05-06	**.005**	0	14
		07-08	**.004**	0.001	5
	20-39	05-06	**.015**	0.003	7
		07-08	**.011**	0.002	8
	40-59	05-06	**.072**	0.007	7
		07-08	**.058**	0.008	8
	60+	05-06	**.251**	0.063	5
		07-08	**.197**	0.021	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.003**	0	11
		07-08	**.004**	0.001	6
	20-39	05-06	**.012**	0.001	9
		07-08	**.013**	0.002	9
	40-59	05-06	**.039**	0.006	4
		07-08	**.048**	0.007	6
	60+	05-06	**.076**	0.017	4
		07-08	**.092**	0.01	5
Mexican American Female	12-19	05-06	**.003**	0	16
		07-08	*	*	5
	20-39	05-06	**.007**	0.001	9
		07-08	**.008**	0.001	8
	40-59	05-06	**.035**	0.001	6
		07-08	**.038**	0.005	6
	60+	05-06	**.080**	0.012	3
		07-08	**.088**	0.02	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (lipid adjusted) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**11.1** (<LOD-11.9)	**18.2** (16.5-19.5)	**23.7** (21.0-27.0)	2279
	03-04	**2.69** (2.53-2.85)	**4.19** (3.55-4.70)	**8.47** (7.79-9.06)	**14.3** (13.3-16.0)	**19.1** (17.6-20.8)	1835
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	746
	03-04	*	**< LOD**	**1.11** (.700-1.57)	**2.40** (1.70-3.57)	**5.18** (2.80-6.81)	572
20 years and older	01-02	*	**< LOD**	**12.0** (11.0-13.3)	**19.1** (17.7-20.5)	**25.3** (22.7-28.0)	1533
	03-04	**3.64** (3.40-3.89)	**4.95** (4.56-5.42)	**9.30** (8.62-9.90)	**15.3** (13.9-17.1)	**20.1** (18.1-21.9)	1263
Gender							
Males	01-02	*	**< LOD**	**12.3** (10.6-14.1)	**19.2** (17.2-21.2)	**25.2** (21.7-29.0)	1059
	03-04	**2.95** (2.61-3.35)	**4.47** (3.55-5.20)	**9.60** (8.30-10.9)	**17.1** (14.2-18.8)	**21.8** (19.8-25.6)	913
Females	01-02	*	**< LOD**	**< LOD**	**17.0** (14.7-18.8)	**21.9** (19.3-26.2)	1220
	03-04	**2.45** (2.28-2.64)	**4.00** (3.39-4.49)	**7.50** (7.01-8.39)	**12.7** (11.2-13.6)	**16.6** (13.7-18.6)	922
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**14.3** (10.5-17.6)	561
	03-04	**.845** (.582-1.23)	**.900** (.640-1.49)	**2.90** (1.79-4.76)	**7.21** (4.80-8.90)	**9.50** (7.40-15.0)	410
Non-Hispanic blacks	01-02	*	**< LOD**	**12.3** (<LOD-15.3)	**22.6** (18.0-27.5)	**29.8** (23.7-41.1)	508
	03-04	**2.45** (1.94-3.08)	**3.62** (2.70-4.49)	**8.83** (6.80-11.2)	**18.1** (13.0-23.2)	**28.3** (18.9-35.6)	450
Non-Hispanic whites	01-02	*	**< LOD**	**11.9** (10.9-13.1)	**18.8** (17.1-20.2)	**24.1** (20.9-28.0)	1048
	03-04	**3.25** (2.97-3.56)	**4.90** (4.19-5.42)	**9.08** (8.36-9.80)	**14.7** (13.5-16.6)	**19.1** (17.4-21.2)	861

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.599**	0.081	9
		07-08	**.622**	0.099	6
	20-39	05-06	**2.31**	0.63	12
		07-08	**1.91**	0.2	15
	40-59	05-06	**8.60**	1.06	12
		07-08	**7.17**	0.32	16
	60+	05-06	**15.1**	0.9	15
		07-08	**15.5**	0.7	23
Non-Hispanic White Female	12-19	05-06	**.386**	0.061	10
		07-08	**.691**	0.184	7
	20-39	05-06	**1.30**	0.16	16
		07-08	**1.64**	0.16	13
	40-59	05-06	**4.30**	0.54	13
		07-08	**5.43**	0.35	17
	60+	05-06	**11.3**	0.8	17
		07-08	**11.7**	0.6	21
Non-Hispanic Black Male	12-19	05-06	**.604**	0.084	13
		07-08	*	*	6
	20-39	05-06	**2.19**	0.28	6
		07-08	**1.75**	0.2	6
	40-59	05-06	**8.55**	0.39	5
		07-08	**8.95**	0.86	6
	60+	05-06	**21.6**	2.2	5
		07-08	**20.8**	2.1	8
Non-Hispanic Black Female	12-19	05-06	**.362**	0.042	14
		07-08	*	*	5
	20-39	05-06	**1.30**	0.2	7
		07-08	**1.11**	0.26	8
	40-59	05-06	**6.26**	0.84	7
		07-08	**6.00**	0.7	8
	60+	05-06	**18.1**	3.4	5
		07-08	**16.9**	1	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.501**	0.138	11
		07-08	**.465**	0.077	6
	20-39	05-06	**.988**	0.082	9
		07-08	****1.76**	0.57	9
	40-59	05-06	**3.83**	0.39	4
		07-08	**5.26**	0.76	6
	60+	05-06	**9.53**	2.54	4
		07-08	**12.2**	1.7	5
Mexican American Female	12-19	05-06	**.331**	0.038	16
		07-08	*	*	5
	20-39	05-06	**.641**	0.109	9
		07-08	**.943**	0.049	8
	40-59	05-06	**3.25**	0.45	6
		07-08	**3.73**	0.95	6
	60+	05-06	**6.74**	0.23	3
		07-08	**7.77**	1.42	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (whole weight) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**.070** (<LOD-.080)	**.120** (.110-.140)	**.160** (.150-.190)	2279
	03-04	**.016** (.015-.017)	**.026** (.022-.028)	**.056** (.052-.060)	**.096** (.091-.103)	**.129** (.116-.139)	1835
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	746
	03-04	*	**< LOD**	**.006** (.004-.008)	**.013** (.009-.020)	**.023** (.013-.035)	572
20 years and older	01-02	*	**< LOD**	**.080** (.070-.090)	**.130** (.110-.150)	**.170** (.150-.200)	1533
	03-04	**.023** (.021-.024)	**.031** (.027-.035)	**.061** (.057-.065)	**.103** (.094-.113)	**.133** (.122-.145)	1263
Gender							
Males	01-02	*	**< LOD**	**.080** (.070-.090)	**.140** (.110-.160)	**.170** (.150-.210)	1059
	03-04	**.018** (.016-.021)	**.027** (.023-.034)	**.061** (.054-.069)	**.106** (.095-.121)	**.142** (.129-.166)	913
Females	01-02	*	**< LOD**	**< LOD**	**.110** (.090-.130)	**.150** (.130-.180)	1220
	03-04	**.015** (.014-.016)	**.024** (.020-.027)	**.051** (.047-.056)	**.088** (.080-.096)	**.112** (.103-.117)	922
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.100** (.080-.110)	561
	03-04	**.005** (.004-.008)	**.006** (.004-.010)	**.019** (.012-.031)	**.049** (.033-.064)	**.081** (.051-.118)	410
Non-Hispanic blacks	01-02	*	**< LOD**	**.080** (<LOD-.090)	**.150** (.100-.180)	**.200** (.140-.250)	508
	03-04	**.014** (.011-.018)	**.020** (.014-.026)	**.054** (.045-.063)	**.120** (.081-.155)	**.172** (.123-.202)	450
Non-Hispanic whites	01-02	*	**< LOD**	**.080** (.070-.090)	**.130** (.110-.150)	**.170** (.150-.190)	1048
	03-04	**.020** (.018-.022)	**.029** (.026-.034)	**.061** (.056-.066)	**.099** (.090-.106)	**.132** (.116-.143)	861

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.003**	0	9
		07-08	**.003**	0	6
	20-39	05-06	****.018**	0.005	12
		07-08	**.013**	0.001	15
	40-59	05-06	**.065**	0.008	12
		07-08	**.052**	0.003	16
	60+	05-06	**.102**	0.005	15
		07-08	**.100**	0.005	23
Non-Hispanic White Female	12-19	05-06	**.002**	0	10
		07-08	****.003**	0.001	7
	20-39	05-06	**.008**	0.001	16
		07-08	**.010**	0.001	13
	40-59	05-06	**.032**	0.005	13
		07-08	**.036**	0.003	17
	60+	05-06	**.082**	0.006	17
		07-08	**.079**	0.004	21
Non-Hispanic Black Male	12-19	05-06	**.003**	0	13
		07-08	*	*	6
	20-39	05-06	**.013**	0.002	6
		07-08	**.010**	0.001	6
	40-59	05-06	**.054**	0.003	5
		07-08	**.057**	0.006	6
	60+	05-06	**.131**	0.017	5
		07-08	**.127**	0.014	8
Non-Hispanic Black Female	12-19	05-06	**.002**	0	14
		07-08	*	*	5
	20-39	05-06	**.007**	0.001	7
		07-08	**.006**	0.001	8
	40-59	05-06	**.040**	0.005	7
		07-08	**.036**	0.005	8
	60+	05-06	**.120**	0.022	5
		07-08	**.102**	0.007	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.003**	0.001	11
		07-08	**.002**	0	6
	20-39	05-06	**.007**	0.001	9
		07-08	****.012**	0.004	9
	40-59	05-06	**.031**	0.004	4
		07-08	**.037**	0.005	6
	60+	05-06	**.069**	0.018	4
		07-08	**.086**	0.009	5
Mexican American Female	12-19	05-06	**.002**	0	16
		07-08	*	*	5
	20-39	05-06	**.004**	0.001	9
		07-08	**.005**	0	8
	40-59	05-06	**.024**	0.003	6
		07-08	**.025**	0.006	6
	60+	05-06	**.052**	0.007	3
		07-08	**.054**	0.011	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195) (lipid adjusted) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2230
	03-04	*	**.900** (<LOD-1.01)	**1.98** (1.80-2.10)	**3.40** (3.10-3.60)	**4.51** (3.90-5.18)	1820
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	716
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**1.74** (.720-3.82)	567
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1514
	03-04	**.800** (.721-.888)	**1.10** (.980-1.20)	**2.10** (2.00-2.30)	**3.53** (3.20-3.74)	**4.68** (4.12-5.19)	1253
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1035
	03-04	*	**.800** (<LOD-1.00)	**2.08** (1.82-2.20)	**3.50** (3.12-3.70)	**4.60** (3.82-5.40)	904
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1195
	03-04	*	**.970** (<LOD-1.10)	**1.85** (1.64-2.09)	**3.30** (2.86-3.60)	**4.50** (3.57-5.25)	916
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	544
	03-04	*	**< LOD**	**< LOD**	**1.80** (1.11-2.40)	**2.40** (1.80-3.50)	407
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	490
	03-04	**.709** (<LOD-.870)	**.820** (<LOD-1.14)	**2.00** (1.65-2.57)	**4.18** (3.16-5.30)	**6.90** (4.18-8.10)	444
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1037
	03-04	**.749** (<LOD-.850)	**1.00** (.800-1.18)	**2.10** (1.90-2.30)	**3.40** (3.10-3.61)	**4.44** (3.80-5.19)	856

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 28.1 and 0.7.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.487**	0.129	12
		07-08	*	*	15
	40-59	05-06	**1.50**	0.29	12
		07-08	**1.25**	0.05	16
	60+	05-06	**2.52**	0.16	15
		07-08	**2.74**	0.16	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	**.936**	0.067	13
		07-08	**1.14**	0.08	17
	60+	05-06	**2.04**	0.16	17
		07-08	**2.38**	0.13	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	**.435**	0.047	6
		07-08	*	*	6
	40-59	05-06	**1.35**	0.13	5
		07-08	**1.80**	0.23	6
	60+	05-06	**3.40**	0.27	5
		07-08	**3.99**	0.53	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**.348**	0.044	7
		07-08	*	*	8
	40-59	05-06	**1.41**	0.15	7
		07-08	**1.35**	0.17	8
	60+	05-06	**3.82**	0.76	5
		07-08	**3.94**	0.26	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	**.766**	0.083	4
		07-08	**1.02**	0.11	6
	60+	05-06	**1.69**	0.4	4
		07-08	**2.24**	0.29	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**.780**	0.083	6
		07-08	**.986**	0.187	6
	60+	05-06	**1.47**	0.06	3
		07-08	**1.98**	0.39	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195) (whole weight) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2230
	03-04	*	**.005** (<LOD-.006)	**.012** (.012-.013)	**.022** (.020-.025)	**.031** (.027-.034)	1820
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	716
	03-04	*	**< LOD**	**< LOD**	**< LOD**	**.007** (.004-.017)	567
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1514
	03-04	**.005** (.004-.006)	**.007** (.006-.007)	**.014** (.012-.015)	**.023** (.021-.026)	**.032** (.028-.035)	1253
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1035
	03-04	*	**.005** (<LOD-.006)	**.013** (.012-.014)	**.022** (.020-.025)	**.031** (.025-.035)	904
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1195
	03-04	*	**.006** (<LOD-.007)	**.012** (.011-.013)	**.021** (.019-.025)	**.031** (.026-.035)	916
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	544
	03-04	*	**< LOD**	**< LOD**	**.012** (.008-.018)	**.018** (.013-.025)	407
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	490
	03-04	**.004** (<LOD-.005)	**.004** (<LOD-.006)	**.012** (.010-.016)	**.027** (.019-.034)	**.041** (.029-.048)	444
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1037
	03-04	**.005** (<LOD-.005)	**.006** (.005-.007)	**.013** (.012-.014)	**.022** (.020-.025)	**.030** (.027-.033)	856

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.004**	0.001	12
		07-08	*	*	15
	40-59	05-06	**.011**	0.002	12
		07-08	**.009**	0	16
	60+	05-06	**.017**	0.001	15
		07-08	**.018**	0.001	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	*	*	16
		07-08	*	*	13
	40-59	05-06	**.007**	0.001	13
		07-08	**.008**	0.001	17
	60+	05-06	**.015**	0.001	17
		07-08	**.016**	0.001	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	**.003**	0	6
		07-08	*	*	6
	40-59	05-06	**.009**	0.001	5
		07-08	**.012**	0.002	6
	60+	05-06	**.020**	0.001	5
		07-08	**.024**	0.004	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**.002**	0	7
		07-08	*	*	8
	40-59	05-06	**.009**	0.001	7
		07-08	**.008**	0.001	8
	60+	05-06	**.025**	0.005	5
		07-08	**.024**	0.002	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	*	*	9
		07-08	*	*	9
	40-59	05-06	**.006**	0.001	4
		07-08	**.007**	0.001	6
	60+	05-06	**.012**	0.003	4
		07-08	**.016**	0.001	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**.006**	0.001	6
		07-08	**.006**	0.001	6
	60+	05-06	**.011**	0.002	3
		07-08	**.014**	0.003	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://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) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**14.2** (13.0-15.7)	**19.2** (17.4-20.9)	2299
	03-04	**2.61** (2.44-2.79)	**3.40** (3.01-3.80)	**6.70** (6.16-7.23)	**11.8** (10.8-12.7)	**15.0** (13.2-17.4)	1878
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	755
	03-04	**.437** (<LOD-.546)	**.520** (.400-.700)	**1.10** (.900-1.42)	**2.41** (1.86-3.19)	**3.59** (2.93-4.20)	587
20 years and older	01-02	*	**< LOD**	**< LOD**	**15.0** (13.7-17.0)	**19.9** (18.2-21.4)	1544
	03-04	**3.37** (3.15-3.61)	**4.07** (3.74-4.46)	**7.30** (6.79-8.20)	**12.4** (11.5-13.2)	**15.9** (13.4-19.5)	1291
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**14.6** (13.3-16.5)	**19.4** (16.3-21.2)	1071
	03-04	**2.77** (2.49-3.08)	**3.45** (3.07-3.98)	**6.92** (6.12-7.71)	**12.5** (11.2-13.7)	**16.3** (13.7-23.1)	935
Females	01-02	*	**< LOD**	**< LOD**	**13.8** (11.9-15.9)	**19.1** (17.0-21.3)	1228
	03-04	**2.46** (2.27-2.66)	**3.32** (2.83-3.80)	**6.68** (6.12-7.20)	**11.1** (9.74-12.3)	**13.4** (12.8-14.9)	943
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**11.1** (<LOD-12.5)	565
	03-04	**.947** (.689-1.30)	**1.00** (.700-1.50)	**2.80** (1.60-4.30)	**5.90** (4.30-7.40)	**8.35** (6.00-12.3)	424
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**17.6** (14.2-21.0)	**23.1** (19.6-30.2)	513
	03-04	**2.45** (2.06-2.90)	**2.90** (2.33-3.80)	**7.18** (5.80-9.00)	**13.8** (11.5-16.8)	**21.6** (14.0-32.3)	453
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**14.7** (13.6-16.5)	**19.6** (18.1-21.3)	1058
	03-04	**3.01** (2.76-3.27)	**3.88** (3.44-4.20)	**7.10** (6.32-8.20)	**11.8** (10.8-13.1)	**15.4** (12.9-19.0)	882

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://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 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.793**	0.071	9
		07-08	**.667**	0.151	6
	20-39	05-06	**2.63**	0.69	12
		07-08	**2.15**	0.14	15
	40-59	05-06	**8.33**	0.94	12
		07-08	**6.45**	0.25	16
	60+	05-06	**15.4**	0.8	15
		07-08	**15.3**	0.8	23
Non-Hispanic White Female	12-19	05-06	**.593**	0.046	10
		07-08	*	*	7
	20-39	05-06	**1.49**	0.12	16
		07-08	**1.72**	0.21	13
	40-59	05-06	**5.23**	0.24	13
		07-08	**5.27**	0.3	17
	60+	05-06	**12.6**	1	17
		07-08	**12.2**	0.7	21
Non-Hispanic Black Male	12-19	05-06	**.937**	0.103	13
		07-08	*	*	6
	20-39	05-06	**2.34**	0.22	6
		07-08	**1.79**	0.18	6
	40-59	05-06	**8.31**	0.66	5
		07-08	**8.17**	0.91	6
	60+	05-06	**20.9**	2.2	5
		07-08	**19.8**	2.3	8
Non-Hispanic Black Female	12-19	05-06	**.557**	0.039	14
		07-08	*	*	5
	20-39	05-06	**1.61**	0.22	7
		07-08	**1.40**	0.21	8
	40-59	05-06	**7.01**	0.65	7
		07-08	**6.50**	0.73	8
	60+	05-06	**21.2**	4.7	5
		07-08	**18.1**	1.4	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://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 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.500**	0.047	11
		07-08	**.514**	0.087	6
	20-39	05-06	**1.16**	0.1	9
		07-08	****1.97**	0.7	9
	40-59	05-06	**3.85**	0.42	4
		07-08	**4.71**	0.62	6
	60+	05-06	**9.56**	2.38	4
		07-08	**10.6**	1.8	5
Mexican American Female	12-19	05-06	**.464**	0.05	16
		07-08	*	*	5
	20-39	05-06	**.770**	0.121	9
		07-08	**1.02**	0.04	8
	40-59	05-06	**3.87**	0.54	6
		07-08	**4.02**	0.61	6
	60+	05-06	**7.87**	0.44	3
		07-08	**7.87**	1.56	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://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) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**.100** (.090-.110)	**.130** (.110-.140)	2299
	03-04	**.016** (.015-.017)	**.022** (.019-.025)	**.044** (.042-.048)	**.082** (.071-.087)	**.101** (.091-.112)	1878
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	755
	03-04	**.002** (<LOD-.003)	**.003** (.002-.004)	**.006** (.005-.007)	**.013** (.009-.016)	**.016** (.014-.025)	587
20 years and older	01-02	*	**< LOD**	**< LOD**	**.100** (.090-.110)	**.130** (.120-.150)	1544
	03-04	**.021** (.020-.023)	**.026** (.024-.028)	**.049** (.045-.052)	**.084** (.077-.090)	**.104** (.092-.123)	1291
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**.100** (.090-.120)	**.130** (.110-.150)	1071
	03-04	**.017** (.015-.019)	**.023** (.020-.026)	**.045** (.042-.050)	**.084** (.077-.091)	**.106** (.093-.127)	935
Females	01-02	*	**< LOD**	**< LOD**	**.090** (.080-.100)	**.130** (.110-.140)	1228
	03-04	**.015** (.014-.016)	**.020** (.017-.023)	**.043** (.038-.047)	**.076** (.066-.084)	**.093** (.085-.111)	943
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.070** (<LOD-.090)	565
	03-04	**.006** (.004-.008)	**.007** (.004-.010)	**.017** (.011-.026)	**.038** (.028-.054)	**.058** (.035-.087)	424
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**.110** (.090-.140)	**.150** (.110-.210)	513
	03-04	**.014** (.012-.017)	**.017** (.012-.022)	**.046** (.038-.054)	**.090** (.065-.111)	**.141** (.094-.209)	453
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**.100** (.090-.110)	**.130** (.110-.140)	1058
	03-04	**.019** (.017-.020)	**.025** (.022-.028)	**.048** (.043-.052)	**.084** (.070-.090)	**.100** (.090-.120)	882

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://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 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.004**	0	9
		07-08	**.003**	0.001	6
	20-39	05-06	****.020**	0.006	12
		07-08	**.014**	0.001	15
	40-59	05-06	**.063**	0.008	12
		07-08	**.047**	0.002	16
	60+	05-06	**.104**	0.004	15
		07-08	**.098**	0.005	23
Non-Hispanic White Female	12-19	05-06	**.003**	0	10
		07-08	*	*	7
	20-39	05-06	**.010**	0.001	16
		07-08	**.010**	0.001	13
	40-59	05-06	**.039**	0.003	13
		07-08	**.035**	0.002	17
	60+	05-06	**.091**	0.007	17
		07-08	**.082**	0.005	21
Non-Hispanic Black Male	12-19	05-06	**.005**	0	13
		07-08	*	*	6
	20-39	05-06	**.014**	0.001	6
		07-08	**.010**	0.001	6
	40-59	05-06	**.053**	0.004	5
		07-08	**.053**	0.006	6
	60+	05-06	**.125**	0.013	5
		07-08	**.121**	0.016	8
Non-Hispanic Black Female	12-19	05-06	**.003**	0	14
		07-08	*	*	5
	20-39	05-06	**.009**	0.001	7
		07-08	**.007**	0.001	8
	40-59	05-06	**.045**	0.004	7
		07-08	**.039**	0.005	8
	60+	05-06	**.140**	0.031	5
		07-08	**.108**	0.008	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://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 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.003**	0	11
		07-08	**.003**	0	6
	20-39	05-06	**.008**	0.001	9
		07-08	****.013**	0.005	9
	40-59	05-06	**.032**	0.004	4
		07-08	**.033**	0.004	6
	60+	05-06	**.069**	0.017	4
		07-08	**.075**	0.011	5
Mexican American Female	12-19	05-06	**.003**	0	16
		07-08	*	*	5
	20-39	05-06	**.005**	0.001	9
		07-08	**.006**	0	8
	40-59	05-06	**.028**	0.003	6
		07-08	**.027**	0.004	6
	60+	05-06	**.060**	0.008	3
		07-08	**.054**	0.011	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (lipid adjusted) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**17.0** (15.4-18.1)	**22.4** (19.9-25.9)	2292
	03-04	**2.81** (2.64-3.00)	**3.80** (3.26-4.26)	**8.30** (7.70-9.08)	**14.9** (13.8-15.7)	**18.9** (17.9-21.3)	1861
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	756
	03-04	**.416** (<LOD-.522)	**.500** (<LOD-.700)	**1.17** (.890-1.59)	**2.43** (2.02-2.73)	**3.92** (2.90-4.10)	579
20 years and older	01-02	*	**< LOD**	**10.6** (<LOD-11.8)	**17.9** (16.2-19.2)	**24.4** (20.7-27.4)	1536
	03-04	**3.71** (3.41-4.02)	**4.60** (4.10-5.08)	**9.40** (8.73-10.0)	**15.7** (14.7-16.9)	**20.6** (18.3-23.6)	1282
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**17.3** (15.4-18.7)	**21.3** (19.3-24.6)	1066
	03-04	**3.01** (2.68-3.39)	**3.95** (3.30-4.67)	**9.10** (7.60-9.94)	**16.6** (14.0-17.3)	**22.1** (18.1-27.4)	925
Females	01-02	*	**< LOD**	**< LOD**	**16.2** (14.5-17.9)	**22.9** (19.4-27.3)	1226
	03-04	**2.63** (2.49-2.79)	**3.70** (3.20-4.00)	**7.70** (6.92-8.81)	**14.0** (11.6-15.3)	**17.0** (15.7-18.9)	936
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**12.3** (<LOD-14.2)	565
	03-04	**.943** (.664-1.34)	**1.00** (.600-1.50)	**3.35** (1.50-5.33)	**7.37** (5.10-10.2)	**10.2** (7.40-13.5)	418
Non-Hispanic blacks	01-02	*	**< LOD**	**12.5** (<LOD-15.3)	**21.9** (17.0-28.1)	**30.7** (22.4-37.4)	513
	03-04	**3.03** (2.46-3.74)	**3.60** (2.70-4.70)	**10.0** (7.70-13.7)	**21.3** (15.9-30.4)	**35.1** (21.3-43.3)	452
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**17.3** (15.9-18.9)	**22.7** (19.8-26.3)	1051
	03-04	**3.24** (3.03-3.47)	**4.19** (3.78-4.69)	**9.08** (7.88-9.86)	**14.8** (13.5-16.3)	**18.6** (16.9-21.7)	871

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 10.5 and 0.4.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.629**	0.101	9
		07-08	*	*	6
	20-39	05-06	**2.45**	0.63	12
		07-08	**2.12**	0.18	15
	40-59	05-06	**8.40**	0.83	12
		07-08	**6.73**	0.4	16
	60+	05-06	**17.5**	1.1	15
		07-08	**16.9**	1	23
Non-Hispanic White Female	12-19	05-06	**.540**	0.058	10
		07-08	*	*	7
	20-39	05-06	**1.37**	0.12	16
		07-08	**1.61**	0.18	13
	40-59	05-06	**5.45**	0.34	13
		07-08	**5.27**	0.38	17
	60+	05-06	**15.1**	1.2	17
		07-08	**14.7**	0.9	21
Non-Hispanic Black Male	12-19	05-06	**.851**	0.108	13
		07-08	*	*	6
	20-39	05-06	**2.43**	0.32	6
		07-08	**1.70**	0.17	6
	40-59	05-06	**10.7**	0.9	5
		07-08	**9.25**	1.05	6
	60+	05-06	**28.0**	3.6	5
		07-08	**24.6**	2.9	8
Non-Hispanic Black Female	12-19	05-06	**.490**	0.051	14
		07-08	*	*	5
	20-39	05-06	**1.59**	0.24	7
		07-08	**1.36**	0.17	8
	40-59	05-06	**8.16**	1.04	7
		07-08	**6.94**	0.87	8
	60+	05-06	**27.6**	6	5
		07-08	**22.0**	1.8	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.395**	0.045	11
		07-08	*	*	6
	20-39	05-06	**1.03**	0.11	9
		07-08	****1.92**	0.79	9
	40-59	05-06	**4.23**	0.49	4
		07-08	**5.47**	0.92	6
	60+	05-06	**10.1**	2.6	4
		07-08	**11.4**	1.6	5
Mexican American Female	12-19	05-06	**.386**	0.052	16
		07-08	*	*	5
	20-39	05-06	**.634**	0.11	9
		07-08	**.843**	0.031	8
	40-59	05-06	**3.67**	0.52	6
		07-08	**4.09**	0.69	6
	60+	05-06	**8.79**	0.55	3
		07-08	**8.71**	1.93	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (whole weight) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**.110** (.100-.130)	**.150** (.140-.170)	2292
	03-04	**.017** (.016-.018)	**.023** (.020-.027)	**.056** (.053-.060)	**.100** (.091-.106)	**.127** (.119-.144)	1861
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	756
	03-04	**.002** (<LOD-.003)	**.002** (<LOD-.003)	**.006** (.005-.008)	**.012** (.009-.015)	**.016** (.015-.019)	579
20 years and older	01-02	*	**< LOD**	**.070** (<LOD-.080)	**.120** (.110-.140)	**.160** (.140-.180)	1536
	03-04	**.023** (.021-.025)	**.029** (.026-.033)	**.062** (.058-.067)	**.106** (.097-.113)	**.135** (.120-.158)	1282
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**.110** (.100-.130)	**.150** (.130-.180)	1066
	03-04	**.019** (.016-.021)	**.025** (.020-.030)	**.059** (.053-.068)	**.105** (.090-.113)	**.138** (.120-.162)	925
Females	01-02	*	**< LOD**	**< LOD**	**.110** (.100-.130)	**.150** (.130-.170)	1226
	03-04	**.016** (.015-.017)	**.022** (.019-.025)	**.054** (.047-.058)	**.094** (.085-.105)	**.120** (.108-.133)	936
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**.090** (<LOD-.110)	565
	03-04	**.006** (.004-.008)	**.007** (.004-.010)	**.019** (.011-.031)	**.051** (.029-.079)	**.079** (.051-.093)	418
Non-Hispanic blacks	01-02	*	**< LOD**	**.070** (<LOD-.090)	**.140** (.100-.180)	**.190** (.130-.300)	513
	03-04	**.017** (.014-.021)	**.021** (.015-.026)	**.064** (.054-.073)	**.135** (.102-.173)	**.207** (.147-.297)	452
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**.120** (.100-.130)	**.150** (.130-.180)	1051
	03-04	**.020** (.019-.022)	**.027** (.023-.030)	**.059** (.054-.065)	**.101** (.087-.108)	**.125** (.108-.144)	871

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.003**	0.001	9
		07-08	*	*	6
	20-39	05-06	**.019**	0.006	12
		07-08	**.014**	0.001	15
	40-59	05-06	**.063**	0.005	12
		07-08	**.049**	0.003	16
	60+	05-06	**.118**	0.006	15
		07-08	**.109**	0.006	23
Non-Hispanic White Female	12-19	05-06	**.003**	0	10
		07-08	*	*	7
	20-39	05-06	**.009**	0.001	16
		07-08	**.010**	0.001	13
	40-59	05-06	**.041**	0.004	13
		07-08	**.035**	0.003	17
	60+	05-06	**.110**	0.009	17
		07-08	**.099**	0.006	21
Non-Hispanic Black Male	12-19	05-06	**.004**	0.001	13
		07-08	*	*	6
	20-39	05-06	**.014**	0.002	6
		07-08	**.010**	0.001	6
	40-59	05-06	**.069**	0.006	5
		07-08	**.059**	0.007	6
	60+	05-06	**.168**	0.024	5
		07-08	**.150**	0.02	8
Non-Hispanic Black Female	12-19	05-06	**.002**	0	14
		07-08	*	*	5
	20-39	05-06	**.009**	0.001	7
		07-08	**.007**	0.001	8
	40-59	05-06	**.052**	0.006	7
		07-08	**.042**	0.006	8
	60+	05-06	**.183**	0.039	5
		07-08	**.132**	0.011	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	**.002**	0	11
		07-08	*	*	6
	20-39	05-06	**.007**	0.001	9
		07-08	****.013**	0.005	9
	40-59	05-06	**.035**	0.005	4
		07-08	**.038**	0.006	6
	60+	05-06	**.073**	0.02	4
		07-08	**.081**	0.009	5
Mexican American Female	12-19	05-06	**.002**	0	16
		07-08	*	*	5
	20-39	05-06	**.004**	0.001	9
		07-08	**.005**	0	8
	40-59	05-06	**.027**	0.003	6
		07-08	**.028**	0.004	6
	60+	05-06	**.068**	0.01	3
		07-08	**.060**	0.014	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (lipid adjusted) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2208
	03-04	**2.13** (1.97-2.31)	**2.34** (2.00-2.60)	**5.00** (4.69-5.50)	**9.20** (8.55-9.79)	**13.7** (11.5-15.6)	1867
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	723
	03-04	*	**< LOD**	**.900** (.750-1.20)	**1.75** (1.23-2.92)	**3.12** (1.60-6.91)	585
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1485
	03-04	**2.59** (2.37-2.83)	**2.80** (2.42-3.06)	**5.53** (5.10-6.10)	**9.61** (9.03-11.0)	**14.2** (12.2-17.1)	1282
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1033
	03-04	**2.23** (2.03-2.45)	**2.30** (1.90-2.70)	**5.10** (4.78-5.53)	**9.31** (8.18-10.8)	**13.8** (10.8-15.7)	933
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1175
	03-04	**2.05** (1.86-2.25)	**2.34** (1.95-2.78)	**5.00** (4.30-5.70)	**9.00** (8.00-9.79)	**13.6** (11.2-16.5)	934
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	533
	03-04	**.861** (<LOD-1.15)	**.730** (<LOD-1.10)	**1.70** (1.00-3.14)	**4.40** (2.61-6.20)	**6.20** (4.40-8.40)	421
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	483
	03-04	**2.27** (1.98-2.60)	**2.26** (1.85-2.51)	**5.60** (4.30-7.40)	**11.5** (9.49-16.5)	**20.9** (12.1-31.7)	456
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1034
	03-04	**2.40** (2.19-2.63)	**2.70** (2.37-3.01)	**5.37** (4.88-6.06)	**9.20** (8.65-10.1)	**13.8** (11.2-16.6)	872

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02 and 03-04 are 28.1 and 0.7.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.392**	0.038	9
		07-08	*	*	6
	20-39	05-06	**1.24**	0.26	12
		07-08	**1.19**	0.09	15
	40-59	05-06	**3.97**	0.23	12
		07-08	**3.46**	0.26	16
	60+	05-06	**10.3**	0.7	15
		07-08	**8.72**	0.48	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	**.486**	0.089	7
	20-39	05-06	**.778**	0.066	16
		07-08	**.970**	0.116	13
	40-59	05-06	**2.94**	0.22	13
		07-08	**2.93**	0.21	17
	60+	05-06	**11.2**	1.3	17
		07-08	**9.65**	0.75	21
Non-Hispanic Black Male	12-19	05-06	**.519**	0.052	13
		07-08	**.427**	0.112	6
	20-39	05-06	**1.27**	0.13	6
		07-08	**1.10**	0.13	6
	40-59	05-06	**6.34**	0.29	5
		07-08	**4.69**	0.43	6
	60+	05-06	**17.8**	3.2	5
		07-08	**13.7**	1.7	8
Non-Hispanic Black Female	12-19	05-06	**.333**	0.028	14
		07-08	*	*	5
	20-39	05-06	**.953**	0.119	7
		07-08	**.861**	0.122	8
	40-59	05-06	**4.56**	0.47	7
		07-08	**3.75**	0.52	8
	60+	05-06	**21.1**	4.7	5
		07-08	**14.9**	1.7	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (lipid adjusted) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**.528**	0.046	9
		07-08	****1.32**	0.61	9
	40-59	05-06	**2.01**	0.24	4
		07-08	**2.47**	0.34	6
	60+	05-06	**5.50**	1.47	4
		07-08	**5.60**	0.7	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	**.351**	0.047	9
		07-08	**.509**	0.087	8
	40-59	05-06	**1.91**	0.28	6
		07-08	**2.01**	0.29	6
	60+	05-06	**5.76**	0.27	3
		07-08	**5.10**	1.24	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (whole weight) (2001 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	2208
	03-04	**.013** (.012-.014)	**.015** (.012-.017)	**.034** (.031-.037)	**.060** (.054-.068)	**.086** (.077-.104)	1867
Age group							
12-19 years	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	723
	03-04	*	**< LOD**	**.005** (.004-.006)	**.010** (.006-.013)	**.014** (.008-.035)	585
20 years and older	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1485
	03-04	**.016** (.015-.018)	**.017** (.016-.020)	**.038** (.034-.042)	**.066** (.059-.074)	**.090** (.081-.112)	1282
Gender							
Males	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1033
	03-04	**.014** (.012-.015)	**.015** (.012-.018)	**.034** (.032-.038)	**.060** (.051-.070)	**.082** (.070-.097)	933
Females	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1175
	03-04	**.012** (.011-.014)	**.014** (.012-.016)	**.035** (.029-.038)	**.061** (.054-.069)	**.088** (.078-.118)	934
Race/ethnicity							
Mexican Americans	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	533
	03-04	**.005** (<LOD-.007)	**.005** (<LOD-.007)	**.011** (.008-.018)	**.031** (.019-.044)	**.044** (.030-.062)	421
Non-Hispanic blacks	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	483
	03-04	**.013** (.011-.015)	**.012** (.010-.014)	**.035** (.028-.045)	**.078** (.052-.107)	**.128** (.080-.213)	456
Non-Hispanic whites	01-02	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1034
	03-04	**.015** (.013-.016)	**.017** (.015-.020)	**.036** (.033-.040)	**.063** (.058-.069)	**.088** (.077-.107)	872

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (whole weight) (2005 - 2008)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	**.002**	0	9
		07-08	*	*	6
	20-39	05-06	**.009**	0.002	12
		07-08	**.008**	0.001	15
	40-59	05-06	**.030**	0.002	12
		07-08	**.025**	0.002	16
	60+	05-06	**.070**	0.004	15
		07-08	**.056**	0.003	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	**.002**	0	7
	20-39	05-06	**.005**	0	16
		07-08	**.006**	0.001	13
	40-59	05-06	**.022**	0.002	13
		07-08	**.019**	0.001	17
	60+	05-06	**.081**	0.009	17
		07-08	**.065**	0.005	21
Non-Hispanic Black Male	12-19	05-06	**.003**	0	13
		07-08	**.002**	0	6
	20-39	05-06	**.007**	0.001	6
		07-08	**.006**	0.001	6
	40-59	05-06	**.040**	0.003	5
		07-08	**.030**	0.003	6
	60+	05-06	**.107**	0.02	5
		07-08	**.084**	0.012	8
Non-Hispanic Black Female	12-19	05-06	**.002**	0	14
		07-08	*	*	5
	20-39	05-06	**.005**	0.001	7
		07-08	**.004**	0.001	8
	40-59	05-06	**.029**	0.003	7
		07-08	**.023**	0.004	8
	60+	05-06	**.140**	0.03	5
		07-08	**.090**	0.01	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206) (whole weight) (2005 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**.004**	0	9
		07-08	****.009**	0.004	9
	40-59	05-06	**.016**	0.002	4
		07-08	**.017**	0.002	6
	60+	05-06	**.040**	0.012	4
		07-08	**.040**	0.004	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	**.002**	0	9
		07-08	**.003**	0	8
	40-59	05-06	**.014**	0.002	6
		07-08	**.014**	0.002	6
	60+	05-06	**.044**	0.005	3
		07-08	**.035**	0.009	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (lipid adjusted) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of lipid or parts per billion on a lipid-weight basis) for the U.S. population from the National Health and Nutrition Examination Survey.
See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	**1.40** (1.21-1.61)	**1.18** (1.00-1.48)	**3.20** (2.67-4.01)	**7.58** (6.20-8.81)	**11.1** (9.00-15.7)	1854
Age group							
12-19 years	03-04	*	**< LOD**	**< LOD**	**1.12** (.800-4.60)	**3.49** (1.12-6.64)	578
20 years and older	03-04	**1.63** (1.42-1.88)	**1.40** (1.18-1.70)	**3.80** (3.04-4.44)	**8.09** (6.60-9.30)	**12.3** (9.05-18.0)	1276
Gender							
Males	03-04	**1.37** (1.18-1.60)	**1.15** (1.00-1.50)	**3.00** (2.70-3.58)	**6.22** (4.97-8.20)	**9.10** (7.09-13.0)	925
Females	03-04	**1.42** (1.22-1.66)	**1.20** (1.00-1.50)	**3.46** (2.45-4.61)	**8.78** (7.45-9.47)	**13.9** (10.0-18.7)	929
Race/ethnicity							
Mexican Americans	03-04	*	**< LOD**	**1.10** (.770-1.60)	**2.40** (1.60-3.60)	**3.71** (2.40-4.97)	416
Non-Hispanic blacks	03-04	**1.56** (1.37-1.78)	**1.35** (1.10-1.52)	**3.40** (2.62-4.82)	**9.83** (6.70-13.6)	**18.0** (11.8-27.7)	455
Non-Hispanic whites	03-04	**1.53** (1.31-1.79)	**1.30** (1.09-1.70)	**3.89** (3.04-4.50)	**7.95** (6.49-9.09)	**11.3** (9.07-16.3)	864

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.7.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://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 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.664**	0.144	12
		07-08	**.654**	0.097	15
	40-59	05-06	**1.78**	0.14	12
		07-08	**1.86**	0.18	16
	60+	05-06	**7.07**	0.6	15
		07-08	**7.12**	0.68	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	**.374**	0.033	16
		07-08	**.420**	0.073	13
	40-59	05-06	**1.36**	0.12	13
		07-08	**1.64**	0.16	17
	60+	05-06	**11.2**	1.5	17
		07-08	**11.0**	1.2	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	**.797**	0.226	6
		07-08	**.500**	0.107	6
	40-59	05-06	**4.04**	0.4	5
		07-08	**2.72**	0.39	6
	60+	05-06	**14.7**	2.6	5
		07-08	**13.4**	1.9	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**.570**	0.093	7
		07-08	*	*	8
	40-59	05-06	**2.80**	0.3	7
		07-08	**2.36**	0.38	8
	60+	05-06	**21.6**	4.9	5
		07-08	**16.0**	2.5	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://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 - 2008)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**.317**	0.029	9
		07-08	**.330**	0.075	9
	40-59	05-06	**.846**	0.084	4
		07-08	**1.21**	0.17	6
	60+	05-06	****3.91**	1.65	4
		07-08	**4.41**	0.65	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**1.01**	0.15	6
		07-08	**1.44**	0.39	6
	60+	05-06	**4.98**	0.24	3
		07-08	****4.83**	1.49	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
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.
** Standard error of the mean estimate is > 30%.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (whole weight) (2003 – 2004)

Geometric mean and selected percentiles of serum concentrations (in ng/g of serum or parts per billion) for the U.S. population from the National Health and Nutrition Examination Survey. See the following page for data from later NHANES Survey periods.

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Total	03-04	**.009** (.007-.010)	**.008** (.006-.009)	**.021** (.017-.026)	**.049** (.040-.058)	**.073** (.059-.097)	1854
Age group							
12-19 years	03-04	*	**< LOD**	**< LOD**	**.006** (.004-.018)	**.017** (.005-.033)	578
20 years and older	03-04	**.010** (.009-.012)	**.009** (.008-.011)	**.024** (.020-.028)	**.053** (.044-.063)	**.077** (.065-.105)	1276
Gender							
Males	03-04	**.008** (.007-.010)	**.008** (.006-.010)	**.019** (.017-.023)	**.039** (.032-.051)	**.063** (.042-.077)	925
Females	03-04	**.009** (.007-.010)	**.008** (.006-.009)	**.024** (.016-.032)	**.057** (.049-.064)	**.092** (.068-.134)	929
Race/ethnicity							
Mexican Americans	03-04	*	**< LOD**	**.007** (.005-.010)	**.018** (.010-.023)	**.024** (.018-.035)	416
Non-Hispanic blacks	03-04	**.009** (.008-.010)	**.008** (.006-.009)	**.022** (.018-.027)	**.065** (.039-.077)	**.097** (.065-.144)	455
Non-Hispanic whites	03-04	**.009** (.008-.011)	**.009** (.007-.011)	**.024** (.020-.029)	**.053** (.044-.061)	**.076** (.063-.099)	864

< LOD means less than the limit of detection for the lipid adjusted serum level, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (whole weight)

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.
See the previous page for data from earlier NHANES Survey periods.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Non-Hispanic White Male	12-19	05-06	*	*	9
		07-08	*	*	6
	20-39	05-06	**.005**	0.001	12
		07-08	**.004**	0.001	15
	40-59	05-06	**.013**	0.001	12
		07-08	**.014**	0.001	16
	60+	05-06	**.048**	0.004	15
		07-08	**.045**	0.004	23
Non-Hispanic White Female	12-19	05-06	*	*	10
		07-08	*	*	7
	20-39	05-06	**.002**	0	16
		07-08	**.003**	0	13
	40-59	05-06	**.010**	0.001	13
		07-08	**.011**	0.001	17
	60+	05-06	**.080**	0.01	17
		07-08	**.074**	0.008	21
Non-Hispanic Black Male	12-19	05-06	*	*	13
		07-08	*	*	6
	20-39	05-06	**.005**	0.001	6
		07-08	**.003**	0	6
	40-59	05-06	**.026**	0.003	5
		07-08	**.017**	0.003	6
	60+	05-06	**.089**	0.017	5
		07-08	**.082**	0.013	8
Non-Hispanic Black Female	12-19	05-06	*	*	14
		07-08	*	*	5
	20-39	05-06	**.003**	0.001	7
		07-08	*	*	8
	40-59	05-06	**.018**	0.002	7
		07-08	**.014**	0.003	8
	60+	05-06	**.142**	0.03	5
		07-08	**.096**	0.015	7

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not reported: proportion of results below limit of detection was too high to provide a valid result or standard error >30% of mean.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Serum 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209) (whole weight)

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.

Category	Age (years)	Survey years	Weighted arithmetic mean	Unadjusted standard error	Number of pools ‡
Mexican American Male	12-19	05-06	*	*	11
		07-08	*	*	6
	20-39	05-06	**.002**	0	9
		07-08	**.002**	0.001	9
	40-59	05-06	**.007**	0.001	4
		07-08	**.008**	0.001	6
	60+	05-06	*	*	4
		07-08	**.031**	0.004	5
Mexican American Female	12-19	05-06	*	*	16
		07-08	*	*	5
	20-39	05-06	*	*	9
		07-08	*	*	8
	40-59	05-06	**.007**	0.001	6
		07-08	**.010**	0.003	6
	60+	05-06	**.038**	0.002	3
		07-08	*	*	5

†See Special Analysis of Pooled Samples for Select Chemicals for additional explanation.
‡ Each pool was composed of serum from 8 persons.
Weighted arithmetic means are not comparable to weighted geometric means.
Unadjusted standard errors do not incorporate survey design effects.
* Not reported: proportion of results below limit of detection was too high to provide a valid result or standard error >30% of mean.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/NDL-PCBs_BiomonitoringSummary.html

Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

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), 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 human samples 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 and 4.85% (weighted) in NHANES 2013-2014. Too few adults reported use of non-cigarette tobacco products to allow separate categories for these products. We did not use serum cotinine concentrations because not all adults in the sample had results: 4.17% (weighted) of the 2011-2012 sample were missing serum cotinine results; 2013-2014 results were not yet available.

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 in one or more of the categories. Future *Updated Tables* will present data tables for additional chemical groups that were measured in the Special Sample.

Urinary Antimony (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.060** (.052-.071)	**.056** (.043-.070)	**.098** (.080-.116)	**.167** (.135-.180)	**.233** (.170-.301)	891
	13-14	**.051** (.047-.056)	**.049** (.044-.055)	**.092** (.082-.101)	**.162** (.138-.182)	**.224** (.182-.254)	1954
Age group							
20-49 years	11-12	**.064** (.056-.074)	**.061** (.047-.073)	**.105** (.084-.125)	**.170** (.140-.184)	**.233** (.180-.296)	532
18-49 years	13-14	**.053** (.048-.059)	**.052** (.046-.058)	**.095** (.084-.111)	**.164** (.133-.189)	**.223** (.182-.271)	1184
50 years and older	11-12	*	**.046** (<LOD-.064)	**.086** (.060-.113)	**.153** (.110-.233)	**.233** (.137-.406)	359
	13-14	**.048** (.042-.056)	**.043** (.040-.052)	**.083** (.065-.099)	**.156** (.126-.186)	**.227** (.167-.485)	770
Gender							
Males	11-12	**.064** (.053-.077)	**.058** (.042-.079)	**.109** (.084-.139)	**.170** (.142-.204)	**.243** (.177-.322)	540
	13-14	**.055** (.049-.061)	**.054** (.048-.059)	**.094** (.078-.116)	**.172** (.132-.203)	**.227** (.182-.255)	1050
Females	11-12	**.056** (.048-.066)	**.052** (<LOD-.066)	**.083** (.068-.110)	**.140** (.109-.206)	**.207** (.129-.429)	351
	13-14	**.048** (.042-.056)	**.043** (.037-.054)	**.091** (.071-.106)	**.153** (.130-.183)	**.204** (.178-.309)	904
Nonsmokers†							
Total	11-12	*	**.041** (<LOD-.047)	**.070** (.062-.081)	**.121** (.107-.135)	**.159** (.149-.199)	1309
	13-14	**.040** (.036-.044)	**.037** (.032-.043)	**.069** (.063-.076)	**.118** (.103-.135)	**.176** (.146-.213)	3102
Age group							
20-49 years	11-12	*	**.043** (<LOD-.051)	**.077** (.064-.090)	**.137** (.119-.155)	**.176** (.152-.268)	644
18-49 years	13-14	**.042** (.037-.047)	**.040** (.033-.046)	**.072** (.065-.088)	**.130** (.113-.146)	**.182** (.153-.226)	1644
50 years and older	11-12	*	**< LOD**	**.064** (.055-.074)	**.103** (.092-.122)	**.149** (.118-.234)	665
	13-14	**.038** (.035-.042)	**.036** (.028-.042)	**.064** (.058-.069)	**.100** (.094-.114)	**.162** (.112-.213)	1458
Gender							
Males	11-12	*	**.046** (<LOD-.053)	**.080** (.064-.092)	**.135** (.103-.158)	**.179** (.152-.273)	615
	13-14	**.045** (.041-.050)	**.042** (.038-.049)	**.077** (.068-.092)	**.144** (.122-.161)	**.213** (.161-.273)	1440
Females	11-12	*	**< LOD**	**.064** (.056-.073)	**.116** (.094-.128)	**.157** (.127-.184)	694
	13-14	**.036** (.032-.040)	**.032** (.027-.041)	**.062** (.052-.070)	**.100** (.091-.112)	**.141** (.113-.170)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.041 and 0.022, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Antimony_BiomonitoringSummary.html

Urinary Antimony (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.067** (.061-.072)	**.063** (.055-.071)	**.098** (.091-.110)	**.171** (.138-.200)	**.242** (.181-.279)	891
	13-14	**.053** (.048-.059)	**.051** (.044-.058)	**.076** (.068-.089)	**.113** (.096-.145)	**.164** (.133-.221)	1952
Age group							
20-49 years	11-12	**.067** (.062-.073)	**.065** (.059-.071)	**.101** (.092-.110)	**.171** (.123-.207)	**.242** (.171-.290)	532
18-49 years	13-14	**.050** (.045-.056)	**.047** (.043-.055)	**.071** (.065-.083)	**.099** (.090-.122)	**.130** (.100-.177)	1182
50 years and older	11-12	*	**.060** (<LOD-.069)	**.095** (.074-.134)	**.171** (.134-.210)	**.242** (.171-.319)	359
	13-14	**.061** (.055-.068)	**.057** (.053-.062)	**.088** (.070-.110)	**.153** (.111-.239)	**.255** (.148-.429)	770
Gender							
Males	11-12	**.061** (.056-.066)	**.056** (.050-.064)	**.089** (.073-.101)	**.161** (.121-.193)	**.256** (.164-.291)	540
	13-14	**.050** (.046-.054)	**.047** (.044-.051)	**.069** (.063-.079)	**.102** (.090-.119)	**.133** (.108-.200)	1048
Females	11-12	**.075** (.067-.084)	**.073** (<LOD-.086)	**.110** (.094-.138)	**.175** (.141-.207)	**.210** (.158-.344)	351
	13-14	**.057** (.049-.067)	**.057** (.046-.066)	**.085** (.070-.097)	**.130** (.096-.221)	**.221** (.145-.320)	904
Nonsmokers†							
Total	11-12	*	**.056** (<LOD-.060)	**.088** (.076-.101)	**.152** (.126-.171)	**.223** (.179-.240)	1308
	13-14	**.047** (.043-.052)	**.045** (.042-.048)	**.068** (.062-.074)	**.104** (.094-.114)	**.151** (.128-.170)	3100
Age group							
20-49 years	11-12	*	**.054** (<LOD-.060)	**.088** (.071-.107)	**.171** (.126-.214)	**.224** (.175-.297)	643
18-49 years	13-14	**.045** (.041-.048)	**.042** (.039-.047)	**.062** (.058-.069)	**.100** (.087-.109)	**.150** (.114-.172)	1644
50 years and older	11-12	*	**< LOD**	**.088** (.076-.101)	**.132** (.118-.155)	**.183** (.152-.224)	665
	13-14	**.051** (.045-.057)	**.047** (.044-.051)	**.074** (.067-.084)	**.114** (.099-.127)	**.151** (.123-.178)	1456
Gender							
Males	11-12	*	**.047** (<LOD-.049)	**.068** (.062-.074)	**.116** (.100-.126)	**.171** (.126-.237)	614
	13-14	**.044** (.039-.049)	**.041** (.037-.045)	**.059** (.052-.068)	**.100** (.086-.114)	**.162** (.122-.198)	1438
Females	11-12	*	**< LOD**	**.104** (.088-.116)	**.175** (.145-.207)	**.224** (.181-.284)	694
	13-14	**.051** (.046-.055)	**.048** (.045-.052)	**.075** (.069-.081)	**.109** (.097-.122)	**.147** (.123-.167)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
< LOD means less than the limit of detection for the urine levels not corrected for creatinine.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Antimony_BiomonitoringSummary.html

Urinary Total Arsenic (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**6.04** (4.73-7.72)	**5.38** (3.97-6.84)	**12.0** (8.59-18.1)	**30.5** (20.3-43.2)	**46.0** (33.2-109)	891
	13-14	**6.04** (5.08-7.17)	**5.85** (4.91-7.10)	**11.4** (9.83-13.6)	**22.7** (18.2-29.1)	**40.2** (27.9-64.7)	976
Age group							
20-49 years	11-12	**6.08** (4.72-7.82)	**5.68** (3.73-7.35)	**12.0** (8.59-18.1)	**26.2** (20.0-38.3)	**43.2** (24.5-67.8)	532
18-49 years	13-14	**6.34** (5.15-7.80)	**6.15** (5.09-7.91)	**11.7** (9.88-14.6)	**23.9** (17.7-30.7)	**40.2** (27.9-63.0)	591
50 years and older	11-12	**5.98** (4.34-8.25)	**4.72** (3.77-6.86)	**11.4** (7.53-20.1)	**35.9** (15.1-127)	**80.5** (29.0-144)	359
	13-14	**5.45** (4.72-6.28)	**5.28** (4.41-6.10)	**10.6** (8.07-12.4)	**20.4** (15.5-34.2)	**39.3** (23.9-108)	385
Gender							
Males	11-12	**6.56** (4.93-8.71)	**5.71** (4.14-8.59)	**13.5** (9.20-19.9)	**32.5** (21.6-44.1)	**44.1** (28.3-78.0)	540
	13-14	**6.95** (5.65-8.55)	**6.86** (5.82-7.91)	**12.7** (10.4-15.2)	**27.9** (15.3-51.7)	**55.5** (24.4-99.0)	524
Females	11-12	**5.43** (4.40-6.69)	**4.69** (3.38-5.95)	**9.67** (6.86-15.7)	**30.5** (15.9-48.4)	**62.1** (22.4-209)	351
	13-14	**5.21** (4.26-6.38)	**5.09** (4.02-6.15)	**10.2** (7.44-14.2)	**18.9** (16.5-25.4)	**31.0** (23.9-40.2)	452
Nonsmokers†							
Total	11-12	**7.32** (6.26-8.56)	**6.57** (5.34-7.92)	**13.7** (11.3-18.6)	**34.2** (25.6-41.9)	**56.0** (41.4-82.2)	1309
	13-14	**6.54** (5.66-7.56)	**6.13** (5.02-7.32)	**12.5** (10.8-14.5)	**29.3** (24.7-33.6)	**48.5** (38.2-56.6)	1549
Age group							
20-49 years	11-12	**7.31** (6.29-8.49)	**6.46** (5.42-7.67)	**13.1** (11.2-18.1)	**35.7** (24.9-43.9)	**56.7** (45.9-84.5)	644
18-49 years	13-14	**6.35** (5.59-7.22)	**5.94** (5.43-6.76)	**11.5** (9.99-13.4)	**24.9** (20.2-30.5)	**42.8** (30.2-58.3)	821
50 years and older	11-12	**7.34** (6.00-8.98)	**6.58** (5.22-9.06)	**14.4** (10.5-20.3)	**34.2** (21.1-50.6)	**55.8** (34.6-82.8)	665
	13-14	**6.77** (5.45-8.42)	**6.31** (4.28-9.08)	**13.7** (10.8-19.1)	**36.0** (23.8-45.6)	**52.2** (39.5-68.0)	728
Gender							
Males	11-12	**8.19** (6.66-10.1)	**7.25** (5.47-10.0)	**15.8** (11.7-21.2)	**36.6** (26.3-42.7)	**56.0** (38.9-82.8)	615
	13-14	**7.12** (6.25-8.11)	**6.86** (5.86-7.83)	**12.7** (10.9-15.4)	**30.5** (23.9-36.5)	**50.6** (36.0-62.0)	718
Females	11-12	**6.71** (5.78-7.79)	**5.93** (5.02-7.32)	**12.8** (10.2-17.5)	**30.2** (23.9-44.5)	**55.3** (41.2-84.5)	694
	13-14	**6.06** (5.07-7.24)	**5.44** (4.53-6.68)	**12.1** (9.75-14.6)	**28.3** (22.3-36.0)	**45.1** (36.0-63.1)	831

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 1.25 and 0.26, respectively.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Total Arsenic (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**6.67** (5.66-7.86)	**5.34** (4.42-6.93)	**10.9** (8.97-14.1)	**23.3** (19.6-29.5)	**43.6** (24.8-91.3)	891
	13-14	**6.28** (5.49-7.18)	**5.31** (4.79-6.04)	**9.35** (7.78-11.4)	**24.5** (15.0-34.7)	**41.5** (28.4-54.0)	975
Age group							
20-49 years	11-12	**6.35** (5.37-7.51)	**5.20** (4.16-7.02)	**10.3** (8.79-13.3)	**22.1** (16.1-27.8)	**38.6** (22.6-91.7)	532
18-49 years	13-14	**6.02** (5.07-7.14)	**5.22** (4.45-5.91)	**8.55** (7.34-11.4)	**24.4** (13.4-35.3)	**35.8** (21.5-52.1)	590
50 years and older	11-12	**7.20** (5.68-9.15)	**5.92** (4.82-7.23)	**12.3** (8.76-19.6)	**26.1** (19.6-50.6)	**70.5** (20.1-98.0)	359
	13-14	**6.87** (6.21-7.61)	**5.72** (5.00-6.88)	**10.3** (8.69-12.5)	**24.6** (14.7-52.6)	**53.8** (25.6-91.3)	385
Gender							
Males	11-12	**6.27** (5.15-7.63)	**5.18** (4.30-7.02)	**10.6** (8.79-14.7)	**21.7** (16.1-24.8)	**30.2** (22.1-70.5)	540
	13-14	**6.33** (5.36-7.48)	**5.61** (4.81-6.59)	**8.74** (7.58-11.8)	**24.6** (13.0-35.8)	**35.8** (19.7-64.6)	523
Females	11-12	**7.23** (5.95-8.78)	**5.52** (4.38-6.93)	**11.1** (8.31-15.3)	**29.5** (17.0-65.0)	**65.0** (23.5-158)	351
	13-14	**6.23** (5.40-7.19)	**5.22** (4.45-5.78)	**9.75** (7.25-11.9)	**24.5** (17.0-33.9)	**49.5** (24.9-62.0)	452
Nonsmokers†							
Total	11-12	**8.58** (7.44-9.89)	**7.17** (6.16-8.59)	**16.3** (13.0-21.4)	**33.7** (28.2-43.7)	**52.8** (39.9-71.2)	1308
	13-14	**7.74** (6.93-8.65)	**6.56** (5.69-7.64)	**13.0** (11.1-15.1)	**31.8** (24.5-40.8)	**57.2** (47.9-74.7)	1548
Age group							
20-49 years	11-12	**8.05** (6.99-9.27)	**6.87** (5.54-8.42)	**15.2** (11.5-20.8)	**32.4** (26.4-40.8)	**48.0** (36.6-75.8)	643
18-49 years	13-14	**6.81** (6.12-7.58)	**5.94** (5.15-6.67)	**11.1** (9.35-12.4)	**23.7** (18.7-29.9)	**48.7** (29.9-68.2)	821
50 years and older	11-12	**9.15** (7.40-11.3)	**7.57** (6.16-9.71)	**18.3** (12.8-24.6)	**37.5** (28.0-53.3)	**53.5** (37.5-94.6)	665
	13-14	**8.99** (7.50-10.8)	**7.67** (5.83-9.93)	**16.0** (11.6-23.8)	**40.8** (27.1-61.4)	**69.6** (49.8-83.6)	727
Gender							
Males	11-12	**7.30** (5.93-8.98)	**6.29** (5.14-8.02)	**14.3** (10.6-18.3)	**32.8** (20.2-44.3)	**48.7** (32.8-69.6)	614
	13-14	**6.93** (6.17-7.78)	**5.82** (4.87-6.89)	**12.0** (10.0-13.7)	**27.6** (20.8-40.8)	**49.3** (37.9-67.9)	717
Females	11-12	**9.72** (8.65-10.9)	**7.96** (6.87-9.31)	**19.1** (13.7-24.4)	**38.7** (30.8-48.6)	**66.1** (45.9-86.7)	694
	13-14	**8.56** (7.48-9.80)	**7.33** (6.39-8.36)	**14.7** (11.7-17.0)	**34.3** (24.5-43.2)	**68.3** (41.8-98.1)	831

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenic (V) acid (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**.900** (<LOD-3.06)	886
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	972
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**1.27** (<LOD-3.87)	531
18-49 years	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	588
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	355
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	384
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**1.35** (<LOD-3.87)	537
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	523
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	349
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	449
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1309
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1549
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	644
18-49 years	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	824
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	665
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	725
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	615
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	715
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	694
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	834

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.87 and 0.79, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenic (V) acid (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**3.65** (<LOD-5.17)	886
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	971
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**3.65** (<LOD-4.13)	531
18-49 years	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	587
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	355
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	384
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**3.44** (<LOD-3.76)	537
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	522
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	349
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	449
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1308
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1548
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	643
18-49 years	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	824
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	665
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	724
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	614
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	714
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	694
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	834

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
< LOD means less than the limit of detection for the urine levels not corrected for creatinine.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenobetaine (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**3.00** (1.50-4.77)	**12.7** (8.19-19.9)	**25.7** (16.7-74.3)	886
	13-14	*	**< LOD**	**3.36** (2.20-5.03)	**13.1** (7.32-20.0)	**25.1** (15.1-52.1)	972
Age group							
20-49 years	11-12	*	**< LOD**	**2.34** (1.50-4.49)	**11.9** (6.90-19.1)	**24.2** (12.4-39.4)	531
18-49 years	13-14	*	**< LOD**	**3.78** (2.27-5.26)	**14.7** (7.32-20.4)	**24.6** (15.1-52.5)	588
50 years and older	11-12	*	**< LOD**	**4.03** (1.27-6.74)	**13.7** (6.72-46.5)	**44.8** (8.47-114)	355
	13-14	*	**< LOD**	**2.25** (1.60-3.93)	**9.75** (5.60-18.5)	**25.6** (11.9-48.4)	384
Gender							
Males	11-12	*	**< LOD**	**3.26** (1.47-5.05)	**10.8** (6.90-18.1)	**24.2** (13.1-46.5)	537
	13-14	*	**< LOD**	**3.92** (2.41-6.44)	**18.5** (6.38-35.2)	**35.2** (15.5-61.6)	523
Females	11-12	*	**< LOD**	**2.82** (1.32-6.18)	**16.8** (7.58-24.2)	**44.8** (13.7-141)	349
	13-14	*	**< LOD**	**2.83** (1.28-5.08)	**12.1** (4.83-19.6)	**19.6** (12.4-26.5)	449
Nonsmokers†							
Total	11-12	*	**1.24** (<LOD-1.66)	**5.95** (4.44-7.69)	**18.7** (13.3-26.4)	**37.5** (24.4-60.3)	1309
	13-14	*	**< LOD**	**4.60** (3.24-6.31)	**18.7** (14.1-22.0)	**35.4** (26.1-44.6)	1549
Age group							
20-49 years	11-12	*	**< LOD**	**4.95** (3.58-6.43)	**18.7** (10.8-23.6)	**37.4** (24.0-53.4)	644
18-49 years	13-14	*	**< LOD**	**3.36** (2.72-4.61)	**14.1** (9.20-21.3)	**29.4** (19.2-41.8)	824
50 years and older	11-12	*	**1.55** (<LOD-2.34)	**7.21** (3.98-10.3)	**18.6** (12.3-35.5)	**38.8** (19.2-68.3)	665
	13-14	*	**1.39** (<LOD-2.21)	**6.11** (3.33-10.6)	**22.0** (13.2-35.4)	**39.7** (29.0-53.5)	725
Gender							
Males	11-12	*	**1.29** (<LOD-2.08)	**6.36** (4.10-9.64)	**23.3** (12.7-33.6)	**37.4** (25.5-63.9)	615
	13-14	*	**1.27** (<LOD-1.84)	**4.95** (3.33-6.95)	**18.7** (11.7-23.7)	**36.6** (21.9-46.0)	715
Females	11-12	*	**< LOD**	**5.65** (4.00-7.39)	**18.1** (12.3-23.6)	**38.8** (22.5-67.8)	694
	13-14	*	**< LOD**	**4.16** (2.76-6.13)	**18.4** (12.5-24.3)	**34.1** (23.9-50.7)	834

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 1.19 and 1.16, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenobetaine (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**4.00** (2.90-5.00)	**12.5** (8.40-18.8)	**27.9** (15.2-67.2)	886
	13-14	*	**< LOD**	**3.89** (3.04-4.82)	**12.2** (6.89-21.2)	**34.0** (14.6-51.6)	971
Age group							
20-49 years	11-12	*	**< LOD**	**3.97** (2.63-4.94)	**10.3** (6.67-18.8)	**26.8** (10.4-55.0)	531
18-49 years	13-14	*	**< LOD**	**3.83** (2.83-5.16)	**12.9** (6.31-31.5)	**34.0** (12.2-51.6)	587
50 years and older	11-12	*	**< LOD**	**4.64** (2.83-7.81)	**15.4** (11.9-30.0)	**48.3** (12.3-82.1)	355
	13-14	*	**< LOD**	**4.18** (2.81-5.71)	**11.4** (7.32-21.2)	**36.1** (14.2-53.2)	384
Gender							
Males	11-12	*	**< LOD**	**3.50** (2.59-4.94)	**9.68** (5.76-14.5)	**16.5** (12.0-39.7)	537
	13-14	*	**< LOD**	**3.73** (2.71-4.97)	**11.5** (5.01-34.0)	**34.0** (9.62-51.2)	522
Females	11-12	*	**< LOD**	**4.88** (3.02-10.2)	**18.8** (10.6-30.3)	**39.6** (16.5-100)	349
	13-14	*	**< LOD**	**4.48** (3.31-5.38)	**12.9** (7.45-19.0)	**31.5** (12.2-51.8)	449
Nonsmokers†							
Total	11-12	*	**2.10** (<LOD-2.46)	**7.64** (5.25-10.5)	**22.6** (14.8-35.7)	**40.0** (28.7-48.9)	1308
	13-14	*	**< LOD**	**5.98** (4.61-7.62)	**19.2** (14.5-26.3)	**44.3** (34.4-59.4)	1548
Age group							
20-49 years	11-12	*	**< LOD**	**6.46** (4.34-10.4)	**18.4** (15.4-25.6)	**35.1** (21.7-42.6)	643
18-49 years	13-14	*	**< LOD**	**4.21** (3.44-5.48)	**13.8** (8.90-19.2)	**35.5** (19.2-54.7)	824
50 years and older	11-12	*	**2.43** (<LOD-3.44)	**8.21** (4.78-14.3)	**26.1** (14.3-42.6)	**43.4** (26.1-76.9)	665
	13-14	*	**2.48** (<LOD-3.34)	**8.44** (5.08-14.5)	**26.9** (14.9-46.0)	**56.1** (37.7-71.5)	724
Gender							
Males	11-12	*	**1.72** (<LOD-2.10)	**5.81** (3.51-10.0)	**20.7** (11.2-35.7)	**35.7** (20.7-52.1)	614
	13-14	*	**1.67** (<LOD-2.00)	**5.49** (3.80-7.92)	**16.7** (12.7-24.4)	**40.5** (24.1-59.4)	714
Females	11-12	*	**< LOD**	**8.46** (6.46-11.3)	**24.0** (16.6-36.9)	**42.0** (29.3-66.4)	694
	13-14	*	**< LOD**	**6.45** (4.82-8.13)	**19.9** (13.8-33.3)	**46.0** (33.3-82.4)	834

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
< LOD means less than the limit of detection for the urine levels not corrected for creatinine.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenocholine (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	886
	13-14	*	**< LOD**	**< LOD**	**.170** (<LOD-.250)	**.280** (.190-.350)	972
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	531
18-49 years	13-14	*	**< LOD**	**< LOD**	**.190** (.130-.240)	**.280** (.190-.350)	588
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	355
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**.270** (<LOD-.410)	384
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	537
	13-14	*	**< LOD**	**< LOD**	**.200** (<LOD-.280)	**.280** (.170-.410)	523
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	349
	13-14	*	**< LOD**	**< LOD**	**.150** (<LOD-.240)	**.240** (.190-.300)	449
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1309
	13-14	*	**< LOD**	**< LOD**	**.220** (.150-.280)	**.350** (.290-.380)	1549
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	644
18-49 years	13-14	*	**< LOD**	**< LOD**	**.200** (<LOD-.280)	**.320** (.260-.380)	824
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	665
	13-14	*	**< LOD**	**< LOD**	**.220** (.140-.330)	**.380** (.300-.390)	725
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	615
	13-14	*	**< LOD**	**< LOD**	**.250** (.130-.330)	**.360** (.290-.430)	715
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	694
	13-14	*	**< LOD**	**< LOD**	**.200** (.110-.260)	**.320** (.220-.380)	834

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.28 and 0.11, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenocholine (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	886
	13-14	*	**< LOD**	**< LOD**	**.286** (<LOD-.333)	**.381** (.348-.444)	971
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	531
18-49 years	13-14	*	**< LOD**	**< LOD**	**.250** (.190-.333)	**.364** (.286-.485)	587
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	355
	13-14	*	**< LOD**	**< LOD**	**< LOD**	**.444** (<LOD-.615)	384
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	537
	13-14	*	**< LOD**	**< LOD**	**.229** (<LOD-.296)	**.333** (.229-.444)	522
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	349
	13-14	*	**< LOD**	**< LOD**	**.320** (<LOD-.442)	**.471** (.364-.727)	449
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1308
	13-14	*	**< LOD**	**< LOD**	**.364** (.320-.421)	**.578** (.471-.667)	1548
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	643
18-49 years	13-14	*	**< LOD**	**< LOD**	**.296** (<LOD-.364)	**.444** (.364-.523)	824
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	665
	13-14	*	**< LOD**	**< LOD**	**.471** (.333-.571)	**.658** (.506-.800)	724
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	614
	13-14	*	**< LOD**	**< LOD**	**.258** (.235-.333)	**.571** (.333-.660)	714
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	694
	13-14	*	**< LOD**	**< LOD**	**.421** (.364-.444)	**.622** (.471-.727)	834

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
< LOD means less than the limit of detection for the urine levels not corrected for creatinine.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenous (III) acid (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**.750** (.580-.950)	**1.01** (.740-1.78)	886
	13-14	**.338** (.291-.393)	**.500** (.400-.590)	**.740** (.660-.840)	**1.05** (.900-1.21)	**1.30** (1.14-1.43)	972
Age group							
20-49 years	11-12	*	**< LOD**	**.510** (<LOD-.690)	**.890** (.640-1.34)	**1.29** (.890-2.22)	531
18-49 years	13-14	**.394** (.332-.467)	**.560** (.460-.640)	**.780** (.680-.870)	**1.10** (.920-1.27)	**1.32** (1.14-1.46)	588
50 years and older	11-12	*	**< LOD**	**< LOD**	**.500** (<LOD-.740)	**.640** (.490-.920)	355
	13-14	*	**.280** (<LOD-.460)	**.660** (.540-.820)	**.970** (.830-1.17)	**1.24** (.970-1.48)	384
Gender							
Males	11-12	*	**< LOD**	**.520** (<LOD-.690)	**.900** (.680-1.35)	**1.39** (.920-2.22)	537
	13-14	**.401** (.327-.491)	**.580** (.440-.660)	**.800** (.680-.920)	**1.14** (.940-1.33)	**1.35** (1.15-1.52)	523
Females	11-12	*	**< LOD**	**< LOD**	**.530** (<LOD-.640)	**.640** (.520-.830)	349
	13-14	**.283** (.245-.327)	**.430** (.280-.500)	**.680** (.590-.780)	**.940** (.800-1.20)	**1.23** (.930-1.48)	449
Nonsmokers†							
Total	11-12	*	**< LOD**	**.490** (<LOD-.570)	**.810** (.700-.920)	**1.05** (.910-1.18)	1309
	13-14	**.298** (.260-.341)	**.430** (.320-.530)	**.720** (.640-.790)	**.960** (.870-1.05)	**1.12** (1.05-1.22)	1549
Age group							
20-49 years	11-12	*	**< LOD**	**.560** (<LOD-.700)	**.860** (.770-1.05)	**1.24** (.950-1.48)	644
18-49 years	13-14	**.364** (.316-.420)	**.520** (.410-.590)	**.770** (.690-.860)	**1.04** (.960-1.11)	**1.19** (1.12-1.35)	824
50 years and older	11-12	*	**< LOD**	**< LOD**	**.700** (.550-.830)	**.920** (.700-1.15)	665
	13-14	*	**.240** (<LOD-.410)	**.640** (.580-.690)	**.870** (.790-.940)	**1.03** (.940-1.11)	725
Gender							
Males	11-12	*	**< LOD**	**.570** (<LOD-.690)	**.920** (.780-1.12)	**1.18** (1.05-1.48)	615
	13-14	**.358** (.304-.421)	**.540** (.410-.630)	**.800** (.710-.870)	**.990** (.940-1.08)	**1.17** (1.06-1.35)	715
Females	11-12	*	**< LOD**	**< LOD**	**.730** (.560-.810)	**.860** (.800-.990)	694
	13-14	*	**.340** (.150-.440)	**.630** (.580-.700)	**.870** (.790-1.00)	**1.10** (.950-1.20)	834

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.48 and 0.12, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Arsenous (III) acid (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**1.36** (1.06-1.66)	**1.89** (1.42-2.13)	886
	13-14	**.348** (.298-.405)	**.374** (.320-.444)	**.641** (.552-.776)	**1.01** (.900-1.17)	**1.37** (1.10-1.63)	971
Age group							
20-49 years	11-12	*	**< LOD**	**.773** (<LOD-.944)	**1.42** (1.06-1.89)	**2.00** (1.35-2.83)	531
18-49 years	13-14	**.372** (.314-.440)	**.398** (.331-.473)	**.641** (.561-.777)	**1.07** (.900-1.21)	**1.38** (1.10-1.63)	587
50 years and older	11-12	*	**< LOD**	**< LOD**	**1.26** (<LOD-1.55)	**1.42** (1.13-2.13)	355
	13-14	*	**.348** (<LOD-.459)	**.641** (.459-.838)	**.944** (.816-1.13)	**1.16** (1.00-1.80)	384
Gender							
Males	11-12	*	**< LOD**	**.694** (<LOD-.835)	**1.32** (.976-1.70)	**1.89** (1.31-2.27)	537
	13-14	**.362** (.302-.433)	**.381** (.320-.459)	**.620** (.505-.730)	**1.00** (.776-1.25)	**1.27** (.985-1.65)	522
Females	11-12	*	**< LOD**	**< LOD**	**1.37** (<LOD-1.70)	**1.70** (1.37-2.13)	349
	13-14	**.333** (.279-.398)	**.361** (.276-.443)	**.675** (.559-.847)	**1.01** (.900-1.21)	**1.42** (1.10-1.81)	449
Nonsmokers†							
Total	11-12	*	**< LOD**	**.791** (<LOD-.850)	**1.36** (1.21-1.54)	**1.82** (1.55-2.00)	1308
	13-14	**.351** (.304-.406)	**.373** (.308-.444)	**.701** (.597-.827)	**1.21** (.989-1.35)	**1.55** (1.31-1.85)	1548
Age group							
20-49 years	11-12	*	**< LOD**	**.829** (<LOD-.931)	**1.48** (1.17-1.89)	**1.96** (1.62-2.43)	643
18-49 years	13-14	**.389** (.326-.464)	**.401** (.329-.482)	**.784** (.604-.943)	**1.24** (1.02-1.57)	**1.67** (1.26-2.06)	824
50 years and older	11-12	*	**< LOD**	**< LOD**	**1.26** (1.13-1.42)	**1.62** (1.36-1.96)	665
	13-14	*	**.320** (<LOD-.406)	**.620** (.560-.732)	**1.04** (.861-1.30)	**1.43** (1.30-1.59)	724
Gender							
Males	11-12	*	**< LOD**	**.659** (<LOD-.710)	**1.03** (.850-1.19)	**1.48** (1.17-1.68)	614
	13-14	**.350** (.301-.406)	**.371** (.301-.445)	**.681** (.571-.806)	**1.21** (.919-1.41)	**1.51** (1.30-1.85)	714
Females	11-12	*	**< LOD**	**< LOD**	**1.54** (1.36-1.81)	**2.13** (1.64-2.62)	694
	13-14	*	**.375** (.299-.445)	**.711** (.612-.864)	**1.17** (.982-1.35)	**1.55** (1.30-1.85)	834

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
< LOD means less than the limit of detection for the urine levels not corrected for creatinine.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Dimethylarsinic acid (2011 - 2014)

Metabolite of Arsenic

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**3.19** (2.79-3.66)	**2.77** (2.41-3.29)	**5.50** (4.29-7.07)	**10.5** (7.78-15.3)	**16.3** (10.9-23.4)	886
	13-14	**3.15** (2.83-3.51)	**3.10** (2.69-3.48)	**5.15** (4.51-5.95)	**7.76** (6.76-9.70)	**11.4** (8.76-14.1)	972
Age group							
20-49 years	11-12	**3.14** (2.65-3.72)	**2.93** (2.15-3.65)	**5.38** (4.09-6.76)	**8.92** (7.34-12.5)	**14.3** (9.81-19.3)	531
18-49 years	13-14	**3.22** (2.84-3.66)	**3.17** (2.69-3.76)	**5.26** (4.66-5.96)	**7.33** (6.81-9.19)	**10.5** (7.77-12.8)	588
50 years and older	11-12	**3.29** (2.76-3.92)	**2.58** (2.40-3.05)	**5.75** (3.65-9.85)	**12.7** (7.91-28.8)	**20.1** (10.4-30.1)	355
	13-14	**3.01** (2.64-3.43)	**2.93** (2.37-3.34)	**4.97** (4.12-6.30)	**8.58** (6.09-12.3)	**12.3** (8.64-16.8)	384
Gender							
Males	11-12	**3.49** (3.04-4.00)	**3.02** (2.57-3.96)	**6.28** (4.68-9.47)	**12.5** (8.96-16.4)	**17.2** (12.5-30.1)	537
	13-14	**3.34** (3.00-3.72)	**3.34** (2.86-3.94)	**5.75** (4.85-6.34)	**8.19** (7.25-9.80)	**11.1** (8.76-12.8)	523
Females	11-12	**2.85** (2.48-3.27)	**2.57** (2.32-3.03)	**4.41** (3.64-5.24)	**7.95** (6.07-10.5)	**11.8** (7.92-20.2)	349
	13-14	**2.97** (2.58-3.41)	**2.78** (2.24-3.34)	**4.74** (4.07-5.95)	**7.33** (6.02-10.2)	**11.4** (7.77-15.1)	449
Nonsmokers†							
Total	11-12	**3.54** (3.25-3.86)	**3.43** (3.00-3.81)	**5.84** (5.18-6.78)	**10.0** (8.57-11.7)	**14.2** (12.1-17.2)	1309
	13-14	**3.18** (2.91-3.49)	**3.02** (2.63-3.49)	**5.26** (4.67-5.89)	**8.78** (7.86-9.62)	**11.8** (10.2-15.0)	1549
Age group							
20-49 years	11-12	**3.69** (3.30-4.11)	**3.56** (3.10-4.05)	**6.35** (5.63-7.44)	**10.7** (8.96-12.3)	**15.9** (12.3-17.8)	644
18-49 years	13-14	**3.26** (2.98-3.57)	**3.10** (2.69-3.57)	**5.31** (4.68-5.87)	**9.03** (7.62-10.7)	**11.8** (10.5-16.4)	824
50 years and older	11-12	**3.40** (3.09-3.74)	**3.21** (2.91-3.72)	**5.44** (4.52-6.61)	**9.02** (7.71-11.0)	**13.5** (9.70-17.8)	665
	13-14	**3.09** (2.77-3.45)	**2.87** (2.36-3.53)	**5.21** (4.31-6.31)	**8.52** (7.69-9.21)	**11.9** (9.62-15.0)	725
Gender							
Males	11-12	**3.95** (3.52-4.42)	**3.87** (3.33-4.52)	**6.12** (5.20-7.68)	**10.6** (8.45-13.7)	**15.9** (12.1-17.8)	615
	13-14	**3.32** (3.07-3.60)	**3.27** (2.87-3.76)	**5.45** (4.98-6.03)	**8.56** (7.84-9.85)	**11.6** (9.85-15.6)	715
Females	11-12	**3.26** (2.97-3.58)	**2.99** (2.62-3.49)	**5.52** (4.65-6.24)	**9.52** (8.10-11.1)	**14.0** (10.7-17.5)	694
	13-14	**3.06** (2.73-3.44)	**2.77** (2.37-3.26)	**4.95** (3.98-6.01)	**8.82** (7.58-10.0)	**11.9** (9.79-15.7)	834

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 1.8 and 1.91, respectively.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Dimethylarsinic acid (creatinine corrected) (2011 - 2014)

Metabolite of Arsenic

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**3.51** (3.26-3.79)	**3.24** (2.89-3.53)	**5.56** (5.14-6.10)	**8.94** (7.87-10.1)	**10.8** (9.49-13.5)	886
	13-14	**3.24** (2.98-3.52)	**3.03** (2.81-3.36)	**4.82** (4.32-5.19)	**7.46** (6.14-8.94)	**10.4** (7.94-12.3)	971
Age group							
20-49 years	11-12	**3.28** (2.98-3.62)	**3.06** (2.59-3.56)	**5.20** (4.45-6.04)	**8.12** (6.51-9.37)	**10.6** (8.25-12.7)	531
18-49 years	13-14	**3.04** (2.73-3.38)	**2.83** (2.55-3.22)	**4.50** (3.74-5.08)	**6.19** (5.76-7.69)	**9.51** (7.09-11.4)	587
50 years and older	11-12	**3.92** (3.46-4.44)	**3.49** (3.18-4.08)	**6.68** (4.70-7.95)	**10.1** (7.00-20.2)	**13.0** (10.1-23.8)	355
	13-14	**3.69** (3.19-4.26)	**3.57** (2.87-4.38)	**5.40** (4.57-6.84)	**8.94** (6.69-12.3)	**12.3** (8.88-25.4)	384
Gender							
Males	11-12	**3.34** (3.11-3.58)	**3.08** (2.75-3.29)	**5.29** (4.45-6.61)	**9.37** (7.47-10.1)	**10.6** (9.37-13.0)	537
	13-14	**3.01** (2.75-3.31)	**2.81** (2.65-3.27)	**4.38** (3.94-4.82)	**6.14** (5.16-7.74)	**8.94** (6.14-11.4)	522
Females	11-12	**3.75** (3.30-4.27)	**3.70** (3.10-4.23)	**5.87** (4.70-7.00)	**8.15** (7.00-11.5)	**12.2** (8.10-21.4)	349
	13-14	**3.49** (3.09-3.95)	**3.24** (2.85-3.85)	**5.19** (4.47-6.08)	**8.41** (6.28-10.5)	**12.3** (8.31-14.9)	449
Nonsmokers†							
Total	11-12	**4.15** (3.90-4.41)	**3.91** (3.62-4.23)	**6.43** (5.69-7.37)	**10.8** (9.69-12.3)	**14.9** (12.9-16.4)	1308
	13-14	**3.75** (3.49-4.03)	**3.55** (3.22-3.91)	**5.70** (5.14-6.21)	**9.54** (8.26-10.6)	**13.1** (11.6-15.0)	1548
Age group							
20-49 years	11-12	**4.06** (3.75-4.40)	**3.93** (3.50-4.39)	**6.65** (5.91-7.53)	**10.7** (9.45-12.5)	**14.3** (12.4-15.9)	643
18-49 years	13-14	**3.48** (3.25-3.73)	**3.31** (2.96-3.63)	**5.13** (4.78-5.70)	**8.44** (7.34-9.33)	**12.3** (9.71-13.5)	824
50 years and older	11-12	**4.24** (3.85-4.67)	**3.85** (3.47-4.38)	**6.02** (5.26-7.42)	**11.3** (9.37-12.8)	**15.4** (11.9-19.7)	665
	13-14	**4.10** (3.71-4.52)	**3.86** (3.40-4.38)	**6.43** (5.53-7.33)	**10.6** (8.67-12.8)	**14.6** (12.4-16.9)	724
Gender							
Males	11-12	**3.51** (3.16-3.91)	**3.31** (3.03-3.74)	**5.31** (4.51-6.20)	**8.38** (6.97-10.2)	**12.8** (9.07-15.8)	614
	13-14	**3.24** (2.98-3.52)	**3.00** (2.77-3.33)	**4.72** (4.31-5.11)	**7.99** (7.29-9.33)	**11.0** (10.0-13.5)	714
Females	11-12	**4.72** (4.46-5.00)	**4.54** (4.23-4.70)	**7.61** (7.00-8.63)	**11.9** (10.6-14.0)	**15.9** (14.0-17.3)	694
	13-14	**4.29** (3.92-4.68)	**4.03** (3.66-4.56)	**6.43** (5.81-7.13)	**10.7** (8.72-12.8)	**13.9** (12.4-16.9)	834

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Monomethylarsonic acid (2011 - 2014)

Metabolite of Arsenic

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**1.38** (1.09-1.78)	**1.90** (1.52-2.18)	886
	13-14	**.446** (.401-.496)	**.510** (.430-.590)	**.890** (.820-.990)	**1.36** (1.18-1.53)	**1.72** (1.42-2.04)	972
Age group							
20-49 years	11-12	*	**< LOD**	**.920** (<LOD-1.13)	**1.49** (1.23-1.87)	**2.06** (1.52-2.82)	531
18-49 years	13-14	**.484** (.423-.553)	**.560** (.470-.680)	**.920** (.830-1.03)	**1.36** (1.18-1.55)	**1.70** (1.39-1.97)	588
50 years and older	11-12	*	**< LOD**	**< LOD**	**1.12** (.960-1.44)	**1.61** (1.12-2.10)	355
	13-14	**.378** (.318-.448)	**.370** (.250-.460)	**.830** (.600-1.01)	**1.32** (1.01-1.91)	**1.81** (1.15-3.22)	384
Gender							
Males	11-12	*	**< LOD**	**.990** (<LOD-1.17)	**1.70** (1.38-2.04)	**2.13** (1.67-2.82)	537
	13-14	**.490** (.421-.571)	**.520** (.450-.720)	**.990** (.840-1.10)	**1.44** (1.12-1.72)	**1.74** (1.44-2.00)	523
Females	11-12	*	**< LOD**	**< LOD**	**1.07** (.920-1.23)	**1.31** (1.09-1.52)	349
	13-14	**.404** (.361-.452)	**.470** (.340-.550)	**.810** (.680-.900)	**1.27** (.960-1.52)	**1.55** (1.27-2.56)	449
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**1.30** (1.15-1.53)	**1.85** (1.53-2.08)	1309
	13-14	**.402** (.357-.452)	**.440** (.360-.530)	**.770** (.720-.850)	**1.19** (1.07-1.33)	**1.54** (1.27-1.88)	1549
Age group							
20-49 years	11-12	*	**< LOD**	**.930** (<LOD-1.06)	**1.55** (1.24-1.88)	**2.04** (1.66-2.40)	644
18-49 years	13-14	**.429** (.388-.475)	**.480** (.400-.540)	**.810** (.740-.870)	**1.24** (1.08-1.38)	**1.60** (1.31-1.95)	824
50 years and older	11-12	*	**< LOD**	**< LOD**	**1.13** (.970-1.41)	**1.53** (1.28-1.75)	665
	13-14	**.371** (.322-.429)	**.390** (.290-.490)	**.740** (.650-.830)	**1.14** (1.04-1.32)	**1.44** (1.22-1.80)	725
Gender							
Males	11-12	*	**< LOD**	**.960** (<LOD-1.18)	**1.52** (1.19-1.89)	**2.05** (1.75-2.47)	615
	13-14	**.461** (.407-.522)	**.520** (.440-.630)	**.900** (.830-.980)	**1.28** (1.13-1.41)	**1.64** (1.31-1.88)	715
Females	11-12	*	**< LOD**	**< LOD**	**1.15** (.990-1.42)	**1.58** (1.42-1.88)	694
	13-14	**.354** (.312-.402)	**.380** (.250-.480)	**.710** (.610-.750)	**1.10** (.890-1.27)	**1.39** (1.13-1.89)	834

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.89 and 0.2, respectively.

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

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

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Monomethylarsonic acid (creatinine corrected) (2011 - 2014)

Metabolite of Arsenic

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**2.25** (2.02-2.63)	**3.32** (2.63-3.72)	886
	13-14	**.458** (.415-.506)	**.471** (.424-.519)	**.761** (.671-.867)	**1.16** (1.00-1.30)	**1.42** (1.27-1.69)	971
Age group							
20-49 years	11-12	*	**< LOD**	**1.29** (<LOD-1.54)	**2.52** (1.82-3.32)	**3.71** (2.17-4.20)	531
18-49 years	13-14	**.456** (.409-.510)	**.484** (.434-.520)	**.728** (.681-.824)	**1.08** (.975-1.15)	**1.27** (1.11-1.41)	587
50 years and older	11-12	*	**< LOD**	**< LOD**	**2.10** (1.85-2.42)	**2.86** (2.33-3.50)	355
	13-14	**.463** (.373-.574)	**.445** (.350-.579)	**.800** (.609-1.13)	**1.33** (.978-1.84)	**1.73** (1.22-3.07)	384
Gender							
Males	11-12	*	**< LOD**	**1.21** (<LOD-1.37)	**1.97** (1.47-2.86)	**3.50** (2.00-3.72)	537
	13-14	**.443** (.397-.493)	**.455** (.408-.513)	**.746** (.636-.866)	**1.07** (.930-1.20)	**1.33** (1.13-1.60)	522
Females	11-12	*	**< LOD**	**< LOD**	**2.42** (2.10-2.92)	**3.15** (2.42-3.94)	349
	13-14	**.476** (.422-.536)	**.491** (.400-.579)	**.778** (.654-.967)	**1.27** (.978-1.45)	**1.48** (1.27-2.13)	449
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**2.31** (1.95-2.52)	**2.74** (2.42-3.53)	1308
	13-14	**.474** (.424-.529)	**.491** (.424-.556)	**.820** (.737-.911)	**1.27** (1.16-1.43)	**1.62** (1.39-1.91)	1548
Age group							
20-49 years	11-12	*	**< LOD**	**1.43** (<LOD-1.70)	**2.33** (1.85-2.86)	**3.32** (2.52-3.94)	643
18-49 years	13-14	**.458** (.402-.522)	**.478** (.415-.540)	**.785** (.696-.875)	**1.24** (1.06-1.43)	**1.55** (1.29-1.94)	824
50 years and older	11-12	*	**< LOD**	**< LOD**	**2.25** (1.85-2.52)	**2.63** (2.33-3.32)	665
	13-14	**.492** (.439-.552)	**.500** (.424-.582)	**.862** (.754-.991)	**1.35** (1.18-1.53)	**1.69** (1.44-2.04)	724
Gender							
Males	11-12	*	**< LOD**	**1.07** (<LOD-1.17)	**1.70** (1.43-1.85)	**2.17** (1.76-2.52)	614
	13-14	**.450** (.406-.499)	**.473** (.402-.541)	**.762** (.683-.857)	**1.20** (1.04-1.32)	**1.53** (1.30-1.73)	714
Females	11-12	*	**< LOD**	**< LOD**	**2.63** (2.33-2.86)	**3.50** (2.69-4.85)	694
	13-14	**.496** (.437-.563)	**.508** (.429-.583)	**.874** (.761-1.02)	**1.36** (1.18-1.55)	**1.77** (1.39-2.13)	834

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
< LOD means less than the limit of detection for the urine levels not corrected for creatinine.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Trimethylarsine oxide (2011 - 2012)‡

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	886
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	531
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	355
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	537
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	349
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1309
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	644
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	665
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	615
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	694

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.25.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result. .
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Trimethylarsine oxide (creatinine corrected) (2011 - 2012)‡

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	886
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	531
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	355
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	537
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	349
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1308
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	643
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	665
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	614
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	694

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
< LOD means less than the limit of detection for the urine levels not corrected for creatinine.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Arsenic_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Arsenic_FactSheet.html

Urinary Barium (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**1.15** (1.04-1.28)	**1.17** (1.01-1.36)	**2.34** (1.94-2.77)	**3.79** (3.25-4.31)	**5.34** (3.99-6.52)	891
	13-14	**1.12** (1.00-1.24)	**1.12** (.980-1.33)	**2.16** (1.94-2.38)	**3.95** (3.37-4.47)	**5.96** (4.78-7.27)	1954
Age group							
20-49 years	11-12	**1.23** (1.10-1.37)	**1.16** (.980-1.47)	**2.55** (1.94-3.20)	**3.88** (3.35-4.31)	**5.43** (4.25-6.52)	532
18-49 years	13-14	**1.18** (1.03-1.36)	**1.25** (.960-1.54)	**2.31** (1.94-2.85)	**4.09** (3.58-4.47)	**6.23** (4.58-7.67)	1184
50 years and older	11-12	**1.04** (.876-1.23)	**1.20** (.910-1.40)	**2.09** (1.72-2.37)	**3.43** (2.43-5.19)	**5.19** (3.79-7.71)	359
	13-14	**.994** (.850-1.16)	**1.01** (.870-1.15)	**1.78** (1.37-2.52)	**3.57** (2.68-5.47)	**5.47** (3.68-7.75)	770
Gender							
Males	11-12	**1.28** (1.07-1.52)	**1.33** (.980-1.68)	**2.68** (1.89-3.26)	**3.97** (3.25-5.49)	**5.80** (3.99-8.89)	540
	13-14	**1.17** (1.06-1.28)	**1.24** (1.03-1.48)	**2.11** (1.92-2.39)	**3.75** (3.14-4.66)	**5.60** (4.33-7.11)	1050
Females	11-12	**1.01** (.890-1.14)	**1.01** (.870-1.18)	**2.19** (1.63-2.55)	**3.14** (2.55-3.91)	**4.80** (3.78-5.52)	351
	13-14	**1.07** (.920-1.25)	**1.03** (.890-1.25)	**2.27** (1.78-2.68)	**4.09** (3.31-5.45)	**6.31** (4.42-7.75)	904
Nonsmokers†							
Total	11-12	**1.10** (1.01-1.20)	**1.16** (1.02-1.28)	**2.16** (1.94-2.44)	**3.74** (3.33-4.04)	**5.13** (4.61-5.57)	1309
	13-14	**1.03** (.952-1.12)	**1.01** (.900-1.16)	**2.08** (1.85-2.31)	**3.74** (3.19-4.27)	**5.34** (4.67-5.87)	3102
Age group							
20-49 years	11-12	**1.12** (1.02-1.23)	**1.21** (1.07-1.32)	**2.16** (1.91-2.46)	**3.63** (3.17-4.16)	**4.68** (4.32-5.52)	644
18-49 years	13-14	**1.10** (.988-1.21)	**1.07** (.920-1.27)	**2.27** (1.93-2.65)	**4.07** (3.42-4.78)	**5.78** (4.78-6.61)	1644
50 years and older	11-12	**1.08** (.970-1.21)	**1.09** (.890-1.29)	**2.18** (1.79-2.53)	**3.93** (3.01-5.13)	**5.46** (4.62-7.13)	665
	13-14	**.960** (.850-1.09)	**.960** (.820-1.16)	**1.92** (1.53-2.29)	**3.33** (2.77-4.24)	**4.91** (3.74-5.61)	1458
Gender							
Males	11-12	**1.20** (1.05-1.38)	**1.25** (1.09-1.38)	**2.18** (1.89-2.61)	**3.89** (3.34-4.40)	**5.78** (4.46-7.13)	615
	13-14	**1.16** (1.02-1.32)	**1.18** (1.00-1.40)	**2.32** (1.90-2.75)	**4.24** (3.15-5.49)	**5.78** (5.32-6.44)	1440
Females	11-12	**1.03** (.915-1.15)	**1.06** (.910-1.20)	**2.15** (1.58-2.57)	**3.63** (3.20-4.05)	**5.05** (3.96-5.52)	694
	13-14	**.925** (.844-1.02)	**.890** (.780-1.05)	**1.86** (1.66-2.16)	**3.34** (3.16-3.74)	**4.50** (4.02-5.41)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.1 and 0.06, respectively.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Barium_BiomonitoringSummary.html

Urinary Barium (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**1.27** (1.14-1.42)	**1.30** (1.14-1.44)	**2.14** (1.88-2.78)	**4.17** (3.12-5.76)	**5.76** (3.83-7.09)	891
	13-14	**1.16** (1.05-1.28)	**1.19** (1.00-1.34)	**2.23** (1.87-2.56)	**3.39** (3.08-3.84)	**4.49** (3.76-6.68)	1952
Age group							
20-49 years	11-12	**1.28** (1.11-1.48)	**1.26** (1.07-1.35)	**2.22** (1.81-2.97)	**4.45** (3.12-5.76)	**5.76** (4.13-7.22)	532
18-49 years	13-14	**1.12** (.980-1.28)	**1.13** (.956-1.34)	**2.15** (1.82-2.51)	**3.36** (3.08-3.70)	**4.27** (3.51-6.68)	1182
50 years and older	11-12	**1.25** (1.12-1.40)	**1.40** (1.20-1.55)	**1.95** (1.76-2.74)	**3.76** (3.00-5.68)	**6.66** (3.43-7.36)	359
	13-14	**1.25** (1.01-1.56)	**1.24** (.927-1.77)	**2.46** (1.74-3.07)	**3.50** (2.88-5.94)	**5.68** (3.39-14.4)	770
Gender							
Males	11-12	**1.22** (1.06-1.40)	**1.17** (1.00-1.46)	**1.95** (1.69-2.49)	**3.73** (2.74-5.76)	**5.76** (3.49-7.75)	540
	13-14	**1.06** (.960-1.17)	**1.09** (.974-1.19)	**1.93** (1.82-2.28)	**3.26** (3.05-3.55)	**4.14** (3.55-5.94)	1048
Females	11-12	**1.34** (1.10-1.63)	**1.38** (1.15-1.69)	**2.38** (1.79-3.62)	**4.67** (2.89-6.41)	**6.39** (3.94-10.4)	351
	13-14	**1.28** (1.11-1.47)	**1.32** (1.00-1.60)	**2.44** (1.83-3.05)	**3.53** (3.08-4.12)	**4.96** (3.70-9.44)	904
Nonsmokers†							
Total	11-12	**1.29** (1.18-1.41)	**1.30** (1.17-1.42)	**2.28** (1.95-2.70)	**3.88** (3.48-4.37)	**6.04** (4.39-8.33)	1308
	13-14	**1.22** (1.14-1.30)	**1.17** (1.09-1.27)	**2.15** (1.95-2.41)	**4.06** (3.73-4.36)	**5.36** (4.60-6.11)	3100
Age group							
20-49 years	11-12	**1.23** (1.08-1.40)	**1.27** (1.11-1.42)	**2.00** (1.75-2.39)	**3.57** (3.09-4.19)	**5.21** (4.03-6.84)	643
18-49 years	13-14	**1.17** (1.08-1.27)	**1.11** (.994-1.27)	**2.00** (1.76-2.38)	**3.73** (2.99-4.41)	**4.78** (4.36-5.62)	1644
50 years and older	11-12	**1.35** (1.22-1.50)	**1.36** (1.21-1.54)	**2.64** (2.15-2.97)	**4.23** (3.48-5.11)	**6.83** (4.71-9.68)	665
	13-14	**1.27** (1.13-1.42)	**1.23** (1.07-1.51)	**2.36** (2.02-2.72)	**4.28** (3.96-4.60)	**6.11** (4.58-7.19)	1456
Gender							
Males	11-12	**1.07** (.953-1.20)	**1.04** (.918-1.16)	**1.87** (1.64-2.17)	**3.20** (2.71-3.83)	**4.26** (3.44-5.89)	614
	13-14	**1.12** (1.01-1.24)	**1.07** (.994-1.21)	**2.00** (1.74-2.44)	**3.71** (2.94-4.36)	**4.50** (4.17-5.19)	1438
Females	11-12	**1.49** (1.34-1.66)	**1.45** (1.36-1.57)	**2.64** (2.22-3.09)	**4.71** (3.52-5.54)	**6.84** (5.11-8.88)	694
	13-14	**1.31** (1.21-1.41)	**1.27** (1.14-1.47)	**2.34** (2.02-2.64)	**4.25** (3.89-5.02)	**6.23** (5.51-7.86)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Barium_BiomonitoringSummary.html

Urinary Cadmium (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.304** (.260-.355)	**.321** (.271-.413)	**.683** (.552-.783)	**1.29** (1.02-1.59)	**1.80** (1.56-2.33)	891
	13-14	**.234** (.217-.253)	**.253** (.230-.276)	**.539** (.469-.623)	**.895** (.831-.977)	**1.22** (1.06-1.39)	1954
Age group							
20-49 years	11-12	**.215** (.177-.262)	**.227** (.163-.299)	**.490** (.371-.604)	**.840** (.684-1.10)	**1.27** (1.01-1.49)	532
18-49 years	13-14	**.167** (.152-.184)	**.167** (.154-.185)	**.361** (.313-.418)	**.691** (.553-.767)	**.806** (.754-.927)	1184
50 years and older	11-12	**.526** (.452-.611)	**.479** (.423-.608)	**1.03** (.761-1.44)	**1.80** (1.52-2.72)	**3.45** (2.12-3.89)	359
	13-14	**.475** (.423-.532)	**.490** (.396-.570)	**.853** (.741-1.03)	**1.30** (1.12-1.60)	**1.73** (1.44-2.10)	770
Gender							
Males	11-12	**.317** (.270-.371)	**.364** (.292-.423)	**.717** (.559-.828)	**1.31** (1.01-1.69)	**1.69** (1.29-2.09)	540
	13-14	**.208** (.183-.237)	**.227** (.174-.264)	**.497** (.427-.570)	**.855** (.774-.959)	**1.11** (.959-1.39)	1050
Females	11-12	**.288** (.228-.363)	**.303** (.222-.416)	**.629** (.456-.741)	**1.25** (.783-2.05)	**2.05** (1.18-2.53)	351
	13-14	**.265** (.240-.292)	**.276** (.237-.313)	**.563** (.464-.736)	**.950** (.804-1.12)	**1.25** (1.10-1.55)	904
Nonsmokers†							
Total	11-12	**.174** (.159-.191)	**.177** (.162-.192)	**.313** (.280-.362)	**.611** (.522-.694)	**.846** (.748-1.04)	1309
	13-14	**.138** (.130-.147)	**.144** (.133-.154)	**.286** (.264-.312)	**.567** (.515-.608)	**.788** (.691-.945)	3102
Age group							
20-49 years	11-12	**.130** (.113-.150)	**.134** (.114-.156)	**.233** (.186-.279)	**.461** (.333-.606)	**.642** (.551-.827)	644
18-49 years	13-14	**.101** (.093-.109)	**.095** (.087-.109)	**.201** (.180-.218)	**.352** (.310-.434)	**.603** (.479-.643)	1644
50 years and older	11-12	**.236** (.211-.263)	**.228** (.216-.259)	**.393** (.334-.466)	**.760** (.607-.873)	**1.05** (.842-1.52)	665
	13-14	**.200** (.184-.217)	**.214** (.190-.232)	**.392** (.338-.439)	**.707** (.606-.848)	**1.14** (.820-1.30)	1458
Gender							
Males	11-12	**.167** (.151-.184)	**.170** (.161-.185)	**.280** (.241-.338)	**.537** (.414-.664)	**.826** (.595-.939)	615
	13-14	**.138** (.128-.147)	**.143** (.131-.153)	**.266** (.230-.312)	**.510** (.406-.614)	**.726** (.552-1.21)	1440
Females	11-12	**.180** (.160-.204)	**.184** (.153-.214)	**.339** (.300-.399)	**.643** (.573-.782)	**.931** (.782-1.37)	694
	13-14	**.139** (.124-.155)	**.146** (.125-.166)	**.302** (.271-.340)	**.603** (.526-.692)	**.820** (.705-.965)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.056 and 0.036, respectively.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Cadmium_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Cadmium_FactSheet.html

Urinary Cadmium (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.336** (.306-.368)	**.370** (.333-.418)	**.631** (.558-.734)	**1.09** (1.00-1.21)	**1.48** (1.28-1.71)	891
	13-14	**.244** (.218-.273)	**.259** (.216-.310)	**.528** (.436-.652)	**.910** (.707-1.10)	**1.16** (.976-1.41)	1952
Age group							
20-49 years	11-12	**.225** (.200-.253)	**.235** (.200-.263)	**.424** (.363-.470)	**.643** (.595-.735)	**.935** (.724-1.19)	532
18-49 years	13-14	**.159** (.147-.171)	**.157** (.145-.174)	**.295** (.270-.326)	**.496** (.413-.657)	**.723** (.587-.943)	1182
50 years and older	11-12	**.633** (.574-.698)	**.594** (.507-.734)	**.977** (.817-1.13)	**1.48** (1.27-1.72)	**1.86** (1.48-2.21)	359
	13-14	**.599** (.542-.662)	**.617** (.528-.675)	**.907** (.711-1.11)	**1.34** (1.04-1.57)	**1.53** (1.28-1.79)	770
Gender							
Males	11-12	**.303** (.264-.347)	**.371** (.288-.433)	**.568** (.482-.706)	**.932** (.761-1.13)	**1.24** (.907-1.71)	540
	13-14	**.189** (.173-.207)	**.189** (.170-.212)	**.436** (.403-.466)	**.697** (.602-.801)	**.943** (.727-1.17)	1048
Females	11-12	**.384** (.330-.446)	**.370** (.327-.458)	**.735** (.595-.873)	**1.28** (.977-1.51)	**1.68** (1.19-2.28)	351
	13-14	**.317** (.273-.367)	**.337** (.276-.404)	**.663** (.568-.727)	**1.05** (.949-1.13)	**1.27** (1.11-1.65)	904
Nonsmokers†							
Total	11-12	**.204** (.187-.223)	**.195** (.181-.219)	**.359** (.319-.399)	**.568** (.503-.660)	**.870** (.638-1.07)	1308
	13-14	**.163** (.155-.171)	**.160** (.146-.178)	**.298** (.274-.314)	**.549** (.489-.612)	**.753** (.674-.838)	3100
Age group							
20-49 years	11-12	**.143** (.128-.160)	**.138** (.125-.152)	**.230** (.200-.278)	**.384** (.310-.470)	**.538** (.401-.743)	643
18-49 years	13-14	**.108** (.100-.116)	**.108** (.097-.117)	**.180** (.158-.202)	**.287** (.264-.316)	**.399** (.349-.526)	1644
50 years and older	11-12	**.294** (.270-.321)	**.296** (.257-.329)	**.458** (.409-.521)	**.732** (.583-.942)	**1.09** (.892-1.22)	665
	13-14	**.264** (.247-.281)	**.262** (.241-.280)	**.422** (.391-.461)	**.726** (.639-.821)	**.964** (.821-1.20)	1456
Gender							
Males	11-12	**.149** (.132-.167)	**.144** (.132-.159)	**.232** (.196-.297)	**.406** (.327-.524)	**.554** (.463-.713)	614
	13-14	**.133** (.124-.142)	**.126** (.109-.145)	**.227** (.207-.262)	**.375** (.339-.455)	**.613** (.455-.700)	1438
Females	11-12	**.261** (.235-.290)	**.271** (.242-.290)	**.443** (.382-.476)	**.672** (.568-.892)	**1.03** (.823-1.22)	694
	13-14	**.196** (.182-.211)	**.203** (.177-.220)	**.356** (.318-.395)	**.627** (.581-.713)	**.928** (.713-1.04)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Cadmium_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Cadmium_FactSheet.html

Urinary Cesium (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**3.71** (3.49-3.94)	**4.01** (3.56-4.38)	**6.34** (5.94-6.60)	**8.72** (7.71-10.2)	**11.1** (8.86-11.9)	891
	13-14	**3.93** (3.62-4.26)	**4.11** (3.72-4.52)	**6.94** (6.35-7.66)	**9.82** (9.21-10.8)	**11.9** (10.1-14.2)	1954
Age group							
20-49 years	11-12	**3.63** (3.36-3.92)	**3.98** (3.48-4.52)	**6.34** (5.74-7.03)	**8.61** (7.54-10.6)	**10.9** (7.76-11.9)	532
18-49 years	13-14	**4.00** (3.57-4.47)	**4.15** (3.72-4.89)	**7.11** (6.32-8.15)	**9.72** (9.01-10.8)	**12.3** (9.72-14.9)	1184
50 years and older	11-12	**3.84** (3.42-4.31)	**4.03** (3.27-4.61)	**6.28** (5.53-6.62)	**8.86** (7.52-10.8)	**11.2** (8.69-11.5)	359
	13-14	**3.79** (3.46-4.15)	**3.92** (3.37-4.29)	**6.61** (5.70-7.40)	**9.88** (8.31-10.9)	**11.6** (9.88-14.0)	770
Gender							
Males	11-12	**3.88** (3.56-4.23)	**4.42** (3.56-4.90)	**6.63** (6.29-7.12)	**8.41** (7.70-10.6)	**11.2** (8.21-11.9)	540
	13-14	**3.96** (3.49-4.48)	**4.14** (3.72-4.87)	**6.71** (6.09-7.65)	**9.26** (8.15-10.6)	**10.8** (9.26-14.2)	1050
Females	11-12	**3.49** (3.04-4.02)	**3.79** (3.20-4.03)	**5.80** (4.66-6.64)	**9.20** (6.68-11.1)	**11.1** (7.19-16.0)	351
	13-14	**3.90** (3.44-4.42)	**3.99** (3.27-4.75)	**7.05** (6.00-8.61)	**10.6** (9.25-11.9)	**12.8** (9.88-14.9)	904
Nonsmokers†							
Total	11-12	**3.86** (3.64-4.08)	**4.10** (3.88-4.39)	**6.28** (5.90-6.85)	**9.08** (8.48-9.44)	**10.5** (9.52-11.5)	1308
	13-14	**3.85** (3.63-4.08)	**4.09** (3.77-4.38)	**6.41** (6.20-6.76)	**9.01** (8.28-9.79)	**11.0** (10.0-11.7)	3102
Age group							
20-49 years	11-12	**3.63** (3.33-3.97)	**3.93** (3.66-4.28)	**6.25** (5.59-6.95)	**9.08** (7.92-9.27)	**9.87** (9.48-11.2)	644
18-49 years	13-14	**3.86** (3.67-4.07)	**4.20** (3.77-4.51)	**6.47** (6.23-6.82)	**8.88** (8.08-9.81)	**10.4** (9.80-11.7)	1644
50 years and older	11-12	**4.10** (3.83-4.39)	**4.28** (3.91-4.59)	**6.32** (5.76-7.10)	**9.10** (8.06-10.2)	**10.6** (9.44-13.7)	664
	13-14	**3.84** (3.48-4.23)	**3.97** (3.46-4.44)	**6.37** (5.71-7.08)	**9.14** (7.69-10.4)	**11.2** (9.22-13.5)	1458
Gender							
Males	11-12	**4.42** (4.16-4.70)	**4.71** (4.28-5.17)	**6.63** (6.13-7.20)	**9.18** (8.15-9.88)	**10.7** (9.74-12.8)	614
	13-14	**4.15** (3.80-4.54)	**4.47** (4.01-4.91)	**6.83** (6.36-7.45)	**9.39** (8.42-10.3)	**11.1** (9.39-13.7)	1440
Females	11-12	**3.47** (3.22-3.73)	**3.64** (3.44-3.90)	**5.90** (5.31-6.62)	**8.60** (7.79-9.48)	**9.94** (9.21-11.4)	694
	13-14	**3.59** (3.36-3.84)	**3.68** (3.39-4.12)	**6.09** (5.61-6.49)	**8.33** (7.78-9.27)	**10.7** (9.81-11.5)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.12 and 0.086, respectively.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Cesium_BiomonitoringSummary.html

Urinary Cesium (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**4.10** (3.78-4.44)	**3.97** (3.75-4.30)	**5.55** (5.22-5.70)	**8.18** (6.42-10.7)	**10.9** (7.48-14.6)	891
	13-14	**4.08** (3.85-4.34)	**3.94** (3.64-4.36)	**5.67** (5.30-6.08)	**8.00** (7.13-8.59)	**8.96** (8.51-10.1)	1952
Age group							
20-49 years	11-12	**3.79** (3.47-4.15)	**3.69** (3.26-4.04)	**5.41** (4.57-5.72)	**7.73** (5.82-9.38)	**9.27** (7.48-14.4)	532
18-49 years	13-14	**3.79** (3.52-4.08)	**3.66** (3.27-4.11)	**5.11** (4.70-5.64)	**6.98** (6.35-8.08)	**8.35** (7.13-10.1)	1182
50 years and older	11-12	**4.63** (4.27-5.02)	**4.50** (4.03-4.91)	**6.10** (5.47-7.01)	**8.83** (7.01-11.5)	**11.5** (7.36-32.4)	359
	13-14	**4.78** (4.40-5.19)	**4.67** (4.13-5.41)	**7.06** (5.94-7.81)	**8.67** (8.38-9.11)	**9.95** (8.91-11.5)	770
Gender							
Males	11-12	**3.71** (3.39-4.07)	**3.68** (3.23-4.13)	**4.88** (4.54-5.39)	**6.35** (5.62-7.72)	**8.00** (6.27-14.4)	540
	13-14	**3.60** (3.34-3.88)	**3.55** (3.21-3.86)	**4.79** (4.50-5.20)	**6.55** (5.64-7.28)	**7.55** (6.83-8.89)	1048
Females	11-12	**4.65** (4.22-5.13)	**4.53** (4.13-5.10)	**6.95** (5.68-7.79)	**9.27** (7.77-11.5)	**11.5** (8.29-14.6)	351
	13-14	**4.66** (4.37-4.97)	**4.58** (4.12-5.06)	**6.69** (5.81-7.75)	**8.67** (8.03-9.89)	**10.3** (8.71-12.5)	904
Nonsmokers†							
Total	11-12	**4.51** (4.26-4.79)	**4.46** (4.22-4.76)	**6.25** (5.71-6.77)	**8.25** (7.64-8.77)	**10.3** (8.80-12.1)	1307
	13-14	**4.54** (4.37-4.73)	**4.44** (4.22-4.69)	**6.24** (6.03-6.54)	**8.48** (8.21-8.86)	**10.3** (9.63-10.9)	3100
Age group							
20-49 years	11-12	**4.00** (3.80-4.21)	**4.00** (3.70-4.34)	**5.59** (5.05-5.92)	**7.01** (6.45-7.43)	**8.19** (7.43-8.75)	643
18-49 years	13-14	**4.14** (3.91-4.37)	**4.04** (3.67-4.35)	**5.59** (5.20-6.03)	**7.81** (6.86-8.30)	**9.47** (8.26-10.9)	1644
50 years and older	11-12	**5.12** (4.64-5.64)	**4.89** (4.36-5.66)	**7.19** (5.91-8.22)	**9.48** (8.26-10.7)	**12.1** (10.2-13.5)	664
	13-14	**5.07** (4.79-5.37)	**5.00** (4.71-5.43)	**6.84** (6.46-7.39)	**9.50** (8.50-10.1)	**10.7** (9.98-12.8)	1456
Gender							
Males	11-12	**3.93** (3.61-4.29)	**3.79** (3.54-4.27)	**5.38** (4.79-6.24)	**7.93** (6.47-8.52)	**8.75** (8.07-10.3)	613
	13-14	**4.02** (3.82-4.24)	**4.00** (3.76-4.19)	**5.19** (4.93-5.49)	**7.06** (6.42-8.11)	**8.68** (7.81-10.1)	1438
Females	11-12	**5.02** (4.77-5.29)	**4.96** (4.75-5.20)	**6.62** (6.25-7.17)	**8.70** (8.10-9.98)	**11.9** (9.47-13.5)	694
	13-14	**5.08** (4.88-5.28)	**5.09** (4.84-5.38)	**7.03** (6.63-7.39)	**9.51** (8.65-10.4)	**11.3** (10.5-12.5)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Cesium_BiomonitoringSummary.html

Urinary Cobalt (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.307** (.281-.336)	**.308** (.277-.332)	**.518** (.457-.571)	**.874** (.744-.963)	**1.20** (.958-1.59)	890
	13-14	**.400** (.356-.449)	**.429** (.364-.488)	**.707** (.651-.757)	**1.05** (.966-1.17)	**1.40** (1.29-1.54)	1954
Age group							
20-49 years	11-12	**.310** (.281-.342)	**.314** (.273-.344)	**.499** (.430-.581)	**.904** (.690-1.04)	**1.32** (.912-1.81)	531
18-49 years	13-14	**.419** (.371-.473)	**.463** (.421-.510)	**.724** (.668-.798)	**1.13** (.970-1.23)	**1.45** (1.33-1.55)	1184
50 years and older	11-12	**.304** (.270-.341)	**.292** (.251-.374)	**.518** (.448-.603)	**.857** (.670-1.00)	**1.03** (.857-1.36)	359
	13-14	**.361** (.307-.426)	**.353** (.281-.462)	**.638** (.483-.775)	**1.02** (.779-1.28)	**1.35** (1.06-2.39)	770
Gender							
Males	11-12	**.290** (.259-.325)	**.296** (.254-.331)	**.516** (.425-.556)	**.688** (.603-.885)	**.904** (.744-.968)	539
	13-14	**.375** (.345-.407)	**.433** (.382-.473)	**.644** (.583-.691)	**.816** (.785-.871)	**1.02** (.871-1.31)	1050
Females	11-12	**.331** (.301-.365)	**.321** (.258-.351)	**.556** (.456-.681)	**1.14** (.803-1.39)	**1.59** (1.17-2.02)	351
	13-14	**.427** (.356-.513)	**.427** (.334-.545)	**.811** (.667-1.00)	**1.28** (1.13-1.48)	**1.78** (1.39-2.28)	904
Nonsmokers†							
Total	11-12	**.305** (.284-.327)	**.296** (.284-.321)	**.476** (.453-.513)	**.811** (.712-.982)	**1.28** (1.03-1.58)	1309
	13-14	**.367** (.349-.386)	**.375** (.356-.400)	**.637** (.603-.669)	**.925** (.879-1.05)	**1.24** (1.17-1.35)	3102
Age group							
20-49 years	11-12	**.315** (.292-.340)	**.326** (.293-.358)	**.535** (.475-.595)	**.883** (.736-1.06)	**1.44** (1.00-1.61)	644
18-49 years	13-14	**.378** (.345-.415)	**.407** (.362-.458)	**.673** (.635-.728)	**1.01** (.892-1.10)	**1.30** (1.17-1.40)	1644
50 years and older	11-12	**.294** (.269-.322)	**.284** (.265-.306)	**.447** (.401-.479)	**.729** (.588-.986)	**1.16** (.810-1.62)	665
	13-14	**.354** (.337-.372)	**.349** (.326-.375)	**.577** (.517-.647)	**.883** (.749-1.08)	**1.23** (.930-2.02)	1458
Gender							
Males	11-12	**.296** (.273-.321)	**.292** (.277-.324)	**.424** (.374-.476)	**.659** (.545-.752)	**.858** (.721-1.03)	615
	13-14	**.359** (.333-.387)	**.376** (.340-.419)	**.604** (.544-.649)	**.827** (.757-.925)	**1.08** (.900-1.23)	1440
Females	11-12	**.311** (.281-.345)	**.310** (.277-.355)	**.541** (.482-.600)	**1.07** (.736-1.35)	**1.53** (1.16-1.84)	694
	13-14	**.374** (.342-.410)	**.375** (.342-.420)	**.671** (.639-.717)	**1.09** (.929-1.21)	**1.40** (1.25-1.63)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.048 and 0.023, respectively.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Cobalt_BiomonitoringSummary.html

Urinary Cobalt (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.338** (.310-.369)	**.323** (.289-.339)	**.498** (.468-.514)	**.757** (.699-.823)	**1.16** (.875-1.50)	890
	13-14	**.415** (.383-.451)	**.406** (.367-.441)	**.597** (.538-.661)	**.924** (.829-.999)	**1.22** (1.04-1.46)	1952
Age group							
20-49 years	11-12	**.321** (.285-.362)	**.290** (.260-.338)	**.474** (.442-.513)	**.767** (.699-.890)	**1.26** (.782-1.92)	531
18-49 years	13-14	**.397** (.367-.431)	**.403** (.353-.427)	**.559** (.513-.629)	**.855** (.747-.952)	**1.16** (.940-1.31)	1182
50 years and older	11-12	**.366** (.339-.395)	**.336** (.329-.378)	**.509** (.481-.573)	**.716** (.622-.888)	**1.04** (.800-1.50)	359
	13-14	**.456** (.401-.519)	**.436** (.367-.514)	**.673** (.597-.736)	**.999** (.852-1.29)	**1.53** (1.12-1.98)	770
Gender							
Males	11-12	**.275** (.254-.297)	**.269** (.235-.297)	**.400** (.336-.465)	**.546** (.490-.622)	**.635** (.616-.751)	539
	13-14	**.341** (.308-.377)	**.347** (.315-.387)	**.448** (.414-.513)	**.624** (.544-.682)	**.721** (.643-.952)	1048
Females	11-12	**.441** (.375-.519)	**.419** (.337-.503)	**.648** (.572-.729)	**1.13** (.800-1.61)	**1.88** (1.02-2.51)	351
	13-14	**.510** (.458-.569)	**.509** (.434-.586)	**.749** (.695-.829)	**1.17** (1.00-1.24)	**1.53** (1.23-1.74)	904
Nonsmokers†							
Total	11-12	**.357** (.339-.376)	**.333** (.304-.350)	**.520** (.469-.576)	**.893** (.713-1.10)	**1.30** (1.10-1.59)	1308
	13-14	**.433** (.415-.450)	**.420** (.390-.443)	**.611** (.581-.659)	**.931** (.872-1.02)	**1.31** (1.17-1.51)	3100
Age group							
20-49 years	11-12	**.347** (.323-.372)	**.314** (.282-.348)	**.531** (.465-.613)	**1.02** (.773-1.12)	**1.27** (1.10-1.58)	643
18-49 years	13-14	**.405** (.386-.425)	**.390** (.370-.422)	**.585** (.550-.617)	**.888** (.817-.935)	**1.09** (.971-1.28)	1644
50 years and older	11-12	**.367** (.337-.401)	**.345** (.304-.390)	**.513** (.451-.594)	**.786** (.604-1.17)	**1.41** (.876-2.13)	665
	13-14	**.467** (.440-.496)	**.444** (.405-.488)	**.679** (.593-.728)	**1.13** (.877-1.35)	**1.50** (1.25-2.09)	1456
Gender							
Males	11-12	**.263** (.246-.282)	**.242** (.228-.260)	**.352** (.320-.391)	**.511** (.425-.626)	**.665** (.514-1.03)	614
	13-14	**.347** (.326-.369)	**.333** (.312-.351)	**.476** (.438-.520)	**.679** (.593-.726)	**.884** (.683-1.41)	1438
Females	11-12	**.451** (.420-.486)	**.424** (.401-.458)	**.638** (.594-.713)	**1.10** (.969-1.27)	**1.58** (1.18-2.24)	694
	13-14	**.529** (.495-.565)	**.517** (.474-.550)	**.767** (.703-.829)	**1.15** (.980-1.31)	**1.50** (1.26-2.02)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Cobalt_BiomonitoringSummary.html

Urinary Lead (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.473** (.395-.566)	**.430** (.390-.550)	**.860** (.740-1.01)	**1.51** (1.15-1.97)	**2.36** (1.68-4.62)	891
	13-14	**.376** (.339-.417)	**.380** (.330-.450)	**.680** (.590-.820)	**1.16** (1.01-1.30)	**1.50** (1.31-1.80)	1954
Age group							
20-49 years	11-12	**.420** (.347-.509)	**.390** (.320-.560)	**.780** (.660-.990)	**1.20** (1.03-1.71)	**1.76** (1.35-3.07)	532
18-49 years	13-14	**.343** (.297-.396)	**.350** (.300-.440)	**.610** (.510-.680)	**1.01** (.870-1.16)	**1.34** (1.13-1.92)	1184
50 years and older	11-12	**.570** (.453-.718)	**.500** (.430-.700)	**1.01** (.720-1.36)	**1.91** (1.36-2.97)	**3.16** (1.62-6.83)	359
	13-14	**.456** (.393-.530)	**.460** (.390-.570)	**.920** (.700-1.08)	**1.36** (1.25-1.41)	**1.72** (1.40-2.03)	770
Gender							
Males	11-12	**.575** (.467-.708)	**.600** (.430-.740)	**1.00** (.810-1.20)	**1.76** (1.39-2.54)	**3.07** (1.73-5.03)	540
	13-14	**.429** (.378-.487)	**.460** (.380-.510)	**.820** (.680-.950)	**1.21** (1.17-1.50)	**1.90** (1.37-2.14)	1050
Females	11-12	**.367** (.309-.434)	**.350** (.280-.410)	**.640** (.500-.760)	**1.15** (.750-1.47)	**1.58** (1.15-3.45)	351
	13-14	**.328** (.289-.371)	**.340** (.300-.370)	**.570** (.460-.690)	**1.01** (.830-1.24)	**1.30** (1.15-1.41)	904
Nonsmokers†							
Total	11-12	**.359** (.331-.389)	**.370** (.330-.400)	**.650** (.570-.710)	**1.02** (.890-1.18)	**1.38** (1.25-1.56)	1309
	13-14	**.275** (.260-.290)	**.280** (.270-.290)	**.500** (.480-.530)	**.800** (.730-.910)	**1.16** (.970-1.48)	3102
Age group							
20-49 years	11-12	**.297** (.264-.333)	**.300** (.260-.340)	**.550** (.500-.640)	**.930** (.770-1.14)	**1.26** (1.01-1.38)	644
18-49 years	13-14	**.227** (.209-.248)	**.240** (.220-.270)	**.410** (.360-.480)	**.660** (.600-.730)	**.900** (.730-1.04)	1644
50 years and older	11-12	**.438** (.393-.488)	**.440** (.390-.480)	**.720** (.600-.810)	**1.11** (.920-1.38)	**1.63** (1.29-2.16)	665
	13-14	**.342** (.321-.365)	**.340** (.320-.370)	**.600** (.530-.670)	**1.01** (.830-1.25)	**1.57** (1.22-2.40)	1458
Gender							
Males	11-12	**.419** (.377-.466)	**.420** (.390-.450)	**.700** (.600-.790)	**1.11** (.890-1.36)	**1.56** (1.17-2.13)	615
	13-14	**.322** (.301-.344)	**.320** (.290-.360)	**.580** (.510-.620)	**.940** (.780-1.17)	**1.54** (1.22-2.21)	1440
Females	11-12	**.318** (.286-.355)	**.320** (.300-.360)	**.590** (.500-.680)	**.960** (.820-1.15)	**1.32** (1.07-1.41)	694
	13-14	**.238** (.219-.258)	**.240** (.220-.270)	**.450** (.420-.480)	**.720** (.630-.780)	**.950** (.790-1.12)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.08 and 0.03, respectively.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Lead_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Lead_FactSheet.html

Urinary Lead (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.522** (.464-.587)	**.494** (.439-.549)	**.791** (.677-.924)	**1.23** (1.08-1.51)	**1.91** (1.26-3.70)	891
	13-14	**.391** (.357-.428)	**.375** (.337-.419)	**.625** (.579-.688)	**.977** (.829-1.08)	**1.26** (1.07-1.61)	1952
Age group							
20-49 years	11-12	**.439** (.388-.497)	**.405** (.374-.448)	**.616** (.538-.765)	**1.10** (.833-1.29)	**1.66** (1.12-2.76)	532
18-49 years	13-14	**.325** (.298-.355)	**.318** (.285-.333)	**.469** (.429-.563)	**.775** (.660-.865)	**1.04** (.836-1.26)	1182
50 years and older	11-12	**.687** (.586-.805)	**.664** (.559-.764)	**.956** (.810-1.21)	**1.51** (1.14-2.15)	**2.15** (1.23-4.53)	359
	13-14	**.576** (.513-.646)	**.583** (.527-.634)	**.833** (.727-.983)	**1.19** (1.01-1.66)	**1.77** (1.36-2.20)	770
Gender							
Males	11-12	**.550** (.492-.614)	**.496** (.441-.590)	**.833** (.714-1.03)	**1.42** (1.12-1.90)	**2.17** (1.51-3.70)	540
	13-14	**.391** (.357-.427)	**.375** (.330-.418)	**.620** (.545-.702)	**.992** (.821-1.06)	**1.33** (1.05-1.67)	1048
Females	11-12	**.488** (.413-.577)	**.493** (.418-.542)	**.714** (.590-.864)	**1.14** (.867-1.34)	**1.34** (1.10-4.00)	351
	13-14	**.391** (.343-.447)	**.376** (.333-.448)	**.632** (.563-.727)	**.950** (.775-1.25)	**1.22** (1.01-1.54)	904
Nonsmokers†							
Total	11-12	**.421** (.391-.454)	**.410** (.386-.433)	**.653** (.591-.704)	**.939** (.835-1.10)	**1.46** (1.21-1.64)	1308
	13-14	**.324** (.311-.339)	**.316** (.302-.328)	**.526** (.500-.558)	**.823** (.758-.907)	**1.16** (1.00-1.32)	3100
Age group							
20-49 years	11-12	**.328** (.291-.369)	**.316** (.268-.374)	**.515** (.458-.580)	**.731** (.656-.911)	**.939** (.759-1.16)	643
18-49 years	13-14	**.243** (.222-.266)	**.231** (.205-.253)	**.375** (.338-.409)	**.576** (.486-.706)	**.822** (.640-1.02)	1644
50 years and older	11-12	**.546** (.491-.608)	**.496** (.433-.579)	**.759** (.680-.812)	**1.26** (1.04-1.62)	**1.71** (1.47-2.12)	665
	13-14	**.453** (.427-.481)	**.452** (.414-.494)	**.661** (.596-.750)	**1.00** (.907-1.20)	**1.47** (1.16-1.84)	1456
Gender							
Males	11-12	**.375** (.329-.427)	**.369** (.320-.425)	**.543** (.490-.622)	**.833** (.704-1.08)	**1.21** (.929-1.65)	614
	13-14	**.312** (.289-.337)	**.302** (.273-.324)	**.485** (.433-.540)	**.741** (.621-1.00)	**1.16** (.849-1.72)	1438
Females	11-12	**.461** (.420-.507)	**.444** (.400-.510)	**.716** (.647-.774)	**1.05** (.909-1.29)	**1.61** (1.22-1.80)	694
	13-14	**.336** (.317-.356)	**.331** (.313-.353)	**.558** (.516-.617)	**.897** (.792-.970)	**1.18** (.976-1.30)	1662

†Cigarette nonsmokers who used other tobacco products were excluded.See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Lead_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Lead_FactSheet.html

Urinary Manganese (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.122** (.110-.135)	**.120** (.100-.140)	**.200** (.180-.220)	**.300** (.260-.350)	**.410** (.290-.630)	891
	13-14	*	**< LOD**	**.130** (<LOD-.150)	**.220** (.200-.250)	**.300** (.260-.390)	1954
Age group							
20-49 years	11-12	**.133** (.117-.152)	**.130** (.110-.150)	**.220** (.190-.260)	**.350** (.260-.570)	**.570** (.280-.660)	532
18-49 years	13-14	*	**< LOD**	**.130** (<LOD-.160)	**.230** (.210-.260)	**.310** (.260-.440)	1184
50 years and older	11-12	**.106** (.090-.125)	**.100** (.080-.130)	**.160** (.120-.210)	**.250** (.190-.300)	**.300** (.250-.350)	359
	13-14	*	**< LOD**	**< LOD**	**.200** (.150-.250)	**.270** (.210-.310)	770
Gender							
Males	11-12	**.114** (.099-.131)	**.110** (.080-.140)	**.190** (.160-.210)	**.270** (.230-.350)	**.370** (.270-.570)	540
	13-14	*	**< LOD**	**< LOD**	**.210** (.140-.240)	**.260** (.210-.310)	1050
Females	11-12	**.133** (.117-.152)	**.130** (.110-.150)	**.220** (.170-.270)	**.310** (.250-.630)	**.600** (.270-.920)	351
	13-14	*	**< LOD**	**.140** (.130-.160)	**.250** (.210-.290)	**.350** (.280-.710)	904
Nonsmokers†							
Total	11-12	**.121** (.109-.134)	**.120** (.100-.140)	**.190** (.170-.220)	**.270** (.250-.300)	**.350** (.300-.400)	1309
	13-14	*	**< LOD**	**.130** (<LOD-.140)	**.200** (.180-.220)	**.270** (.240-.330)	3102
Age group							
20-49 years	11-12	**.120** (.106-.136)	**.110** (.100-.140)	**.190** (.170-.220)	**.280** (.250-.300)	**.360** (.300-.410)	644
18-49 years	13-14	*	**< LOD**	**.130** (<LOD-.140)	**.190** (.170-.210)	**.240** (.210-.320)	1644
50 years and older	11-12	**.123** (.111-.136)	**.130** (.100-.150)	**.190** (.170-.220)	**.270** (.240-.300)	**.340** (.290-.400)	665
	13-14	*	**< LOD**	**.130** (<LOD-.150)	**.220** (.180-.250)	**.310** (.240-.400)	1458
Gender							
Males	11-12	**.121** (.108-.135)	**.120** (.100-.140)	**.190** (.170-.220)	**.260** (.240-.300)	**.330** (.290-.380)	615
	13-14	*	**< LOD**	**< LOD**	**.180** (.150-.210)	**.230** (.200-.240)	1440
Females	11-12	**.121** (.108-.136)	**.120** (.100-.140)	**.190** (.170-.230)	**.280** (.250-.300)	**.350** (.300-.460)	694
	13-14	*	**< LOD**	**.140** (<LOD-.160)	**.230** (.190-.280)	**.340** (.280-.410)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.08 and 0.13, respectively.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary Manganese (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.135** (.118-.154)	**.127** (.112-.144)	**.237** (.194-.286)	**.377** (.328-.413)	**.476** (.423-.583)	891
	13-14	*	**< LOD**	**.194** (<LOD-.204)	**.329** (.279-.400)	**.484** (.359-.708)	1952
Age group							
20-49 years	11-12	**.139** (.116-.167)	**.131** (.104-.158)	**.246** (.211-.302)	**.393** (.335-.473)	**.556** (.419-1.00)	532
18-49 years	13-14	*	**< LOD**	**.184** (<LOD-.204)	**.297** (.242-.368)	**.418** (.313-.708)	1182
50 years and older	11-12	**.128** (.112-.145)	**.124** (.104-.150)	**.205** (.177-.286)	**.317** (.281-.385)	**.407** (.324-.571)	359
	13-14	*	**< LOD**	**< LOD**	**.400** (.255-.708)	**.511** (.341-1.02)	770
Gender							
Males	11-12	**.109** (.093-.128)	**.104** (.089-.127)	**.187** (.146-.213)	**.317** (.244-.335)	**.380** (.335-.423)	540
	13-14	*	**< LOD**	**< LOD**	**.263** (.200-.329)	**.368** (.289-.418)	1048
Females	11-12	**.177** (.152-.206)	**.178** (.139-.215)	**.292** (.228-.378)	**.469** (.388-.587)	**.684** (.473-1.08)	351
	13-14	*	**< LOD**	**.230** (.200-.279)	**.400** (.288-.708)	**.642** (.400-.836)	904
Nonsmokers†							
Total	11-12	**.142** (.127-.158)	**.138** (.119-.154)	**.238** (.200-.281)	**.427** (.374-.518)	**.574** (.526-.636)	1308
	13-14	*	**< LOD**	**.214** (<LOD-.242)	**.368** (.317-.418)	**.541** (.434-.657)	3100
Age group							
20-49 years	11-12	**.132** (.117-.148)	**.127** (.112-.145)	**.213** (.186-.254)	**.427** (.345-.545)	**.625** (.442-1.10)	643
18-49 years	13-14	*	**< LOD**	**.192** (<LOD-.204)	**.307** (.271-.383)	**.418** (.354-.511)	1644
50 years and older	11-12	**.153** (.136-.173)	**.144** (.127-.167)	**.259** (.209-.321)	**.438** (.374-.518)	**.550** (.512-.605)	665
	13-14	*	**< LOD**	**.256** (<LOD-.279)	**.484** (.337-.564)	**.657** (.511-.905)	1456
Gender							
Males	11-12	**.108** (.095-.122)	**.108** (.093-.119)	**.171** (.154-.185)	**.308** (.218-.381)	**.385** (.341-.529)	614
	13-14	*	**< LOD**	**< LOD**	**.256** (.230-.279)	**.317** (.279-.400)	1438
Females	11-12	**.176** (.157-.198)	**.161** (.143-.200)	**.289** (.254-.340)	**.519** (.426-.597)	**.667** (.571-1.21)	694
	13-14	*	**< LOD**	**.279** (<LOD-.317)	**.484** (.383-.541)	**.640** (.541-.836)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
< LOD means less than the limit of detection for the urine levels not corrected for creatinine.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Urinary Molybdenum (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**32.2** (28.2-36.7)	**35.1** (29.3-39.7)	**66.8** (56.6-77.4)	**105** (85.2-126)	**137** (111-146)	891
	13-14	**29.9** (26.7-33.5)	**32.6** (26.1-39.4)	**61.4** (54.3-71.0)	**100** (86.2-112)	**124** (105-144)	1954
Age group							
20-49 years	11-12	**34.7** (29.8-40.5)	**37.6** (28.5-46.6)	**70.2** (56.6-83.6)	**108** (82.6-134)	**132** (113-144)	532
18-49 years	13-14	**32.4** (28.3-37.1)	**36.6** (30.4-45.3)	**67.1** (59.1-75.7)	**108** (85.5-126)	**126** (104-158)	1184
50 years and older	11-12	**28.5** (24.3-33.4)	**32.1** (23.2-39.7)	**60.9** (52.0-72.6)	**98.4** (78.8-137)	**141** (95.2-184)	359
	13-14	**25.3** (21.7-29.4)	**25.2** (20.3-35.4)	**48.5** (40.5-57.4)	**79.5** (69.6-96.7)	**107** (96.7-121)	770
Gender							
Males	11-12	**35.2** (29.4-42.2)	**37.8** (28.5-46.1)	**73.8** (56.9-88.1)	**110** (85.2-144)	**141** (120-160)	540
	13-14	**34.3** (31.5-37.3)	**39.1** (33.8-43.9)	**67.1** (57.4-73.3)	**104** (86.2-116)	**118** (112-134)	1050
Females	11-12	**28.6** (24.1-34.0)	**31.8** (26.8-37.9)	**57.4** (46.6-70.2)	**92.2** (76.9-108)	**132** (100-175)	351
	13-14	**26.0** (21.3-31.6)	**25.3** (20.5-36.1)	**57.8** (44.2-69.1)	**95.8** (73.3-121)	**126** (80.7-180)	904
Nonsmokers†							
Total	11-12	**34.7** (32.3-37.1)	**37.6** (34.2-40.3)	**63.0** (59.4-68.0)	**99.7** (92.9-108)	**134** (116-143)	1309
	13-14	**31.2** (28.5-34.2)	**32.9** (28.4-37.2)	**61.8** (54.5-68.4)	**95.2** (88.4-101)	**129** (119-134)	3102
Age group							
20-49 years	11-12	**35.2** (31.2-39.7)	**40.4** (36.8-45.3)	**65.8** (60.7-75.1)	**103** (92.7-115)	**134** (113-150)	644
18-49 years	13-14	**32.3** (28.7-36.4)	**34.7** (29.3-41.8)	**65.2** (57.4-71.6)	**96.3** (88.2-105)	**128** (113-133)	1644
50 years and older	11-12	**34.1** (31.8-36.6)	**34.3** (31.8-38.8)	**57.8** (54.3-64.5)	**97.6** (81.6-108)	**135** (109-144)	665
	13-14	**30.0** (27.2-33.1)	**29.8** (25.6-35.3)	**56.6** (47.4-65.1)	**93.8** (79.6-107)	**129** (113-139)	1458
Gender							
Males	11-12	**41.6** (38.1-45.4)	**44.5** (39.7-51.6)	**69.6** (63.7-75.2)	**107** (98.0-130)	**140** (108-150)	615
	13-14	**35.6** (32.4-39.2)	**38.1** (32.7-44.4)	**68.4** (60.9-78.3)	**104** (95.2-117)	**139** (123-173)	1440
Females	11-12	**30.1** (27.1-33.3)	**31.6** (28.1-35.0)	**58.4** (49.4-63.9)	**86.8** (79.8-101)	**121** (101-154)	694
	13-14	**27.7** (25.1-30.5)	**28.5** (24.6-33.2)	**54.1** (47.1-63.0)	**82.8** (78.2-90.2)	**113** (97.5-129)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.99 and 0.8, respectively.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Molybdenum_BiomonitoringSummary.html

Urinary Molybdenum (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**35.5** (33.7-37.5)	**35.7** (32.9-38.6)	**54.5** (51.9-57.9)	**79.6** (73.4-89.5)	**104** (91.2-110)	891
	13-14	**31.1** (28.7-33.7)	**32.2** (28.8-36.1)	**48.6** (42.7-53.6)	**66.1** (60.8-73.9)	**82.1** (74.5-94.7)	1952
Age group							
20-49 years	11-12	**36.3** (33.3-39.6)	**36.3** (32.7-40.5)	**53.1** (48.9-57.9)	**76.3** (66.5-91.5)	**96.0** (89.5-108)	532
18-49 years	13-14	**30.7** (27.7-34.1)	**32.5** (28.3-37.5)	**48.1** (42.0-53.8)	**63.7** (57.9-75.4)	**79.2** (66.5-94.7)	1182
50 years and older	11-12	**34.4** (31.2-37.9)	**34.8** (30.0-42.2)	**57.0** (53.0-63.5)	**82.9** (73.2-108)	**108** (87.1-126)	359
	13-14	**31.9** (29.2-34.8)	**32.2** (29.1-35.1)	**50.0** (42.4-56.7)	**69.1** (60.7-78.9)	**96.2** (69.1-123)	770
Gender							
Males	11-12	**33.7** (30.2-37.6)	**34.5** (31.9-40.3)	**55.4** (48.2-58.5)	**73.4** (63.5-79.1)	**82.9** (76.1-92.5)	540
	13-14	**31.2** (28.7-33.9)	**32.2** (29.9-36.5)	**46.0** (42.1-52.7)	**62.7** (57.1-69.3)	**75.4** (63.7-84.2)	1048
Females	11-12	**38.1** (35.2-41.2)	**36.4** (33.0-38.6)	**53.5** (51.6-61.0)	**96.0** (76.3-108)	**119** (96.0-157)	351
	13-14	**31.0** (27.6-34.8)	**32.2** (26.9-37.2)	**50.4** (42.6-58.2)	**71.8** (60.5-86.1)	**94.7** (71.4-108)	904
Nonsmokers†							
Total	11-12	**40.6** (38.9-42.3)	**39.5** (37.3-43.4)	**60.9** (56.9-63.7)	**85.6** (80.0-91.6)	**118** (99.5-144)	1308
	13-14	**36.8** (34.3-39.5)	**37.4** (35.7-39.3)	**55.2** (50.4-59.1)	**82.1** (74.7-85.1)	**102** (91.5-114)	3100
Age group							
20-49 years	11-12	**38.7** (36.8-40.7)	**37.4** (34.8-41.0)	**57.9** (52.7-61.8)	**78.1** (71.6-85.6)	**106** (87.1-148)	643
18-49 years	13-14	**34.6** (31.8-37.7)	**35.8** (33.1-38.1)	**51.2** (47.9-54.0)	**71.6** (65.3-78.0)	**85.0** (79.7-94.4)	1644
50 years and older	11-12	**42.6** (39.5-45.8)	**41.6** (37.3-46.3)	**62.9** (56.2-71.7)	**91.9** (85.5-104)	**118** (103-148)	665
	13-14	**39.5** (36.6-42.7)	**39.8** (36.6-43.2)	**59.0** (56.5-67.5)	**89.4** (83.7-101)	**118** (107-128)	1456
Gender							
Males	11-12	**37.0** (33.9-40.4)	**36.7** (33.3-42.6)	**52.2** (48.4-60.3)	**80.6** (69.6-87.1)	**92.5** (84.9-114)	614
	13-14	**34.4** (31.2-37.9)	**35.5** (30.8-39.1)	**52.3** (47.5-58.0)	**79.7** (71.8-85.0)	**101** (86.9-111)	1438
Females	11-12	**43.6** (40.7-46.6)	**42.2** (38.4-45.4)	**65.2** (61.3-68.9)	**95.1** (84.7-105)	**148** (104-163)	694
	13-14	**39.1** (36.8-41.5)	**39.0** (37.5-40.7)	**57.3** (52.7-61.6)	**83.6** (75.2-88.5)	**107** (93.6-117)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Molybdenum_BiomonitoringSummary.html

Urinary Strontium (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**88.9** (76.4-103)	**93.0** (76.2-113)	**172** (136-209)	**271** (250-309)	**342** (318-379)	889
	13-14	**88.2** (79.3-98.1)	**99.4** (89.1-110)	**168** (153-186)	**255** (222-312)	**339** (277-395)	1954
Age group							
20-49 years	11-12	**91.6** (79.2-106)	**92.8** (76.9-104)	**186** (143-219)	**277** (245-318)	**351** (287-399)	532
18-49 years	13-14	**94.9** (83.9-107)	**108** (94.3-123)	**181** (159-199)	**271** (223-324)	**348** (294-395)	1184
50 years and older	11-12	**84.6** (69.2-103)	**96.2** (67.0-123)	**159** (128-184)	**257** (226-309)	**338** (303-398)	357
	13-14	**75.6** (63.0-90.7)	**79.8** (62.9-101)	**142** (120-153)	**229** (173-289)	**312** (242-479)	770
Gender							
Males	11-12	**98.1** (81.9-117)	**100** (85.5-125)	**185** (153-233)	**303** (267-329)	**365** (312-396)	539
	13-14	**95.3** (85.4-106)	**107** (94.3-125)	**189** (160-204)	**259** (222-315)	**323** (252-395)	1050
Females	11-12	**78.1** (65.5-93.2)	**77.1** (65.5-99.2)	**149** (110-200)	**249** (184-318)	**318** (235-491)	350
	13-14	**81.3** (71.2-92.9)	**90.4** (76.8-104)	**151** (138-166)	**243** (201-339)	**360** (275-479)	904
Nonsmokers†							
Total	11-12	**81.5** (75.6-87.9)	**82.3** (76.3-91.1)	**155** (148-161)	**234** (210-252)	**297** (261-355)	1308
	13-14	**79.8** (76.3-83.5)	**84.3** (79.6-90.3)	**142** (130-152)	**223** (208-237)	**282** (261-315)	3102
Age group							
20-49 years	11-12	**83.7** (77.0-90.9)	**87.3** (78.4-103)	**169** (153-185)	**239** (218-262)	**292** (255-327)	644
18-49 years	13-14	**85.0** (78.0-92.6)	**92.4** (84.2-97.5)	**155** (139-176)	**235** (220-254)	**297** (256-363)	1644
50 years and older	11-12	**79.3** (72.2-87.1)	**77.9** (66.7-89.0)	**146** (130-156)	**218** (179-276)	**325** (234-379)	664
	13-14	**74.2** (68.1-80.8)	**79.0** (71.8-84.5)	**125** (118-133)	**196** (187-220)	**268** (232-303)	1458
Gender							
Males	11-12	**92.2** (81.3-105)	**97.2** (84.5-108)	**159** (138-184)	**247** (190-297)	**302** (249-379)	614
	13-14	**88.2** (81.0-96.0)	**93.1** (84.3-101)	**149** (129-176)	**231** (206-256)	**298** (256-342)	1440
Females	11-12	**74.0** (68.5-80.0)	**76.3** (66.1-80.8)	**152** (134-164)	**227** (205-255)	**276** (247-327)	694
	13-14	**72.9** (68.1-78.0)	**76.0** (69.4-81.1)	**131** (123-143)	**216** (189-239)	**269** (237-343)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 2.5 and 2.34, respectively.

Urinary Strontium (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**98.1** (86.1-112)	**95.6** (80.2-116)	**167** (139-192)	**250** (207-314)	**339** (269-427)	889
	13-14	**91.7** (82.0-102)	**98.6** (89.7-107)	**151** (136-171)	**214** (187-253)	**275** (217-375)	1952
Age group							
20-49 years	11-12	**95.8** (84.8-108)	**94.4** (82.1-113)	**160** (134-187)	**236** (203-275)	**312** (246-427)	532
18-49 years	13-14	**89.9** (79.3-102)	**95.2** (86.2-105)	**148** (133-164)	**203** (185-222)	**249** (200-393)	1182
50 years and older	11-12	**102** (86.3-120)	**107** (78.3-118)	**175** (134-201)	**272** (201-398)	**398** (192-811)	357
	13-14	**95.4** (77.0-118)	**104** (87.3-127)	**163** (137-182)	**253** (185-302)	**310** (259-430)	770
Gender							
Males	11-12	**93.8** (83.0-106)	**92.9** (78.7-112)	**146** (129-175)	**223** (197-260)	**311** (232-367)	539
	13-14	**86.7** (75.3-99.7)	**94.3** (82.9-106)	**148** (132-169)	**197** (179-225)	**258** (193-426)	1048
Females	11-12	**104** (79.5-136)	**101** (78.1-143)	**187** (122-258)	**275** (183-706)	**427** (211-892)	350
	13-14	**97.2** (86.0-110)	**105** (92.3-112)	**156** (135-180)	**226** (193-266)	**298** (235-375)	904
Nonsmokers†							
Total	11-12	**95.3** (89.2-102)	**98.7** (92.5-107)	**150** (140-164)	**235** (216-255)	**315** (277-346)	1307
	13-14	**94.2** (89.7-99.0)	**100** (93.0-104)	**146** (140-153)	**218** (192-243)	**287** (257-308)	3100
Age group							
20-49 years	11-12	**91.8** (83.0-101)	**99.7** (82.7-113)	**139** (128-154)	**219** (185-251)	**261** (241-304)	643
18-49 years	13-14	**91.0** (85.0-97.4)	**94.3** (89.1-101)	**138** (131-149)	**198** (175-235)	**265** (235-295)	1644
50 years and older	11-12	**99.0** (89.6-109)	**97.8** (92.4-113)	**163** (144-197)	**249** (220-318)	**350** (313-379)	664
	13-14	**98.2** (90.0-107)	**105** (94.0-113)	**152** (144-162)	**238** (193-288)	**302** (257-390)	1456
Gender							
Males	11-12	**81.8** (73.9-90.5)	**88.9** (80.4-92.5)	**130** (117-142)	**179** (154-222)	**232** (189-277)	613
	13-14	**85.5** (81.1-90.2)	**90.2** (85.3-98.6)	**130** (123-142)	**183** (165-202)	**231** (190-259)	1438
Females	11-12	**107** (101-114)	**112** (100-123)	**179** (156-204)	**272** (239-313)	**347** (313-424)	694
	13-14	**103** (95.3-111)	**108** (97.5-115)	**159** (151-171)	**260** (218-298)	**336** (297-390)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary Thallium (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.137** (.126-.149)	**.145** (.127-.161)	**.230** (.208-.256)	**.358** (.282-.419)	**.419** (.356-.524)	891
	13-14	**.137** (.120-.156)	**.147** (.122-.174)	**.246** (.217-.274)	**.367** (.302-.414)	**.435** (.410-.459)	1954
Age group							
20-49 years	11-12	**.144** (.130-.160)	**.159** (.131-.176)	**.247** (.213-.307)	**.375** (.295-.442)	**.438** (.352-.524)	532
18-49 years	13-14	**.150** (.132-.171)	**.167** (.139-.196)	**.269** (.234-.294)	**.381** (.316-.429)	**.435** (.408-.481)	1184
50 years and older	11-12	**.126** (.111-.143)	**.130** (.112-.156)	**.206** (.170-.230)	**.303** (.230-.395)	**.395** (.256-.535)	359
	13-14	**.113** (.098-.129)	**.120** (.096-.134)	**.192** (.173-.216)	**.297** (.247-.385)	**.414** (.360-.477)	770
Gender							
Males	11-12	**.142** (.127-.160)	**.148** (.128-.167)	**.230** (.213-.257)	**.356** (.266-.466)	**.454** (.322-.535)	540
	13-14	**.142** (.124-.163)	**.156** (.120-.194)	**.253** (.217-.276)	**.343** (.289-.414)	**.420** (.393-.439)	1050
Females	11-12	**.130** (.112-.151)	**.136** (.109-.160)	**.233** (.173-.288)	**.362** (.243-.440)	**.390** (.362-.446)	351
	13-14	**.132** (.108-.161)	**.133** (.113-.171)	**.242** (.190-.297)	**.373** (.293-.457)	**.457** (.385-.559)	904
Nonsmokers†							
Total	11-12	**.147** (.136-.157)	**.156** (.142-.168)	**.246** (.217-.275)	**.346** (.312-.376)	**.413** (.372-.515)	1309
	13-14	**.138** (.130-.146)	**.151** (.137-.162)	**.240** (.218-.261)	**.340** (.323-.364)	**.417** (.392-.433)	3102
Age group							
20-49 years	11-12	**.158** (.142-.175)	**.173** (.158-.198)	**.276** (.245-.318)	**.376** (.341-.405)	**.437** (.381-.522)	644
18-49 years	13-14	**.148** (.137-.159)	**.161** (.147-.174)	**.255** (.241-.270)	**.374** (.348-.395)	**.440** (.414-.474)	1644
50 years and older	11-12	**.136** (.124-.149)	**.140** (.125-.155)	**.204** (.181-.245)	**.292** (.260-.352)	**.361** (.298-.545)	665
	13-14	**.127** (.119-.135)	**.138** (.128-.144)	**.212** (.187-.248)	**.314** (.270-.344)	**.373** (.338-.419)	1458
Gender							
Males	11-12	**.169** (.152-.187)	**.173** (.152-.204)	**.269** (.235-.304)	**.361** (.324-.385)	**.409** (.372-.520)	615
	13-14	**.147** (.135-.161)	**.161** (.142-.173)	**.248** (.222-.274)	**.353** (.316-.386)	**.438** (.387-.474)	1440
Females	11-12	**.131** (.121-.143)	**.140** (.129-.149)	**.227** (.198-.258)	**.322** (.290-.376)	**.428** (.330-.522)	694
	13-14	**.130** (.121-.139)	**.138** (.120-.154)	**.235** (.204-.257)	**.327** (.303-.360)	**.398** (.378-.421)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.02 and 0.018, respectively.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Thallium_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Thallium_FactSheet.html

Urinary Thallium (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.151** (.139-.165)	**.153** (.142-.162)	**.207** (.186-.227)	**.292** (.237-.350)	**.365** (.278-.518)	891
	13-14	**.142** (.130-.156)	**.142** (.133-.155)	**.200** (.180-.222)	**.285** (.248-.345)	**.392** (.296-.482)	1952
Age group							
20-49 years	11-12	**.151** (.136-.166)	**.151** (.140-.167)	**.201** (.178-.236)	**.288** (.241-.320)	**.347** (.291-.572)	532
18-49 years	13-14	**.143** (.127-.160)	**.142** (.131-.155)	**.194** (.176-.221)	**.291** (.231-.392)	**.392** (.281-.491)	1182
50 years and older	11-12	**.152** (.137-.168)	**.153** (.126-.168)	**.221** (.179-.243)	**.299** (.228-.416)	**.380** (.243-.544)	359
	13-14	**.142** (.130-.155)	**.142** (.130-.162)	**.201** (.181-.238)	**.276** (.258-.313)	**.373** (.302-.410)	770
Gender							
Males	11-12	**.136** (.125-.149)	**.135** (.122-.150)	**.179** (.157-.207)	**.241** (.200-.278)	**.278** (.237-.375)	540
	13-14	**.129** (.115-.145)	**.133** (.123-.143)	**.176** (.161-.193)	**.253** (.223-.274)	**.365** (.258-.491)	1048
Females	11-12	**.173** (.155-.193)	**.171** (.162-.188)	**.235** (.202-.294)	**.347** (.284-.457)	**.457** (.294-.593)	351
	13-14	**.157** (.141-.175)	**.156** (.140-.174)	**.223** (.191-.259)	**.313** (.246-.400)	**.392** (.297-.559)	904
Nonsmokers†							
Total	11-12	**.171** (.159-.185)	**.167** (.156-.181)	**.237** (.217-.258)	**.342** (.313-.376)	**.453** (.376-.532)	1308
	13-14	**.163** (.156-.170)	**.162** (.152-.171)	**.235** (.224-.248)	**.338** (.327-.350)	**.429** (.400-.444)	3100
Age group							
20-49 years	11-12	**.173** (.157-.191)	**.171** (.156-.189)	**.235** (.210-.258)	**.333** (.290-.388)	**.449** (.332-.711)	643
18-49 years	13-14	**.158** (.147-.171)	**.155** (.142-.171)	**.228** (.217-.247)	**.327** (.294-.350)	**.414** (.350-.462)	1644
50 years and older	11-12	**.170** (.153-.187)	**.165** (.152-.179)	**.240** (.209-.282)	**.348** (.300-.425)	**.476** (.351-.532)	665
	13-14	**.168** (.159-.177)	**.165** (.156-.177)	**.245** (.223-.262)	**.352** (.331-.364)	**.435** (.405-.475)	1456
Gender							
Males	11-12	**.150** (.137-.165)	**.151** (.132-.158)	**.209** (.179-.233)	**.296** (.235-.333)	**.343** (.296-.532)	614
	13-14	**.143** (.136-.151)	**.137** (.128-.144)	**.195** (.184-.206)	**.283** (.258-.302)	**.349** (.306-.374)	1438
Females	11-12	**.190** (.178-.204)	**.186** (.172-.200)	**.266** (.240-.289)	**.406** (.353-.436)	**.482** (.411-.537)	694
	13-14	**.183** (.174-.193)	**.187** (.172-.197)	**.270** (.250-.281)	**.387** (.354-.414)	**.444** (.430-.482)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Thallium_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Thallium_FactSheet.html

Urinary Tin (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.584** (.489-.697)	**.500** (.400-.610)	**1.00** (.800-1.27)	**2.48** (1.56-4.09)	**4.22** (2.95-6.85)	891
	13-14	**.439** (.373-.516)	**.400** (.350-.480)	**.960** (.760-1.18)	**2.18** (1.79-2.65)	**4.17** (2.65-5.46)	1954
Age group							
20-49 years	11-12	**.580** (.475-.708)	**.460** (.370-.590)	**.970** (.740-1.52)	**2.72** (1.62-4.22)	**4.99** (3.20-9.72)	532
18-49 years	13-14	**.385** (.317-.468)	**.350** (.310-.420)	**.770** (.630-1.17)	**1.72** (1.34-2.20)	**3.02** (1.84-5.46)	1184
50 years and older	11-12	**.590** (.497-.700)	**.560** (.450-.660)	**1.01** (.870-1.24)	**2.09** (1.42-3.12)	**3.59** (2.24-6.21)	359
	13-14	**.577** (.479-.696)	**.530** (.430-.650)	**1.30** (.990-1.55)	**3.25** (2.32-4.45)	**5.36** (2.94-14.0)	770
Gender							
Males	11-12	**.548** (.451-.666)	**.490** (.400-.590)	**.880** (.740-1.13)	**2.08** (1.20-3.20)	**3.40** (2.22-5.70)	540
	13-14	**.411** (.320-.527)	**.360** (.300-.480)	**.780** (.630-1.06)	**2.19** (1.31-4.17)	**5.46** (2.06-19.6)	1050
Females	11-12	**.634** (.512-.785)	**.520** (.400-.660)	**1.23** (.850-1.61)	**2.98** (1.61-6.85)	**6.85** (2.94-12.4)	351
	13-14	**.470** (.406-.545)	**.440** (.370-.550)	**1.13** (.820-1.34)	**2.12** (1.81-2.51)	**3.32** (2.70-4.30)	904
Nonsmokers†							
Total	11-12	**.588** (.527-.655)	**.500** (.450-.570)	**1.01** (.880-1.21)	**2.69** (2.13-3.46)	**4.74** (3.44-6.50)	1309
	13-14	**.391** (.337-.454)	**.350** (.310-.400)	**.840** (.710-.990)	**2.02** (1.61-2.36)	**3.20** (2.54-4.15)	3102
Age group							
20-49 years	11-12	**.484** (.434-.539)	**.410** (.360-.480)	**.810** (.730-.960)	**1.88** (1.36-2.49)	**3.28** (2.19-5.89)	644
18-49 years	13-14	**.328** (.273-.394)	**.300** (.250-.360)	**.730** (.560-.890)	**1.58** (1.17-2.12)	**2.30** (1.92-3.07)	1644
50 years and older	11-12	**.719** (.608-.851)	**.580** (.470-.720)	**1.24** (.990-1.67)	**3.62** (2.39-4.74)	**6.06** (3.62-9.43)	665
	13-14	**.479** (.404-.567)	**.390** (.340-.500)	**1.00** (.800-1.34)	**2.54** (2.22-3.06)	**4.30** (3.20-6.33)	1458
Gender							
Males	11-12	**.612** (.523-.717)	**.510** (.470-.580)	**.990** (.790-1.22)	**3.21** (1.82-4.88)	**6.50** (3.20-10.2)	615
	13-14	**.374** (.324-.433)	**.340** (.280-.380)	**.790** (.630-.960)	**1.73** (1.40-2.26)	**3.03** (2.26-4.47)	1440
Females	11-12	**.569** (.502-.646)	**.480** (.410-.580)	**1.03** (.850-1.28)	**2.35** (2.10-3.10)	**4.33** (3.16-5.43)	694
	13-14	**.406** (.341-.484)	**.370** (.310-.430)	**.900** (.750-1.17)	**2.22** (1.67-2.61)	**3.31** (2.67-4.17)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.22 and 0.09, respectively.

Urinary Tin (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.645** (.566-.734)	**.567** (.484-.645)	**1.07** (.864-1.33)	**2.20** (1.79-2.81)	**4.15** (2.81-5.50)	891
	13-14	**.456** (.392-.532)	**.418** (.330-.507)	**.823** (.724-1.00)	**1.69** (1.45-2.25)	**3.20** (2.50-4.99)	1952
Age group							
20-49 years	11-12	**.606** (.519-.707)	**.543** (.449-.650)	**.993** (.780-1.33)	**2.00** (1.63-2.80)	**4.15** (2.38-7.90)	532
18-49 years	13-14	**.365** (.310-.431)	**.331** (.265-.437)	**.664** (.569-.777)	**1.27** (.896-1.69)	**2.11** (1.31-3.05)	1182
50 years and older	11-12	**.711** (.603-.838)	**.576** (.459-.686)	**1.24** (.767-1.52)	**2.67** (1.52-3.82)	**4.09** (2.74-5.86)	359
	13-14	**.728** (.626-.848)	**.641** (.500-.787)	**1.34** (1.10-1.57)	**3.32** (2.37-4.99)	**5.69** (3.20-17.1)	770
Gender							
Males	11-12	**.524** (.468-.586)	**.485** (.406-.576)	**.824** (.686-.918)	**1.52** (1.24-2.03)	**2.20** (1.94-2.91)	540
	13-14	**.373** (.298-.468)	**.320** (.250-.413)	**.695** (.538-.818)	**1.45** (1.01-2.69)	**2.69** (1.27-6.49)	1048
Females	11-12	**.844** (.656-1.09)	**.673** (.542-.815)	**1.41** (.962-2.38)	**3.48** (2.20-4.95)	**5.50** (3.48-12.9)	351
	13-14	**.562** (.487-.648)	**.550** (.438-.656)	**1.00** (.823-1.27)	**1.89** (1.66-2.40)	**3.39** (2.64-4.99)	904
Nonsmokers†							
Total	11-12	**.689** (.618-.769)	**.605** (.548-.678)	**1.11** (.975-1.35)	**2.51** (2.09-3.04)	**4.51** (3.10-5.55)	1308
	13-14	**.460** (.401-.527)	**.411** (.372-.459)	**.826** (.724-1.02)	**1.92** (1.77-2.23)	**3.17** (2.80-3.63)	3100
Age group							
20-49 years	11-12	**.534** (.477-.598)	**.487** (.441-.538)	**.867** (.763-.975)	**1.75** (1.20-2.42)	**3.10** (2.10-4.45)	643
18-49 years	13-14	**.352** (.309-.400)	**.329** (.279-.372)	**.606** (.557-.681)	**1.28** (1.09-1.69)	**2.23** (1.78-3.05)	1644
50 years and older	11-12	**.897** (.780-1.03)	**.778** (.650-.895)	**1.67** (1.22-1.97)	**2.91** (2.52-4.55)	**5.58** (4.04-7.26)	665
	13-14	**.629** (.534-.740)	**.526** (.464-.639)	**1.27** (1.00-1.51)	**2.62** (1.98-3.25)	**4.00** (2.99-5.70)	1456
Gender							
Males	11-12	**.547** (.451-.664)	**.461** (.397-.565)	**.822** (.640-1.23)	**2.29** (1.24-4.04)	**4.54** (2.29-7.22)	614
	13-14	**.360** (.310-.419)	**.328** (.286-.375)	**.591** (.493-.748)	**1.51** (1.29-1.78)	**2.55** (1.97-3.05)	1438
Females	11-12	**.825** (.724-.941)	**.755** (.625-.897)	**1.28** (1.09-1.61)	**2.62** (2.26-3.27)	**4.51** (3.12-6.07)	694
	13-14	**.574** (.493-.669)	**.527** (.458-.579)	**1.13** (.889-1.36)	**2.29** (1.84-2.76)	**3.63** (2.99-4.41)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary Tungsten (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.073** (.061-.089)	**.069** (.058-.083)	**.141** (.108-.190)	**.285** (.195-.479)	**.496** (.247-.838)	881
	13-14	**.059** (.052-.068)	**.063** (.050-.077)	**.132** (.118-.147)	**.233** (.209-.262)	**.294** (.256-.397)	1954
Age group							
20-49 years	11-12	**.079** (.061-.103)	**.075** (.062-.095)	**.149** (.112-.228)	**.361** (.180-.703)	**.527** (.261-.838)	523
18-49 years	13-14	**.066** (.057-.076)	**.069** (.058-.083)	**.142** (.126-.166)	**.250** (.211-.278)	**.350** (.278-.464)	1184
50 years and older	11-12	**.065** (.056-.076)	**.063** (.048-.075)	**.120** (.086-.165)	**.235** (.165-.298)	**.298** (.235-.512)	358
	13-14	**.047** (.039-.058)	**.050** (.035-.065)	**.104** (.083-.132)	**.205** (.146-.254)	**.270** (.211-.483)	770
Gender							
Males	11-12	**.080** (.061-.106)	**.075** (.058-.099)	**.157** (.113-.220)	**.327** (.177-.703)	**.611** (.263-.838)	535
	13-14	**.066** (.058-.075)	**.069** (.058-.085)	**.135** (.121-.160)	**.230** (.200-.272)	**.294** (.233-.446)	1050
Females	11-12	**.065** (.054-.078)	**.064** (.049-.079)	**.132** (.095-.180)	**.230** (.180-.350)	**.366** (.247-.479)	346
	13-14	**.053** (.044-.064)	**.055** (.038-.069)	**.123** (.095-.152)	**.235** (.186-.276)	**.292** (.254-.483)	904
Nonsmokers†							
Total	11-12	**.064** (.057-.071)	**.057** (.053-.063)	**.116** (.099-.137)	**.232** (.182-.315)	**.364** (.271-.472)	1303
	13-14	**.050** (.044-.057)	**.048** (.039-.058)	**.107** (.090-.124)	**.212** (.173-.243)	**.341** (.262-.414)	3102
Age group							
20-49 years	11-12	**.071** (.060-.083)	**.065** (.055-.080)	**.131** (.106-.171)	**.274** (.186-.364)	**.405** (.274-.743)	641
18-49 years	13-14	**.053** (.044-.062)	**.051** (.038-.070)	**.119** (.102-.140)	**.220** (.184-.261)	**.346** (.262-.442)	1644
50 years and older	11-12	**.057** (.052-.063)	**.053** (.047-.058)	**.098** (.085-.118)	**.201** (.167-.225)	**.307** (.212-.426)	662
	13-14	**.048** (.041-.055)	**.046** (.038-.053)	**.094** (.076-.117)	**.181** (.146-.254)	**.280** (.227-.476)	1458
Gender							
Males	11-12	**.072** (.063-.083)	**.063** (.056-.080)	**.138** (.116-.167)	**.272** (.190-.384)	**.405** (.246-.628)	612
	13-14	**.056** (.049-.065)	**.054** (.044-.067)	**.120** (.098-.150)	**.227** (.193-.267)	**.347** (.278-.446)	1440
Females	11-12	**.057** (.052-.063)	**.052** (.047-.057)	**.101** (.086-.116)	**.218** (.161-.274)	**.307** (.220-.438)	691
	13-14	**.045** (.040-.052)	**.045** (.034-.054)	**.097** (.080-.110)	**.178** (.150-.218)	**.296** (.233-.393)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.026 and 0.018, respectively.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Tungsten_BiomonitoringSummary.html

Urinary Tungsten (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.081** (.071-.093)	**.075** (.069-.086)	**.129** (.113-.144)	**.233** (.159-.365)	**.355** (.247-.633)	881
	13-14	**.062** (.054-.070)	**.059** (.052-.071)	**.109** (.099-.121)	**.179** (.149-.203)	**.272** (.198-.352)	1952
Age group							
20-49 years	11-12	**.083** (.068-.100)	**.080** (.066-.096)	**.132** (.110-.165)	**.247** (.140-.443)	**.374** (.247-.658)	523
18-49 years	13-14	**.063** (.054-.072)	**.059** (.052-.073)	**.114** (.100-.124)	**.172** (.142-.198)	**.258** (.186-.364)	1182
50 years and older	11-12	**.078** (.070-.087)	**.074** (.064-.081)	**.122** (.106-.138)	**.203** (.167-.233)	**.262** (.226-.288)	358
	13-14	**.060** (.049-.073)	**.059** (.050-.073)	**.102** (.088-.130)	**.198** (.147-.256)	**.281** (.179-.537)	770
Gender							
Males	11-12	**.077** (.062-.095)	**.073** (.060-.090)	**.121** (.096-.150)	**.247** (.129-.374)	**.365** (.226-.571)	535
	13-14	**.060** (.050-.071)	**.059** (.048-.075)	**.100** (.091-.126)	**.176** (.142-.198)	**.230** (.184-.421)	1048
Females	11-12	**.087** (.072-.104)	**.082** (.069-.098)	**.139** (.118-.165)	**.229** (.180-.293)	**.343** (.229-.733)	346
	13-14	**.064** (.055-.073)	**.059** (.050-.076)	**.118** (.101-.125)	**.191** (.150-.240)	**.281** (.202-.480)	904
Nonsmokers†							
Total	11-12	**.075** (.067-.083)	**.068** (.064-.075)	**.124** (.104-.145)	**.221** (.174-.263)	**.343** (.238-.458)	1302
	13-14	**.059** (.053-.066)	**.056** (.049-.064)	**.103** (.089-.118)	**.189** (.162-.224)	**.287** (.235-.370)	3100
Age group							
20-49 years	11-12	**.078** (.068-.090)	**.072** (.064-.081)	**.127** (.106-.167)	**.244** (.181-.345)	**.391** (.244-.647)	640
18-49 years	13-14	**.056** (.050-.064)	**.054** (.046-.062)	**.096** (.081-.114)	**.172** (.153-.202)	**.261** (.214-.300)	1644
50 years and older	11-12	**.072** (.065-.079)	**.065** (.062-.074)	**.122** (.099-.135)	**.192** (.157-.238)	**.261** (.206-.366)	662
	13-14	**.063** (.054-.073)	**.059** (.052-.069)	**.108** (.090-.128)	**.220** (.153-.276)	**.330** (.251-.656)	1456
Gender							
Males	11-12	**.065** (.056-.074)	**.062** (.053-.068)	**.107** (.087-.130)	**.180** (.133-.261)	**.261** (.167-.467)	611
	13-14	**.054** (.047-.062)	**.053** (.043-.065)	**.093** (.079-.110)	**.158** (.130-.202)	**.282** (.190-.377)	1438
Females	11-12	**.084** (.077-.091)	**.075** (.069-.080)	**.142** (.118-.160)	**.233** (.200-.314)	**.389** (.268-.492)	691
	13-14	**.064** (.058-.071)	**.059** (.052-.067)	**.112** (.102-.121)	**.220** (.176-.251)	**.310** (.261-.367)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Tungsten_BiomonitoringSummary.html

Urinary Uranium (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.007** (.006-.009)	**.007** (.006-.008)	**.013** (.010-.017)	**.024** (.018-.033)	**.034** (.025-.045)	891
	13-14	**.006** (.005-.007)	**.006** (.005-.006)	**.012** (.009-.015)	**.025** (.016-.039)	**.039** (.026-.063)	1954
Age group							
20-49 years	11-12	**.007** (.006-.009)	**.007** (.005-.009)	**.013** (.010-.017)	**.023** (.018-.034)	**.035** (.023-.063)	532
18-49 years	13-14	**.006** (.005-.007)	**.006** (.005-.007)	**.011** (.009-.014)	**.024** (.016-.033)	**.033** (.026-.054)	1184
50 years and older	11-12	**.007** (.006-.009)	**.007** (.005-.007)	**.013** (.008-.017)	**.025** (.017-.033)	**.034** (.026-.039)	359
	13-14	**.006** (.005-.008)	**.005** (.004-.007)	**.014** (.009-.017)	**.030** (.016-.056)	**.046** (.035-.069)	770
Gender							
Males	11-12	**.008** (.006-.009)	**.007** (.006-.008)	**.013** (.010-.016)	**.026** (.017-.037)	**.037** (.022-.069)	540
	13-14	**.006** (.005-.007)	**.006** (.005-.007)	**.012** (.009-.014)	**.023** (.015-.032)	**.034** (.023-.054)	1050
Females	11-12	**.007** (.006-.009)	**.007** (.005-.009)	**.013** (.008-.019)	**.023** (.018-.027)	**.029** (.023-.060)	351
	13-14	**.006** (.005-.007)	**.006** (.005-.007)	**.012** (.008-.017)	**.027** (.016-.043)	**.040** (.027-.111)	904
Nonsmokers†							
Total	11-12	**.005** (.005-.006)	**.005** (.004-.006)	**.009** (.007-.012)	**.016** (.013-.022)	**.025** (.019-.038)	1309
	13-14	**.005** (.004-.006)	**.004** (.004-.005)	**.009** (.007-.012)	**.023** (.014-.033)	**.036** (.024-.058)	3102
Age group							
20-49 years	11-12	**.005** (.004-.006)	**.005** (.004-.005)	**.008** (.007-.010)	**.015** (.011-.021)	**.022** (.015-.032)	644
18-49 years	13-14	**.005** (.004-.006)	**.004** (.004-.005)	**.010** (.008-.012)	**.023** (.014-.031)	**.034** (.023-.056)	1644
50 years and older	11-12	**.006** (.005-.007)	**.005** (.004-.006)	**.011** (.007-.014)	**.017** (.014-.025)	**.028** (.019-.043)	665
	13-14	**.005** (.004-.006)	**.004** (.003-.005)	**.009** (.007-.011)	**.023** (.013-.040)	**.040** (.024-.075)	1458
Gender							
Males	11-12	**.006** (.005-.007)	**.005** (.004-.007)	**.010** (.007-.013)	**.016** (.013-.022)	**.023** (.016-.040)	615
	13-14	**.005** (.004-.006)	**.004** (.003-.005)	**.009** (.007-.013)	**.024** (.013-.040)	**.040** (.024-.067)	1440
Females	11-12	**.005** (.005-.006)	**.005** (.004-.006)	**.009** (.007-.011)	**.016** (.012-.024)	**.027** (.019-.043)	694
	13-14	**.005** (.004-.006)	**.004** (.004-.005)	**.009** (.007-.011)	**.021** (.013-.030)	**.031** (.023-.053)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.003 and 0.002, respectively.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Uranium_BiomonitoringSummary.html

Urinary Uranium (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**.008** (.007-.010)	**.007** (.007-.009)	**.013** (.011-.015)	**.021** (.019-.025)	**.030** (.022-.058)	891
	13-14	**.006** (.005-.007)	**.005** (.004-.007)	**.011** (.008-.013)	**.020** (.014-.030)	**.035** (.022-.054)	1952
Age group							
20-49 years	11-12	**.008** (.006-.009)	**.007** (.006-.009)	**.013** (.010-.015)	**.022** (.017-.027)	**.030** (.021-.083)	532
18-49 years	13-14	**.006** (.005-.007)	**.005** (.004-.006)	**.010** (.008-.011)	**.017** (.013-.023)	**.026** (.020-.036)	1182
50 years and older	11-12	**.008** (.007-.010)	**.008** (.006-.011)	**.014** (.012-.017)	**.021** (.018-.026)	**.034** (.022-.058)	359
	13-14	**.007** (.006-.010)	**.006** (.004-.009)	**.013** (.008-.019)	**.031** (.015-.054)	**.051** (.025-.101)	770
Gender							
Males	11-12	**.007** (.006-.009)	**.007** (.005-.009)	**.012** (.008-.016)	**.020** (.014-.025)	**.027** (.019-.083)	540
	13-14	**.005** (.005-.006)	**.005** (.004-.005)	**.008** (.006-.011)	**.019** (.013-.023)	**.030** (.021-.037)	1048
Females	11-12	**.009** (.008-.010)	**.009** (.007-.010)	**.014** (.012-.017)	**.024** (.021-.030)	**.037** (.024-.058)	351
	13-14	**.007** (.006-.009)	**.006** (.005-.009)	**.012** (.009-.016)	**.022** (.014-.046)	**.043** (.022-.098)	904
Nonsmokers†							
Total	11-12	**.006** (.005-.007)	**.006** (.005-.007)	**.010** (.008-.013)	**.020** (.014-.027)	**.028** (.021-.035)	1308
	13-14	**.006** (.005-.007)	**.005** (.004-.006)	**.010** (.008-.012)	**.020** (.013-.034)	**.038** (.020-.061)	3100
Age group							
20-49 years	11-12	**.006** (.005-.006)	**.005** (.005-.006)	**.009** (.007-.012)	**.020** (.013-.026)	**.027** (.020-.029)	643
18-49 years	13-14	**.005** (.004-.006)	**.005** (.004-.006)	**.009** (.007-.011)	**.017** (.012-.027)	**.027** (.017-.061)	1644
50 years and older	11-12	**.007** (.006-.008)	**.007** (.006-.008)	**.012** (.009-.014)	**.020** (.014-.032)	**.033** (.021-.051)	665
	13-14	**.006** (.005-.008)	**.005** (.005-.006)	**.011** (.008-.015)	**.025** (.014-.048)	**.043** (.027-.067)	1456
Gender							
Males	11-12	**.005** (.004-.006)	**.005** (.004-.006)	**.008** (.007-.010)	**.013** (.010-.020)	**.020** (.013-.030)	614
	13-14	**.005** (.004-.006)	**.004** (.004-.005)	**.008** (.006-.010)	**.017** (.010-.036)	**.029** (.014-.096)	1438
Females	11-12	**.008** (.006-.009)	**.007** (.006-.008)	**.013** (.010-.017)	**.022** (.018-.028)	**.033** (.027-.040)	694
	13-14	**.007** (.006-.008)	**.006** (.005-.007)	**.011** (.009-.013)	**.023** (.016-.038)	**.042** (.024-.067)	1662

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Uranium_BiomonitoringSummary.html

Urinary Nitrate (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**46.7** (43.0-50.6)	**48.9** (45.0-52.5)	**82.5** (69.0-90.9)	**120** (107-130)	**145** (122-173)	884
	13-14	**47.7** (43.7-52.0)	**50.5** (43.5-57.3)	**82.4** (76.1-90.2)	**118** (107-137)	**149** (130-180)	967
Age group							
20-49 years	11-12	**47.7** (43.1-52.8)	**51.9** (45.0-57.9)	**81.7** (68.2-94.4)	**120** (98.8-145)	**149** (122-193)	528
18-49 years	13-14	**51.2** (46.4-56.5)	**54.8** (49.0-62.0)	**89.9** (78.7-99.8)	**130** (113-141)	**152** (135-183)	586
50 years and older	11-12	**45.1** (40.3-50.4)	**45.8** (35.6-54.4)	**82.8** (64.5-91.7)	**121** (104-140)	**145** (107-173)	356
	13-14	**41.0** (36.6-46.0)	**40.1** (35.5-43.5)	**70.7** (61.0-82.9)	**106** (86.4-128)	**129** (95.4-207)	381
Gender							
Males	11-12	**49.6** (44.5-55.4)	**52.0** (45.8-60.3)	**87.7** (77.2-97.8)	**123** (107-140)	**154** (123-186)	538
	13-14	**50.2** (44.2-57.0)	**54.0** (46.0-62.2)	**82.6** (74.0-97.0)	**119** (107-141)	**164** (118-260)	524
Females	11-12	**43.0** (38.3-48.3)	**44.2** (38.8-52.2)	**69.8** (64.2-81.5)	**109** (90.9-128)	**145** (107-241)	346
	13-14	**45.2** (41.0-49.8)	**46.7** (40.2-53.2)	**82.3** (70.4-91.1)	**114** (101-135)	**145** (129-179)	443
Nonsmokers†							
Total	11-12	**38.9** (36.4-41.6)	**41.5** (38.6-44.4)	**67.3** (62.7-71.2)	**101** (93.4-112)	**130** (116-148)	1285
	13-14	**37.7** (35.4-40.2)	**38.7** (36.7-41.6)	**66.5** (60.2-71.9)	**98.9** (90.0-108)	**124** (111-151)	1444
Age group							
20-49 years	11-12	**41.9** (38.2-45.8)	**43.8** (41.1-47.9)	**71.0** (65.4-78.4)	**112** (96.1-117)	**135** (115-165)	632
18-49 years	13-14	**39.6** (36.5-42.9)	**40.2** (36.9-45.3)	**68.6** (60.7-77.3)	**101** (90.6-108)	**132** (108-153)	751
50 years and older	11-12	**36.0** (32.4-40.1)	**38.7** (33.0-44.2)	**60.8** (54.0-71.4)	**93.7** (83.0-108)	**120** (102-148)	653
	13-14	**35.7** (32.4-39.5)	**37.6** (32.0-42.2)	**65.0** (55.5-71.2)	**91.0** (83.8-109)	**122** (109-157)	693
Gender							
Males	11-12	**45.3** (41.2-49.9)	**45.2** (41.6-49.8)	**73.3** (65.4-77.5)	**107** (88.8-132)	**138** (103-175)	608
	13-14	**41.6** (37.2-46.5)	**42.2** (37.4-49.3)	**69.7** (58.2-81.8)	**101** (88.0-112)	**136** (108-156)	652
Females	11-12	**34.5** (31.7-37.5)	**36.6** (31.8-41.7)	**60.5** (55.6-68.0)	**97.9** (85.9-113)	**119** (112-135)	677
	13-14	**34.6** (32.0-37.5)	**34.8** (30.7-38.7)	**63.8** (56.8-68.8)	**96.2** (85.9-108)	**121** (107-155)	792

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.7 and 0.7, respectively.

Urinary Nitrate (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**51.7** (48.0-55.7)	**51.5** (44.7-58.2)	**71.6** (64.4-78.4)	**92.4** (86.1-108)	**133** (96.4-163)	884
	13-14	**49.2** (47.1-51.4)	**48.0** (45.6-50.4)	**67.3** (61.9-72.2)	**93.0** (81.8-107)	**119** (104-141)	967
Age group							
20-49 years	11-12	**50.1** (46.2-54.3)	**47.7** (42.5-53.0)	**65.9** (60.7-73.0)	**88.9** (79.3-104)	**136** (90.6-187)	528
18-49 years	13-14	**47.8** (44.8-51.0)	**46.4** (43.1-49.7)	**61.9** (55.7-70.1)	**85.1** (76.2-107)	**123** (90.2-165)	586
50 years and older	11-12	**54.4** (49.7-59.5)	**57.2** (49.7-60.9)	**80.9** (66.2-86.3)	**99.3** (87.2-107)	**109** (99.3-144)	356
	13-14	**52.3** (46.8-58.3)	**50.5** (45.6-57.8)	**74.6** (66.1-84.0)	**104** (85.2-113)	**119** (104-168)	381
Gender							
Males	11-12	**47.6** (44.0-51.6)	**47.4** (42.0-52.5)	**61.8** (58.6-68.8)	**87.1** (73.9-95.0)	**102** (87.2-133)	538
	13-14	**45.5** (41.3-50.2)	**43.7** (39.1-49.2)	**57.8** (53.0-71.0)	**86.7** (78.3-98.7)	**126** (86.7-166)	524
Females	11-12	**57.6** (52.2-63.5)	**58.8** (51.1-65.3)	**80.9** (71.7-84.8)	**104** (88.1-142)	**144** (102-241)	346
	13-14	**53.4** (49.5-57.6)	**51.6** (46.5-57.2)	**72.5** (66.4-76.4)	**104** (79.8-113)	**119** (107-150)	443
Nonsmokers†							
Total	11-12	**45.8** (42.9-49.0)	**43.8** (41.0-46.2)	**66.8** (59.4-72.8)	**105** (88.0-120)	**149** (117-167)	1284
	13-14	**45.4** (43.1-48.0)	**44.3** (41.3-47.2)	**66.0** (61.9-70.9)	**97.4** (90.0-105)	**123** (112-136)	1444
Age group							
20-49 years	11-12	**46.4** (42.5-50.7)	**42.7** (38.8-46.7)	**63.8** (55.9-72.2)	**106** (84.9-137)	**162** (108-186)	631
18-49 years	13-14	**43.8** (41.6-46.0)	**42.5** (39.0-44.6)	**60.0** (56.6-64.5)	**91.9** (83.5-99.7)	**120** (104-130)	751
50 years and older	11-12	**45.3** (41.2-49.7)	**45.0** (41.2-50.0)	**68.4** (56.6-83.8)	**99.4** (85.4-120)	**140** (109-151)	653
	13-14	**47.4** (43.3-51.9)	**48.4** (42.5-53.2)	**72.2** (65.0-78.6)	**107** (90.0-117)	**132** (112-162)	693
Gender							
Males	11-12	**40.4** (37.9-43.2)	**38.9** (36.4-41.7)	**54.6** (51.0-59.6)	**84.9** (69.4-98.4)	**105** (84.9-120)	607
	13-14	**40.6** (37.6-43.9)	**38.2** (34.9-43.2)	**57.5** (51.9-64.3)	**79.7** (77.6-91.4)	**104** (85.8-123)	652
Females	11-12	**50.6** (45.7-55.9)	**47.8** (43.8-53.3)	**75.6** (66.8-85.4)	**126** (102-150)	**154** (137-180)	677
	13-14	**50.1** (47.2-53.3)	**49.8** (46.3-53.8)	**73.3** (67.8-79.6)	**108** (97.2-120)	**138** (120-167)	792

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary Perchlorate (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**2.54** (2.31-2.80)	**2.70** (2.36-3.03)	**4.72** (3.88-5.57)	**7.64** (7.18-9.44)	**10.3** (8.26-15.4)	884
	13-14	**2.45** (2.15-2.80)	**2.37** (2.03-3.03)	**4.53** (4.10-4.87)	**7.39** (6.02-9.21)	**10.4** (7.82-17.5)	967
Age group							
20-49 years	11-12	**2.61** (2.29-2.96)	**2.75** (2.25-3.24)	**4.72** (3.76-5.80)	**9.06** (6.15-10.7)	**11.7** (9.15-22.2)	528
18-49 years	13-14	**2.60** (2.30-2.95)	**2.86** (2.21-3.25)	**4.76** (4.47-5.46)	**7.44** (6.47-9.09)	**9.91** (7.73-17.5)	586
50 years and older	11-12	**2.44** (2.06-2.90)	**2.59** (1.98-3.38)	**4.68** (3.39-6.14)	**7.23** (5.43-7.86)	**8.40** (7.49-10.5)	356
	13-14	**2.17** (1.79-2.64)	**2.06** (1.80-2.37)	**3.78** (3.27-4.10)	**6.58** (5.02-10.4)	**11.7** (8.58-21.9)	381
Gender							
Males	11-12	**2.74** (2.41-3.11)	**2.93** (2.37-3.37)	**5.43** (4.21-6.24)	**8.26** (7.23-10.3)	**10.5** (8.40-26.6)	538
	13-14	**2.54** (2.16-3.00)	**2.37** (1.93-3.24)	**4.57** (4.27-5.23)	**7.03** (5.79-9.34)	**9.95** (7.03-19.2)	524
Females	11-12	**2.31** (2.06-2.58)	**2.51** (2.00-2.91)	**4.08** (3.64-4.63)	**7.42** (5.03-9.44)	**9.52** (7.81-11.7)	346
	13-14	**2.36** (2.03-2.75)	**2.41** (1.95-2.96)	**4.47** (3.78-5.00)	**7.67** (6.27-8.09)	**11.4** (7.82-17.5)	443
Nonsmokers†							
Total	11-12	**2.95** (2.76-3.16)	**2.95** (2.72-3.18)	**5.39** (5.00-5.73)	**8.81** (8.30-10.5)	**12.9** (11.2-15.1)	1285
	13-14	**2.54** (2.35-2.75)	**2.47** (2.25-2.76)	**4.65** (4.18-5.17)	**7.67** (6.93-8.46)	**10.3** (8.79-12.0)	1444
Age group							
20-49 years	11-12	**2.87** (2.60-3.17)	**2.84** (2.36-3.31)	**5.46** (4.78-6.43)	**8.67** (8.04-10.8)	**12.8** (9.47-19.1)	632
18-49 years	13-14	**2.55** (2.32-2.79)	**2.52** (2.20-2.90)	**4.89** (4.25-5.61)	**7.98** (7.02-8.79)	**10.2** (8.76-12.1)	751
50 years and older	11-12	**3.04** (2.68-3.45)	**3.00** (2.54-3.47)	**5.21** (4.25-6.14)	**9.02** (7.50-11.2)	**14.4** (10.4-18.4)	653
	13-14	**2.54** (2.32-2.78)	**2.46** (2.25-2.71)	**4.28** (3.89-4.70)	**7.13** (6.24-8.24)	**10.6** (8.46-12.0)	693
Gender							
Males	11-12	**3.35** (3.03-3.71)	**3.31** (2.97-3.67)	**5.70** (5.03-7.10)	**10.4** (8.34-11.1)	**13.8** (11.1-18.4)	608
	13-14	**2.71** (2.39-3.08)	**2.84** (2.37-3.20)	**4.76** (4.12-5.61)	**7.95** (6.73-9.59)	**11.5** (8.76-14.4)	652
Females	11-12	**2.67** (2.44-2.93)	**2.62** (2.37-2.93)	**5.00** (4.02-5.94)	**8.30** (7.76-9.22)	**12.8** (10.6-15.3)	677
	13-14	**2.40** (2.19-2.63)	**2.22** (2.06-2.47)	**4.37** (3.81-5.21)	**7.52** (6.74-8.26)	**9.19** (8.05-11.4)	792

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.05 and 0.05, respectively.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Perchlorate_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Perchlorate_FactSheet.html

Urinary Perchlorate (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**2.82** (2.60-3.05)	**2.68** (2.38-2.89)	**4.51** (4.12-4.94)	**7.34** (6.21-7.94)	**9.88** (7.53-13.8)	884
	13-14	**2.53** (2.30-2.79)	**2.39** (2.20-2.67)	**3.75** (3.41-4.25)	**6.65** (5.16-8.94)	**10.1** (8.35-12.3)	967
Age group							
20-49 years	11-12	**2.74** (2.42-3.09)	**2.50** (2.23-3.02)	**4.45** (3.90-5.12)	**7.32** (5.67-9.22)	**9.89** (7.32-23.5)	528
18-49 years	13-14	**2.43** (2.14-2.75)	**2.30** (2.07-2.64)	**3.61** (3.26-4.00)	**5.90** (4.41-8.84)	**9.09** (6.55-11.8)	586
50 years and older	11-12	**2.95** (2.65-3.29)	**2.75** (2.44-3.08)	**4.63** (3.77-5.28)	**7.45** (5.11-9.62)	**9.03** (7.50-11.8)	356
	13-14	**2.77** (2.41-3.18)	**2.62** (2.21-3.09)	**4.26** (3.44-5.40)	**8.18** (5.90-11.2)	**13.1** (8.61-22.8)	381
Gender							
Males	11-12	**2.63** (2.38-2.90)	**2.38** (2.09-2.73)	**4.24** (3.87-4.57)	**7.13** (5.54-7.53)	**9.88** (7.13-23.5)	538
	13-14	**2.31** (2.02-2.65)	**2.23** (1.92-2.61)	**3.53** (3.05-4.05)	**5.82** (4.40-8.41)	**8.94** (5.90-13.9)	524
Females	11-12	**3.09** (2.73-3.49)	**3.03** (2.74-3.41)	**4.78** (4.45-5.38)	**7.50** (5.79-8.87)	**10.5** (8.03-13.4)	346
	13-14	**2.79** (2.56-3.04)	**2.64** (2.40-2.97)	**4.12** (3.65-4.66)	**7.59** (5.16-10.1)	**10.4** (8.61-15.4)	443
Nonsmokers†							
Total	11-12	**3.48** (3.22-3.76)	**3.38** (3.02-3.72)	**5.83** (5.49-6.13)	**9.81** (8.03-11.8)	**15.0** (10.8-18.5)	1284
	13-14	**3.06** (2.84-3.30)	**3.03** (2.78-3.37)	**4.89** (4.55-5.44)	**7.59** (6.79-8.44)	**10.6** (9.16-12.3)	1444
Age group							
20-49 years	11-12	**3.18** (2.82-3.58)	**2.98** (2.52-3.56)	**5.60** (4.55-6.38)	**9.81** (7.21-11.8)	**12.8** (9.81-17.7)	631
18-49 years	13-14	**2.82** (2.56-3.10)	**2.74** (2.46-2.93)	**4.61** (4.13-5.36)	**7.39** (6.46-8.44)	**9.75** (8.44-11.7)	751
50 years and older	11-12	**3.82** (3.38-4.33)	**3.66** (3.33-4.06)	**6.09** (5.28-6.91)	**10.0** (7.86-14.9)	**16.9** (11.0-23.0)	653
	13-14	**3.37** (3.12-3.63)	**3.40** (3.10-3.75)	**5.21** (4.70-5.69)	**8.09** (6.81-8.79)	**11.0** (9.57-13.2)	693
Gender							
Males	11-12	**2.99** (2.69-3.31)	**2.93** (2.55-3.23)	**4.65** (4.10-5.35)	**7.21** (6.09-9.92)	**13.8** (7.21-20.0)	607
	13-14	**2.65** (2.41-2.92)	**2.54** (2.23-2.84)	**4.35** (3.77-4.64)	**6.50** (5.81-7.75)	**9.60** (7.03-13.1)	652
Females	11-12	**3.92** (3.52-4.37)	**3.85** (3.18-4.72)	**6.53** (6.04-7.49)	**10.3** (9.22-14.4)	**16.2** (11.8-19.8)	677
	13-14	**3.47** (3.20-3.77)	**3.55** (3.19-3.80)	**5.63** (4.76-6.17)	**8.44** (7.33-9.35)	**11.4** (9.45-15.3)	792

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Perchlorate_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Perchlorate_FactSheet.html

Urinary Thiocyanate (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**4.02** (3.51-4.59)	**4.53** (3.91-5.37)	**7.16** (6.43-8.11)	**11.2** (9.33-12.8)	**14.7** (12.7-16.4)	884
	13-14	**3.84** (3.45-4.27)	**4.39** (3.88-4.77)	**7.38** (6.60-8.15)	**12.3** (9.89-13.9)	**15.2** (13.9-17.6)	964
Age group							
20-49 years	11-12	**4.03** (3.55-4.57)	**4.64** (4.07-5.05)	**7.36** (6.43-8.20)	**11.7** (10.7-13.3)	**16.2** (13.5-17.8)	528
18-49 years	13-14	**3.85** (3.28-4.50)	**4.63** (3.77-5.32)	**7.77** (6.90-8.83)	**13.4** (10.7-14.5)	**15.5** (14.1-18.0)	584
50 years and older	11-12	**4.00** (3.26-4.90)	**4.37** (3.37-6.20)	**6.90** (5.44-8.11)	**9.94** (7.83-13.1)	**12.8** (9.50-15.3)	356
	13-14	**3.83** (3.45-4.26)	**4.12** (3.47-4.67)	**6.42** (5.45-7.51)	**9.84** (8.85-12.6)	**13.9** (11.0-18.3)	380
Gender							
Males	11-12	**3.87** (3.17-4.74)	**4.45** (3.38-5.88)	**7.23** (6.43-8.59)	**11.1** (8.99-13.3)	**14.5** (11.7-17.8)	538
	13-14	**3.65** (3.07-4.34)	**4.48** (3.61-4.96)	**7.50** (6.44-8.66)	**13.5** (10.7-14.5)	**15.6** (14.1-19.0)	521
Females	11-12	**4.21** (3.82-4.63)	**4.71** (4.31-5.37)	**6.95** (6.12-7.95)	**11.4** (8.86-13.8)	**15.7** (11.9-18.9)	346
	13-14	**4.06** (3.62-4.54)	**4.30** (3.90-4.73)	**7.15** (6.17-8.23)	**11.3** (9.28-13.9)	**14.4** (11.2-17.7)	443
Nonsmokers†							
Total	11-12	**.778** (.723-.837)	**.856** (.816-.918)	**1.54** (1.39-1.69)	**2.45** (2.19-2.90)	**3.13** (2.92-3.32)	1285
	13-14	**.749** (.695-.806)	**.774** (.699-.843)	**1.41** (1.32-1.51)	**2.41** (2.14-2.69)	**3.45** (2.85-4.17)	1443
Age group							
20-49 years	11-12	**.823** (.758-.894)	**.913** (.816-.965)	**1.65** (1.45-1.85)	**2.47** (2.23-3.05)	**3.32** (3.05-4.03)	632
18-49 years	13-14	**.773** (.709-.844)	**.825** (.711-.919)	**1.46** (1.33-1.66)	**2.40** (2.13-2.66)	**3.10** (2.61-4.04)	751
50 years and older	11-12	**.733** (.663-.811)	**.828** (.726-.886)	**1.44** (1.21-1.67)	**2.39** (1.94-2.90)	**2.92** (2.39-3.86)	653
	13-14	**.722** (.642-.812)	**.735** (.621-.820)	**1.32** (1.15-1.55)	**2.42** (1.86-3.13)	**3.66** (2.55-4.75)	692
Gender							
Males	11-12	**.956** (.855-1.07)	**1.01** (.913-1.20)	**1.87** (1.57-2.18)	**2.76** (2.29-3.11)	**3.28** (2.94-4.03)	608
	13-14	**.848** (.755-.952)	**.861** (.759-1.00)	**1.71** (1.37-1.98)	**2.73** (2.31-3.50)	**3.81** (2.92-4.88)	652
Females	11-12	**.661** (.589-.742)	**.716** (.596-.826)	**1.32** (1.19-1.44)	**2.19** (1.83-2.42)	**2.90** (2.42-3.21)	677
	13-14	**.671** (.609-.740)	**.686** (.598-.782)	**1.24** (1.10-1.41)	**2.02** (1.78-2.31)	**2.85** (2.31-3.75)	791

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 and 13-14 are 0.02 and 0.02, respectively.

Urinary Thiocyanate (creatinine corrected) (2011 - 2014)

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**4.45** (4.03-4.92)	**4.99** (4.34-5.40)	**8.28** (7.42-10.0)	**14.4** (11.6-15.7)	**16.7** (15.3-18.6)	884
	13-14	**3.97** (3.53-4.46)	**4.34** (3.96-5.00)	**7.83** (7.12-8.59)	**12.5** (10.7-14.5)	**15.7** (14.1-18.3)	964
Age group							
20-49 years	11-12	**4.23** (3.91-4.57)	**4.69** (3.78-5.40)	**7.89** (7.54-8.77)	**14.0** (11.4-16.1)	**16.7** (14.6-19.9)	528
18-49 years	13-14	**3.59** (3.16-4.08)	**4.10** (3.61-4.47)	**7.38** (6.26-8.20)	**11.7** (10.6-13.8)	**14.4** (13.1-16.0)	584
50 years and older	11-12	**4.82** (4.07-5.72)	**5.26** (4.43-6.89)	**8.84** (7.11-12.5)	**15.3** (10.5-17.2)	**16.6** (15.3-18.3)	356
	13-14	**4.89** (4.33-5.53)	**5.12** (4.44-5.90)	**8.47** (7.42-10.3)	**14.5** (10.5-18.6)	**20.0** (12.9-24.4)	380
Gender							
Males	11-12	**3.72** (3.30-4.19)	**4.15** (3.64-4.94)	**7.24** (6.54-7.75)	**11.0** (9.41-12.5)	**14.4** (12.5-15.6)	538
	13-14	**3.32** (2.86-3.86)	**4.03** (3.01-4.48)	**7.12** (6.01-7.93)	**11.0** (9.39-13.2)	**14.3** (11.7-15.3)	521
Females	11-12	**5.63** (4.65-6.83)	**5.93** (4.69-8.08)	**11.1** (8.54-14.6)	**16.7** (14.0-18.9)	**18.9** (16.6-23.4)	346
	13-14	**4.80** (4.20-5.48)	**4.94** (4.10-6.13)	**8.43** (7.64-10.1)	**14.1** (11.5-16.8)	**17.9** (14.3-20.4)	443
Nonsmokers†							
Total	11-12	**.916** (.863-.973)	**.968** (.892-1.10)	**1.67** (1.50-1.78)	**2.66** (2.26-2.91)	**3.22** (2.97-3.59)	1284
	13-14	**.903** (.838-.971)	**.956** (.873-1.03)	**1.60** (1.49-1.73)	**2.54** (2.15-2.92)	**3.40** (2.92-4.13)	1443
Age group							
20-49 years	11-12	**.911** (.834-.996)	**.974** (.867-1.09)	**1.61** (1.44-1.76)	**2.41** (1.99-2.91)	**3.00** (2.66-3.16)	631
18-49 years	13-14	**.856** (.789-.928)	**.903** (.827-1.00)	**1.46** (1.33-1.61)	**2.17** (1.90-2.44)	**2.83** (2.37-3.66)	751
50 years and older	11-12	**.921** (.844-1.01)	**.965** (.830-1.18)	**1.72** (1.46-1.99)	**2.85** (2.16-3.29)	**3.59** (2.96-4.28)	653
	13-14	**.958** (.858-1.07)	**1.04** (.869-1.22)	**1.81** (1.54-2.00)	**2.88** (2.27-3.56)	**4.08** (3.08-5.08)	692
Gender							
Males	11-12	**.852** (.770-.941)	**.941** (.750-1.09)	**1.56** (1.28-1.87)	**2.39** (2.07-2.91)	**3.17** (2.66-3.97)	607
	13-14	**.829** (.755-.910)	**.890** (.815-1.01)	**1.52** (1.32-1.71)	**2.40** (1.96-2.96)	**3.55** (2.75-5.05)	652
Females	11-12	**.970** (.892-1.06)	**1.02** (.923-1.13)	**1.73** (1.57-1.88)	**2.82** (2.32-3.02)	**3.22** (2.91-3.89)	677
	13-14	**.973** (.903-1.05)	**1.00** (.921-1.06)	**1.71** (1.55-1.81)	**2.60** (2.18-3.06)	**3.37** (2.92-4.13)	791

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary 2-Hydroxyfluorene (2011 - 2012)‡

Metabolite of Fluorene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**1120** (983-1290)	**1290** (1060-1430)	**2340** (2100-2620)	**3960** (3380-4570)	**5600** (4730-6100)	885
Age group							
20-49 years	11-12	**1050** (862-1280)	**1220** (990-1410)	**2260** (1870-2520)	**3430** (2740-4260)	**4760** (3840-5330)	530
50 years and older	11-12	**1250** (1080-1440)	**1380** (1030-1840)	**2520** (2140-3380)	**4900** (3800-5910)	**6100** (4900-6960)	355
Gender							
Males	11-12	**1130** (925-1380)	**1330** (976-1540)	**2480** (2090-3020)	**4260** (3550-5600)	**5960** (4140-7490)	537
Females	11-12	**1120** (993-1260)	**1230** (1100-1360)	**2260** (2070-2410)	**3380** (2680-4210)	**4480** (3760-5650)	348
Nonsmokers†							
Total	11-12	**161** (149-175)	**153** (144-169)	**296** (262-327)	**563** (459-622)	**715** (621-980)	1300
Age group							
20-49 years	11-12	**175** (157-194)	**169** (148-202)	**345** (306-384)	**622** (524-683)	**826** (670-1100)	640
50 years and older	11-12	**148** (131-168)	**143** (125-161)	**254** (214-298)	**448** (345-599)	**622** (481-966)	660
Gender							
Males	11-12	**194** (169-223)	**194** (161-217)	**337** (285-399)	**622** (493-735)	**916** (623-1460)	612
Females	11-12	**140** (129-151)	**138** (124-147)	**260** (225-290)	**487** (396-580)	**644** (580-766)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxyfluorene (creatinine corrected) (2011 - 2012)‡

Metabolite of Fluorene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**1240** (1160-1330)	**1370** (1320-1460)	**2230** (2040-2460)	**3200** (2950-3490)	**3940** (3540-4670)	885
Age group							
20-49 years	11-12	**1100** (993-1220)	**1240** (1050-1350)	**1950** (1750-2150)	**3080** (2540-3440)	**3850** (3210-4390)	530
50 years and older	11-12	**1510** (1360-1670)	**1750** (1450-1950)	**2630** (2300-2930)	**3540** (2950-3920)	**4120** (3480-5090)	355
Gender							
Males	11-12	**1080** (974-1200)	**1250** (1030-1370)	**1920** (1710-2170)	**2860** (2400-3390)	**3550** (2950-4020)	537
Females	11-12	**1490** (1280-1740)	**1750** (1470-1970)	**2740** (2110-3080)	**3630** (3080-4120)	**4390** (3630-4840)	348
Nonsmokers†							
Total	11-12	**190** (177-204)	**173** (163-184)	**265** (248-291)	**435** (366-472)	**629** (472-890)	1299
Age group							
20-49 years	11-12	**193** (178-209)	**175** (166-186)	**271** (239-303)	**443** (349-511)	**637** (472-920)	639
50 years and older	11-12	**186** (167-207)	**168** (145-195)	**260** (223-301)	**426** (348-484)	**624** (450-941)	660
Gender							
Males	11-12	**173** (152-197)	**147** (132-177)	**248** (205-281)	**423** (314-511)	**542** (424-1320)	611
Females	11-12	**204** (192-216)	**185** (171-200)	**282** (250-312)	**446** (374-509)	**702** (476-816)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyfluorene (2011 - 2012)‡

Metabolite of Fluorene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**574** (486-677)	**670** (525-801)	**1270** (1080-1590)	**2130** (1900-2530)	**2900** (2370-3330)	885
Age group							
20-49 years	11-12	**539** (432-674)	**638** (496-800)	**1210** (1030-1430)	**2010** (1730-2440)	**2750** (2120-3340)	530
50 years and older	11-12	**632** (510-783)	**693** (496-945)	**1460** (1100-1750)	**2400** (1750-2990)	**3040** (2440-3970)	355
Gender							
Males	11-12	**583** (452-752)	**684** (493-951)	**1550** (1140-1830)	**2440** (1930-2990)	**2990** (2390-4560)	537
Females	11-12	**561** (499-632)	**637** (515-759)	**1130** (960-1240)	**1810** (1510-2050)	**2400** (1930-2830)	348
Nonsmokers†							
Total	11-12	**56.9** (51.9-62.5)	**56.0** (50.0-60.0)	**104** (92.0-117)	**195** (169-221)	**281** (229-373)	1296
Age group							
20-49 years	11-12	**62.1** (55.5-69.5)	**59.0** (54.0-70.0)	**124** (113-143)	**227** (199-267)	**347** (267-439)	639
50 years and older	11-12	**52.0** (45.4-59.5)	**53.0** (45.0-59.0)	**83.0** (68.0-102)	**153** (116-192)	**222** (162-355)	657
Gender							
Males	11-12	**68.6** (58.5-80.5)	**62.0** (57.0-70.0)	**118** (104-148)	**223** (164-311)	**332** (222-818)	611
Females	11-12	**49.1** (44.6-54.2)	**50.0** (47.0-56.0)	**88.0** (79.0-99.0)	**166** (151-183)	**260** (195-320)	685

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyfluorene (creatinine corrected) (2011 - 2012)‡

Metabolite of Fluorene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**634** (575-700)	**765** (694-825)	**1210** (1110-1330)	**1830** (1480-2050)	**2060** (1980-2280)	885
Age group							
20-49 years	11-12	**565** (500-638)	**631** (568-736)	**1170** (1020-1240)	**1780** (1360-2050)	**2050** (1730-2320)	530
50 years and older	11-12	**763** (639-911)	**964** (844-1030)	**1310** (1100-1640)	**1840** (1560-2060)	**2060** (1690-2420)	355
Gender							
Males	11-12	**558** (479-651)	**637** (568-754)	**1100** (971-1200)	**1640** (1290-2050)	**2050** (1560-2140)	537
Females	11-12	**750** (624-902)	**936** (796-1080)	**1350** (1130-1680)	**1980** (1420-2420)	**2330** (2030-2450)	348
Nonsmokers†							
Total	11-12	**66.8** (61.6-72.6)	**59.3** (54.5-65.4)	**98.3** (88.9-107)	**174** (149-200)	**251** (200-338)	1295
Age group							
20-49 years	11-12	**68.5** (62.3-75.3)	**58.9** (53.6-67.3)	**103** (83.2-117)	**182** (148-223)	**251** (203-345)	638
50 years and older	11-12	**65.2** (57.1-74.4)	**60.5** (50.0-70.7)	**94.4** (87.5-107)	**168** (137-200)	**249** (171-372)	657
Gender							
Males	11-12	**61.2** (52.3-71.5)	**51.9** (48.0-59.7)	**86.0** (76.4-103)	**149** (113-195)	**226** (149-765)	610
Females	11-12	**71.7** (65.5-78.5)	**65.6** (57.6-75.8)	**106** (92.9-127)	**193** (163-239)	**254** (235-311)	685

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 9-Hydroxyfluorene (2011 - 2012)‡

Metabolite of Fluorene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**605** (557-657)	**658** (553-724)	**1190** (1040-1300)	**1980** (1700-2470)	**3100** (2470-3730)	885
Age group							
20-49 years	11-12	**571** (507-643)	**621** (504-669)	**1110** (915-1220)	**1760** (1470-2400)	**2590** (2090-3680)	530
50 years and older	11-12	**662** (572-766)	**742** (553-900)	**1350** (1150-1480)	**2470** (1780-2840)	**3460** (2470-4020)	355
Gender							
Males	11-12	**612** (536-698)	**658** (453-809)	**1190** (999-1400)	**2340** (1590-3400)	**3460** (2370-4020)	537
Females	11-12	**595** (512-692)	**642** (529-736)	**1190** (903-1440)	**1880** (1470-2560)	**2590** (1790-3730)	348
Nonsmokers†							
Total	11-12	**204** (189-220)	**199** (181-222)	**381** (341-406)	**752** (650-872)	**1230** (915-1350)	1300
Age group							
20-49 years	11-12	**210** (188-234)	**210** (188-248)	**402** (350-437)	**807** (678-945)	**1310** (1010-1340)	640
50 years and older	11-12	**198** (169-232)	**183** (141-240)	**343** (308-388)	**714** (524-909)	**1010** (720-1780)	660
Gender							
Males	11-12	**241** (212-274)	**244** (196-285)	**433** (387-492)	**796** (664-951)	**1280** (951-1490)	612
Females	11-12	**179** (162-198)	**181** (157-198)	**322** (290-375)	**683** (495-864)	**1230** (794-1580)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 9-Hydroxyfluorene (creatinine corrected) (2011 - 2012)‡

Metabolite of Fluorene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**669** (609-734)	**667** (618-741)	**1170** (1100-1280)	**1860** (1610-2110)	**2630** (2000-3640)	885
Age group							
20-49 years	11-12	**598** (513-696)	**586** (520-659)	**1020** (851-1170)	**1730** (1320-2370)	**2630** (1650-4950)	530
50 years and older	11-12	**799** (720-887)	**877** (794-949)	**1350** (1160-1610)	**2010** (1610-2300)	**2570** (2080-2940)	355
Gender							
Males	11-12	**586** (518-662)	**605** (531-683)	**1070** (878-1150)	**1610** (1360-1930)	**2490** (1820-2910)	537
Females	11-12	**795** (707-895)	**797** (665-936)	**1390** (1190-1600)	**2010** (1660-2630)	**2700** (2010-3890)	348
Nonsmokers†							
Total	11-12	**240** (219-262)	**218** (195-244)	**359** (326-419)	**704** (575-848)	**959** (834-1140)	1299
Age group							
20-49 years	11-12	**232** (212-253)	**208** (187-229)	**349** (324-386)	**663** (537-908)	**1080** (804-1170)	639
50 years and older	11-12	**248** (217-284)	**230** (193-275)	**367** (324-489)	**704** (543-917)	**921** (783-1080)	660
Gender							
Males	11-12	**215** (193-240)	**192** (179-212)	**315** (280-362)	**676** (411-921)	**921** (621-1630)	611
Females	11-12	**261** (233-292)	**243** (208-277)	**397** (342-492)	**750** (583-914)	**984** (901-1140)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Fluorene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxyphenanthrene (2011 - 2012)‡

Metabolite of Phenanthrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**197** (178-218)	**207** (178-236)	**378** (315-434)	**577** (526-665)	**758** (607-864)	885
Age group							
20-49 years	11-12	**198** (173-228)	**210** (172-256)	**378** (311-427)	**569** (511-643)	**716** (580-864)	530
50 years and older	11-12	**195** (172-220)	**200** (157-249)	**407** (298-459)	**607** (459-809)	**772** (543-1170)	355
Gender							
Males	11-12	**195** (170-224)	**207** (172-236)	**398** (313-453)	**589** (532-687)	**758** (619-820)	537
Females	11-12	**199** (173-230)	**208** (175-247)	**365** (276-453)	**526** (387-790)	**750** (526-1170)	348
Nonsmokers†							
Total	11-12	**114** (106-123)	**112** (102-125)	**209** (193-230)	**356** (307-432)	**535** (400-639)	1300
Age group							
20-49 years	11-12	**117** (105-131)	**123** (103-138)	**230** (201-249)	**389** (315-466)	**541** (443-590)	640
50 years and older	11-12	**111** (96.5-127)	**105** (93.0-122)	**193** (173-221)	**322** (271-400)	**498** (340-874)	660
Gender							
Males	11-12	**126** (113-140)	**127** (106-141)	**221** (198-253)	**356** (302-437)	**498** (375-781)	612
Females	11-12	**106** (95.1-117)	**104** (94.0-110)	**197** (174-232)	**356** (290-446)	**540** (375-639)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxyphenanthrene (creatinine corrected) (2011 - 2012)‡

Metabolite of Phenanthrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**218** (204-233)	**213** (197-244)	**328** (303-360)	**492** (426-543)	**583** (543-609)	885
Age group							
20-49 years	11-12	**208** (193-223)	**204** (178-234)	**313** (292-340)	**455** (394-492)	**531** (474-658)	530
50 years and older	11-12	**235** (212-260)	**238** (211-270)	**357** (289-481)	**543** (426-583)	**583** (543-691)	355
Gender							
Males	11-12	**187** (171-204)	**181** (159-210)	**283** (234-322)	**383** (360-455)	**492** (409-583)	537
Females	11-12	**266** (243-291)	**267** (239-300)	**416** (326-500)	**543** (500-594)	**658** (562-795)	348
Nonsmokers†							
Total	11-12	**134** (123-146)	**126** (113-134)	**200** (178-218)	**335** (269-413)	**498** (384-655)	1299
Age group							
20-49 years	11-12	**130** (118-142)	**122** (108-133)	**195** (167-218)	**303** (244-384)	**473** (332-598)	639
50 years and older	11-12	**139** (123-157)	**129** (112-145)	**206** (175-236)	**340** (272-460)	**508** (413-683)	660
Gender							
Males	11-12	**112** (102-122)	**100** (91.0-112)	**157** (137-175)	**247** (192-367)	**413** (247-598)	611
Females	11-12	**154** (136-175)	**143** (126-162)	**221** (200-254)	**352** (288-495)	**549** (432-831)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxyphenanthrene (2011 - 2012)‡

Metabolite of Phenanthrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**112** (102-122)	**109** (102-130)	**205** (184-228)	**334** (297-360)	**389** (371-466)	884
Age group							
20-49 years	11-12	**109** (95.7-124)	**108** (96.0-130)	**202** (164-228)	**304** (258-349)	**385** (353-489)	530
50 years and older	11-12	**117** (105-129)	**119** (94.0-149)	**219** (199-247)	**360** (287-374)	**398** (366-498)	354
Gender							
Males	11-12	**120** (105-136)	**130** (105-151)	**224** (197-260)	**360** (292-377)	**417** (374-489)	537
Females	11-12	**102** (90.4-116)	**106** (88.0-119)	**185** (151-213)	**263** (235-310)	**357** (301-478)	347
Nonsmokers†							
Total	11-12	**53.2** (49.5-57.2)	**52.0** (48.0-57.0)	**93.0** (83.0-103)	**170** (147-195)	**264** (198-306)	1297
Age group							
20-49 years	11-12	**57.1** (52.1-62.5)	**58.0** (52.0-66.0)	**103** (93.0-114)	**179** (164-202)	**265** (209-331)	640
50 years and older	11-12	**49.4** (42.9-57.0)	**48.0** (41.0-56.0)	**82.0** (68.0-95.0)	**141** (114-235)	**262** (141-349)	657
Gender							
Males	11-12	**65.3** (57.6-74.0)	**65.0** (53.0-76.0)	**112** (96.0-126)	**206** (168-247)	**275** (209-384)	611
Females	11-12	**45.3** (41.9-49.1)	**46.0** (42.0-49.0)	**75.0** (67.0-89.0)	**137** (112-175)	**226** (158-303)	686

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxyphenanthrene (creatinine corrected) (2011 - 2012)‡

Metabolite of Phenanthrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**124** (117-131)	**127** (117-132)	**193** (175-207)	**285** (247-318)	**365** (307-425)	884
Age group							
20-49 years	11-12	**114** (105-124)	**112** (104-120)	**178** (162-198)	**261** (234-295)	**365** (261-538)	530
50 years and older	11-12	**140** (129-153)	**144** (132-158)	**207** (188-243)	**318** (243-356)	**356** (293-432)	354
Gender							
Males	11-12	**115** (106-124)	**116** (101-129)	**173** (159-180)	**264** (206-321)	**385** (249-432)	537
Females	11-12	**137** (121-155)	**142** (126-159)	**220** (191-245)	**303** (253-334)	**356** (307-503)	347
Nonsmokers†							
Total	11-12	**62.4** (57.7-67.6)	**57.1** (53.3-60.5)	**92.3** (78.9-101)	**154** (120-182)	**213** (163-282)	1296
Age group							
20-49 years	11-12	**62.9** (58.6-67.5)	**59.3** (53.7-62.9)	**91.7** (80.0-101)	**145** (113-173)	**188** (152-284)	639
50 years and older	11-12	**62.0** (54.4-70.6)	**56.7** (48.7-64.8)	**92.3** (73.9-110)	**156** (121-203)	**218** (156-303)	657
Gender							
Males	11-12	**58.1** (52.1-64.8)	**52.6** (47.9-56.3)	**85.5** (70.1-103)	**146** (110-200)	**200** (145-281)	610
Females	11-12	**66.0** (59.8-72.9)	**61.5** (57.1-68.2)	**93.1** (84.1-105)	**156** (114-188)	**226** (163-292)	686

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyphenanthrene (2011 - 2012)‡

Metabolite of Phenanthrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**138** (120-158)	**143** (123-162)	**265** (220-340)	**517** (444-549)	**633** (552-678)	885
Age group							
20-49 years	11-12	**136** (114-164)	**143** (115-168)	**264** (207-325)	**519** (382-593)	**651** (563-724)	530
50 years and older	11-12	**140** (122-160)	**151** (120-184)	**269** (223-369)	**497** (398-550)	**622** (495-784)	355
Gender							
Males	11-12	**147** (123-176)	**161** (123-201)	**313** (253-382)	**549** (458-622)	**673** (622-784)	537
Females	11-12	**126** (109-145)	**128** (109-150)	**242** (183-269)	**385** (297-483)	**519** (401-687)	348
Nonsmokers†							
Total	11-12	**48.0** (44.2-52.2)	**47.0** (42.0-54.0)	**88.0** (79.0-100)	**165** (135-193)	**229** (190-284)	1299
Age group							
20-49 years	11-12	**51.8** (46.7-57.4)	**54.0** (47.0-61.0)	**103** (90.0-118)	**182** (165-202)	**231** (202-325)	640
50 years and older	11-12	**44.4** (38.1-51.8)	**44.0** (35.0-54.0)	**78.0** (63.0-91.0)	**135** (100-186)	**221** (146-282)	659
Gender							
Males	11-12	**57.9** (49.8-67.4)	**56.0** (47.0-67.0)	**106** (82.0-132)	**189** (149-251)	**261** (195-475)	612
Females	11-12	**41.5** (38.0-45.2)	**40.0** (37.0-45.0)	**80.0** (67.0-87.0)	**135** (109-173)	**206** (173-217)	687

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 3-Hydroxyphenanthrene (creatinine corrected) (2011 - 2012)‡

Metabolite of Phenanthrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**152** (143-162)	**162** (150-173)	**255** (239-277)	**370** (350-410)	**467** (416-503)	885
Age group							
20-49 years	11-12	**143** (129-158)	**147** (129-167)	**244** (214-258)	**359** (304-410)	**422** (375-525)	530
50 years and older	11-12	**169** (155-183)	**189** (161-214)	**289** (259-313)	**427** (348-460)	**474** (407-560)	355
Gender							
Males	11-12	**141** (130-153)	**150** (129-166)	**231** (217-253)	**354** (324-406)	**467** (409-474)	537
Females	11-12	**168** (145-194)	**181** (151-210)	**278** (246-329)	**407** (361-427)	**471** (410-667)	348
Nonsmokers†							
Total	11-12	**56.4** (52.0-61.3)	**52.1** (48.2-56.1)	**82.1** (73.8-95.2)	**148** (121-168)	**206** (159-300)	1298
Age group							
20-49 years	11-12	**57.1** (52.7-61.8)	**51.9** (47.2-56.8)	**81.8** (70.3-94.6)	**150** (118-173)	**203** (163-250)	639
50 years and older	11-12	**55.8** (48.7-63.8)	**52.2** (44.5-60.3)	**82.8** (69.8-103)	**147** (114-177)	**222** (148-338)	659
Gender							
Males	11-12	**51.6** (45.5-58.6)	**46.3** (41.4-52.9)	**76.4** (61.6-93.6)	**140** (102-163)	**188** (139-338)	611
Females	11-12	**60.5** (54.5-67.2)	**55.8** (50.9-61.6)	**87.0** (75.8-105)	**149** (122-178)	**231** (151-334)	687

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 4-Hydroxyphenanthrene (2011 - 2012)‡

Metabolite of Phenanthrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**38.2** (35.3-41.3)	**42.0** (35.0-46.0)	**74.0** (66.0-79.0)	**116** (102-136)	**156** (144-178)	874
Age group							
20-49 years	11-12	**36.9** (32.9-41.3)	**38.0** (31.0-46.0)	**73.0** (61.0-79.0)	**109** (99.0-126)	**155** (126-179)	525
50 years and older	11-12	**40.3** (36.1-45.1)	**45.0** (38.0-50.0)	**77.0** (66.0-95.0)	**126** (106-148)	**156** (124-201)	349
Gender							
Males	11-12	**36.3** (31.6-41.8)	**36.0** (31.0-45.0)	**74.0** (64.0-82.0)	**119** (102-148)	**169** (126-189)	531
Females	11-12	**40.7** (34.7-47.8)	**47.0** (38.0-52.0)	**74.0** (63.0-84.0)	**113** (90.0-146)	**151** (117-182)	343
Nonsmokers†							
Total	11-12	**17.4** (16.3-18.7)	**16.0** (14.0-17.0)	**30.0** (27.0-33.0)	**53.0** (44.0-67.0)	**84.0** (72.0-96.0)	1296
Age group							
20-49 years	11-12	**19.1** (17.3-21.1)	**18.0** (15.0-22.0)	**34.0** (30.0-39.0)	**63.0** (51.0-72.0)	**84.0** (67.0-116)	639
50 years and older	11-12	**15.8** (14.0-17.9)	**14.0** (12.0-17.0)	**26.0** (23.0-29.0)	**40.0** (34.0-65.0)	**81.0** (44.0-134)	657
Gender							
Males	11-12	**19.4** (17.0-22.0)	**19.0** (16.0-23.0)	**33.0** (29.0-35.0)	**60.0** (44.0-79.0)	**84.0** (67.0-108)	610
Females	11-12	**16.0** (14.7-17.5)	**14.0** (12.0-16.0)	**26.0** (22.0-31.0)	**47.0** (40.0-65.0)	**82.0** (52.0-134)	686

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 4-Hydroxyphenanthrene (creatinine corrected) (2011 - 2012)‡

Metabolite of Phenanthrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**42.0** (38.8-45.5)	**44.4** (40.7-46.8)	**76.5** (63.2-88.9)	**124** (105-143)	**153** (142-172)	874
Age group							
20-49 years	11-12	**38.6** (34.7-42.9)	**40.4** (36.8-44.6)	**64.5** (59.3-80.0)	**118** (95.5-133)	**143** (123-198)	525
50 years and older	11-12	**48.2** (43.4-53.6)	**53.3** (45.7-59.7)	**90.1** (77.4-103)	**143** (103-158)	**154** (124-175)	349
Gender							
Males	11-12	**34.8** (30.4-39.8)	**37.8** (35.3-40.9)	**60.8** (49.5-72.2)	**100** (82.3-112)	**127** (100-172)	531
Females	11-12	**53.9** (45.3-64.2)	**59.0** (47.2-63.4)	**103** (75.8-124)	**143** (121-159)	**159** (143-228)	343
Nonsmokers†							
Total	11-12	**20.4** (19.0-22.0)	**19.7** (18.4-21.1)	**30.2** (26.4-33.8)	**50.7** (41.8-65.0)	**79.6** (51.9-117)	1295
Age group							
20-49 years	11-12	**20.9** (19.2-22.8)	**20.3** (19.2-22.1)	**30.9** (26.3-34.7)	**51.5** (42.7-66.7)	**80.5** (54.6-117)	638
50 years and older	11-12	**19.9** (17.8-22.2)	**18.5** (17.6-20.9)	**29.6** (26.1-32.7)	**48.8** (37.5-65.0)	**79.6** (47.5-111)	657
Gender							
Males	11-12	**17.3** (15.8-18.9)	**17.1** (15.1-18.3)	**25.1** (23.0-27.3)	**41.2** (31.9-54.7)	**59.7** (39.7-111)	609
Females	11-12	**23.3** (21.2-25.6)	**22.2** (20.3-24.4)	**34.5** (29.6-38.6)	**54.9** (47.1-79.6)	**88.8** (55.3-135)	686

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Phenanthrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxypyrene (2011 - 2012)‡

Metabolite of Pyrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**234** (202-273)	**239** (198-295)	**483** (387-555)	**773** (693-888)	**1160** (922-1240)	885
Age group							
20-49 years	11-12	**237** (196-286)	**243** (198-303)	**460** (364-604)	**773** (652-1010)	**1180** (832-1440)	530
50 years and older	11-12	**231** (196-271)	**232** (162-295)	**497** (358-582)	**775** (603-1100)	**1120** (756-1400)	355
Gender							
Males	11-12	**238** (193-293)	**238** (193-321)	**522** (415-636)	**835** (756-1080)	**1230** (1020-1380)	537
Females	11-12	**230** (200-264)	**243** (194-278)	**423** (342-513)	**664** (543-828)	**882** (685-1180)	348
Nonsmokers†							
Total	11-12	**81.5** (75.1-88.5)	**83.0** (75.0-92.0)	**147** (135-168)	**262** (227-306)	**395** (311-450)	1297
Age group							
20-49 years	11-12	**96.1** (84.9-109)	**99.0** (83.0-113)	**183** (160-217)	**304** (262-365)	**436** (349-482)	639
50 years and older	11-12	**68.5** (61.1-76.8)	**71.0** (59.0-86.0)	**121** (101-135)	**196** (167-222)	**307** (206-424)	658
Gender							
Males	11-12	**92.1** (82.5-103)	**93.0** (83.0-100)	**169** (143-183)	**299** (227-424)	**450** (316-599)	611
Females	11-12	**74.1** (67.5-81.3)	**75.0** (64.0-85.0)	**136** (120-154)	**238** (196-293)	**330** (285-381)	686

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 10.0.
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Pyrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxypyrene (creatinine corrected) (2011 - 2012)‡

Metabolite of Pyrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**259** (240-280)	**264** (253-281)	**429** (387-458)	**661** (547-763)	**887** (714-996)	885
Age group							
20-49 years	11-12	**248** (224-274)	**251** (218-277)	**395** (360-453)	**653** (525-769)	**838** (700-996)	530
50 years and older	11-12	**278** (248-312)	**296** (264-334)	**448** (386-518)	**694** (556-887)	**899** (748-1070)	355
Gender							
Males	11-12	**228** (204-255)	**226** (206-261)	**378** (330-418)	**546** (458-703)	**804** (580-993)	537
Females	11-12	**307** (266-354)	**323** (288-376)	**466** (413-572)	**743** (589-887)	**888** (700-1040)	348
Nonsmokers†							
Total	11-12	**96.7** (90.8-103)	**92.4** (87.3-100)	**149** (141-160)	**248** (214-280)	**341** (280-460)	1296
Age group							
20-49 years	11-12	**106** (100-113)	**104** (94.2-113)	**163** (147-184)	**256** (225-289)	**329** (295-385)	638
50 years and older	11-12	**87.6** (78.0-98.4)	**85.5** (75.0-91.6)	**127** (116-146)	**220** (183-307)	**401** (249-855)	658
Gender							
Males	11-12	**82.3** (74.0-91.7)	**80.7** (72.3-85.7)	**122** (109-136)	**208** (162-298)	**323** (243-482)	610
Females	11-12	**110** (101-119)	**104** (93.2-118)	**167** (153-182)	**258** (224-289)	**362** (307-438)	686

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Pyrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxynaphthalene (1-Naphthol) (2011 - 2012)‡

Metabolite of Naphthalene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**9.00** (7.76-10.4)	**10.6** (8.57-11.9)	**19.8** (17.0-22.1)	**34.6** (27.9-36.5)	**42.6** (35.7-49.0)	885
Age group							
20-49 years	11-12	**8.18** (6.53-10.3)	**9.97** (7.63-11.5)	**18.3** (14.8-21.7)	**27.6** (24.2-35.2)	**37.2** (32.3-48.5)	530
50 years and older	11-12	**10.5** (8.84-12.4)	**11.8** (8.52-14.1)	**22.7** (18.5-26.0)	**38.8** (27.2-43.7)	**44.5** (38.8-128)	355
Gender							
Males	11-12	**8.79** (6.99-11.0)	**10.9** (8.54-12.4)	**21.3** (17.2-24.2)	**35.7** (27.4-38.8)	**42.6** (33.2-49.0)	537
Females	11-12	**9.28** (8.16-10.6)	**9.97** (8.08-12.1)	**18.5** (16.1-21.1)	**30.7** (24.7-35.2)	**42.2** (35.1-58.5)	348
Nonsmokers†							
Total	11-12	**1.17** (1.08-1.27)	**1.09** (.954-1.20)	**2.31** (2.11-2.48)	**5.40** (4.36-6.12)	**9.40** (7.26-11.6)	1300
Age group							
20-49 years	11-12	**1.00** (.931-1.08)	**.931** (.805-1.09)	**1.92** (1.77-2.29)	**4.44** (3.30-5.79)	**7.21** (5.79-9.93)	640
50 years and older	11-12	**1.39** (1.20-1.61)	**1.25** (.954-1.59)	**2.64** (2.29-3.05)	**5.83** (4.58-8.21)	**11.6** (8.84-16.0)	660
Gender							
Males	11-12	**1.31** (1.14-1.52)	**1.20** (.950-1.52)	**2.42** (2.11-2.89)	**5.73** (4.12-6.91)	**8.21** (6.63-16.0)	612
Females	11-12	**1.07** (.920-1.25)	**.976** (.831-1.15)	**2.16** (1.85-2.50)	**4.97** (3.51-6.72)	**11.0** (6.34-12.9)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.044.
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 1-Hydroxynaphthalene (1-Naphthol) (creatinine corrected) (2011 - 2012)‡

Metabolite of Naphthalene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**9.95** (8.94-11.1)	**12.0** (10.3-13.1)	**18.4** (16.4-19.8)	**29.4** (24.2-36.4)	**38.8** (33.0-46.1)	885
Age group							
20-49 years	11-12	**8.56** (7.40-9.91)	**9.49** (8.34-11.3)	**15.8** (14.0-18.4)	**26.4** (20.7-35.2)	**37.2** (30.0-42.0)	530
50 years and older	11-12	**12.6** (10.6-15.1)	**13.5** (13.2-15.5)	**20.2** (18.1-24.2)	**33.7** (24.2-40.5)	**42.2** (32.3-124)	355
Gender							
Males	11-12	**8.41** (7.34-9.63)	**9.46** (8.12-11.9)	**14.3** (13.4-16.7)	**22.5** (19.9-26.1)	**32.8** (26.1-38.0)	537
Females	11-12	**12.4** (10.2-15.0)	**14.7** (13.1-15.9)	**21.4** (18.6-28.7)	**36.6** (29.3-44.0)	**44.0** (36.6-50.3)	348
Nonsmokers†							
Total	11-12	**1.38** (1.25-1.52)	**1.18** (1.05-1.35)	**2.44** (2.05-2.88)	**5.46** (4.61-6.86)	**9.35** (7.80-12.4)	1299
Age group							
20-49 years	11-12	**1.10** (.993-1.22)	**.998** (.849-1.16)	**1.92** (1.75-2.21)	**3.67** (3.17-4.67)	**6.19** (4.97-7.70)	639
50 years and older	11-12	**1.74** (1.52-1.99)	**1.49** (1.17-1.83)	**3.15** (2.50-4.16)	**7.55** (5.54-11.4)	**15.8** (10.6-19.4)	660
Gender							
Males	11-12	**1.17** (1.02-1.34)	**.963** (.790-1.20)	**1.98** (1.70-2.45)	**4.07** (3.26-6.19)	**8.48** (6.25-11.8)	611
Females	11-12	**1.57** (1.35-1.82)	**1.41** (1.17-1.66)	**2.91** (2.28-3.42)	**5.95** (5.23-7.65)	**10.6** (7.80-12.9)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxynaphthalene (2-Naphthol) (2011 - 2012)‡

Metabolite of Naphthalene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**11.9** (10.6-13.4)	**13.0** (11.2-14.5)	**24.0** (20.5-27.7)	**36.1** (31.2-43.7)	**49.4** (43.5-52.5)	885
Age group							
20-49 years	11-12	**11.6** (9.84-13.6)	**13.3** (10.6-15.2)	**23.4** (19.1-27.7)	**32.8** (29.8-38.5)	**45.3** (35.5-51.6)	530
50 years and older	11-12	**12.4** (10.5-14.8)	**12.7** (10.3-16.8)	**26.0** (19.8-29.7)	**43.6** (35.9-51.1)	**52.8** (36.1-71.2)	355
Gender							
Males	11-12	**11.8** (9.86-14.1)	**13.0** (10.7-16.0)	**26.0** (21.4-29.2)	**38.5** (31.2-50.4)	**51.6** (36.6-67.3)	537
Females	11-12	**12.0** (10.8-13.4)	**12.9** (10.7-14.5)	**21.2** (17.9-26.0)	**35.9** (29.1-38.4)	**41.1** (36.1-49.6)	348
Nonsmokers†							
Total	11-12	**3.12** (2.81-3.46)	**3.17** (2.76-3.67)	**6.35** (5.52-7.54)	**13.1** (11.1-15.2)	**18.3** (15.5-20.5)	1300
Age group							
20-49 years	11-12	**3.62** (3.11-4.22)	**3.75** (3.08-4.44)	**8.57** (6.20-10.7)	**15.2** (12.0-17.9)	**20.5** (16.3-23.0)	640
50 years and older	11-12	**2.67** (2.35-3.05)	**2.57** (2.31-3.25)	**5.27** (4.41-6.05)	**10.6** (8.51-11.5)	**14.8** (11.5-20.0)	660
Gender							
Males	11-12	**3.30** (2.95-3.69)	**3.41** (2.78-4.06)	**6.10** (5.35-7.54)	**11.5** (10.7-14.3)	**15.8** (11.9-20.0)	612
Females	11-12	**2.99** (2.57-3.49)	**2.89** (2.46-3.74)	**6.74** (5.29-8.62)	**13.9** (11.7-16.2)	**19.5** (15.6-21.8)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.042.
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary 2-Hydroxynaphthalene (2-Naphthol) (creatinine corrected) (2011 - 2012)‡

Metabolite of Naphthalene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**13.2** (12.4-14.0)	**14.2** (13.4-14.9)	**21.2** (19.6-22.1)	**28.7** (25.8-32.0)	**34.7** (30.8-39.4)	885
Age group							
20-49 years	11-12	**12.1** (11.0-13.3)	**13.1** (11.8-14.2)	**19.2** (18.1-20.7)	**28.0** (23.6-31.2)	**33.9** (28.6-41.9)	530
50 years and older	11-12	**15.0** (13.4-16.8)	**17.4** (15.1-18.4)	**23.5** (21.8-24.5)	**31.3** (25.8-34.3)	**35.7** (28.8-39.8)	355
Gender							
Males	11-12	**11.3** (10.4-12.3)	**12.9** (11.3-13.7)	**18.3** (15.5-19.6)	**23.7** (21.4-28.0)	**29.0** (24.3-34.6)	537
Females	11-12	**16.1** (14.1-18.4)	**17.7** (14.7-20.8)	**24.3** (21.4-28.4)	**33.2** (26.9-39.4)	**39.4** (34.3-43.8)	348
Nonsmokers†							
Total	11-12	**3.67** (3.44-3.92)	**3.40** (3.04-3.84)	**6.56** (5.94-7.27)	**11.9** (10.0-12.6)	**15.5** (13.4-17.9)	1299
Age group							
20-49 years	11-12	**4.01** (3.57-4.50)	**3.74** (3.20-4.32)	**7.48** (6.56-8.70)	**12.6** (11.1-13.6)	**16.4** (13.9-18.9)	639
50 years and older	11-12	**3.35** (3.00-3.75)	**3.18** (2.57-3.57)	**5.73** (4.66-6.86)	**9.63** (8.57-11.4)	**13.0** (10.5-17.4)	660
Gender							
Males	11-12	**2.95** (2.67-3.25)	**2.77** (2.46-2.99)	**4.86** (4.17-5.76)	**8.72** (7.23-9.39)	**11.4** (9.19-14.6)	611
Females	11-12	**4.37** (3.94-4.84)	**4.18** (3.40-5.01)	**7.64** (7.04-8.64)	**13.0** (11.9-14.9)	**17.7** (15.5-20.3)	688

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
‡Not measured after Survey years 2011-2012.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Naphthalene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/PAHs_FactSheet.html

Urinary N-Acetyl-S-(2-carboxyethyl)-L-cysteine (2011 - 2012)

Metabolite of Acrolein

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**221** (196-248)	**237** (205-269)	**430** (385-476)	**775** (638-956)	**1030** (879-1320)	884
Age group							
20-49 years	11-12	**196** (166-231)	**216** (176-257)	**375** (322-439)	**682** (604-749)	**935** (743-1120)	528
50 years and older	11-12	**267** (222-320)	**274** (208-370)	**541** (430-623)	**974** (585-1320)	**1310** (956-1810)	356
Gender							
Males	11-12	**229** (196-269)	**252** (206-285)	**449** (407-536)	**828** (633-1070)	**1240** (956-1450)	538
Females	11-12	**210** (183-240)	**217** (178-283)	**403** (332-490)	**743** (554-879)	**935** (743-1130)	346
Nonsmokers†							
Total	11-12	**80.3** (74.3-86.9)	**86.4** (79.2-94.4)	**155** (143-169)	**260** (236-296)	**367** (310-448)	1284
Age group							
20-49 years	11-12	**72.6** (64.5-81.7)	**81.5** (72.1-90.6)	**144** (128-158)	**253** (217-282)	**307** (277-381)	632
50 years and older	11-12	**89.2** (80.9-98.4)	**94.6** (82.0-107)	**173** (149-192)	**303** (236-367)	**459** (317-528)	652
Gender							
Males	11-12	**108** (98.5-119)	**109** (96.5-128)	**191** (164-217)	**324** (282-368)	**448** (350-492)	608
Females	11-12	**63.6** (56.9-71.0)	**65.6** (54.5-81.0)	**129** (114-147)	**218** (188-248)	**284** (242-341)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 8.0.

Urinary N-Acetyl-S-(2-carboxyethyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of Acrolein

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**245** (228-262)	**254** (228-276)	**412** (376-447)	**607** (510-749)	**827** (640-966)	884
Age group							
20-49 years	11-12	**206** (189-224)	**201** (184-224)	**359** (318-399)	**492** (452-553)	**656** (522-900)	528
50 years and older	11-12	**322** (279-372)	**326** (264-375)	**510** (409-597)	**756** (559-979)	**966** (607-1510)	356
Gender							
Males	11-12	**220** (201-241)	**225** (204-236)	**372** (321-417)	**510** (443-597)	**634** (554-757)	538
Females	11-12	**281** (246-320)	**295** (254-354)	**462** (429-540)	**749** (540-933)	**948** (749-1070)	346
Nonsmokers†							
Total	11-12	**94.5** (88.2-101)	**92.5** (85.2-102)	**143** (134-155)	**209** (191-251)	**278** (251-308)	1283
Age group							
20-49 years	11-12	**80.3** (73.9-87.1)	**78.8** (74.8-85.4)	**119** (107-141)	**177** (154-194)	**203** (190-243)	631
50 years and older	11-12	**112** (103-123)	**107** (102-114)	**167** (153-188)	**277** (221-300)	**351** (300-404)	652
Gender							
Males	11-12	**96.2** (88.5-105)	**90.0** (80.4-106)	**141** (124-154)	**212** (173-294)	**300** (221-351)	607
Females	11-12	**93.3** (85.6-102)	**97.5** (82.8-105)	**148** (133-164)	**206** (193-235)	**271** (231-308)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary N-Acetyl-S-(3-hydroxypropyl)-L-cysteine (2011 - 2012)

Metabolite of Acrolein

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**1080** (947-1220)	**1110** (952-1380)	**2360** (1970-2850)	**3970** (3570-4310)	**5070** (4590-5770)	884
Age group							
20-49 years	11-12	**988** (808-1210)	**1050** (755-1310)	**2130** (1710-2800)	**3670** (3180-4100)	**4730** (4100-5030)	528
50 years and older	11-12	**1230** (1050-1450)	**1360** (1060-1700)	**2670** (2240-3250)	**4800** (3850-5770)	**5840** (4830-6220)	356
Gender							
Males	11-12	**1120** (928-1350)	**1110** (944-1470)	**2530** (2110-3090)	**4100** (3610-4310)	**5400** (4100-6220)	538
Females	11-12	**1020** (927-1130)	**1070** (932-1260)	**2140** (1770-2710)	**3670** (2950-4800)	**4840** (3590-5770)	346
Nonsmokers†							
Total	11-12	**221** (205-237)	**225** (206-247)	**406** (376-437)	**688** (584-841)	**1010** (888-1130)	1284
Age group							
20-49 years	11-12	**233** (209-261)	**240** (213-278)	**420** (391-469)	**688** (573-844)	**951** (830-1200)	632
50 years and older	11-12	**208** (185-235)	**211** (184-230)	**382** (306-465)	**703** (524-919)	**1040** (852-1270)	652
Gender							
Males	11-12	**287** (264-312)	**295** (277-314)	**462** (394-496)	**830** (702-893)	**1060** (879-1270)	608
Females	11-12	**179** (162-199)	**182** (154-199)	**345** (290-410)	**607** (524-731)	**998** (654-1440)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 13.0.

Urinary N-Acetyl-S-(3-hydroxypropyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of Acrolein

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**1190** (1100-1290)	**1220** (1100-1410)	**2360** (2110-2650)	**3780** (3070-4440)	**5000** (3990-6380)	884
Age group							
20-49 years	11-12	**1040** (911-1180)	**1080** (814-1260)	**1910** (1750-2260)	**3320** (2780-4270)	**4790** (3730-5760)	528
50 years and older	11-12	**1490** (1330-1670)	**1700** (1450-1930)	**2840** (2510-3070)	**4030** (3070-5330)	**5000** (3780-7230)	356
Gender							
Males	11-12	**1080** (978-1180)	**1080** (943-1260)	**1870** (1730-2220)	**3070** (2640-3750)	**4540** (3120-5420)	538
Females	11-12	**1370** (1140-1650)	**1560** (1330-1780)	**2990** (2440-3280)	**4120** (3090-5760)	**5720** (3900-7700)	346
Nonsmokers†							
Total	11-12	**260** (244-277)	**241** (223-259)	**390** (365-416)	**655** (578-729)	**853** (751-1010)	1283
Age group							
20-49 years	11-12	**259** (235-284)	**231** (212-259)	**386** (337-449)	**656** (533-815)	**865** (718-1110)	631
50 years and older	11-12	**262** (233-294)	**249** (223-274)	**391** (324-460)	**624** (523-787)	**844** (704-1110)	652
Gender							
Males	11-12	**256** (238-276)	**243** (222-262)	**375** (308-421)	**589** (500-693)	**741** (681-843)	607
Females	11-12	**263** (242-286)	**237** (212-272)	**401** (370-456)	**687** (594-837)	**1010** (818-1180)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary N-Acetyl-S-(2-carbamoylethyl)-L-cysteine (2011 - 2012)

Metabolite of Acrylamide

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**108** (91.3-128)	**110** (84.0-140)	**215** (190-256)	**378** (285-506)	**507** (358-686)	884
Age group							
20-49 years	11-12	**115** (90.3-147)	**128** (92.5-158)	**251** (194-306)	**418** (311-540)	**540** (401-752)	528
50 years and older	11-12	**97.6** (79.8-119)	**84.1** (75.3-133)	**195** (136-243)	**292** (243-354)	**400** (292-469)	356
Gender							
Males	11-12	**118** (93.6-149)	**130** (92.1-157)	**256** (208-292)	**424** (315-540)	**540** (422-752)	538
Females	11-12	**96.2** (84.9-109)	**90.0** (79.5-122)	**194** (154-220)	**304** (254-378)	**401** (313-445)	346
Nonsmokers†							
Total	11-12	**36.0** (33.5-38.7)	**37.1** (34.4-40.4)	**64.3** (60.9-67.9)	**112** (100-121)	**154** (137-178)	1284
Age group							
20-49 years	11-12	**38.0** (33.7-42.9)	**40.1** (33.8-46.4)	**71.1** (60.9-78.5)	**127** (106-154)	**192** (145-236)	632
50 years and older	11-12	**34.1** (31.6-36.8)	**35.3** (32.5-38.8)	**59.7** (54.8-64.3)	**94.0** (78.8-117)	**129** (104-145)	652
Gender							
Males	11-12	**45.5** (42.3-49.0)	**46.4** (40.2-52.5)	**76.8** (69.6-82.2)	**125** (112-142)	**157** (137-192)	608
Females	11-12	**30.0** (27.0-33.4)	**30.7** (28.8-32.5)	**55.5** (48.9-59.9)	**97.0** (76.0-117)	**145** (111-226)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 2.2.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html

Urinary N-Acetyl-S-(2-carbamoylethyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of Acrylamide

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**120** (107-135)	**127** (115-139)	**180** (162-198)	**248** (211-325)	**343** (248-432)	884
Age group							
20-49 years	11-12	**121** (103-142)	**131** (116-145)	**183** (154-219)	**278** (219-364)	**367** (278-434)	528
50 years and older	11-12	**118** (102-136)	**124** (98.9-146)	**175** (144-199)	**235** (176-295)	**272** (235-353)	356
Gender							
Males	11-12	**113** (98.7-130)	**118** (100-138)	**175** (150-186)	**230** (187-325)	**353** (230-432)	538
Females	11-12	**129** (110-151)	**135** (117-161)	**188** (162-233)	**270** (230-337)	**340** (259-391)	346
Nonsmokers†							
Total	11-12	**42.5** (40.1-44.9)	**41.8** (39.1-44.9)	**61.2** (57.8-63.7)	**88.1** (79.3-100)	**117** (104-135)	1283
Age group							
20-49 years	11-12	**42.1** (38.7-45.7)	**40.8** (36.8-44.0)	**59.6** (55.9-63.8)	**90.0** (76.7-108)	**122** (104-143)	631
50 years and older	11-12	**42.9** (39.4-46.6)	**43.5** (38.9-48.5)	**62.3** (56.7-66.2)	**88.1** (72.9-108)	**113** (90.4-155)	652
Gender							
Males	11-12	**40.5** (38.0-43.2)	**39.0** (35.6-42.7)	**60.8** (53.2-66.0)	**82.5** (75.6-93.6)	**108** (90.4-116)	607
Females	11-12	**44.0** (40.6-47.8)	**44.4** (39.6-48.0)	**62.1** (57.7-65.4)	**91.6** (76.8-113)	**128** (97.9-155)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html

Urinary N-Acetyl-S-(2-carbamoyl-2-hydroxyethyl)-L-cysteine (2011 - 2012)

Metabolite of Acrylamide

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**27.3** (24.0-31.1)	**26.2** (22.8-32.9)	**51.7** (44.0-60.0)	**91.7** (67.7-120)	**131** (93.4-142)	884
Age group							
20-49 years	11-12	**28.1** (23.2-33.9)	**30.4** (22.7-38.0)	**53.9** (47.1-64.2)	**98.2** (74.5-127)	**134** (95.8-164)	528
50 years and older	11-12	**26.1** (21.4-31.9)	**25.4** (18.4-34.0)	**47.0** (34.4-64.2)	**80.6** (60.0-119)	**127** (69.3-154)	356
Gender							
Males	11-12	**28.3** (23.4-34.2)	**28.2** (22.4-38.1)	**54.0** (43.6-67.2)	**91.7** (67.2-127)	**134** (91.7-154)	538
Females	11-12	**26.1** (22.8-29.8)	**24.5** (22.7-29.5)	**49.4** (41.2-55.3)	**89.5** (55.1-132)	**129** (68.6-169)	346
Nonsmokers†							
Total	11-12	**12.9** (12.2-13.6)	**12.3** (10.9-13.7)	**19.9** (18.4-21.2)	**30.5** (28.0-34.8)	**43.3** (35.8-50.7)	1284
Age group							
20-49 years	11-12	**13.5** (12.3-14.9)	**12.8** (10.6-15.1)	**21.2** (18.9-24.7)	**32.6** (28.0-43.3)	**50.7** (36.8-61.8)	632
50 years and older	11-12	**12.2** (11.4-13.1)	**11.9** (10.7-13.3)	**18.7** (16.7-20.6)	**29.1** (23.2-32.9)	**35.8** (28.3-50.6)	652
Gender							
Males	11-12	**14.3** (13.2-15.5)	**14.3** (12.2-16.2)	**21.6** (20.3-23.3)	**31.8** (27.3-36.8)	**39.7** (32.9-52.5)	608
Females	11-12	*	**10.5** (<LOD-12.1)	**18.2** (16.3-19.9)	**28.9** (23.7-35.3)	**44.9** (32.6-56.5)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 9.4.

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

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

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html

Urinary N-Acetyl-S-(2-carbamoyl-2-hydroxyethyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of Acrylamide

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**30.3** (27.4-33.5)	**31.3** (27.7-36.3)	**44.6** (40.0-51.3)	**62.3** (57.6-71.0)	**73.5** (68.4-82.2)	884
Age group							
20-49 years	11-12	**29.5** (26.4-32.9)	**30.8** (27.7-35.2)	**44.1** (39.1-52.5)	**66.5** (55.4-74.4)	**78.4** (71.0-92.6)	528
50 years and older	11-12	**31.6** (26.9-37.1)	**31.5** (26.2-40.2)	**45.8** (38.5-55.4)	**58.8** (47.6-72.6)	**72.6** (53.2-95.4)	356
Gender							
Males	11-12	**27.2** (24.1-30.7)	**27.8** (24.9-32.0)	**39.1** (32.7-46.2)	**53.2** (46.2-61.0)	**64.5** (53.8-81.5)	538
Females	11-12	**34.9** (30.9-39.4)	**38.1** (32.6-41.6)	**52.8** (44.6-59.9)	**71.0** (59.9-72.6)	**78.3** (71.0-90.0)	346
Nonsmokers†							
Total	11-12	**15.2** (14.3-16.0)	**15.2** (14.1-16.2)	**21.5** (20.2-23.5)	**29.2** (27.8-31.7)	**38.8** (32.8-44.3)	1283
Age group							
20-49 years	11-12	**14.9** (13.9-16.1)	**14.5** (13.6-15.5)	**21.5** (19.6-23.5)	**32.7** (28.1-38.9)	**41.6** (34.9-64.4)	631
50 years and older	11-12	**15.4** (14.2-16.6)	**15.8** (14.3-17.1)	**21.3** (19.6-23.8)	**27.7** (25.4-30.9)	**32.5** (29.2-44.3)	652
Gender							
Males	11-12	**12.7** (11.9-13.5)	**13.2** (12.1-14.3)	**16.9** (15.7-18.0)	**23.3** (20.6-26.6)	**28.9** (24.4-35.1)	607
Females	11-12	*	**17.3** (<LOD-19.0)	**24.6** (22.9-27.0)	**33.3** (29.2-38.9)	**47.5** (36.9-63.6)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
< LOD means less than the limit of detection for the urine levels not corrected for creatinine.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Acrylamide_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Acrylamide_FactSheet.html

Urinary N-Acetyl-S-(2-cyanoethyl)-L-cysteine (2011 - 2012)

Metabolite of Acrylonitrile

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**110** (87.9-139)	**141** (118-172)	**274** (233-310)	**480** (430-551)	**703** (522-792)	884
Age group							
20-49 years	11-12	**100** (70.0-144)	**134** (97.8-190)	**261** (216-290)	**484** (356-589)	**688** (505-888)	528
50 years and older	11-12	**128** (102-162)	**146** (122-186)	**305** (223-349)	**478** (385-621)	**703** (463-846)	356
Gender							
Males	11-12	**115** (82.4-160)	**161** (123-192)	**305** (243-371)	**551** (467-623)	**745** (543-846)	538
Females	11-12	**105** (87.3-126)	**127** (114-144)	**238** (199-277)	**368** (294-484)	**511** (402-699)	346
Nonsmokers†							
Total	11-12	**1.45** (1.32-1.60)	**1.29** (1.21-1.43)	**2.28** (2.08-2.44)	**4.02** (3.43-5.43)	**11.1** (5.80-19.9)	1284
Age group							
20-49 years	11-12	**1.57** (1.36-1.81)	**1.42** (1.23-1.61)	**2.36** (2.16-2.55)	**5.00** (3.50-8.83)	**14.7** (6.61-24.4)	632
50 years and older	11-12	**1.34** (1.19-1.51)	**1.23** (1.06-1.36)	**2.15** (1.85-2.44)	**3.53** (3.03-4.07)	**6.84** (3.73-19.9)	652
Gender							
Males	11-12	**1.80** (1.51-2.14)	**1.60** (1.38-1.83)	**2.87** (2.44-3.10)	**5.37** (3.29-14.7)	**14.7** (4.81-53.7)	608
Females	11-12	**1.23** (1.07-1.41)	**1.16** (1.02-1.26)	**1.88** (1.71-2.02)	**3.41** (2.91-3.97)	**6.84** (3.97-11.1)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.5.

Urinary N-Acetyl-S-(2-cyanoethyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of Acrylonitrile

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**122** (103-145)	**164** (147-180)	**261** (238-289)	**409** (346-457)	**542** (442-637)	884
Age group							
20-49 years	11-12	**105** (80.7-138)	**144** (123-161)	**233** (220-264)	**385** (309-442)	**550** (408-657)	528
50 years and older	11-12	**155** (127-189)	**194** (170-229)	**300** (251-342)	**444** (359-484)	**537** (458-622)	356
Gender							
Males	11-12	**110** (87.5-139)	**146** (122-170)	**231** (200-249)	**359** (323-432)	**473** (414-622)	538
Females	11-12	**141** (109-182)	**200** (162-229)	**294** (255-317)	**448** (330-565)	**565** (442-657)	346
Nonsmokers†							
Total	11-12	**1.71** (1.55-1.88)	**1.48** (1.32-1.62)	**2.22** (2.00-2.57)	**4.17** (3.39-5.42)	**8.35** (5.46-14.5)	1283
Age group							
20-49 years	11-12	**1.74** (1.53-1.98)	**1.46** (1.27-1.66)	**2.34** (2.02-2.62)	**4.44** (3.84-6.17)	**10.6** (6.59-31.6)	631
50 years and older	11-12	**1.68** (1.50-1.88)	**1.48** (1.32-1.62)	**2.18** (1.86-2.61)	**3.65** (2.85-5.24)	**5.84** (4.06-14.5)	652
Gender							
Males	11-12	**1.60** (1.37-1.87)	**1.32** (1.19-1.49)	**2.00** (1.73-2.51)	**4.24** (2.50-10.0)	**10.0** (4.17-36.8)	607
Females	11-12	**1.80** (1.58-2.05)	**1.56** (1.44-1.71)	**2.51** (2.16-2.77)	**4.08** (3.39-5.42)	**6.17** (4.86-27.3)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary N-Acetyl-S-(2-hydroxyethyl)-L-cysteine (2011 - 2012)

Metabolite of Acrylonitrile, Ethylene oxide, and Vinyl chloride

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**1.86** (1.63-2.12)	**1.79** (1.50-2.14)	**3.92** (3.20-4.81)	**7.89** (5.72-11.3)	**12.5** (9.56-15.4)	884
Age group							
20-49 years	11-12	**1.95** (1.64-2.31)	**2.01** (1.62-2.30)	**3.92** (3.14-4.96)	**7.76** (5.54-11.7)	**12.5** (8.89-15.4)	528
50 years and older	11-12	**1.73** (1.34-2.22)	**1.50** (1.07-2.03)	**3.94** (2.39-5.55)	**8.69** (4.97-15.1)	**13.1** (6.02-27.5)	356
Gender							
Males	11-12	**1.66** (1.36-2.01)	**1.48** (1.16-1.95)	**3.37** (2.39-4.57)	**8.82** (5.15-12.5)	**12.5** (7.89-17.0)	538
Females	11-12	**2.17** (1.90-2.47)	**2.32** (1.99-2.72)	**4.55** (3.55-5.12)	**7.52** (5.89-9.84)	**11.3** (7.88-15.1)	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**.946** (.839-1.06)	**1.55** (1.35-1.70)	**2.10** (1.77-2.67)	1284
Age group							
20-49 years	11-12	*	**< LOD**	**1.03** (.863-1.14)	**1.63** (1.42-1.98)	**2.55** (1.94-3.61)	632
50 years and older	11-12	*	**< LOD**	**.880** (.684-1.09)	**1.35** (1.14-1.73)	**1.79** (1.47-2.50)	652
Gender							
Males	11-12	*	**< LOD**	**.896** (.745-1.14)	**1.47** (1.32-1.73)	**1.85** (1.63-3.00)	608
Females	11-12	*	**< LOD**	**.962** (.861-1.06)	**1.56** (1.26-1.86)	**2.49** (1.81-2.81)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.6.

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

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

Urinary N-Acetyl-S-(2-hydroxyethyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of Acrylonitrile, Ethylene oxide, and Vinyl chloride

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**2.06** (1.82-2.33)	**2.11** (1.64-2.49)	**4.17** (3.36-5.08)	**7.83** (6.13-8.68)	**11.5** (8.11-13.1)	884
Age group							
20-49 years	11-12	**2.05** (1.85-2.27)	**2.15** (1.57-2.66)	**4.15** (3.69-4.68)	**6.92** (6.04-8.14)	**9.50** (7.88-14.4)	528
50 years and older	11-12	**2.09** (1.61-2.70)	**2.03** (1.52-2.49)	**4.30** (2.55-7.59)	**8.45** (5.08-13.1)	**11.7** (5.69-15.4)	356
Gender							
Males	11-12	**1.59** (1.39-1.82)	**1.52** (1.26-1.83)	**3.19** (2.65-3.69)	**5.69** (4.60-6.52)	**7.44** (5.96-9.23)	538
Females	11-12	**2.90** (2.35-3.57)	**3.01** (2.30-3.53)	**5.49** (4.26-7.76)	**10.1** (7.59-13.1)	**13.1** (8.14-19.0)	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**1.28** (1.15-1.46)	**2.03** (1.84-2.36)	**2.85** (2.32-3.26)	1283
Age group							
20-49 years	11-12	*	**< LOD**	**1.32** (1.15-1.57)	**2.09** (1.84-2.50)	**3.00** (2.36-3.26)	631
50 years and older	11-12	*	**< LOD**	**1.24** (1.09-1.41)	**1.93** (1.60-2.30)	**2.83** (2.23-3.23)	652
Gender							
Males	11-12	*	**< LOD**	**.942** (.845-1.08)	**1.46** (1.19-1.72)	**1.84** (1.62-2.49)	607
Females	11-12	*	**< LOD**	**1.57** (1.41-1.77)	**2.42** (2.09-2.98)	**3.26** (2.56-3.90)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

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

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

Urinary N-Acetyl-S-(phenyl)-L-cysteine (2011 - 2012)

Metabolite of Benzene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**.638** (<LOD-.744)	**1.22** (1.09-1.34)	**2.07** (1.65-2.86)	**3.11** (1.96-3.78)	884
Age group							
20-49 years	11-12	*	**.644** (<LOD-.679)	**1.25** (1.06-1.42)	**2.21** (1.69-2.95)	**3.11** (1.84-3.93)	528
50 years and older	11-12	*	**.617** (<LOD-.890)	**1.14** (.921-1.42)	**1.78** (1.45-2.86)	**3.32** (1.74-4.03)	356
Gender							
Males	11-12	*	**.678** (<LOD-.869)	**1.34** (1.13-1.49)	**2.74** (1.55-3.58)	**3.58** (2.27-4.13)	538
Females	11-12	*	**< LOD**	**1.05** (.965-1.25)	**1.70** (1.42-2.01)	**2.21** (1.78-2.67)	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**.950** (.868-1.08)	**1.82** (1.56-2.30)	**3.06** (2.13-3.79)	1284
Age group							
20-49 years	11-12	*	**< LOD**	**.992** (.916-1.21)	**2.11** (1.73-2.75)	**3.20** (2.40-3.76)	632
50 years and older	11-12	*	**< LOD**	**.911** (.779-1.07)	**1.51** (1.24-2.47)	**2.84** (1.44-3.90)	652
Gender							
Males	11-12	*	**.628** (<LOD-.780)	**1.12** (.949-1.29)	**1.79** (1.46-2.75)	**3.20** (1.73-5.62)	608
Females	11-12	*	**< LOD**	**.831** (.664-.969)	**1.83** (1.31-2.60)	**2.84** (1.77-3.50)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.6.

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

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

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Benzene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Benzene_FactSheet.html

Urinary N-Acetyl-S-(phenyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of Benzene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**.827** (<LOD-.930)	**1.33** (1.19-1.49)	**2.11** (1.76-2.39)	**2.53** (2.36-2.83)	884
Age group							
20-49 years	11-12	*	**.771** (<LOD-.917)	**1.25** (1.04-1.61)	**2.11** (1.65-2.49)	**2.63** (2.11-3.36)	528
50 years and older	11-12	*	**.942** (<LOD-1.06)	**1.37** (1.21-1.52)	**2.13** (1.70-2.27)	**2.49** (2.20-2.65)	356
Gender							
Males	11-12	*	**.771** (<LOD-.865)	**1.17** (.950-1.51)	**2.03** (1.54-2.49)	**2.51** (2.00-3.03)	538
Females	11-12	*	**< LOD**	**1.41** (1.25-1.63)	**2.12** (1.77-2.44)	**2.64** (2.23-3.03)	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**1.29** (1.15-1.41)	**2.06** (1.82-2.55)	**3.26** (2.55-4.15)	1283
Age group							
20-49 years	11-12	*	**< LOD**	**1.33** (1.15-1.57)	**2.36** (1.89-2.91)	**3.26** (2.65-4.90)	631
50 years and older	11-12	*	**< LOD**	**1.25** (1.06-1.46)	**1.92** (1.63-2.36)	**2.83** (1.95-4.81)	652
Gender							
Males	11-12	*	**.642** (<LOD-.740)	**1.06** (.902-1.15)	**1.76** (1.36-2.23)	**2.53** (1.85-3.69)	607
Females	11-12	*	**< LOD**	**1.51** (1.26-1.70)	**2.49** (1.98-3.21)	**3.86** (2.73-4.81)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
< LOD means less than the limit of detection for the urine levels not corrected for creatinine.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Benzene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Benzene_FactSheet.html

Urinary N-Acetyl-S-(n-propyl)-L-cysteine (2011 - 2012)

Metabolite of 1-Bromopropane

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**3.91** (3.32-4.62)	**3.06** (2.52-3.94)	**9.75** (6.77-14.0)	**25.4** (18.2-46.7)	**58.9** (29.9-105)	877
Age group							
20-49 years	11-12	**4.20** (3.46-5.10)	**3.45** (2.79-4.44)	**10.6** (7.23-14.9)	**28.1** (16.4-64.2)	**58.5** (28.4-105)	526
50 years and older	11-12	**3.49** (2.52-4.82)	**2.60** (1.97-3.89)	**7.66** (4.63-15.4)	**24.6** (18.1-45.1)	**62.6** (21.3-147)	351
Gender							
Males	11-12	**4.23** (3.28-5.45)	**3.28** (2.45-5.01)	**13.0** (7.17-18.2)	**29.9** (18.2-51.5)	**79.3** (29.9-163)	533
Females	11-12	**3.54** (3.14-3.99)	**2.93** (2.25-3.71)	**8.19** (5.94-10.3)	**22.9** (14.6-28.4)	**47.3** (25.1-68.7)	344
Nonsmokers†							
Total	11-12	**4.78** (4.21-5.43)	**4.38** (3.72-5.11)	**12.4** (10.4-15.1)	**30.0** (24.6-38.9)	**53.6** (35.4-76.7)	1242
Age group							
20-49 years	11-12	**5.18** (4.44-6.04)	**4.80** (3.71-5.92)	**13.2** (10.3-17.6)	**32.4** (23.1-45.3)	**64.4** (33.1-94.2)	617
50 years and older	11-12	**4.40** (3.46-5.60)	**4.17** (3.08-5.22)	**10.5** (8.49-15.7)	**27.4** (18.6-39.9)	**43.7** (27.4-72.9)	625
Gender							
Males	11-12	**5.28** (4.52-6.16)	**4.82** (4.01-5.92)	**12.5** (10.4-15.5)	**33.1** (24.4-45.3)	**60.9** (29.6-89.7)	587
Females	11-12	**4.43** (3.81-5.14)	**4.11** (3.17-5.14)	**12.0** (9.88-16.4)	**28.7** (20.8-39.9)	**45.3** (33.5-71.2)	655

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 1.2.

Urinary N-Acetyl-S-(n-propyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of 1-Bromopropane

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**4.34** (3.80-4.96)	**4.16** (3.33-5.00)	**8.71** (7.98-9.61)	**27.2** (18.1-37.8)	**57.0** (35.1-87.5)	877
Age group							
20-49 years	11-12	**4.42** (3.80-5.14)	**4.47** (3.54-5.09)	**8.82** (7.88-11.1)	**27.2** (18.3-38.2)	**47.7** (28.0-87.5)	526
50 years and older	11-12	**4.22** (3.09-5.77)	**3.81** (2.24-6.06)	**7.85** (5.75-12.2)	**35.1** (10.6-71.6)	**69.1** (32.2-92.8)	351
Gender							
Males	11-12	**4.05** (3.35-4.90)	**3.87** (2.93-5.12)	**8.60** (7.58-11.0)	**26.4** (18.1-42.2)	**61.3** (26.0-87.5)	533
Females	11-12	**4.75** (3.91-5.77)	**4.47** (3.14-6.06)	**8.71** (7.55-11.6)	**30.3** (12.0-52.3)	**51.3** (37.2-92.8)	344
Nonsmokers†							
Total	11-12	**5.62** (4.98-6.33)	**5.32** (4.57-6.07)	**14.2** (12.6-17.0)	**36.0** (26.4-46.1)	**51.8** (40.0-65.2)	1241
Age group							
20-49 years	11-12	**5.76** (5.08-6.54)	**5.44** (4.47-6.62)	**16.2** (12.8-21.7)	**36.4** (29.2-48.8)	**54.9** (40.0-67.6)	616
50 years and older	11-12	**5.46** (4.30-6.94)	**5.25** (4.08-6.72)	**12.7** (10.0-17.8)	**32.7** (21.3-45.7)	**50.8** (32.7-71.8)	625
Gender							
Males	11-12	**4.68** (4.05-5.40)	**4.28** (3.53-5.50)	**12.3** (9.32-13.8)	**31.0** (19.8-36.6)	**46.1** (32.7-61.5)	586
Females	11-12	**6.49** (5.37-7.85)	**6.54** (4.81-8.20)	**17.0** (12.7-24.7)	**37.2** (29.7-51.8)	**62.9** (43.8-81.0)	655

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary N-Acetyl-S-(3,4-dihydroxybutyl)-L-cysteine (2011 - 2012)

Metabolite of 1,3-Butadiene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**336** (302-372)	**355** (291-402)	**593** (535-679)	**949** (857-1060)	**1220** (954-1550)	884
Age group							
20-49 years	11-12	**340** (299-387)	**366** (297-420)	**590** (518-693)	**947** (788-1060)	**1220** (882-1550)	528
50 years and older	11-12	**329** (287-376)	**335** (277-412)	**608** (491-729)	**949** (841-1180)	**1240** (956-1460)	356
Gender							
Males	11-12	**371** (322-427)	**391** (355-447)	**679** (541-748)	**1180** (836-1460)	**1460** (1060-1770)	538
Females	11-12	**294** (259-334)	**271** (234-353)	**548** (451-608)	**813** (642-939)	**944** (870-972)	346
Nonsmokers†							
Total	11-12	**228** (212-245)	**255** (229-271)	**409** (392-429)	**578** (552-612)	**721** (641-769)	1284
Age group							
20-49 years	11-12	**222** (198-249)	**246** (217-289)	**421** (381-457)	**578** (530-623)	**707** (621-753)	632
50 years and older	11-12	**235** (218-253)	**262** (228-272)	**407** (356-444)	**576** (513-647)	**764** (599-808)	652
Gender							
Males	11-12	**286** (260-315)	**319** (272-372)	**459** (424-493)	**615** (558-697)	**764** (646-848)	608
Females	11-12	**191** (175-208)	**210** (186-223)	**338** (312-373)	**538** (496-575)	**666** (592-753)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 5.0.

Urinary N-Acetyl-S-(3,4-dihydroxybutyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of 1,3-Butadiene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**372** (351-395)	**365** (347-388)	**473** (439-525)	**655** (578-714)	**759** (692-827)	884
Age group							
20-49 years	11-12	**357** (334-381)	**341** (326-364)	**452** (422-497)	**653** (564-711)	**750** (678-819)	528
50 years and older	11-12	**397** (366-430)	**395** (365-436)	**501** (457-577)	**657** (568-771)	**805** (623-866)	356
Gender							
Males	11-12	**356** (333-381)	**356** (326-388)	**452** (425-479)	**588** (520-703)	**750** (597-866)	538
Females	11-12	**394** (364-426)	**375** (347-434)	**520** (457-600)	**661** (623-714)	**778** (692-861)	346
Nonsmokers†							
Total	11-12	**268** (257-280)	**265** (252-277)	**342** (328-355)	**443** (420-456)	**512** (458-544)	1283
Age group							
20-49 years	11-12	**245** (231-261)	**240** (226-256)	**310** (286-326)	**376** (349-420)	**447** (396-518)	631
50 years and older	11-12	**295** (279-312)	**290** (271-317)	**378** (355-410)	**467** (449-510)	**546** (488-609)	652
Gender							
Males	11-12	**255** (242-268)	**247** (235-262)	**328** (302-352)	**413** (382-430)	**475** (413-610)	607
Females	11-12	**280** (265-296)	**278** (261-297)	**352** (335-372)	**455** (433-490)	**520** (476-557)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary N-Acetyl-S-(1-hydroxymethyl-2-propenyl)-L-cysteine (2011 - 2012)

Metabolite of 1,3-Butadiene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	884
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	528
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	356
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	538
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1284
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	632
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	652
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	608
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.7.

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

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

Urinary N-Acetyl-S-(1-hydroxymethyl-2-propenyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of 1,3-Butadiene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	884
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	528
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	356
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	538
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1283
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	631
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	652
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	607
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

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

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

Urinary N-Acetyl-S-(2-hydroxy-3-butenyl)-L-cysteine (2011 - 2012)

Metabolite of 1,3-Butadiene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**1.02** (.868-1.19)	**2.67** (2.20-3.46)	**6.09** (5.08-7.79)	**8.95** (7.71-9.73)	884
Age group							
20-49 years	11-12	*	**.807** (<LOD-1.03)	**2.56** (2.01-3.30)	**5.85** (4.05-7.58)	**8.95** (6.29-9.88)	528
50 years and older	11-12	**1.48** (1.26-1.73)	**1.30** (1.07-1.60)	**3.10** (2.30-4.87)	**7.46** (5.22-8.86)	**9.40** (7.71-12.7)	356
Gender							
Males	11-12	*	**.959** (.764-1.19)	**2.56** (1.89-4.19)	**6.13** (5.02-8.86)	**9.40** (7.58-10.1)	538
Females	11-12	*	**1.07** (.707-1.29)	**2.87** (2.20-3.79)	**6.07** (4.50-7.71)	**7.95** (6.32-11.1)	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1284
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	632
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	652
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	608
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.7.

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

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

Urinary N-Acetyl-S-(2-hydroxy-3-butenyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of 1,3-Butadiene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**1.46** (1.18-1.70)	**3.07** (2.75-3.64)	**5.75** (4.74-6.91)	**7.81** (5.68-11.0)	884
Age group							
20-49 years	11-12	*	**1.18** (<LOD-1.53)	**2.78** (2.34-3.35)	**5.33** (4.08-6.45)	**7.06** (6.01-9.68)	528
50 years and older	11-12	**1.78** (1.49-2.13)	**1.66** (1.46-2.03)	**3.75** (3.06-4.67)	**6.59** (4.32-9.12)	**7.87** (4.83-15.0)	356
Gender							
Males	11-12	*	**1.18** (.980-1.42)	**2.61** (1.92-3.07)	**4.83** (3.72-5.30)	**6.32** (4.89-8.28)	538
Females	11-12	*	**1.83** (1.22-2.81)	**4.00** (3.06-5.46)	**6.88** (5.30-8.60)	**8.60** (6.73-13.9)	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1283
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	631
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	652
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	607
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

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

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

Urinary N-Acetyl-S-(4-hydroxy-2-butenyl)-L-cysteine (2011 - 2012)

Metabolite of 1,3-Butadiene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**55.3** (49.0-62.5)	**64.0** (54.6-76.6)	**126** (108-146)	**206** (189-226)	**266** (232-286)	884
Age group							
20-49 years	11-12	**49.3** (40.4-60.1)	**54.6** (43.1-66.2)	**109** (91.3-129)	**182** (153-210)	**228** (200-285)	528
50 years and older	11-12	**66.3** (54.0-81.5)	**81.5** (63.1-94.8)	**163** (115-189)	**232** (206-278)	**286** (215-408)	356
Gender							
Males	11-12	**54.6** (44.6-66.9)	**61.8** (45.8-77.3)	**138** (101-165)	**219** (190-256)	**286** (232-343)	538
Females	11-12	**56.3** (50.3-62.9)	**68.8** (56.2-81.2)	**120** (97.8-140)	**184** (157-210)	**230** (200-269)	346
Nonsmokers†							
Total	11-12	**6.91** (6.31-7.58)	**7.21** (6.78-7.88)	**13.2** (12.4-13.9)	**21.4** (19.4-23.2)	**28.3** (25.8-31.1)	1284
Age group							
20-49 years	11-12	**6.88** (5.94-7.96)	**7.25** (6.38-8.68)	**13.1** (12.0-14.5)	**22.4** (18.5-25.9)	**31.9** (25.9-47.1)	632
50 years and older	11-12	**6.95** (6.28-7.69)	**7.11** (6.52-7.98)	**13.3** (11.2-14.3)	**20.2** (18.1-23.0)	**26.1** (21.8-28.9)	652
Gender							
Males	11-12	**8.95** (8.15-9.83)	**9.30** (8.22-10.6)	**14.4** (13.1-16.1)	**23.0** (20.1-27.7)	**28.9** (25.9-39.4)	608
Females	11-12	**5.64** (4.88-6.52)	**5.87** (5.00-6.78)	**11.4** (10.1-13.1)	**19.7** (16.6-22.7)	**24.9** (22.1-31.2)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.6.

Urinary N-Acetyl-S-(4-hydroxy-2-butenyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of 1,3-Butadiene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**61.3** (55.8-67.4)	**71.1** (61.4-80.3)	**130** (112-141)	**197** (171-232)	**258** (211-306)	884
Age group							
20-49 years	11-12	**51.8** (44.9-59.7)	**59.2** (48.7-67.2)	**104** (86.0-130)	**164** (140-186)	**211** (174-293)	528
50 years and older	11-12	**80.1** (67.0-95.7)	**92.1** (73.0-113)	**153** (141-176)	**244** (172-283)	**273** (243-371)	356
Gender							
Males	11-12	**52.4** (46.8-58.7)	**59.3** (51.4-67.0)	**101** (80.4-127)	**164** (144-172)	**216** (167-253)	538
Females	11-12	**75.4** (61.2-92.8)	**92.4** (70.3-113)	**151** (132-185)	**243** (189-306)	**306** (245-371)	346
Nonsmokers†							
Total	11-12	**8.14** (7.44-8.91)	**7.87** (7.07-8.73)	**12.5** (11.8-13.7)	**18.7** (17.0-21.2)	**24.4** (21.9-27.8)	1283
Age group							
20-49 years	11-12	**7.62** (6.69-8.67)	**7.35** (6.06-8.83)	**12.2** (10.3-13.7)	**18.1** (15.3-22.0)	**25.0** (18.7-31.8)	631
50 years and older	11-12	**8.73** (7.99-9.55)	**8.10** (7.49-9.08)	**12.7** (11.8-14.1)	**19.8** (16.2-22.3)	**22.9** (21.1-25.6)	652
Gender							
Males	11-12	**7.98** (7.35-8.66)	**7.58** (6.77-8.46)	**12.0** (10.8-13.6)	**18.3** (15.4-21.9)	**22.3** (18.3-25.0)	607
Females	11-12	**8.28** (7.27-9.43)	**8.07** (6.79-9.48)	**12.6** (11.6-14.0)	**19.7** (16.1-22.9)	**25.3** (22.0-34.9)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary 2-Thioxothiazolidine-4-carboxylic acid (2011 - 2012)

Metabolite of Carbon disulfide

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**11.1** (9.47-12.9)	**9.72** (7.86-12.2)	**23.3** (17.4-26.3)	**47.4** (38.3-63.3)	**89.6** (61.9-151)	884
Age group							
20-49 years	11-12	**10.7** (8.64-13.3)	**9.78** (7.06-12.7)	**21.6** (14.8-25.7)	**42.9** (28.4-69.3)	**84.5** (54.0-145)	528
50 years and older	11-12	**11.6** (9.51-14.3)	**9.67** (7.60-12.8)	**26.3** (17.4-34.1)	**61.2** (35.3-89.6)	**89.6** (59.4-399)	356
Gender							
Males	11-12	**11.3** (9.57-13.3)	**10.7** (8.31-12.2)	**22.5** (14.8-35.0)	**47.3** (38.3-61.9)	**81.0** (59.4-145)	538
Females	11-12	**10.8** (8.72-13.3)	**8.87** (6.67-12.5)	**23.8** (15.0-26.3)	**49.9** (31.7-79.6)	**99.3** (38.2-406)	346
Nonsmokers†							
Total	11-12	**8.67** (7.79-9.66)	**6.82** (5.99-7.68)	**18.3** (14.5-21.9)	**51.0** (37.3-69.7)	**109** (74.2-146)	1284
Age group							
20-49 years	11-12	**8.53** (7.35-9.90)	**6.46** (5.08-7.97)	**17.3** (12.6-25.2)	**52.2** (35.8-81.2)	**109** (70.4-157)	632
50 years and older	11-12	**8.82** (7.68-10.1)	**6.91** (6.06-7.75)	**18.8** (14.2-23.3)	**48.8** (33.9-60.2)	**107** (60.2-176)	652
Gender							
Males	11-12	**11.0** (9.30-13.1)	**8.14** (6.99-10.1)	**26.0** (19.6-31.2)	**74.1** (47.9-123)	**157** (96.5-201)	608
Females	11-12	**7.17** (6.59-7.81)	**5.65** (4.64-6.44)	**13.2** (11.0-17.0)	**35.8** (27.9-46.0)	**70.6** (47.4-86.5)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 3.5.

Urinary 2-Thioxothiazolidine-4-carboxylic acid (creatinine corrected) (2011 - 2012)

Metabolite of Carbon disulfide

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**12.3** (10.7-14.1)	**10.4** (8.61-12.7)	**20.6** (16.9-25.1)	**58.5** (37.8-75.1)	**90.5** (73.3-146)	884
Age group							
20-49 years	11-12	**11.3** (9.89-12.8)	**9.85** (7.66-12.5)	**17.9** (15.8-22.1)	**42.4** (30.3-58.5)	**81.6** (53.5-146)	528
50 years and older	11-12	**14.0** (11.1-17.7)	**11.9** (8.97-15.2)	**24.2** (18.5-37.9)	**75.1** (28.1-89.5)	**93.8** (75.1-204)	356
Gender							
Males	11-12	**10.8** (9.51-12.4)	**9.48** (8.07-11.4)	**18.4** (14.5-23.5)	**42.3** (30.4-60.2)	**78.4** (44.9-136)	538
Females	11-12	**14.4** (11.8-17.6)	**12.2** (9.09-16.2)	**23.5** (17.9-39.0)	**75.1** (39.0-90.7)	**93.8** (58.5-334)	346
Nonsmokers†							
Total	11-12	**10.2** (9.11-11.4)	**8.30** (7.21-9.46)	**20.3** (17.6-23.0)	**53.6** (41.6-63.9)	**108** (71.8-170)	1283
Age group							
20-49 years	11-12	**9.44** (8.07-11.0)	**7.75** (6.49-9.19)	**19.0** (13.7-27.4)	**51.5** (32.4-84.5)	**102** (53.7-151)	631
50 years and older	11-12	**11.1** (9.48-13.0)	**9.08** (7.39-10.4)	**21.6** (18.4-24.1)	**55.7** (41.0-73.2)	**135** (69.2-222)	652
Gender							
Males	11-12	**9.84** (8.32-11.6)	**7.68** (5.99-9.57)	**21.7** (18.4-27.6)	**55.7** (40.3-84.6)	**108** (57.9-221)	607
Females	11-12	**10.5** (9.26-12.0)	**8.97** (7.21-10.1)	**19.0** (14.0-25.9)	**48.8** (36.8-65.0)	**107** (66.4-164)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary N-Acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine (2011 - 2012)

Metabolite of Crotonaldehyde

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**1720** (1520-1950)	**2000** (1590-2320)	**3860** (3340-4370)	**6960** (6040-7500)	**7910** (7610-8720)	884
Age group							
20-49 years	11-12	**1530** (1260-1860)	**1670** (1230-2300)	**3520** (2670-4230)	**6040** (4580-7050)	**7790** (6310-8880)	528
50 years and older	11-12	**2060** (1730-2470)	**2420** (1860-2860)	**4450** (3560-5410)	**7570** (6790-8040)	**8720** (7320-9650)	356
Gender							
Males	11-12	**1720** (1420-2070)	**2000** (1320-2610)	**4020** (3380-4380)	**7000** (5460-7680)	**8410** (7680-9120)	538
Females	11-12	**1730** (1570-1900)	**2000** (1640-2250)	**3700** (3090-4230)	**6680** (4780-7700)	**7910** (6950-8880)	346
Nonsmokers†							
Total	11-12	**333** (315-352)	**340** (310-366)	**584** (519-633)	**906** (806-1030)	**1260** (954-1950)	1284
Age group							
20-49 years	11-12	**328** (299-359)	**338** (295-379)	**600** (516-660)	**917** (772-1050)	**1120** (917-1950)	632
50 years and older	11-12	**338** (312-368)	**342** (291-410)	**564** (492-641)	**889** (790-1030)	**1460** (889-2120)	652
Gender							
Males	11-12	**405** (378-433)	**419** (364-466)	**659** (609-697)	**984** (867-1110)	**1370** (992-1640)	608
Females	11-12	**285** (259-314)	**280** (244-321)	**498** (466-551)	**843** (658-1030)	**1150** (833-2350)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 2.0.

Urinary N-Acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of Crotonaldehyde

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**1910** (1730-2100)	**2160** (1860-2330)	**3920** (3500-4490)	**6270** (5660-7250)	**7960** (6930-9140)	884
Age group							
20-49 years	11-12	**1610** (1390-1870)	**1680** (1410-2010)	**3320** (2700-3870)	**5700** (5250-6450)	**7630** (6450-8540)	528
50 years and older	11-12	**2490** (2160-2870)	**2890** (2510-3410)	**4850** (3920-5710)	**6810** (5810-8290)	**8380** (5870-12500)	356
Gender							
Males	11-12	**1650** (1490-1820)	**1800** (1410-2160)	**3220** (2680-3550)	**5810** (4700-6010)	**7250** (5820-8540)	538
Females	11-12	**2310** (1900-2810)	**2800** (2230-3310)	**5210** (3870-5830)	**6930** (5830-8530)	**9140** (7100-10500)	346
Nonsmokers†							
Total	11-12	**392** (362-424)	**361** (326-396)	**509** (479-549)	**764** (683-932)	**1170** (923-1480)	1283
Age group							
20-49 years	11-12	**362** (320-409)	**311** (287-347)	**461** (412-549)	**730** (617-1040)	**1330** (730-3550)	631
50 years and older	11-12	**425** (398-454)	**391** (362-420)	**532** (494-587)	**803** (712-938)	**1060** (923-1300)	652
Gender							
Males	11-12	**360** (338-382)	**331** (296-362)	**475** (420-525)	**712** (613-838)	**1010** (742-1400)	607
Females	11-12	**419** (379-463)	**372** (342-412)	**526** (486-587)	**855** (706-1040)	**1330** (923-2490)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary 2-Aminothiazoline-4-carboxylic acid (2011 - 2012)

Metabolite of Cyanide

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**117** (102-135)	**126** (108-144)	**236** (194-277)	**439** (339-514)	**610** (487-755)	884
Age group							
20-49 years	11-12	**114** (97.7-134)	**125** (99.8-155)	**221** (190-252)	**430** (315-524)	**558** (439-703)	528
50 years and older	11-12	**122** (96.0-156)	**130** (99.4-163)	**264** (172-327)	**487** (317-689)	**716** (451-926)	356
Gender							
Males	11-12	**93.5** (78.6-111)	**99.4** (76.9-125)	**187** (163-234)	**305** (243-359)	**381** (294-635)	538
Females	11-12	**158** (135-184)	**162** (143-189)	**327** (238-439)	**573** (440-721)	**773** (576-997)	346
Nonsmokers†							
Total	11-12	**95.5** (87.1-105)	**103** (94.6-111)	**189** (168-217)	**323** (278-364)	**430** (364-506)	1284
Age group							
20-49 years	11-12	**91.8** (81.0-104)	**99.3** (81.5-108)	**184** (160-218)	**315** (270-404)	**443** (349-543)	632
50 years and older	11-12	**99.5** (90.1-110)	**108** (94.6-125)	**192** (176-220)	**332** (293-364)	**414** (356-501)	652
Gender							
Males	11-12	**78.7** (69.8-88.6)	**80.4** (69.2-94.6)	**144** (131-175)	**265** (217-386)	**407** (265-501)	608
Females	11-12	**111** (98.6-125)	**126** (104-148)	**218** (191-257)	**342** (307-363)	**473** (383-531)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 15.0.

Urinary 2-Aminothiazoline-4-carboxylic acid (creatinine corrected) (2011 - 2012)

Metabolite of Cyanide

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**130** (119-142)	**129** (115-151)	**246** (224-278)	**412** (363-449)	**516** (440-623)	884
Age group							
20-49 years	11-12	**120** (109-132)	**122** (113-149)	**225** (208-248)	**344** (285-406)	**412** (366-514)	528
50 years and older	11-12	**148** (124-175)	**140** (102-186)	**327** (234-405)	**477** (422-623)	**635** (449-925)	356
Gender							
Males	11-12	**89.8** (80.6-100)	**91.1** (83.2-99.4)	**149** (133-167)	**265** (207-310)	**359** (286-477)	538
Females	11-12	**211** (193-232)	**224** (207-256)	**363** (307-412)	**512** (440-584)	**674** (464-925)	346
Nonsmokers†							
Total	11-12	**112** (103-123)	**123** (112-134)	**217** (196-236)	**350** (315-371)	**418** (372-489)	1283
Age group							
20-49 years	11-12	**102** (91.9-112)	**111** (94.5-127)	**194** (170-218)	**313** (253-354)	**373** (339-411)	631
50 years and older	11-12	**125** (113-138)	**132** (118-148)	**240** (220-280)	**372** (332-418)	**489** (418-546)	652
Gender							
Males	11-12	**69.9** (60.7-80.5)	**68.6** (56.9-77.9)	**126** (109-155)	**228** (180-283)	**319** (250-411)	607
Females	11-12	**163** (148-180)	**170** (154-188)	**271** (236-309)	**377** (353-420)	**478** (400-546)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary N-Acetyl-S-(N-methylcarbamoyl)-L-cysteine (2011 - 2012)

Metabolite of N,N-Dimethylformamide

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**405** (356-459)	**418** (362-499)	**761** (661-914)	**1290** (1080-1520)	**1830** (1400-2130)	884
Age group							
20-49 years	11-12	**371** (321-429)	**399** (331-475)	**719** (627-847)	**1120** (1000-1330)	**1400** (1170-1830)	528
50 years and older	11-12	**463** (378-566)	**491** (357-611)	**842** (700-1070)	**1750** (1310-2040)	**2230** (1390-3210)	356
Gender							
Males	11-12	**403** (336-485)	**419** (323-514)	**820** (665-1000)	**1360** (1080-1810)	**1830** (1270-2230)	538
Females	11-12	**406** (365-451)	**415** (357-530)	**720** (611-847)	**1140** (939-1470)	**1640** (1310-2040)	346
Nonsmokers†							
Total	11-12	**108** (103-115)	**112** (106-123)	**215** (199-230)	**351** (307-401)	**462** (402-529)	1284
Age group							
20-49 years	11-12	**94.2** (84.6-105)	**98.9** (90.0-107)	**183** (163-213)	**316** (268-359)	**433** (329-552)	632
50 years and older	11-12	**126** (116-136)	**129** (124-140)	**242** (214-288)	**375** (332-418)	**468** (418-625)	652
Gender							
Males	11-12	**126** (116-138)	**132** (117-153)	**224** (208-240)	**346** (295-393)	**447** (375-519)	608
Females	11-12	**96.3** (88.8-104)	**97.3** (90.0-107)	**196** (176-222)	**359** (296-418)	**475** (406-588)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 5.5.

Urinary N-Acetyl-S-(N-methylcarbamoyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of N,N-Dimethylformamide

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**448** (401-502)	**474** (436-552)	**756** (663-874)	**1060** (969-1200)	**1300** (1110-1470)	884
Age group							
20-49 years	11-12	**390** (350-435)	**408** (344-470)	**638** (560-756)	**963** (855-1100)	**1190** (1000-1410)	528
50 years and older	11-12	**559** (476-656)	**615** (521-720)	**942** (757-1020)	**1200** (1010-1400)	**1370** (1080-1610)	356
Gender							
Males	11-12	**387** (339-442)	**408** (354-476)	**640** (564-745)	**934** (746-1140)	**1200** (898-1440)	538
Females	11-12	**544** (471-628)	**615** (520-720)	**942** (811-1020)	**1190** (1030-1400)	**1400** (1220-1610)	346
Nonsmokers†							
Total	11-12	**128** (120-135)	**129** (121-138)	**216** (198-232)	**326** (305-348)	**392** (352-460)	1283
Age group							
20-49 years	11-12	**104** (95.1-114)	**106** (98.8-114)	**172** (157-188)	**255** (218-316)	**337** (265-376)	631
50 years and older	11-12	**158** (146-171)	**154** (135-179)	**268** (228-299)	**374** (326-398)	**482** (384-599)	652
Gender							
Males	11-12	**112** (103-122)	**118** (105-130)	**177** (166-197)	**280** (232-318)	**337** (295-460)	607
Females	11-12	**141** (132-151)	**140** (129-154)	**241** (218-273)	**352** (320-376)	**398** (377-476)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary Phenylglyoxylic acid (2011 - 2012)

Metabolite of Ethylbenzene and Styrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**306** (269-348)	**343** (298-386)	**550** (469-656)	**899** (765-1050)	**1140** (900-1560)	884
Age group							
20-49 years	11-12	**302** (256-356)	**344** (277-407)	**578** (459-706)	**900** (730-1060)	**1090** (900-1330)	528
50 years and older	11-12	**312** (269-363)	**330** (254-419)	**516** (462-664)	**864** (664-1290)	**1280** (782-1730)	356
Gender							
Males	11-12	**333** (272-409)	**387** (309-431)	**592** (490-764)	**1010** (799-1290)	**1330** (906-1730)	538
Females	11-12	**273** (248-300)	**297** (248-347)	**482** (447-571)	**755** (664-849)	**899** (816-994)	346
Nonsmokers†							
Total	11-12	**158** (145-173)	**184** (168-197)	**298** (268-316)	**419** (384-448)	**551** (461-630)	1284
Age group							
20-49 years	11-12	**156** (138-177)	**185** (161-206)	**308** (269-354)	**434** (383-514)	**566** (500-655)	632
50 years and older	11-12	**160** (145-177)	**181** (161-198)	**278** (240-312)	**394** (366-431)	**486** (420-594)	652
Gender							
Males	11-12	**191** (168-218)	**215** (189-248)	**334** (287-374)	**458** (407-514)	**559** (468-630)	608
Females	11-12	**136** (125-149)	**145** (135-168)	**240** (220-272)	**388** (353-429)	**500** (406-661)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 12.0.

Biomonitoring Summaries

http://www.cdc.gov/biomonitoring/Ethylbenzene_BiomonitoringSummary.html

http://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary Phenylglyoxylic acid (creatinine corrected) (2011 - 2012)

Metabolite of Ethylbenzene and Styrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**339** (307-375)	**355** (310-388)	**513** (470-564)	**681** (585-751)	**782** (681-959)	884
Age group							
20-49 years	11-12	**317** (286-352)	**325** (272-378)	**477** (413-529)	**630** (559-699)	**751** (633-842)	528
50 years and older	11-12	**377** (334-425)	**400** (374-429)	**576** (474-681)	**726** (583-874)	**874** (716-1120)	356
Gender							
Males	11-12	**320** (284-360)	**335** (285-386)	**481** (406-528)	**600** (538-717)	**731** (594-874)	538
Females	11-12	**366** (310-432)	**380** (302-471)	**576** (474-677)	**726** (617-841)	**841** (716-1120)	346
Nonsmokers†							
Total	11-12	**186** (173-201)	**195** (179-209)	**253** (240-268)	**329** (313-349)	**388** (357-417)	1283
Age group							
20-49 years	11-12	**172** (160-186)	**176** (162-198)	**234** (223-251)	**295** (274-323)	**346** (317-401)	631
50 years and older	11-12	**202** (187-218)	**210** (195-227)	**278** (260-291)	**357** (329-379)	**407** (360-448)	652
Gender							
Males	11-12	**170** (155-187)	**173** (158-194)	**228** (218-235)	**304** (264-347)	**360** (314-400)	607
Females	11-12	**200** (185-216)	**207** (200-225)	**272** (252-290)	**346** (318-387)	**407** (358-452)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summaries

http://www.cdc.gov/biomonitoring/Ethylbenzene_BiomonitoringSummary.html

http://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary N-Acetyl-S-(2-hydroxypropyl)-L-cysteine (2011 - 2012)

Metabolite of Propylene oxide

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**102** (89.8-116)	**108** (91.1-124)	**216** (190-235)	**362** (306-410)	**494** (416-587)	884
Age group							
20-49 years	11-12	**94.0** (79.3-111)	**105** (85.4-119)	**196** (158-235)	**311** (275-360)	**429** (360-498)	528
50 years and older	11-12	**116** (91.2-147)	**114** (82.9-173)	**232** (195-321)	**416** (312-587)	**601** (388-1390)	356
Gender							
Males	11-12	**105** (89.4-124)	**111** (92.0-134)	**224** (177-256)	**370** (280-446)	**500** (401-727)	538
Females	11-12	**98.0** (85.3-113)	**100** (85.1-117)	**216** (183-226)	**328** (288-397)	**487** (330-686)	346
Nonsmokers†							
Total	11-12	**52.8** (47.2-59.1)	**48.6** (44.1-56.3)	**93.4** (80.8-110)	**194** (167-230)	**523** (297-716)	1284
Age group							
20-49 years	11-12	**56.2** (48.9-64.7)	**54.1** (46.0-61.0)	**104** (84.9-125)	**196** (155-289)	**406** (202-879)	632
50 years and older	11-12	**49.5** (41.3-59.3)	**45.3** (38.0-54.7)	**85.5** (68.9-105)	**192** (134-314)	**536** (206-1040)	652
Gender							
Males	11-12	**59.8** (51.8-69.1)	**57.9** (48.2-65.4)	**95.2** (76.3-125)	**172** (136-220)	**364** (202-640)	608
Females	11-12	**47.9** (41.2-55.7)	**41.2** (33.9-49.9)	**91.2** (73.5-111)	**224** (158-349)	**550** (301-911)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

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

Urinary N-Acetyl-S-(2-hydroxypropyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of Propylene oxide

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**113** (100-127)	**115** (99.5-130)	**203** (170-234)	**350** (276-409)	**459** (366-589)	884
Age group							
20-49 years	11-12	**98.8** (89.3-109)	**100** (83.9-116)	**188** (149-214)	**291** (241-378)	**399** (300-488)	528
50 years and older	11-12	**140** (112-175)	**135** (107-167)	**237** (176-312)	**430** (275-617)	**589** (312-1450)	356
Gender							
Males	11-12	**101** (86.8-117)	**99.5** (82.3-120)	**159** (138-201)	**269** (216-363)	**410** (276-524)	538
Females	11-12	**131** (112-154)	**137** (118-167)	**255** (198-308)	**395** (291-519)	**519** (356-617)	346
Nonsmokers†							
Total	11-12	**62.2** (55.7-69.4)	**51.9** (48.4-56.5)	**89.3** (77.6-99.0)	**179** (148-233)	**547** (304-1050)	1283
Age group							
20-49 years	11-12	**62.2** (55.7-69.3)	**51.9** (48.7-56.5)	**95.9** (81.5-109)	**179** (141-313)	**427** (192-1530)	631
50 years and older	11-12	**62.2** (52.0-74.4)	**51.9** (46.0-58.3)	**83.8** (73.9-99.1)	**181** (129-382)	**630** (181-1910)	652
Gender							
Males	11-12	**53.2** (47.6-59.4)	**48.9** (44.7-53.4)	**75.4** (62.6-85.0)	**122** (97.9-179)	**260** (148-438)	607
Females	11-12	**70.2** (58.2-84.8)	**56.1** (48.3-63.9)	**105** (88.7-134)	**265** (168-474)	**943** (313-2260)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Urinary N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine (2011 - 2012)

Metabolite of Styrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**.957** (.722-1.21)	**2.17** (1.57-2.93)	**4.34** (3.20-6.16)	**6.16** (4.10-7.92)	884
Age group							
20-49 years	11-12	*	**.898** (<LOD-1.14)	**1.95** (1.32-2.83)	**4.39** (2.93-6.16)	**6.21** (4.39-10.3)	528
50 years and older	11-12	**1.25** (1.02-1.53)	**1.16** (.813-1.43)	**2.50** (1.65-3.20)	**4.16** (3.20-6.02)	**6.02** (4.10-6.86)	356
Gender							
Males	11-12	**1.26** (1.00-1.59)	**1.10** (<LOD-1.42)	**2.57** (1.77-3.24)	**5.24** (3.41-6.85)	**6.85** (4.72-15.5)	538
Females	11-12	*	**.898** (<LOD-1.11)	**1.69** (1.32-2.14)	**3.47** (2.59-4.75)	**5.22** (3.26-9.12)	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**1.37** (1.17-1.60)	**1.85** (1.65-2.09)	1284
Age group							
20-49 years	11-12	*	**< LOD**	**.778** (<LOD-.865)	**1.56** (1.29-1.73)	**1.95** (1.81-2.26)	632
50 years and older	11-12	*	**< LOD**	**< LOD**	**1.28** (.972-1.63)	**1.75** (1.32-1.93)	652
Gender							
Males	11-12	*	**< LOD**	**.759** (<LOD-.898)	**1.60** (1.19-1.87)	**2.03** (1.81-2.61)	608
Females	11-12	*	**< LOD**	**< LOD**	**1.28** (1.05-1.39)	**1.69** (1.38-1.91)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.7.

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

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

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of Styrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**1.26** (1.10-1.41)	**2.33** (1.93-2.61)	**3.55** (3.01-4.21)	**4.75** (4.02-6.42)	884
Age group							
20-49 years	11-12	*	**1.13** (<LOD-1.38)	**2.03** (1.82-2.42)	**3.30** (2.76-4.41)	**4.75** (3.43-7.53)	528
50 years and older	11-12	**1.50** (1.32-1.71)	**1.41** (1.23-1.62)	**2.73** (2.05-3.10)	**4.02** (3.29-4.33)	**4.85** (4.02-6.42)	356
Gender							
Males	11-12	**1.21** (1.05-1.40)	**1.10** (<LOD-1.27)	**1.96** (1.71-2.50)	**3.43** (2.75-4.21)	**4.33** (3.44-9.42)	538
Females	11-12	*	**1.45** (<LOD-1.65)	**2.52** (2.20-2.74)	**4.02** (3.01-4.64)	**4.88** (4.02-7.09)	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**1.91** (1.77-2.15)	**2.64** (2.15-3.30)	1283
Age group							
20-49 years	11-12	*	**< LOD**	**1.18** (<LOD-1.36)	**1.98** (1.65-2.62)	**2.91** (2.25-3.81)	631
50 years and older	11-12	*	**< LOD**	**< LOD**	**1.83** (1.76-2.06)	**2.25** (1.98-3.54)	652
Gender							
Males	11-12	*	**< LOD**	**.944** (<LOD-1.05)	**1.36** (1.24-1.71)	**1.90** (1.48-2.64)	607
Females	11-12	*	**< LOD**	**< LOD**	**2.15** (1.98-2.74)	**3.54** (2.44-4.45)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
< LOD means less than the limit of detection for the urine levels not corrected for creatinine.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary Mandelic acid (2011 - 2012)

Metabolite of Styrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**282** (245-325)	**280** (246-353)	**496** (454-603)	**892** (709-1020)	**1200** (959-1390)	884
Age group							
20-49 years	11-12	**279** (230-337)	**285** (236-376)	**499** (437-603)	**890** (662-1140)	**1200** (924-1610)	528
50 years and older	11-12	**287** (255-324)	**267** (242-324)	**483** (449-597)	**892** (675-991)	**1130** (953-1270)	356
Gender							
Males	11-12	**303** (249-370)	**308** (263-376)	**613** (468-730)	**1010** (804-1270)	**1390** (1020-1610)	538
Females	11-12	**256** (228-288)	**259** (223-287)	**454** (373-475)	**687** (513-856)	**929** (709-1070)	346
Nonsmokers†							
Total	11-12	**127** (115-140)	**138** (120-153)	**235** (193-262)	**349** (312-388)	**449** (395-505)	1284
Age group							
20-49 years	11-12	**134** (117-154)	**150** (126-179)	**256** (224-288)	**381** (312-420)	**452** (399-556)	632
50 years and older	11-12	**120** (110-131)	**131** (109-147)	**196** (173-236)	**339** (258-360)	**415** (355-490)	652
Gender							
Males	11-12	**157** (143-172)	**164** (141-185)	**255** (224-291)	**363** (311-422)	**463** (385-657)	608
Females	11-12	**108** (95.2-121)	**117** (99.9-138)	**193** (168-236)	**331** (279-386)	**422** (366-490)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 12.0.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary Mandelic acid (creatinine corrected) (2011 - 2012)

Metabolite of Styrene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**313** (286-341)	**316** (289-330)	**475** (437-512)	**702** (622-787)	**880** (778-1010)	884
Age group							
20-49 years	11-12	**293** (266-323)	**300** (264-321)	**447** (425-477)	**665** (607-787)	**835** (755-892)	528
50 years and older	11-12	**347** (315-382)	**328** (307-375)	**515** (438-556)	**726** (570-1030)	**900** (637-1160)	356
Gender							
Males	11-12	**291** (260-326)	**280** (239-319)	**438** (404-477)	**723** (559-811)	**854** (787-932)	538
Females	11-12	**343** (296-397)	**335** (306-399)	**531** (427-609)	**657** (610-880)	**884** (728-1030)	346
Nonsmokers†							
Total	11-12	**150** (140-160)	**147** (135-158)	**198** (184-218)	**284** (257-316)	**361** (314-400)	1283
Age group							
20-49 years	11-12	**148** (138-159)	**146** (136-156)	**193** (183-214)	**271** (244-319)	**361** (285-410)	631
50 years and older	11-12	**151** (138-164)	**148** (131-164)	**201** (177-238)	**296** (259-326)	**361** (308-471)	652
Gender							
Males	11-12	**140** (133-147)	**135** (124-146)	**180** (165-192)	**245** (218-268)	**308** (268-354)	607
Females	11-12	**158** (144-173)	**157** (145-171)	**222** (199-240)	**316** (269-361)	**384** (352-447)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Styrene_BiomonitoringSummary.html

Factsheet

http://www.cdc.gov/biomonitoring/Styrene_FactSheet.html

Urinary N-Acetyl-S-(trichlorovinyl)-L-cysteine (2011 - 2012)

Metabolite of Tetrachloroethene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	884
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	528
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	356
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	538
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1284
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	632
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	652
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	608
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 3.0.

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

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

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(trichlorovinyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of Tetrachloroethene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	884
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	528
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	356
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	538
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1283
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	631
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	652
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	607
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
< LOD means less than the limit of detection for the urine levels not corrected for creatinine.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(benzyl)-L-cysteine (2011 - 2012)

Metabolite of Toluene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**6.11** (5.43-6.88)	**5.94** (5.29-6.93)	**12.2** (9.51-16.9)	**23.7** (17.3-30.0)	**35.1** (29.9-44.6)	884
Age group							
20-49 years	11-12	**6.19** (5.32-7.20)	**6.02** (4.82-7.47)	**12.3** (9.42-16.9)	**25.9** (16.9-40.5)	**40.5** (29.9-54.5)	528
50 years and older	11-12	**5.99** (5.13-6.99)	**5.90** (5.18-7.25)	**12.0** (8.37-17.3)	**22.5** (17.5-26.7)	**33.5** (25.4-48.8)	356
Gender							
Males	11-12	**6.56** (5.61-7.68)	**6.88** (5.83-7.95)	**14.0** (11.0-17.3)	**25.8** (17.3-33.9)	**35.1** (29.9-44.4)	538
Females	11-12	**5.57** (4.80-6.46)	**5.33** (4.66-5.80)	**10.6** (7.06-14.3)	**20.7** (14.0-33.5)	**40.5** (22.7-60.3)	346
Nonsmokers†							
Total	11-12	**6.47** (5.98-7.00)	**6.35** (6.00-6.93)	**12.1** (10.1-13.8)	**23.2** (19.5-27.6)	**37.3** (29.5-53.9)	1284
Age group							
20-49 years	11-12	**6.57** (5.82-7.43)	**6.27** (5.39-7.96)	**12.3** (10.1-15.5)	**27.3** (20.2-33.1)	**40.9** (33.1-56.9)	632
50 years and older	11-12	**6.37** (5.76-7.04)	**6.53** (5.89-7.21)	**11.1** (9.86-13.4)	**20.6** (18.0-25.0)	**34.2** (25.5-39.7)	652
Gender							
Males	11-12	**7.00** (6.24-7.86)	**6.74** (6.13-7.65)	**12.2** (10.1-14.3)	**22.4** (18.2-31.8)	**40.4** (25.4-86.2)	608
Females	11-12	**6.08** (5.44-6.80)	**6.10** (5.38-6.81)	**11.8** (9.46-15.3)	**23.8** (19.1-29.5)	**34.8** (29.5-44.6)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.5.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Toluene_BiomonitoringSummary.html

Urinary N-Acetyl-S-(benzyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of Toluene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**6.78** (6.35-7.24)	**6.02** (5.68-6.48)	**11.2** (9.33-12.6)	**20.0** (16.5-21.0)	**27.0** (23.1-35.3)	884
Age group							
20-49 years	11-12	**6.51** (5.96-7.10)	**5.78** (5.41-6.48)	**9.33** (8.53-10.9)	**20.4** (13.8-21.0)	**26.8** (20.6-40.0)	528
50 years and older	11-12	**7.23** (6.49-8.06)	**6.12** (5.79-7.83)	**14.3** (10.2-15.3)	**19.5** (15.3-23.6)	**27.8** (22.2-47.7)	356
Gender							
Males	11-12	**6.30** (5.79-6.86)	**5.75** (5.16-6.30)	**9.33** (8.53-11.1)	**18.3** (15.2-20.6)	**22.6** (20.4-30.4)	538
Females	11-12	**7.46** (6.43-8.66)	**6.55** (5.44-7.52)	**12.9** (9.83-15.2)	**21.0** (15.8-28.7)	**40.0** (25.3-51.8)	346
Nonsmokers†							
Total	11-12	**7.63** (7.06-8.24)	**6.84** (6.36-7.51)	**12.8** (11.4-14.4)	**23.8** (19.2-27.4)	**39.6** (29.2-51.4)	1283
Age group							
20-49 years	11-12	**7.28** (6.74-7.88)	**6.44** (5.95-7.11)	**12.0** (10.9-13.4)	**22.2** (18.3-24.9)	**35.5** (24.5-49.3)	631
50 years and older	11-12	**8.00** (7.25-8.83)	**7.47** (6.59-8.02)	**13.6** (11.5-16.0)	**26.1** (18.2-34.7)	**44.1** (31.0-55.5)	652
Gender							
Males	11-12	**6.24** (5.69-6.85)	**5.76** (5.28-6.09)	**8.85** (8.02-10.2)	**17.4** (13.8-23.7)	**32.0** (18.2-44.7)	607
Females	11-12	**8.93** (7.95-10.0)	**8.19** (7.24-9.54)	**15.3** (13.1-17.4)	**26.1** (22.9-31.8)	**44.1** (31.0-55.3)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Toluene_BiomonitoringSummary.html

Urinary N-Acetyl-S-(1,2-dichlorovinyl)-L-cysteine (2011 - 2012)

Metabolite of Trichloroethene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	884
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	528
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	356
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	538
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1284
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	632
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	652
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	608
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 12.6.

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

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

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(1,2-dichlorovinyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of Trichloroethene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	884
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	528
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	356
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	538
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1283
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	631
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	652
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	607
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
< LOD means less than the limit of detection for the urine levels not corrected for creatinine.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(2,2-dichlorovinyl)-L-cysteine (2011 - 2012)

Metabolite of Trichloroethene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	884
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	528
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	356
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	538
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1284
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	632
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	652
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	608
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 6.5.

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

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

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(2,2-dichlorovinyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of Trichloroethene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	884
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	528
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	356
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	538
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1283
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	631
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	652
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	607
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
< LOD means less than the limit of detection for the urine levels not corrected for creatinine.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/HalogenatedSolvents_BiomonitoringSummary.html

Urinary N-Acetyl-S-(dimethylphenyl)-L-cysteine (2011 - 2012)

Metabolite of Xylene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	884
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	528
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	356
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	538
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1284
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	632
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	652
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	608
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 0.5.
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary N-Acetyl-S-(dimethylphenyl)-L-cysteine (creatinine corrected) (2011 - 2012)

Metabolite of Xylene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	884
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	528
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	356
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	538
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	346
Nonsmokers†							
Total	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	1283
Age group							
20-49 years	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	631
50 years and older	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	652
Gender							
Males	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	607
Females	11-12	*	**< LOD**	**< LOD**	**< LOD**	**< LOD**	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample
< LOD means less than the limit of detection for the urine levels not corrected for creatinine.
* Not calculated: proportion of results below limit of detection was too high to provide a valid result.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary 2-Methylhippuric acid (2011 - 2012)

Metabolite of Xylene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**96.9** (84.6-111)	**104** (94.3-115)	**180** (163-201)	**276** (238-314)	**396** (324-426)	884
Age group							
20-49 years	11-12	**91.7** (77.6-108)	**104** (89.9-112)	**168** (153-191)	**276** (222-306)	**351** (276-434)	528
50 years and older	11-12	**106** (88.4-126)	**105** (89.6-144)	**194** (174-215)	**310** (238-392)	**423** (353-477)	356
Gender							
Males	11-12	**103** (83.1-128)	**111** (95.7-147)	**196** (171-224)	**290** (253-366)	**398** (308-469)	538
Females	11-12	**89.5** (80.2-99.8)	**94.6** (89.1-104)	**163** (133-180)	**247** (204-306)	**355** (242-443)	346
Nonsmokers†							
Total	11-12	**25.8** (22.8-29.2)	**24.4** (20.9-27.4)	**55.0** (46.9-64.4)	**113** (93.4-147)	**171** (131-227)	1284
Age group							
20-49 years	11-12	**28.2** (24.0-33.0)	**25.0** (21.4-29.8)	**62.0** (46.9-75.8)	**123** (91.7-166)	**188** (128-319)	632
50 years and older	11-12	**23.5** (20.0-27.7)	**23.5** (18.3-28.3)	**49.7** (38.9-62.3)	**107** (75.0-148)	**170** (113-224)	652
Gender							
Males	11-12	**31.1** (24.1-40.1)	**27.3** (20.5-35.2)	**65.3** (43.3-88.9)	**158** (88.9-206)	**206** (129-408)	608
Females	11-12	**22.3** (19.4-25.6)	**22.1** (19.7-25.6)	**48.5** (39.4-56.4)	**96.2** (81.6-111)	**138** (107-172)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 5.0.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary 2-Methylhippuric acid (creatinine corrected) (2011 - 2012)

Metabolite of Xylene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**107** (97.2-119)	**112** (101-127)	**193** (180-208)	**324** (255-376)	**382** (336-440)	884
Age group							
20-49 years	11-12	**96.3** (86.6-107)	**95.8** (85.1-105)	**184** (163-199)	**324** (239-348)	**378** (333-453)	528
50 years and older	11-12	**128** (111-147)	**138** (124-155)	**206** (186-245)	**332** (264-398)	**423** (330-486)	356
Gender							
Males	11-12	**98.9** (82.6-118)	**101** (85.1-122)	**171** (131-214)	**303** (200-376)	**374** (333-423)	538
Females	11-12	**120** (98.5-146)	**140** (104-166)	**229** (187-270)	**330** (270-398)	**438** (330-533)	346
Nonsmokers†							
Total	11-12	**30.4** (27.2-34.0)	**28.5** (25.1-32.6)	**60.6** (52.9-68.9)	**123** (98.9-137)	**165** (138-207)	1283
Age group							
20-49 years	11-12	**31.3** (27.6-35.4)	**29.0** (26.5-33.5)	**60.6** (47.2-69.0)	**100** (87.6-137)	**168** (98.9-292)	631
50 years and older	11-12	**29.6** (25.7-34.0)	**27.4** (21.3-35.2)	**60.8** (51.8-72.3)	**133** (110-142)	**159** (142-201)	652
Gender							
Males	11-12	**27.8** (22.3-34.5)	**26.6** (22.0-33.5)	**55.9** (41.8-75.8)	**100** (84.3-127)	**154** (100-307)	607
Females	11-12	**32.7** (29.2-36.6)	**30.2** (26.3-36.0)	**62.6** (55.1-69.8)	**133** (109-140)	**177** (146-204)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary 3-and 4-Methylhippuric acid (2011 - 2012)

Metabolite of Xylene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**672** (579-779)	**730** (599-869)	**1300** (1140-1560)	**2180** (2020-2400)	**2860** (2430-3390)	884
Age group							
20-49 years	11-12	**619** (512-748)	**711** (512-897)	**1250** (1080-1410)	**1940** (1700-2380)	**2650** (2120-2960)	528
50 years and older	11-12	**764** (649-901)	**774** (590-1050)	**1490** (1160-1900)	**2430** (1970-3610)	**3610** (2430-4710)	356
Gender							
Males	11-12	**715** (573-892)	**866** (587-1060)	**1490** (1210-1770)	**2290** (1920-2830)	**3170** (2260-3940)	538
Females	11-12	**619** (545-702)	**649** (590-801)	**1110** (995-1250)	**2030** (1720-2400)	**2450** (2220-2860)	346
Nonsmokers†							
Total	11-12	**171** (156-187)	**160** (143-186)	**366** (311-467)	**793** (691-957)	**1370** (1060-1560)	1284
Age group							
20-49 years	11-12	**169** (143-199)	**157** (131-196)	**375** (298-473)	**793** (683-1040)	**1330** (909-1630)	632
50 years and older	11-12	**173** (150-200)	**167** (132-208)	**359** (291-506)	**789** (609-1070)	**1370** (1020-1590)	652
Gender							
Males	11-12	**199** (160-247)	**180** (138-230)	**389** (291-615)	**949** (683-1370)	**1550** (1170-1660)	608
Females	11-12	**152** (135-171)	**148** (126-166)	**352** (281-467)	**730** (618-884)	**1210** (872-1460)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Limit of detection (LOD, see Data Analysis section) for Survey year 11-12 is 8.0.

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Urinary 3-and 4-Methylhippuric acid (creatinine corrected) (2011 - 2012)

Metabolite of Xylene

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

	Survey years	Geometric mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample size
Cigarette Smokers							
Total	11-12	**745** (671-827)	**813** (772-855)	**1320** (1160-1540)	**2000** (1690-2170)	**2290** (2080-2570)	884
Age group							
20-49 years	11-12	**650** (579-730)	**691** (589-787)	**1180** (1080-1320)	**2000** (1540-2120)	**2220** (2050-2490)	528
50 years and older	11-12	**923** (818-1040)	**971** (833-1110)	**1550** (1250-1690)	**2080** (1790-2470)	**2570** (2080-2880)	356
Gender							
Males	11-12	**686** (573-822)	**713** (610-870)	**1130** (966-1360)	**1770** (1420-2050)	**2130** (1870-2490)	538
Females	11-12	**828** (704-974)	**971** (774-1160)	**1600** (1290-1770)	**2120** (1990-2290)	**2500** (2080-3080)	346
Nonsmokers†							
Total	11-12	**201** (187-217)	**164** (147-186)	**403** (338-466)	**770** (712-841)	**1060** (908-1210)	1283
Age group							
20-49 years	11-12	**187** (167-209)	**152** (137-185)	**384** (308-452)	**640** (545-741)	**784** (725-1020)	631
50 years and older	11-12	**218** (196-243)	**169** (149-193)	**454** (342-578)	**958** (798-1060)	**1290** (1030-1520)	652
Gender							
Males	11-12	**177** (149-210)	**146** (119-181)	**338** (227-468)	**647** (530-743)	**867** (675-1140)	607
Females	11-12	**223** (206-241)	**178** (161-205)	**452** (381-540)	**858** (770-1030)	**1290** (960-1520)	676

†Cigarette nonsmokers who used other tobacco products were excluded. See Exposure to Chemicals Found in Cigarette Smoke in U.S. Adults: Select Chemicals in a Special Sample

Biomonitoring Summary

http://www.cdc.gov/biomonitoring/Xylenes_BiomonitoringSummary.html

Appendix C. Limit of Detection Table

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 results are reported by survey periods (e.g., 1999-2000, 2001-2002, etc.).

Reference: Taylor JK. Quality Assurance of Chemical Measurements. Chelsea (MI): Lewis Publishing. 1987.

Chemical, *matrix, units*	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014
Adducts of Hemoglobin *in packed rbcs, pmol/g hemoglobin*								
Acrylamide			3.0	0.11				
Glycidamide			4.0	0.66				
Tobacco Smoke								
Cotinine *in serum, ng/mL*	0.05	0.05	0.015	0.015	0.015	0.015	0.015	
NNAL *in urine, pg/mL*					1	0.6	0.6	
Disinfection By-Products *in blood, pg/mL*								
Bromodichloromethane		0.233	0.62	0.62	0.62			
Dibromochloromethane		0.271	0.62	0.62	0.62			
Tribromomethane (Bromoform)		0.596	1.5	1.0	1.0			
Trichloromethane (Chloroform)		2.37	2.11	2.1	2.1			
Personal Care and Consumer Product Chemicals and Metabolites *in urine, µg/L*								
Benzophenone-3			0.3	0.4	0.4	0.4	0.4	0.4
Bisphenol A			0.4	0.4	0.4	0.4	0.4	0.2
4-*tert*-Octylphenol				0.2	0.2	0.2		
Triclocarban								0.1
Triclosan			2.3	2.3	2.3	2.3	2.3	1.7
Butyl paraben				0.2	0.2	0.2	0.2	0.1
Ethyl paraben				1	1	1	1	1
Methyl paraben				1	1	1	1	1
n-Propyl paraben				0.2	0.2	0.2	0.2	0.1
2,4-Dichlorophenol			0.17	0.2	0.2	0.2	0.2	0.1
2,5-Dichlorophenol			0.12	0.2	0.2	0.2	0.2	0.1
Fungicides and Metabolites *in urine, µg/L*								
ortho- Phenylphenol			0.1	0.1	0.1	0.2		
Ethylene thiourea			0.1	0.24	0.21			
Pentachlorophenol			0.5					
Propylene thiourea			0.1	0.37	0.36			
Herbicides and Metabolites *in urine, µg/L*								
Atrazine					0.5			
Atrazine mercapturate					0.5			
Desethyl atrazine					0.25			
Desisopropyl atrazine					0.25			
Desisopropyl atrazine mercapturate					0.1			
Diaminochlorotriazine					0.5			
2,4-Dichlorophenoxyacetic acid	0.952	0.2	0.1		0.4	0.15		
2,4,5-Trichlorophenoxyacetic acid	1.2	0.1	0.1		0.10	0.1		
Sulfonyl Urea Herbicides *in urine, µg/L*								
Urinary Bensulfuron-methyl			0.05	0.05	0.05			
Urinary Chlorsulfuron			0.06	0.06	0.06			
Urinary Ethametsulfuron-methyl			0.1	0.1	0.1			
Urinary Foramsulfuron			0.05	0.05	0.05			
Urinary Halosulfuron			0.1	0.1	0.1			
Urinary Mesosulfuron-methyl			0.06	0.06	0.06			
Urinary Metsulfuron-methyl			0.05	0.05	0.05			
Urinary Nicosulfuron			0.1	0.1	0.1			
Urinary Oxasulfuron			0.06	0.06	0.06			
Urinary Primisulfuron-methyl			0.07	0.07	0.07			
Urinary Prosulfuron			0.05	0.05	0.05			
Urinary Rimsulfuron			0.05	0.05	0.05			
Urinary Sulfometuron-methyl			0.05	0.05	0.05			
Urinary Sulfosulfuron			0.1	0.1	0.1			
Urinary Thifensulfuron-methyl			0.08	0.08	0.08			
Urinary Triasulfuron			0.07	0.07	0.07			
Urinary Triflusulfuron-methyl			0.05	0.05	0.05			
Insect Repellent and Metabolites *in urine, µg/L*								
N,N-Diethyl-*meta*-toluamide (DEET)					0.089	0.089		
3-(Diethylcarbamoyl) benzoic acid (DCBA)					0.83	0.475		
N,N-Diethyl-3-(hydroxymethyl) benzamide (DHMB)					0.083	0.083		

Chemical, *matrix, units*	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014
Carbamate Pesticide Metabolites *in urine, µg/L*								
Carbofuranphenol	0.4	0.4	0.4					
2-isopropoxyphenol	1.1	0.4	0.4					
Organochlorine Pesticides and Metabolites *in urine, µg/L*								
2,4,5-Trichlorophenol			0.1	0.1	0.1	0.1		
2,4,6-Trichlorophenol			0.5	0.5	0.5	0.5		
Organophosphorus Insecticides:Specific Metabolites *in urine, µg/L*								
Acephate			0.1	0.25	0.27			
Dimethoate			0.1	0.25	0.1			
Methamidophos			0.1	0.37	0.41			
Omethoate			0.1	0.14	0.1			
Malathion dicarboxylic acid	2.64				0.5	0.5		
2-Isopropyl-4-methyl-pyrimidinol	7.2	0.7			0.1	0.1		
para-Nitrophenol	0.8	0.1			0.1	0.1		
3,5,6-Trichloro-2-pyridinol	0.4	0.4			0.1	0.1		
Organophosphorus Insecticides:Dialkyl Phosphate Metabolites *in urine, µg/L*								
Diethylphosphate (DEP)	0.2	0.2	0.1	0.37	0.37			
Dimethylphosphate (DMP)	0.58	0.5	0.5	0.47	0.47			
Diethylthiophosphate (DETP)	0.09	0.1	0.2	0.56	0.56			
Dimethylthiophosphate (DMTP)	0.18	0.4	0.5	0.55	0.55			
Diethyldithiophosphate (DEDTP)	0.05	0.1	0.1	0.39	0.39			
Dimethyldithiophosphate (DMDTP)	0.08	0.1	0.1	0.51	0.51			
Pyrethroid Metabolites *in urine, µg/L*								
trans-3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid	0.1	0.1			0.6	0.6		
cis-3-(2,2-Dibromovinyl)-2,2-dimethylcyclopropane carboxylic acid	0.1	0.1			0.5	0.5		
4-Fluoro-3-phenoxy-benzoic acid	0.2	0.2			0.1	0.1		
3-Phenoxybenzoic acid	0.1	0.1			0.1	0.1		
Metals and Metalloids								
Antimony *in urine, µg/L*	0.04	0.04	0.07	0.032	0.032	0.032	0.041	0.022
Arsenic, Total *in urine, µg/L*			0.74	0.74	0.74	0.74	1.25	0.26
Arsenic (V) Acid *in urine, µg As/L*			1	1	1	1	0.87	0.79
Arsenobetaine *in urine, µg As/L*			0.4	0.4	0.4	0.4	1.19	1.16
Arsenocholine *in urine, µg As/L*			0.6	0.6	0.6	0.6	0.28	0.11
Arsenous (III) Acid *in urine, µg As/L*			1.2	1.2	1.2	1.2	0.48	0.12
Dimethylarsinic Acid *in urine, µg As/L*			1.7	1.7	1.7	1.7	1.8	1.91
Monomethylarsonic Acid *in urine, µg As/L*			0.9	0.9	0.9	0.9	0.89	0.2
Inorganic-related Arsenic Species, in urine, µg As/g							4.04	3.02
Trimethylarsine oxide *in urine, µg As/L*			1	1	1	1	0.25	
Barium *in urine, µg/L*	0.12	0.12	0.31	0.12	0.12	0.12	0.1	0.06
Beryllium *in urine, µg/L*	0.13	0.13	0.13	0.072	0.072	0.072		
Cadmium *in blood, µg/L*	0.3	0.3	0.14	0.2	0.2	0.2	0.16	0.1
Cadmium *in urine, µg/L*	0.06	0.06	0.06	0.042	0.042	0.042	0.56	0.036
Cesium *in urine, µg/L*	0.14	0.14	0.2	0.066	0.066	0.066	0.12	0.086
Cobalt *in urine, µg/L*	0.07	0.07	0.08	0.041	0.041	0.041	0.048	0.023
Copper *in serum, µg/dL*							2.5	2.5
Lead *in blood, µg/dL*	0.3	0.3	0.28	0.25	0.25	0.25	0.25	0.07
Lead *in urine, µg/L*	0.1	0.1	0.33	0.1	0.1	0.1	0.08	0.03
Manganese *in blood, µg/L*							1.06	0.99
Manganese *in urine, µg/L*							0.08	0.13
Mercury, Total *in blood, µg/L*			0.2	0.33	0.33	0.33	0.16	0.28
Mercury, Inorganic *in blood, µg/L*			0.42	0.4	0.35	0.35	0.27	0.27
Mercury, Ethyl *in blood, µg/L*							0.16	0.16
Mercury, Methyl *in blood, µg/L*							0.12	0.12
Mercury *in urine, µg/L*			0.14	0.11	0.08	0.08	0.05	0.13
Molybdenum *in urine, µg/L*	0.8	0.8	1.5	0.92	0.92	0.92	0.99	0.8
Platinum *in urine, µg/L*	0.04	0.04	0.07	0.009	0.009	0.009		
Selenium *in blood, µg/L*							30	24.5
Selenium *in serum, µg/L*							4.5	4.5
Strontium *in urine, µg/L*							2.5	2.34
Thallium *in urine, µg/L*	0.02	0.02	0.02	0.015	0.015	0.015	0.02	0.018
Tin *in urine, µg/L*							0.22	0.09
Tungsten *in urine, µg/L*	0.04	0.04	0.04	0.021	0.021	0.021	0.026	0.018
Uranium *in urine, µg/L*	0.004	0.004	0.005	0.002	0.002	0.0017	0.0033	0.002
Zinc *in serum, µg/dL*							2.9	2.9

Chemical, *matrix, units*	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014
Perchlorate and Other Anions *in urine*								
Nitrate, *mg/L*		0.7		0.7	0.7	0.7	0.7	0.7
Perchlorate, *µg/L*		0.05	0.05	0.05	0.05	0.05	0.05	0.05
Thiocyanate, *mg/L*		0.02		0.02	0.02	0.02	0.02	0.02
Perfluoroalkyl and Polyfluoroalkyl Substances: Surfactants *in serum, µg/L*								
Perfluorobutane sulfonic acid (PFBuS)			0.4	0.1	0.1	0.1	0.1	0.1
Perfluorodecanoic acid (PFDeA)	0.2		0.3	0.2	0.2	0.1	0.1	0.1
Perfluorododecanoic acid (PFDoA)	0.2		1	0.2	0.2	0.1	0.1	0.1
Perfluoroheptanoic acid (PFHpA)	0.4		0.3	0.4	0.4	0.1	0.1	0.1
Perfluorohexane sulfonic acid (PFHxS)	0.1		0.3	0.1	0.1	0.1	0.1	0.1
Perfluorononanoic acid (PFNA)	0.1		0.1	0.1	0.082	0.082	0.082	0.1
Perfluorooctanoic acid (PFOA)	0.1		0.2	0.1	0.1	0.1	0.1	
n-Perfluorooctanoic acid (n-PFOA)								0.1
Branched Perfluorooctanoic acid isomers (Sb-PFOA)								0.1
Perfluorooctane sulfonic acid (PFOS)	0.2		0.4	0.2	0.2	0.2	0.2	
n-Perfluorooctane sulfonic acid (n-PFOS)								0.1
Perfluoromethylheptane sulfonic acid isomers (Sm-PFOS)								0.1
Perfluorooctane sulfonamide (PFOSA)	0.05		0.1	0.1	0.1	0.1	0.1	
2-(N-Ethyl-perfluorooctane sulfonamido) acetic acid (Et-PFOSA-AcOH)	0.2		0.4	0.2	0.2	0.1	0.1	
2-(N-Methyl-perfluorooctane sulfonamido) acetic acid (Me-PFOSA-AcOH)	0.174		0.523	0.174	0.174	0.087	0.087	0.1
Perfluoroundecanoic acid (PFUA)	0.2		0.3	0.2	0.2	0.1	0.1	0.1
Phthalate and Phthalate Alternatives Metabolites *in urine, µg/L*								
Mono-benzyl phthalate (MBzP)	0.576	0.216	0.072	0.216	0.216	0.216	0.3	
Mono-*n*-butyl phthalate (MnBP)	0.9	1.1	0.4	0.6	0.6	0.4	0.4	
Mono-isobutyl phthalate (MiBP)		1	0.3	0.3	0.3	0.2	0.2	
Mono-cyclohexyl phthalate (MCHP)	1.81	0.603	0.402	0.603	0.603	0.402		
Mono-ethyl phthalate (MEP)	0.792	0.594	0.264	0.528	0.462	0.396	0.6	
Mono-2-ethylhexyl phthalate (MEHP)	1.2	1	0.9	1.2	1.1	0.5	0.5	
Mono-(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP)		1	0.3	0.7	0.7	0.2	0.2	
Mono-(2-ethyl-5-oxohexyl) phthalate (MEOHP)		1.1	0.5	0.7	0.6	0.2	0.2	
Mono-(2-ethyl-5-carboxypentyl) phthalate (MECPP)			0.3	0.6	0.5	0.2	0.2	
Mono-(carboxynonyl) phthalate (MCNP)				0.6	0.5	0.2	0.2	
Mono-isononyl phthalate (MiNP)	1.23	1.23	1.54	1.23	1.23	0.77	0.6	
Mono-(carboxyoctyl) phthalate (MCOP)				0.7	0.7	0.2	0.2	
Mono-methyl phthalate (MMP)		0.2	1	1.1	1.1	0.5	0.5	
Mono-(3-carboxypropyl) phthalate (MCPP)		0.4	0.2	0.2	0.2	0.2	0.2	
Mono-*n*-octyl phthalate (MOP)	1.51	1.68	1.68	1.85	1.85	0.84		
Cyclohexane-1,2-dicarboxylic mono hydroxyisononyl ester (MHNCH)							0.4	
Phytoestrogens and Metabolites *in urine, µg/L*								
Urinary Daidzein	0.5	1.6	0.3	0.4	0.4	0.4		
Urinary Enterodiol	0.8	1.5	0.3	0.04	0.04	0.04		
Urinary Enterolactone	0.6	1.9	0.3	0.1	0.1	0.1		
Urinary Equol	3	3.3	0.3	0.06	0.06	0.6		
Urinary Genistein	0.3	0.8	0.3	1	0.2	0.2		
Urinary O-Desmethylangolensin	0.2	0.4	0.2	0.2	0.2	0.2		
Polycyclic Aromatic Hydrocarbon Metabolites *in urine, ng/L except as noted*								
2-Hydroxyfluorene			5	5	5	10	10	
3-Hydroxyfluorene		2	5	5	5	10	10	
9-Hydroxyfluorene			5	5	5	10	10	
1-Hydroxyphenanthrene		3.5	5	5	5	10	10	
2-Hydroxyphenanthrene		3.2	5	5	5	10	10	
3-Hydroxyphenanthrene		3.6	5	5	5	10	10	
4-Hydroxyphenanthrene			5	5				
1-Hydroxypyrene			5	5	5	10	10	
1-Hydroxynaphthalene (1-Naphthol), *µg/L*			0.047	0.048	0.045	0.044	0.044	
2-Hydroxynaphthalene (2-Naphthol), *µg/L*		0.002	0.031	0.013	0.042	0.042	0.042	

Chemical, *matrix, units*	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014
Volatile Organic Compounds (VOCs) *in whole blood, ng/mL except as noted*								
1,1,1-Trichloroethane (Methyl chloroform)			0.048	0.01	0.01			
1,1,1,2-Tetrachloroethane					0.04			
1,1,2,2-Tetrachloroethane			0.05	0.01	0.01			
1,1,2-Trichloroethane			0.01	0.01	0.01			
1,2,3-Trichloropropane					0.04			
1,1-Dichloroethane			0.01	0.01	0.01			
1,1-Dichloroethene (Vinylidene chloride)			0.009	0.009	0.009			
1,2-Dibromo-3-chloropropane (DBCP)			0.1	0.1	0.1			
1,2-Dibromoethane					0.015			
1,2-Dichlorobenzene (*o*-Dichlorobenzene)			0.1	0.1	0.025			
1,2-Dichloroethane (Ethylene dichloride)			0.01	0.01	0.01			
cis-1,2-Dichloroethene			0.01	0.01	0.01			
trans-1,2-Dichloroethene			0.01	0.01	0.01			
1,2-Dichloropropane			0.008	0.008	0.01			
1,3-Dichlorobenzene			0.05	0.05	0.025			
1,4-Dichlorobenzene (Paradichlorobenzene)		0.12	0.12	0.011	0.04			
2,5-Dimethylfuran			0.012	0.011	0.011			
Benzene		0.024	0.024	0.024	0.024			
Chlorobenzene			0.011	0.011	0.011			
Dibromomethane			0.03	0.03	0.03			
Dichloromethane (Methylene chloride)			0.07	0.25	0.25			
Ethylbenzene		0.024	0.024	0.024	0.024			
Furan					0.25			
Hexachloroethane			0.011	0.011	0.011			
Isopropylbenzene (Cumene)					0.04			
Methyl-*tert*-butyl ether (MTBE), *pg/mL*		0.232	2	1.4	1.4			
Nitrobenzene			0.3	0.3	0.320			
Nitromethane, *pg/mL*					0.320			
Styrene		0.03	0.03	0.03	0.032			
Tetrachloroethene (Perchloroethylene)		0.048	0.048	0.048	0.048			
Tetrachloromethane (Carbon tetrachloride)		0.01	0.005	0.005	0.005			
Toluene		0.025	0.025	0.025	0.025			
Trichloroethene (Trichloroethylene)		0.012	0.012	0.012	0.012			
m-/p-Xylene		0.34	0.034	0.034	0.034			
o-Xylene		0.049	0.049	0.024	0.024			
Volatile Organic Compound (VOC) Metabolites *in urine, µg/L*								
N-Acetyl-S-(2-carboxyethyl)-L-cysteine							8	
N-Acetyl-S-(3-hydroxypropyl)-L-cysteine							13	
N-Acetyl-S-(2-carbamoylethyl)-L-cysteine							2.2	
N-Acetyl-S-(2-carbamoyl-2-hydroxyethyl)-L-cysteine							9.4	
N-Acetyl-S-(2-cyanoethyl)-L-cysteine							0.5	
N-Acetyl-S-(2-hydroxyethyl)-L-cysteine							0.6	
N-Acetyl-S-(phenyl)-L-cysteine							0.6	
N-Acetyl-S-(*n*-propyl)-L-cysteine							1.2	
N-Acetyl-S-(3,4-dihydroxybutyl)-L-cysteine							5	
N-Acetyl-S-(1-hydroxymethyl-2-propenyl)-L-cysteine							0.7	
N-Acetyl-S-(2-hydroxy-3-butenyl)-L-cysteine							0.7	
N-Acetyl-S-(4-hydroxy-2-butenyl)-L-cysteine							0.6	
2-Thioxothiazolidine-4 carboxylic acid							3.5	
N-Acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine							2	
2-Aminothiazoline-4-carboxylic acid							15	
N-Acetyl-S-(N-methylcarbamoyl)-L-cysteine							5.5	
Phenylglyoxylic acid							12	
N-Acetyl-S-(2-hydroxypropyl)-L-cysteine							1.3	
N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine							0.7	
Mandelic acid							12	
N-Acetyl-S-(trichlorovinyl)-L-cysteine							3	
N-Acetyl-S-(benzyl)-L-cysteine							0.5	
N-Acetyl-S-(1,2-dichlorovinyl)-L-cysteine							12.6	
N-Acetyl-S-(2,2-dichlorovinyl)-L-cysteine							6.5	
N-Acetyl-S-(dimethylphenyl)-L-cysteine (DPMA)							0.5	
2-Methylhippuric acid							5	
3- & 4-Methylhippuric acid							8	

Chemical, *matrix, units*	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014
Organochlorine Pesticides and Metabolites (Pooled Samples after 2004) *in serum, ng/g lipid*								
Aldrin		5.94	7.8					
Dieldrin		10.5	7.8					
Endrin		5.09	7.8					
Heptachlor epoxide		10.5	7.8					
Oxychlordane	14.5	10.5	7.8	1.46	1.4			
trans-Nonachlor	14.5	10.5	7.8	0.77	1.4			
p,p'-DDT	20.7	17.4	7.8	1.46	1.4			
p,p'-DDE	18.6	8.3	7.8	4.02	1.4			
o,p'-DDT		17.4	7.8					
Hexachlorobenzene	118	31.4	7.8	4.17	1.4			
beta-Hexachlorocyclohexane	9.36	6.76	7.8	1.46	1.4			
gamma-Hexachlorocyclohexane	14.5	10.5	7.8	1.46	1.4			
Mirex	14.6	10.5	7.8	1.46	1.4			
Polybrominated Diphenyl Ethers and PBB 153 (Pooled Samples after 2004) *in serum, ng/g lipid*								
2,2',4'-Tribromodiphenyl ether (BDE 17)			1	0.6	0.6			
2,4,4'-Tribromodiphenyl ether (BDE 28)			0.8	0.6	0.6			
2,2',4,4'-Tetrabromodiphenyl ether (BDE 47)			4.2	1.6	0.6			
2,3',4,4'-Tetrabromodiphenyl ether (BDE 66)			1	0.6	0.6			
2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85)			2.4	0.6	0.6			
2,2',4,4',5-Pentabromodiphenyl ether (BDE 99)			5	1.2	0.6			
2,2',4,4',6-Pentabromodiphenyl ether (BDE 100)			1.4	0.6	0.6			
2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153)			2.2	0.6	0.6			
2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154)			0.8	0.6	0.6			
2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183)			1.7	0.6	0.6			
2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE 209)				6	5.8			
2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153)			0.8	0.6	0.6			
Polychlorinated Dibenzo-p-dioxins (Pooled Samples) *in serum, pg/g lipid*								
1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin (HpCDD)	55.9	10.3	13	2.43	4.22			
1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD)		9	11.9	0.15	0.26			
1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD)	20.1	9.1	12.3	0.12	0.2			
1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin (HxCDD)	20.3	9.3	12.3	0.08	0.13			
1,2,3,4,6,7,8,9-Octachlorodibenzo-*p*-dioxin (OCDD)	329	319	218	13	22.6			
1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin (PeCDD)	14.2	6	4.5	0.62	1.08			
2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD)	12.1	5.8	3.8	0.42	0.74			
Polychlorinated Dibenzofurans (Pooled Samples after 2004) *in serum, pg/g lipid*								
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	13.5	7	8.6	1.03	1.78			
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)		7	8.6	0.19	0.33			
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	12.7	6.5	7.4	0.3	0.51			
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	12.6	6.1	7.9	0.1	0.18			
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	12.7	6	8.3	0.2	0.35			
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	12.9	5.8	8.2	0.11	0.2			
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	35.6	21	12	1.37	2.37			
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	13.2	5.8	7.1	0.47	0.81			
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	12.7	5.5	6.8	0.51	0.88			
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	11.9	5.2	6	0.26	0.45			
Dioxin-like Polychlorinated Biphenyls: Coplanar PCBs (Pooled Samples after 2004) *in serum, pg/g lipid*								
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	68.4	26.8	13.1	1.86	3.23			
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	23.2	10.8	13.9	1.32	2.29			
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	27	11	15.9	1.33	2.31			
Dioxin-like Polychlorinated Biphenyls: mono-ortho-substituted PCBs (Pooled Samples after 2004) *in serum, ng/g lipid*								
2,3,3',4,4'-Pentachlorobiphenyl (PCB 105)	12.4	10.5	0.4	0.31	0.3			
2,3,3',4,4'-Pentachlorobiphenyl (PCB 114)				0.31	0.3			
2,3',4,4',5-Pentachlorobiphenyl (PCB 118)	12.5	10.5	0.6	0.72	0.3			
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)				0.31	0.3			
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	12.5	10.5	0.4	0.31	0.3			
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	12.5	10.5	0.4	0.31	0.3			
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	12.4	10.5	0.4	0.31	0.3			
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)		10.5	0.4	0.31	0.3			

Chemical, *matrix, units*	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014
Polychlorinated Biphenyls: Non-Dioxin-Like (Pooled Samples after 2004) *in serum, ng/g lipid*								
2,4,4'-Trichlorobiphenyl (PCB 28)	32.4		1.7	2.54	0.7			
2,2'3,5'-Tetrachloro biphenyl (PCB 44)			0.4	0.36	0.3			
2,2',4,5'-Tetrachloro biphenyl (PCB 49)			0.4	0.31	0.3			
2,2',5,5'-Tetrachlorobiphenyl (PCB 52)	12.5	12.4	0.8	0.33	0.3			
2,3',4,4'-Tetrachlorobiphenyl (PCB 66)	12.4	12.4	0.8	0.4	0.3			
2,4,4',5-Tetrachlorobiphenyl (PCB 74)	12.4	10.5	0.8	0.31	0.8			
2,2',3,4,5'-Pentachlorobiphenyl (PCB 87)		10.5	0.4	0.31	0.3			
2,2',4,4',5-Pentachlorobiphenyl (PCB 99)	12.5	10.5	0.6	0.31	0.3			
2,2',4,5,5'-Pentachlorobiphenyl (PCB 101)	25.7	10.5	0.6	0.59	0.3			
2,3,3',4',6-Pentachlorobiphenyl (PCB 110)		10.5	0.8	0.31	0.3			
2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128)	12.4	10.5	0.4	0.31	0.3			
2,2',3,4,4',5' and 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158)	41.1	10.5	0.4	0.31	0.3			
2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146)	12.4	10.5	0.4	0.31	0.3			
2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149)	10.5		0.4	0.31	0.3			
2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151)		10.5	0.4	0.31	0.3			
2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153)	55.6	10.5	1.1	0.31	0.3			
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	17.2	10.5	0.4	0.31	0.3			
2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172)	12.5	10.5	0.4	0.31	0.3			
2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177)	12.5	10.5	0.4	0.31	0.3			
2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178)	12.4	10.5	0.4	0.31	0.3			
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	28.2	10.5	0.4	0.31	0.3			
2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183)	12.4	10.5	0.4	0.31	0.3			
2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187)	12.4	10.5	0.4	0.31	0.3			
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194)		10.5	0.4	0.31	0.3			
2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195)		28.1	0.7	0.31	0.3			
2,2',3,3',4,4',5,6' and 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203)		10.5	0.4	0.31	0.3			
2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199)		10.5	0.4	0.31	0.3			
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206)		28.1	0.7	0.31	0.3			
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209)			0.7	0.31	0.3			

Appendix D. References for Biomonitoring Analytical Methods

Adducts of Hemoglobin

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2,4-D and 2,4,5-T

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