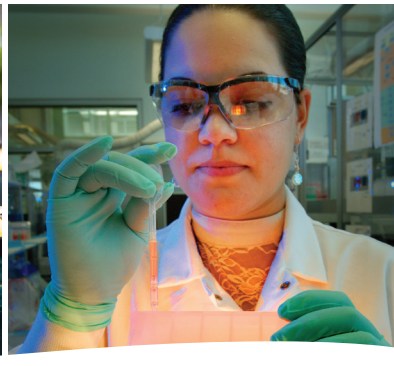


2012

Fourth National Report on Human Exposure to Environmental Chemicals
Updated Tables, September 2012



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

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Fourth National Report on Human Exposure to Environmental Chemicals, Updated Tables, September 2012

The *Fourth National Report on Human Exposure to Environmental Chemicals, Updated Tables, September 2012* provides nationally-representative biomonitoring data that has become available since the publication of the *Fourth National Report on Human Exposure to Environmental Chemicals, 2009*. The *Updated Tables, September 2012* includes all the updates previously provided in *Updated Tables, July 2010*; *Updated Tables, February 2011*; and *Updated Tables, February 2012*. Since the *Fourth Report, 2009*, 119 chemicals have updated tables and 34 chemicals have been added, for a total of 153 chemicals presented in these *Updated Tables*.

A link to information about specific chemicals or the chemical group is provided at the bottom of the data table page, and it is referred to as a Biomonitoring Summary. For many chemicals, there is also a link provided to a brief overview about the chemical, referred to as a Fact Sheet. Two appendices are updated to include information pertinent to these chemicals, as well as the other chemicals included in the *Updated Tables* (Appendix C. References for Biomonitoring Methods; Appendix D. Limit of Detection Table).

The chemicals included in this update are listed in the table that follows.

The *Report* website is the best resource for the most recent updates of available data (<http://www.cdc.gov/exposurereport>). The *Report* website also contains details of the Data Sources and Data Analysis, Interpretation of *Report* Data, and Chemical and Toxicological Information that pertain to the *Updated Tables*.

What's Different and New?

The *Updated Tables* in this release include several chemicals that have results available from one or more of the three survey periods of 2005-2006, 2007-2008, and 2009-2010. Since publication of the *Fourth Report on Human Exposure to Environmental Chemicals, 2009*, the following chemicals have results updated for the first time: dialkylphosphate metabolites of organophosphorus insecticides; polycyclic aromatic hydrocarbons; and volatile organic compounds including disinfection by-products.

CDC has learned that the analytical standard for 2-(N-Methyl-perfluorooctane sulfonamido) acetic acid, Me-PFOSA-AcOH, used for all CDC projects since the early 2000's had a lower purity than previously described. As a result, a correction factor equal to 0.872 has been applied to Me-PFOSA-AcOH for the NHANES periods 1999-2000, 2003-2004, 2005-2006, 2007-2008, and 2009-2010. Consequently, the data tables in the *Updated Tables* for Me-PFOSA-AcOH show results that are slightly different from the data tables presented in the *Fourth National Report on Human Exposure to Environmental Chemicals, 2009, Updated Tables, February 2012*, and in all of the previous *Reports*.

Chemicals in the Fourth Report: Updated Tables, September 2012

CDC's *Fourth National Report on Human Exposure to Environmental Chemicals: Updated Tables* provides exposure data on the following chemicals or classes of chemicals. The updated tables contains cumulative data from national samples collected in 1999–2000, 2001–2002, 2003–2004, 2005–2006, 2007–2008, and 2009–2010. Not all chemicals were measured in each national sample. The data tables are available at <http://www.cdc.gov/exposurereport>. An asterisk (*) denotes the chemical has been added since publication of the *Fourth Report*, 2009.

Tobacco Smoke

Cotinine
NNAL*

Disinfection By-Products

Bromodichloromethane
Dibromochloromethane
Tribromomethane (Bromoform)
Trichloromethane (Chloroform)

Environmental Phenols

Benzophenone-3
Bisphenol A
4-*tert*-Octylphenol
Triclosan

Fungicides and Metabolites

ortho-Phenylphenol
Ethylene thiourea*
Pentachlorophenol
Propylene thiourea*

Herbicides and Metabolites

2,4-Dichlorophenol*
2,4-Dichlorophenoxyacetic acid
2,4,5-Trichlorophenoxyacetic acid

Sulfonyl Urea Herbicides

Urinary Bensulfuron-methyl*
Urinary Chlorsulfuron*
Urinary Ethametsulfuron-methyl*
Urinary Foramsulfuron*
Urinary Halosulfuron*
Urinary Mesosulfuron-methyl*
Urinary Metsulfuron-methyl*
Urinary Nicosulfuron*
Urinary Oxasulfuron*
Urinary Primisulfuron-methyl*
Urinary Prosulfuron*
Urinary Rimsulfuron*
Urinary Sulfometuron-methyl*
Urinary Sulfosulfuron*
Urinary Thifensulfuron-methyl*
Urinary Triasulfuron*
Urinary Triflusulfuron-methyl*

Carbamate Metabolites

Carbofuranphenol
2-isopropoxyphenol

Organochlorine Pesticides and Metabolites

2,4,5-Trichlorophenol
2,4,6-Trichlorophenol

Other Pesticide Metabolites

2,5-Dichlorophenol*

Organophosphorus Insecticides: Specific Metabolites

Urinary Acephate*
Urinary Dimethoate*
Urinary Omethoate*
Urinary Methamidophos*

Organophosphorus Insecticides: Dialkyl Phosphate Metabolites

Diethylphosphate (DEP)
Dimethylphosphate (DMP)
Diethylthiophosphate (DETP)
Dimethylthiophosphate (DMTP)
Diethyldithiophosphate (DEDTP)
Dimethyldithiophosphate (DMDTP)

Metals and Metalloids

Antimony
Arsenic, Total
 Arsenic (V) acid
 Arsenobetaine
 Arsenocholine
 Arsenous (III) acid
 Dimethylarsinic acid
 Monomethylarsonic acid
 Trimethylarsine oxide
Barium
Beryllium
Cadmium
Cesium
Cobalt
Lead
Mercury
Molybdenum
Platinum
Thallium
Tungsten
Uranium

Parabens

Butyl paraben*
Ethyl paraben*
Methyl paraben*
n-Propyl paraben*

Perchlorate and Other Anions

Nitrate*
Perchlorate
Thiocyanate*

Perfluorinated Compounds

Perfluorobutane sulfonic acid (PFBS)
Perfluorodecanoic acid (PFDeA)
Perfluorododecanoic acid (PFDoA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexane sulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)
Perfluorooctanoic acid (PFOA)
Perfluorooctane sulfonic acid (PFOS)
Perfluorooctane sulfonamide (PFOSA)
2-(*N*-Ethyl-perfluorooctane sulfonamido) acetic acid (Et-PFOSA-AcOH)
2-(*N*-Methyl-perfluorooctane sulfonamido) acetic acid (Me-PFOSA-AcOH)
Perfluoroundecanoic acid (PFUA)

Chemicals in the *Fourth Report: Updated Tables, September 2012*

CDC's *Fourth National Report on Human Exposure to Environmental Chemicals: Updated Tables* provides exposure data on the following chemicals or classes of chemicals. The updated tables contains cumulative data from national samples collected in 1999–2000, 2001–2002, 2003–2004, 2005–2006, 2007–2008, and 2009–2010. Not all chemicals were measured in each national sample. The data tables are available at <http://www.cdc.gov/exposurereport>. An asterisk (*) denotes the chemical has been added since publication of the *Fourth Report*, 2009.

Phthalate Metabolites

Mono-benzyl phthalate (MBzP)
Mono-isobutyl phthalate (MiBP)
Mono-n-butyl phthalate (MnBP)
Mono-cyclohexyl phthalate (MCHP)
Mono-ethyl phthalate (MEP)
Mono-2-ethylhexyl phthalate (MEHP)
Mono-(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP)
Mono-(2-ethyl-5-oxohexyl) phthalate (MEOHP)
Mono-(2-ethyl-5-carboxypentyl) phthalate (MECPP)
Mono-(carboxynonyl) phthalate (MCNP)*
Mono-isononyl phthalate (MiNP)
Mono-(carboxyoctyl) phthalate (MCOP)*
Mono-methyl phthalate (MMP)
Mono-(3-carboxypropyl) phthalate (MCPP)
Mono-n-octyl phthalate (MOP)

Phytoestrogens and Metabolites

Urinary Daidzein
Urinary Enterodiol
Urinary Enterolactone
Urinary Equol
Urinary Genistein
Urinary O-Desmethylangolensin

Polycyclic Aromatic Hydrocarbon Metabolites

2-Hydroxyfluorene
3-Hydroxyfluorene
9-Hydroxyfluorene
1-Hydroxyphenanthrene
2-Hydroxyphenanthrene
3-Hydroxyphenanthrene
4-Hydroxyphenanthrene
1-Hydroxypyrene
1-Hydroxynaphthalene (1-Naphthol)
2-Hydroxynaphthalene (2-Naphthol)

Volatile Organic Compounds

1,1,1-Trichloroethane (Methyl chloroform)
1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene (Vinylidene chloride)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dichlorobenzene
1,2-Dichloroethane (Ethylene dichloride)
cis-1,2-Dichloroethene
trans-1,2-Dichloroethene
1,2-Dichloropropane
1,3-Dichlorobenzene
1,4-Dichlorobenzene (Paradichlorobenzene)
2,5-Dimethylfuran
Benzene
Chlorobenzene
Dibromomethane
Dichloromethane (Methylene chloride)
Ethylbenzene
Hexachloroethane
Methyl-*tert*-butyl ether (MTBE)
Nitrobenzene
Styrene
Tetrachloroethene (Perchloroethylene)
Tetrachloromethane (Carbon tetrachloride)
Toluene
Trichloroethene (Trichloroethylene)
m-p-Xylene
o-Xylene

Serum Cotinine

Metabolite of nicotine (component of tobacco smoke)

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

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

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

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

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Serum Cotinine

Metabolite of nicotine (component of tobacco smoke)

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

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

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

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

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary NNAL (4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol)

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

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

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

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

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

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

[Biomonitoring Summary](#)

[Factsheet](#)

NNAL (4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol) (creatinine corrected)

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

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

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

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

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

[Biomonitoring Summary](#)

[Factsheet](#)

Blood Bromodichloromethane

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	2.21 (1.65-2.97)	2.30 (1.56-3.21)	4.63 (3.24-6.20)	8.45 (5.86-12.0)	12.0 (7.68-19.2)	785
	03-04	1.50 (1.20-1.86)	1.40 (1.10-1.90)	3.40 (2.60-4.20)	6.20 (5.30-7.00)	9.50 (7.00-12.0)	1322
	05-06	1.41 (1.09-1.83)	1.30 (.880-1.80)	3.00 (2.10-4.40)	6.30 (4.30-9.70)	10.0 (6.80-14.0)	3139
Age group							
12-19 years	05-06	1.23 (.954-1.58)	1.00 (.620-1.60)	2.80 (1.70-4.10)	5.50 (4.10-7.20)	8.20 (6.20-12.0)	932
20-59 years	01-02	2.21 (1.65-2.97)	2.30 (1.56-3.21)	4.63 (3.24-6.20)	8.45 (5.86-12.0)	12.0 (7.68-19.2)	785
	03-04	1.50 (1.20-1.86)	1.40 (1.10-1.90)	3.40 (2.60-4.20)	6.20 (5.30-7.00)	9.50 (7.00-12.0)	1322
	05-06	1.45 (1.11-1.89)	1.30 (.900-1.90)	3.10 (2.10-4.60)	6.40 (4.30-10.0)	11.0 (6.90-14.0)	1537
60 years and older	05-06	1.43 (.996-2.05)	1.40 (.850-2.00)	3.20 (1.60-5.90)	6.50 (3.20-15.0)	9.70 (5.00-18.0)	670
Gender							
Males	01-02	2.19 (1.60-3.00)	2.31 (1.63-3.21)	4.64 (3.21-6.08)	7.96 (5.74-15.3)	13.0 (6.93-20.5)	382
	03-04	1.48 (1.18-1.85)	1.40 (.940-2.00)	3.40 (2.60-4.30)	6.60 (5.40-7.20)	11.0 (7.20-14.0)	650
	05-06	1.39 (1.07-1.80)	1.20 (.830-1.70)	3.00 (2.00-4.30)	6.50 (4.30-10.0)	11.0 (6.80-16.0)	1489
Females	01-02	2.24 (1.66-3.01)	2.28 (1.49-3.24)	4.63 (3.09-7.01)	8.62 (5.26-12.9)	11.1 (7.68-25.0)	403
	03-04	1.51 (1.21-1.90)	1.50 (1.10-1.90)	3.30 (2.50-4.20)	6.10 (4.69-7.30)	7.80 (6.40-12.0)	672
	05-06	1.44 (1.10-1.88)	1.30 (.900-1.90)	3.10 (2.10-4.60)	6.20 (4.20-9.40)	9.40 (6.30-13.0)	1650
Race/ethnicity							
Mexican Americans	01-02	3.28 (2.29-4.68)	3.32 (2.19-4.70)	6.81 (3.71-10.4)	10.8 (8.24-14.7)	14.7 (11.1-20.5)	227
	03-04	1.65 (1.15-2.38)	1.60 (.820-2.80)	3.50 (2.60-4.90)	7.30 (4.50-10.0)	10.0 (7.30-11.0)	244
	05-06	1.95 (1.19-3.18)	1.90 (1.00-3.70)	4.40 (2.10-9.10)	9.10 (4.80-17.0)	14.0 (7.50-22.0)	771
Non-Hispanic blacks	01-02	2.32 (1.82-2.94)	2.50 (1.56-3.55)	4.57 (3.60-5.56)	8.69 (5.63-9.49)	10.0 (5.89-13.5)	130
	03-04	1.56 (1.15-2.13)	1.70 (1.10-2.20)	2.90 (2.15-3.80)	5.10 (3.80-6.60)	6.60 (4.90-13.0)	290
	05-06	1.74 (1.27-2.37)	1.70 (1.00-2.70)	3.80 (2.70-4.80)	6.40 (4.50-8.90)	8.70 (6.60-11.0)	817
Non-Hispanic whites	01-02	2.02 (1.42-2.87)	2.16 (1.36-3.09)	4.34 (2.92-6.01)	7.33 (4.72-15.3)	11.1 (6.01-26.1)	365
	03-04	1.42 (1.11-1.81)	1.30 (.850-1.90)	3.30 (2.30-4.40)	6.20 (5.20-7.20)	9.80 (6.70-13.0)	684
	05-06	1.29 (.989-1.67)	1.10 (.710-1.70)	2.70 (1.80-4.10)	5.80 (4.00-8.60)	9.40 (6.20-14.0)	1318

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

[Biomonitoring Summary](#)

Blood Dibromochloromethane (Chlorodibromomethane)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	.867 (.521-1.44)	.780 (.340-1.90)	2.61 (1.22-4.38)	5.46 (3.53-9.71)	8.96 (5.04-12.9)	781
	03-04	*	< LOD	1.30 (1.00-1.80)	3.60 (2.70-4.80)	7.20 (4.80-8.60)	1333
	05-06	*	< LOD	1.40 (.870-2.40)	4.30 (2.40-7.40)	7.80 (4.60-13.0)	3122
Age group							
12-19 years	05-06	*	< LOD	1.30 (.750-2.50)	4.10 (2.60-5.50)	6.50 (4.10-11.0)	925
20-59 years	01-02	.867 (.521-1.44)	.780 (.340-1.90)	2.61 (1.22-4.38)	5.46 (3.53-9.71)	8.96 (5.04-12.9)	781
	03-04	*	< LOD	1.30 (1.00-1.80)	3.60 (2.70-4.80)	7.20 (4.80-8.60)	1333
	05-06	*	< LOD	1.40 (.860-2.30)	4.10 (2.40-7.10)	7.80 (4.20-14.0)	1526
60 years and older	05-06	*	< LOD	1.60 (.780-4.00)	5.10 (1.30-13.0)	7.90 (2.20-20.0)	671
Gender							
Males	01-02	.850 (.481-1.50)	.730 (.300-2.25)	2.66 (.960-4.38)	4.77 (3.33-9.20)	8.06 (4.31-14.6)	371
	03-04	*	< LOD	1.30 (1.00-1.90)	3.70 (2.70-5.70)	7.20 (5.20-8.60)	657
	05-06	*	< LOD	1.40 (.830-2.30)	4.40 (2.30-7.80)	8.30 (4.30-14.0)	1487
Females	01-02	.884 (.550-1.42)	.820 (.340-1.69)	2.54 (1.37-4.31)	6.30 (3.28-10.1)	9.91 (5.02-13.0)	410
	03-04	*	< LOD	1.30 (1.00-1.80)	3.60 (2.50-4.80)	6.60 (3.80-9.20)	676
	05-06	*	< LOD	1.50 (.920-2.50)	4.20 (2.20-7.80)	7.20 (4.10-14.0)	1635
Race/ethnicity							
Mexican Americans	01-02	1.61 (.843-3.06)	1.49 (.670-3.99)	4.59 (1.93-8.89)	9.26 (5.21-12.1)	12.0 (9.63-16.1)	233
	03-04	1.20 (.963-1.50)	1.10 (.810-1.40)	2.30 (1.50-4.10)	5.20 (3.80-6.90)	7.70 (5.20-11.0)	256
	05-06	1.25 (.774-2.02)	.950 (<LOD-1.70)	2.50 (1.00-7.40)	7.40 (2.50-19.0)	13.0 (5.80-21.0)	759
Non-Hispanic blacks	01-02	1.03 (.505-2.09)	.930 (.530-2.03)	2.03 (.770-7.06)	4.22 (2.01-10.5)	8.09 (2.80-16.5)	128
	03-04	*	< LOD	.970 (.650-1.60)	1.90 (1.20-3.20)	3.20 (1.80-5.20)	288
	05-06	*	.620 (<LOD-.820)	1.30 (1.00-1.90)	3.40 (2.10-4.90)	5.50 (4.10-7.10)	822
Non-Hispanic whites	01-02	.736 (.413-1.31)	.640 (<LOD-1.93)	2.49 (.870-4.27)	4.57 (3.00-7.12)	6.98 (4.27-11.1)	357
	03-04	*	< LOD	1.30 (.950-1.80)	3.30 (2.50-4.60)	6.60 (3.70-9.20)	685
	05-06	*	< LOD	1.30 (.710-2.30)	4.10 (2.30-7.10)	7.70 (4.60-11.0)	1311

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

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

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

[Biomonitoring Summary](#)

Blood Tribromomethane (Bromoform)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	1.57 (1.07-2.31)	1.39 (.960-2.02)	2.78 (1.76-4.63)	6.05 (2.92-29.2)	15.5 (3.68-85.4)	774
	03-04	*	< LOD	1.80 (<LOD-2.80)	3.74 (2.30-7.10)	6.40 (3.60-14.0)	1310
	05-06	*	< LOD	1.20 (<LOD-1.60)	2.70 (2.00-4.00)	5.20 (3.10-7.60)	3016
Age group							
12-19 years	05-06	*	< LOD	1.20 (<LOD-1.60)	2.40 (1.70-4.40)	4.80 (2.80-7.10)	892
20-59 years	01-02	1.57 (1.07-2.31)	1.39 (.960-2.02)	2.78 (1.76-4.63)	6.05 (2.92-29.2)	15.5 (3.68-85.4)	774
	03-04	*	< LOD	1.80 (<LOD-2.80)	3.74 (2.30-7.10)	6.40 (3.60-14.0)	1310
	05-06	*	< LOD	1.20 (<LOD-1.60)	2.90 (1.90-4.20)	5.20 (3.10-8.80)	1478
60 years and older	05-06	*	< LOD	1.28 (<LOD-2.10)	2.60 (2.30-3.50)	4.70 (3.00-7.70)	646
Gender							
Males	01-02	1.49 (.944-2.34)	1.29 (.850-1.98)	2.65 (1.49-5.05)	6.12 (2.26-33.9)	14.9 (2.79-69.9)	374
	03-04	*	< LOD	1.90 (<LOD-2.87)	4.00 (2.40-6.80)	6.50 (4.00-13.0)	645
	05-06	*	< LOD	1.16 (<LOD-1.60)	2.70 (1.90-4.00)	5.00 (3.10-7.60)	1424
Females	01-02	1.67 (1.17-2.39)	1.46 (1.05-2.21)	2.86 (1.89-4.57)	5.69 (3.30-27.5)	22.2 (5.09-49.6)	400
	03-04	*	< LOD	1.72 (<LOD-2.65)	3.20 (1.93-7.70)	6.10 (3.10-31.0)	665
	05-06	*	< LOD	1.23 (1.00-1.60)	2.70 (1.90-4.20)	5.20 (3.10-8.80)	1592
Race/ethnicity							
Mexican Americans	01-02	2.34 (1.15-4.77)	1.66 (.990-3.38)	4.03 (1.42-36.5)	28.3 (4.39-49.2)	40.8 (31.5-57.9)	234
	03-04	*	1.60 (<LOD-3.10)	3.30 (<LOD-9.40)	7.60 (3.60-14.0)	11.0 (5.60-210)	242
	05-06	*	< LOD	1.60 (1.04-3.20)	4.00 (2.40-5.90)	5.90 (4.30-8.30)	721
Non-Hispanic blacks	01-02	1.51 (.857-2.67)	1.47 (.780-3.15)	2.58 (1.39-4.64)	4.34 (2.57-8.48)	6.27 (3.28-15.2)	121
	03-04	*	< LOD	1.60 (<LOD-2.30)	2.50 (1.80-3.20)	3.20 (2.40-6.10)	289
	05-06	*	< LOD	1.10 (<LOD-1.30)	2.00 (1.70-2.40)	3.40 (2.30-4.30)	796
Non-Hispanic whites	01-02	1.47 (.980-2.22)	1.29 (.840-2.06)	2.58 (1.51-4.91)	5.69 (2.84-21.2)	11.0 (3.30-69.9)	362
	03-04	*	< LOD	1.70 (<LOD-2.90)	3.50 (2.00-7.70)	5.90 (3.30-21.0)	680
	05-06	*	< LOD	1.20 (<LOD-1.60)	2.80 (2.00-3.90)	5.40 (3.10-9.90)	1271

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

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

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

[Biomonitoring Summary](#)

Blood Trichloromethane (Chloroform)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	16.6 (13.0-21.1)	16.1 (11.9-22.2)	31.7 (23.9-40.4)	55.5 (44.5-68.6)	72.1 (57.3-105)	744
	03-04	10.2 (8.56-12.2)	10.0 (8.50-13.0)	20.0 (17.0-24.0)	35.0 (29.0-40.0)	50.0 (37.0-65.0)	1222
	05-06	10.1 (9.09-11.3)	9.90 (8.90-11.0)	19.0 (17.0-21.0)	36.0 (31.0-41.0)	54.0 (46.0-64.0)	3111
Age group							
12-19 years	05-06	9.22 (8.20-10.4)	9.10 (8.10-10.0)	17.0 (14.0-20.0)	33.0 (27.0-40.0)	46.0 (36.0-64.0)	913
20-59 years	01-02	16.6 (13.0-21.1)	16.1 (11.9-22.2)	31.7 (23.9-40.4)	55.5 (44.5-68.6)	72.1 (57.3-105)	744
	03-04	10.2 (8.56-12.2)	10.0 (8.50-13.0)	20.0 (17.0-24.0)	35.0 (29.0-40.0)	50.0 (37.0-65.0)	1222
	05-06	10.5 (9.29-11.8)	10.0 (8.90-12.0)	20.0 (18.0-22.0)	37.0 (31.0-44.0)	55.0 (46.0-71.0)	1529
60 years and older	05-06	9.71 (8.25-11.4)	9.60 (8.20-11.0)	19.0 (14.0-22.0)	35.0 (27.0-40.0)	46.0 (39.0-59.0)	669
Gender							
Males	01-02	16.8 (12.0-23.5)	16.1 (11.0-24.8)	34.3 (22.4-48.7)	57.0 (39.9-76.4)	75.2 (54.5-156)	358
	03-04	10.1 (8.43-12.1)	10.0 (7.90-14.0)	20.0 (17.0-25.0)	36.8 (29.0-49.0)	53.0 (36.8-69.0)	599
	05-06	9.94 (8.80-11.2)	9.80 (8.50-11.0)	19.0 (17.0-22.0)	38.0 (33.0-44.0)	54.0 (46.0-67.0)	1483
Females	01-02	16.4 (13.4-20.1)	16.6 (12.0-21.5)	29.2 (24.0-36.5)	53.5 (38.4-68.9)	69.5 (53.3-104)	386
	03-04	10.4 (8.41-12.7)	10.0 (8.40-13.0)	20.0 (16.0-23.9)	33.0 (26.0-40.0)	46.0 (35.0-65.0)	623
	05-06	10.4 (9.24-11.6)	10.0 (9.10-11.0)	19.0 (17.0-21.0)	32.0 (29.0-39.0)	52.0 (41.0-67.0)	1628
Race/ethnicity							
Mexican Americans	01-02	17.0 (10.5-27.6)	14.5 (10.0-32.7)	35.1 (18.6-57.6)	60.7 (41.5-100)	93.0 (49.7-243)	223
	03-04	9.17 (7.45-11.3)	9.30 (7.60-11.0)	19.0 (15.0-24.0)	34.0 (24.0-44.4)	44.4 (30.0-59.0)	225
	05-06	10.3 (8.59-12.5)	10.0 (7.60-14.0)	20.0 (17.0-22.0)	36.0 (30.0-41.0)	47.0 (41.0-64.0)	740
Non-Hispanic blacks	01-02	19.1 (12.9-28.1)	20.9 (9.28-37.4)	38.4 (27.7-46.0)	55.9 (45.5-69.8)	68.9 (51.9-74.0)	116
	03-04	11.8 (9.54-14.6)	12.0 (8.90-15.0)	20.0 (15.0-30.0)	35.0 (28.0-59.0)	61.0 (34.0-100)	272
	05-06	11.9 (9.78-14.4)	12.0 (9.10-15.0)	22.0 (19.0-26.0)	39.0 (31.0-47.0)	55.0 (46.0-70.0)	822
Non-Hispanic whites	01-02	15.6 (12.0-20.2)	15.2 (11.2-20.5)	26.8 (20.4-39.5)	53.5 (35.3-72.1)	69.5 (53.5-105)	348
	03-04	9.84 (8.09-12.0)	10.0 (8.10-13.0)	20.0 (16.0-23.0)	33.8 (27.0-40.0)	47.0 (35.0-67.0)	630
	05-06	9.87 (8.79-11.1)	9.70 (8.80-11.0)	19.0 (16.0-21.0)	34.0 (29.0-43.0)	53.0 (45.0-67.0)	1318

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 2.37, 2.11, and 2.1 respectively.
 < LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

[Biomonitoring Summary](#)

Urinary Benzophenone-3 (2-Hydroxy-4-methoxybenzophenone)

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

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Benzophenone-3 (2-Hydroxy-4-methoxybenzophenone) (creatinine corrected)

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Bisphenol A (2,2-bis[4-Hydroxyphenyl] propane)

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

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

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

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Urinary Bisphenol A (2,2-bis[4-Hydroxyphenyl] propane) (creatinine corrected)

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

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

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Urinary 4-*tert*-Octylphenol (4-[1,1,3,3-Tetramethylbutyl] phenol)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	05-06	*	< LOD	< LOD	< LOD	.200 (<LOD-.300)	2548
	07-08	*	< LOD	< LOD	< LOD	.300 (.200-.300)	2604
	09-10	*	< LOD	< LOD	.200 (<LOD-.300)	.300 (.300-.400)	2749
Age group							
6-11 years	05-06	*	< LOD	< LOD	< LOD	.300 (.200-.300)	356
	07-08	*	< LOD	< LOD	.200 (<LOD-.300)	.300 (.200-.400)	389
	09-10	*	< LOD	< LOD	.300 (<LOD-.400)	.400 (.300-.600)	415
12-19 years	05-06	*	< LOD	< LOD	< LOD	.200 (<LOD-.400)	702
	07-08	*	< LOD	< LOD	< LOD	.300 (<LOD-.400)	401
	09-10	*	< LOD	< LOD	.300 (.200-.300)	.300 (.300-.400)	420
20 years and older	05-06	*	< LOD	< LOD	< LOD	.200 (<LOD-.300)	1490
	07-08	*	< LOD	< LOD	< LOD	.300 (.200-.400)	1814
	09-10	*	< LOD	< LOD	< LOD	.300 (.200-.400)	1914
Gender							
Males	05-06	*	< LOD	< LOD	< LOD	.200 (<LOD-.300)	1270
	07-08	*	< LOD	< LOD	< LOD	.300 (.200-.400)	1294
	09-10	*	< LOD	< LOD	.200 (<LOD-.300)	.300 (.300-.400)	1399
Females	05-06	*	< LOD	< LOD	< LOD	< LOD	1278
	07-08	*	< LOD	< LOD	< LOD	.300 (.200-.300)	1310
	09-10	*	< LOD	< LOD	.200 (<LOD-.300)	.300 (.200-.400)	1350
Race/ethnicity							
Mexican Americans	05-06	*	< LOD	< LOD	< LOD	.300 (<LOD-.800)	637
	07-08	*	< LOD	< LOD	< LOD	.300 (.200-.300)	531
	09-10	*	< LOD	< LOD	< LOD	.300 (<LOD-.500)	566
Non-Hispanic blacks	05-06	*	< LOD	< LOD	< LOD	.200 (<LOD-.400)	678
	07-08	*	< LOD	< LOD	.200 (<LOD-.300)	.300 (.200-.500)	597
	09-10	*	< LOD	< LOD	.300 (.200-.400)	.500 (.400-.600)	516
Non-Hispanic whites	05-06	*	< LOD	< LOD	< LOD	.200 (<LOD-.300)	1038
	07-08	*	< LOD	< LOD	< LOD	.200 (.200-.300)	1077
	09-10	*	< LOD	< LOD	.200 (<LOD-.300)	.300 (.300-.400)	1206

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

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

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

**The 2003-2004 data for this chemical have been removed, due to potential for contamination that may have occurred during sampling.

[Biomonitoring Summary](#)

Urinary 4-*tert*-Octylphenol (4-[1,1,3,3-Tetramethylbutyl] phenol) (creatinine corrected)

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

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

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

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

**The 2003-2004 data for this chemical have been removed, due to potential for contamination that may have occurred during sampling.

[Biomonitoring Summary](#)

Urinary Triclosan (2,4,4'-Trichloro-2'-hydroxyphenyl ether)

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

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

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

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Urinary Triclosan (2,4,4'-Trichloro-2'-hydroxyphenyl ether) (creatinine corrected)

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

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

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Urinary *ortho*-Phenylphenol

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

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

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.1, 0.1, 0.1, and 0.2 respectively.
 < LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

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

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Urinary *ortho*-Phenylphenol (creatinine corrected)

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

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

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

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

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Urinary Ethylene thiourea

Metabolite of Several Dithiocarbamate Fungicides

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	.310 (<LOD-.560)	2169
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	280
12-19 years	03-04	*	< LOD	< LOD	< LOD	.600 (<LOD-.920)	622
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1267
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	.360 (<LOD-.530)	1056
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1113
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	495
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	.480 (<LOD-1.06)	607
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	.330 (<LOD-.560)	925

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.1.

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

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

Urinary Ethylene thiourea (creatinine corrected)

Metabolite of Several Dithiocarbamate Fungicides

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	.434 (<LOD-.538)	2167
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	280
12-19 years	03-04	*	< LOD	< LOD	< LOD	.423 (<LOD-.700)	621
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1266
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	.350 (<LOD-.467)	1055
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1112
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	494
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	.368 (<LOD-.619)	607
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	.434 (<LOD-.583)	924

< 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 Pentachlorophenol

Also a Metabolite of Several Organochlorine Insecticides

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	1.12 (.570-1.58)	2.57 (2.08-2.99)	3.63 (2.98-4.61)	2354
Age group							
6-11 years	03-04	*	< LOD	1.57 (.970-2.25)	3.23 (2.12-5.67)	5.67 (2.94-6.38)	290
12-19 years	03-04	*	< LOD	1.36 (.760-1.99)	2.88 (2.08-3.53)	3.80 (3.06-6.38)	674
20 years and older	03-04	*	< LOD	1.00 (<LOD-1.47)	2.41 (1.92-2.84)	3.40 (2.95-3.81)	1390
Gender							
Males	03-04	*	< LOD	1.32 (.720-2.05)	2.79 (2.46-3.40)	4.58 (3.50-5.49)	1147
Females	03-04	*	< LOD	.880 (<LOD-1.41)	2.12 (1.71-2.74)	3.20 (2.44-3.84)	1207
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	1.73 (.640-3.38)	2.44 (1.73-3.84)	550
Non-Hispanic blacks	03-04	*	< LOD	1.46 (1.11-1.93)	2.79 (2.22-3.65)	4.06 (3.20-4.77)	610
Non-Hispanic whites	03-04	*	< LOD	1.17 (.580-1.74)	2.66 (2.06-3.23)	3.69 (2.99-5.17)	1039

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

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

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

[Biomonitoring Summary](#)

Urinary Pentachlorophenol (creatinine corrected)

Also a Metabolite of Several Organochlorine Insecticides

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	1.22 (1.01-1.52)	2.30 (1.84-2.77)	3.44 (2.69-3.96)	2352
Age group							
6-11 years	03-04	*	< LOD	1.75 (1.38-2.69)	3.72 (2.50-4.96)	4.96 (3.59-10.6)	290
12-19 years	03-04	*	< LOD	1.11 (.800-1.28)	1.67 (1.31-2.65)	2.76 (1.64-3.89)	673
20 years and older	03-04	*	< LOD	1.19 (<LOD-1.50)	2.19 (1.86-2.64)	3.24 (2.54-3.96)	1389
Gender							
Males	03-04	*	< LOD	1.10 (.825-1.38)	1.93 (1.62-2.65)	3.23 (2.06-4.94)	1146
Females	03-04	*	< LOD	1.37 (<LOD-1.74)	2.50 (2.13-2.98)	3.50 (2.79-4.07)	1206
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	1.54 (1.01-2.69)	2.33 (1.40-4.62)	549
Non-Hispanic blacks	03-04	*	< LOD	.919 (.679-1.25)	1.88 (1.42-2.77)	2.94 (2.21-3.76)	610
Non-Hispanic whites	03-04	*	< LOD	1.35 (1.08-1.64)	2.42 (1.94-3.18)	3.54 (2.77-4.78)	1038

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

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

[Biomonitoring Summary](#)

Urinary Propylene thiourea

Metabolite of Propineb

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2456
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	305
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	702
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1449
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1209
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1247
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	598
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	637
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1062

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.1.

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

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

Urinary Propylene thiourea (creatinine corrected)

Metabolite of Propineb

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2454
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	305
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	701
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1448
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1208
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1246
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	597
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	637
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1061

< 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 2,4-Dichlorophenol

Metabolite of the herbicide 2,4-dichlorophenoxyacetic acid (2,4-D) and other chlorophenols.

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	1.04 (.895-1.21)	.900 (.800-1.10)	2.70 (2.30-3.10)	8.80 (6.60-11.9)	21.3 (14.1-29.5)	2525
	05-06	.945 (.791-1.13)	.800 (.700-1.00)	2.00 (1.60-2.40)	4.90 (3.90-6.30)	11.9 (7.00-20.4)	2548
	07-08	.970 (.852-1.11)	.800 (.700-.900)	1.80 (1.50-2.30)	5.10 (3.80-7.60)	12.6 (9.00-18.1)	2604
	09-10	.803 (.729-.885)	.700 (.700-.800)	1.50 (1.40-1.70)	4.00 (3.30-5.00)	8.80 (6.40-15.7)	2749
Age group							
6-11 years	03-04	1.01 (.796-1.28)	.800 (.600-1.20)	2.30 (1.70-3.20)	7.70 (3.80-20.1)	23.5 (9.40-31.0)	314
	05-06	1.01 (.879-1.15)	.800 (.800-1.10)	2.00 (1.60-2.30)	4.90 (3.30-6.60)	9.80 (6.30-17.6)	356
	07-08	1.04 (.778-1.39)	.900 (.700-1.20)	1.80 (1.20-2.80)	5.90 (2.90-10.1)	11.4 (6.60-20.7)	389
	09-10	.975 (.768-1.24)	.700 (.600-.900)	1.80 (1.40-2.30)	5.00 (3.20-8.40)	14.2 (4.40-90.9)	415
12-19 years	03-04	1.27 (.971-1.67)	1.10 (.800-1.50)	3.40 (2.50-5.00)	13.6 (6.10-25.5)	31.5 (14.5-85.0)	722
	05-06	1.18 (.997-1.39)	1.00 (.900-1.20)	2.50 (2.00-3.10)	5.50 (4.00-8.30)	13.9 (7.10-33.6)	702
	07-08	1.19 (.989-1.44)	1.10 (.800-1.40)	2.60 (2.00-3.00)	5.60 (3.10-10.8)	11.6 (5.70-36.5)	401
	09-10	.967 (.794-1.18)	.800 (.700-.900)	1.60 (1.40-2.70)	5.80 (3.70-10.1)	14.4 (7.10-24.8)	420
20 years and older	03-04	1.01 (.874-1.17)	.900 (.700-1.10)	2.60 (2.20-3.00)	8.50 (6.60-10.4)	19.4 (12.2-27.0)	1489
	05-06	.907 (.737-1.12)	.800 (.600-1.00)	2.00 (1.50-2.40)	4.90 (3.70-6.40)	11.1 (6.50-20.9)	1490
	07-08	.932 (.820-1.06)	.800 (.700-.900)	1.70 (1.40-2.20)	5.00 (3.80-7.60)	13.2 (9.20-18.1)	1814
	09-10	.764 (.699-.836)	.700 (.600-.700)	1.40 (1.30-1.60)	3.60 (3.10-4.50)	8.00 (5.60-13.9)	1914
Gender							
Males	03-04	1.22 (1.02-1.45)	1.10 (.800-1.50)	3.00 (2.50-3.50)	9.40 (6.80-13.9)	22.7 (13.6-40.9)	1231
	05-06	1.16 (.973-1.37)	1.00 (.900-1.20)	2.40 (2.00-2.80)	5.50 (4.40-7.90)	12.9 (7.30-25.3)	1270
	07-08	1.06 (.943-1.19)	.900 (.800-1.00)	1.90 (1.60-2.20)	5.40 (3.90-8.20)	13.6 (10.1-18.1)	1294
	09-10	.879 (.789-.979)	.800 (.700-.800)	1.60 (1.40-1.80)	4.00 (3.20-5.70)	10.4 (5.20-18.4)	1399
Females	03-04	.896 (.754-1.07)	.800 (.600-.900)	2.30 (2.00-2.70)	8.10 (5.70-11.1)	19.8 (12.0-27.5)	1294
	05-06	.779 (.637-.954)	.700 (.500-.800)	1.50 (1.30-2.10)	4.30 (2.80-6.20)	9.40 (5.40-19.6)	1278
	07-08	.893 (.750-1.06)	.700 (.600-.800)	1.80 (1.20-2.50)	4.70 (3.10-8.00)	11.9 (7.60-18.6)	1310
	09-10	.737 (.659-.824)	.600 (.600-.700)	1.40 (1.30-1.70)	4.00 (3.00-5.50)	7.80 (5.80-15.8)	1350
Race/ethnicity							
Mexican Americans	03-04	1.94 (1.46-2.56)	1.70 (1.20-2.10)	4.50 (2.80-9.30)	26.9 (12.7-52.1)	66.0 (47.5-84.2)	617
	05-06	1.97 (1.49-2.59)	1.60 (1.20-2.10)	5.00 (3.30-6.60)	20.9 (8.80-39.7)	66.5 (21.9-79.5)	637
	07-08	1.59 (.969-2.60)	1.20 (.600-2.60)	4.20 (2.10-9.50)	13.4 (7.90-29.6)	38.0 (16.4-74.0)	531
	09-10	1.25 (.860-1.81)	.900 (.700-1.30)	2.70 (1.60-4.30)	11.3 (4.30-26.3)	29.1 (7.60-76.3)	566
Non-Hispanic blacks	03-04	2.42 (1.92-3.06)	2.20 (1.70-2.70)	7.40 (4.00-9.60)	20.8 (11.2-38.3)	49.2 (24.0-69.7)	636
	05-06	2.45 (1.93-3.12)	2.10 (1.70-2.40)	5.20 (3.90-7.40)	20.3 (10.6-36.9)	42.6 (21.3-129)	678
	07-08	1.73 (1.49-2.01)	1.40 (1.10-1.60)	3.70 (2.90-4.90)	17.8 (9.70-25.8)	37.7 (24.6-56.8)	597
	09-10	1.54 (1.06-2.23)	1.20 (.800-2.00)	3.10 (2.10-4.80)	12.4 (4.30-46.4)	35.2 (7.80-107)	516
Non-Hispanic whites	03-04	.837 (.698-1.00)	.700 (.600-.900)	2.10 (1.70-2.60)	6.20 (4.00-8.80)	13.4 (8.60-22.0)	1077
	05-06	.734 (.610-.883)	.700 (.500-.900)	1.40 (1.20-1.80)	3.10 (2.70-3.90)	5.30 (4.30-7.90)	1038
	07-08	.817 (.732-.911)	.700 (.600-.800)	1.50 (1.20-1.80)	3.10 (2.60-4.40)	6.40 (4.60-8.80)	1077
	09-10	.651 (.594-.712)	.600 (.500-.700)	1.30 (1.10-1.40)	2.80 (2.20-3.50)	5.60 (3.80-7.40)	1206

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

[Biomonitoring Summary](#)

Urinary 2,4-Dichlorophenol (creatinine corrected)

Metabolite of the herbicide 2,4-dichlorophenoxyacetic acid (2,4-D) and other chlorophenols.

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

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

[Biomonitoring Summary](#)

Urinary 2,4-Dichlorophenoxyacetic acid

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1977
	01-02	*	< LOD	.230 (<LOD-.320)	.690 (.560-.910)	1.27 (1.02-1.37)	2413
	03-04	.245 (.210-.285)	.240 (.180-.320)	.580 (.490-.670)	.990 (.890-1.31)	1.63 (1.31-2.37)	1960
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	1.30 (<LOD-2.40)	477
	01-02	*	< LOD	.310 (.210-.400)	.740 (.550-1.13)	1.55 (1.00-2.21)	546
	03-04	.266 (.214-.332)	.290 (.200-.390)	.670 (.440-.920)	1.03 (.890-1.40)	1.88 (1.01-2.54)	309
12-19 years	99-00	*	< LOD	< LOD	< LOD	1.10 (<LOD-1.60)	677
	01-02	*	< LOD	.250 (<LOD-.420)	.690 (.440-1.16)	1.24 (.690-1.66)	797
	03-04	.256 (.212-.310)	.260 (.180-.380)	.580 (.470-.710)	1.04 (.890-1.31)	1.66 (1.20-2.97)	714
20-59 years	99-00	*	< LOD	< LOD	< LOD	< LOD	823
	01-02	*	< LOD	.210 (<LOD-.310)	.690 (.540-.910)	1.27 (.930-1.49)	1070
	03-04	.239 (.205-.279)	.220 (.170-.300)	.570 (.480-.640)	.980 (.840-1.35)	1.55 (1.25-2.50)	937
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	1.10 (<LOD-1.80)	962
	01-02	*	< LOD	.330 (.230-.490)	.930 (.680-1.22)	1.51 (1.27-2.08)	1135
	03-04	.277 (.240-.319)	.290 (.210-.380)	.620 (.540-.740)	1.16 (.910-1.40)	1.98 (1.41-2.54)	943
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	1015
	01-02	*	< LOD	< LOD	.490 (.370-.660)	.890 (.670-1.22)	1278
	03-04	.217 (.180-.261)	.190 (.120-.280)	.480 (.400-.640)	.960 (.800-1.22)	1.44 (1.10-2.29)	1017
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	695
	01-02	*	< LOD	.260 (<LOD-.350)	.730 (.610-.910)	1.20 (.960-1.43)	659
	03-04	.320 (.263-.389)	.350 (.260-.450)	.730 (.610-.840)	1.42 (1.01-1.52)	1.78 (1.22-4.47)	495
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	1.20 (<LOD-1.70)	520
	01-02	*	< LOD	< LOD	.610 (.420-.890)	1.07 (.810-1.48)	668
	03-04	*	.190 (<LOD-.280)	.480 (.370-.600)	.890 (.740-1.10)	1.25 (.910-2.21)	579
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	589
	01-02	*	< LOD	.250 (<LOD-.410)	.760 (.560-1.10)	1.32 (1.05-2.03)	892
	03-04	.252 (.209-.304)	.240 (.170-.370)	.590 (.470-.720)	1.10 (.860-1.47)	1.68 (1.26-2.73)	755

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 0.89, 0.2, and 0.1 respectively.

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

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

[Biomonitoring Summary](#)

Urinary 2,4-Dichlorophenoxyacetic acid (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1977
	01-02	*	< LOD	.378 (<LOD-.414)	.667 (.609-.778)	1.08 (.926-1.26)	2412
	03-04	.230 (.193-.274)	.243 (.198-.279)	.469 (.414-.557)	.962 (.797-1.20)	1.58 (1.24-2.34)	1958
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	1.32 (<LOD-2.24)	477
	01-02	*	< LOD	.485 (.378-.679)	1.13 (.825-1.35)	1.41 (1.27-1.73)	546
	03-04	.323 (.249-.421)	.320 (.250-.440)	.744 (.500-1.06)	1.30 (.990-2.55)	2.55 (1.23-5.16)	309
12-19 years	99-00	*	< LOD	< LOD	< LOD	.593 (<LOD-1.05)	677
	01-02	*	< LOD	.275 (<LOD-.376)	.483 (.328-.662)	.662 (.517-.918)	796
	03-04	.193 (.160-.232)	.205 (.157-.250)	.419 (.328-.460)	.709 (.540-.925)	1.23 (.837-2.35)	713
20-59 years	99-00	*	< LOD	< LOD	< LOD	< LOD	823
	01-02	*	< LOD	.378 (<LOD-.412)	.667 (.593-.778)	1.08 (.806-1.29)	1070
	03-04	.227 (.188-.274)	.242 (.196-.278)	.452 (.397-.545)	.923 (.708-1.20)	1.48 (1.14-2.43)	936
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	.667 (<LOD-1.16)	962
	01-02	*	< LOD	.336 (.268-.412)	.640 (.564-.789)	1.14 (.893-1.39)	1135
	03-04	.222 (.183-.268)	.234 (.193-.273)	.442 (.392-.531)	.913 (.718-1.11)	1.48 (.969-2.79)	942
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	1015
	01-02	*	< LOD	< LOD	.700 (.609-.778)	1.08 (.809-1.26)	1277
	03-04	.239 (.199-.287)	.254 (.200-.297)	.489 (.412-.615)	1.00 (.737-1.26)	1.64 (1.23-2.43)	1016
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	695
	01-02	*	< LOD	.350 (<LOD-.386)	.720 (.562-.853)	1.13 (.778-1.56)	659
	03-04	.287 (.223-.369)	.318 (.194-.461)	.582 (.460-.762)	1.07 (.771-1.36)	1.48 (1.08-3.19)	494
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	.593 (<LOD-1.19)	520
	01-02	*	< LOD	< LOD	.438 (.337-.568)	.778 (.552-.975)	667
	03-04	*	.130 (<LOD-.169)	.294 (.250-.331)	.531 (.423-.692)	.938 (.612-1.34)	579
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	589
	01-02	*	< LOD	.412 (<LOD-.467)	.737 (.616-.894)	1.17 (.988-1.40)	892
	03-04	.250 (.201-.311)	.259 (.212-.304)	.500 (.415-.631)	1.03 (.842-1.34)	1.90 (1.30-2.55)	754

< 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](#)

Urinary 2,4,5-Trichlorophenoxyacetic acid

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1814
	01-02	*	< LOD	< LOD	< LOD	< LOD	2538
	03-04	*	< LOD	< LOD	< LOD	.150 (<LOD-.210)	1912
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	< LOD	430
	01-02	*	< LOD	< LOD	< LOD	< LOD	580
	03-04	*	< LOD	< LOD	< LOD	.110 (<LOD-.160)	303
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	618
	01-02	*	< LOD	< LOD	< LOD	< LOD	831
	03-04	*	< LOD	< LOD	< LOD	.140 (<LOD-.190)	701
20-59 years	99-00	*	< LOD	< LOD	< LOD	< LOD	766
	01-02	*	< LOD	< LOD	< LOD	< LOD	1127
	03-04	*	< LOD	< LOD	< LOD	.160 (<LOD-.250)	908
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	891
	01-02	*	< LOD	< LOD	< LOD	< LOD	1192
	03-04	*	< LOD	< LOD	< LOD	.140 (<LOD-.220)	920
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	923
	01-02	*	< LOD	< LOD	< LOD	< LOD	1346
	03-04	*	< LOD	< LOD	< LOD	.150 (<LOD-.210)	992
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	652
	01-02	*	< LOD	< LOD	< LOD	< LOD	679
	03-04	*	< LOD	< LOD	.120 (<LOD-.340)	.200 (<LOD-.390)	494
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	483
	01-02	*	< LOD	< LOD	< LOD	< LOD	701
	03-04	*	< LOD	< LOD	< LOD	< LOD	572
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	531
	01-02	*	< LOD	< LOD	< LOD	< LOD	957
	03-04	*	< LOD	< LOD	< LOD	.160 (<LOD-.230)	716

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, and 03-04 are 1.1, 0.1, and 0.1 respectively.

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

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

[Biomonitoring Summary](#)

Urinary 2,4,5-Trichlorophenoxyacetic acid (creatinine corrected)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1814
	01-02	*	< LOD	< LOD	< LOD	< LOD	2537
	03-04	*	< LOD	< LOD	< LOD	.333 (<LOD-.412)	1910
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	< LOD	430
	01-02	*	< LOD	< LOD	< LOD	< LOD	580
	03-04	*	< LOD	< LOD	< LOD	.318 (<LOD-.368)	303
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	618
	01-02	*	< LOD	< LOD	< LOD	< LOD	830
	03-04	*	< LOD	< LOD	< LOD	.226 (<LOD-.269)	700
20-59 years	99-00	*	< LOD	< LOD	< LOD	< LOD	766
	01-02	*	< LOD	< LOD	< LOD	< LOD	1127
	03-04	*	< LOD	< LOD	< LOD	.350 (<LOD-.438)	907
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	891
	01-02	*	< LOD	< LOD	< LOD	< LOD	1192
	03-04	*	< LOD	< LOD	< LOD	.250 (<LOD-.350)	919
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	923
	01-02	*	< LOD	< LOD	< LOD	< LOD	1345
	03-04	*	< LOD	< LOD	< LOD	.368 (<LOD-.500)	991
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	652
	01-02	*	< LOD	< LOD	< LOD	< LOD	679
	03-04	*	< LOD	< LOD	.193 (<LOD-.333)	.318 (<LOD-.467)	493
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	483
	01-02	*	< LOD	< LOD	< LOD	< LOD	700
	03-04	*	< LOD	< LOD	< LOD	< LOD	572
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	531
	01-02	*	< LOD	< LOD	< LOD	< LOD	957
	03-04	*	< LOD	< LOD	< LOD	.350 (<LOD-.436)	715

< 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](#)

Urinary Bensulfuron-methyl

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2355
	05-06	*	< LOD	< LOD	< LOD	< LOD	2634
	07-08	*	< LOD	< LOD	< LOD	< LOD	2494
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	286
	05-06	*	< LOD	< LOD	< LOD	< LOD	350
	07-08	*	< LOD	< LOD	< LOD	< LOD	374
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	671
	05-06	*	< LOD	< LOD	< LOD	< LOD	718
	07-08	*	< LOD	< LOD	< LOD	< LOD	381
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1398
	05-06	*	< LOD	< LOD	< LOD	< LOD	1566
	07-08	*	< LOD	< LOD	< LOD	< LOD	1739
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1150
	05-06	*	< LOD	< LOD	< LOD	< LOD	1247
	07-08	*	< LOD	< LOD	< LOD	< LOD	1240
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1205
	05-06	*	< LOD	< LOD	< LOD	< LOD	1387
	07-08	*	< LOD	< LOD	< LOD	< LOD	1254
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	567
	05-06	*	< LOD	< LOD	< LOD	< LOD	697
	07-08	*	< LOD	< LOD	< LOD	< LOD	477
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	617
	05-06	*	< LOD	< LOD	< LOD	< LOD	720
	07-08	*	< LOD	< LOD	< LOD	< LOD	558
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1018
	05-06	*	< LOD	< LOD	< LOD	< LOD	1007
	07-08	*	< LOD	< LOD	< LOD	< LOD	1053

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

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

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

[Biomonitoring Summary](#)

Urinary Bensulfuron-methyl (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2353
	05-06	*	< LOD	< LOD	< LOD	< LOD	2634
	07-08	*	< LOD	< LOD	< LOD	< LOD	2492
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	286
	05-06	*	< LOD	< LOD	< LOD	< LOD	350
	07-08	*	< LOD	< LOD	< LOD	< LOD	374
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	670
	05-06	*	< LOD	< LOD	< LOD	< LOD	718
	07-08	*	< LOD	< LOD	< LOD	< LOD	379
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1397
	05-06	*	< LOD	< LOD	< LOD	< LOD	1566
	07-08	*	< LOD	< LOD	< LOD	< LOD	1739
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1149
	05-06	*	< LOD	< LOD	< LOD	< LOD	1247
	07-08	*	< LOD	< LOD	< LOD	< LOD	1239
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1204
	05-06	*	< LOD	< LOD	< LOD	< LOD	1387
	07-08	*	< LOD	< LOD	< LOD	< LOD	1253
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	566
	05-06	*	< LOD	< LOD	< LOD	< LOD	697
	07-08	*	< LOD	< LOD	< LOD	< LOD	476
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	617
	05-06	*	< LOD	< LOD	< LOD	< LOD	720
	07-08	*	< LOD	< LOD	< LOD	< LOD	557
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1017
	05-06	*	< LOD	< LOD	< LOD	< LOD	1007
	07-08	*	< LOD	< LOD	< LOD	< LOD	1053

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

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

[Biomonitoring Summary](#)

Urinary Chlorsulfuron

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2100
	05-06	*	< LOD	< LOD	< LOD	< LOD	2419
	07-08	*	< LOD	< LOD	< LOD	< LOD	2566
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	259
	05-06	*	< LOD	< LOD	< LOD	< LOD	314
	07-08	*	< LOD	< LOD	< LOD	< LOD	380
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	601
	05-06	*	< LOD	< LOD	< LOD	< LOD	653
	07-08	*	< LOD	< LOD	< LOD	< LOD	386
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1240
	05-06	*	< LOD	< LOD	< LOD	< LOD	1452
	07-08	*	< LOD	< LOD	< LOD	< LOD	1800
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1031
	05-06	*	< LOD	< LOD	< LOD	< LOD	1151
	07-08	*	< LOD	< LOD	< LOD	< LOD	1285
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1069
	05-06	*	< LOD	< LOD	< LOD	< LOD	1268
	07-08	*	< LOD	< LOD	< LOD	< LOD	1281
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	506
	05-06	*	< LOD	< LOD	< LOD	< LOD	633
	07-08	*	< LOD	< LOD	< LOD	< LOD	491
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	568
	05-06	*	< LOD	< LOD	< LOD	< LOD	658
	07-08	*	< LOD	< LOD	< LOD	< LOD	570
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	894
	05-06	*	< LOD	< LOD	< LOD	< LOD	940
	07-08	*	< LOD	< LOD	< LOD	< LOD	1081

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

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

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

[Biomonitoring Summary](#)

Urinary Chlorsulfuron (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2098
	05-06	*	< LOD	< LOD	< LOD	< LOD	2419
	07-08	*	< LOD	< LOD	< LOD	< LOD	2564
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	259
	05-06	*	< LOD	< LOD	< LOD	< LOD	314
	07-08	*	< LOD	< LOD	< LOD	< LOD	380
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	600
	05-06	*	< LOD	< LOD	< LOD	< LOD	653
	07-08	*	< LOD	< LOD	< LOD	< LOD	384
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1239
	05-06	*	< LOD	< LOD	< LOD	< LOD	1452
	07-08	*	< LOD	< LOD	< LOD	< LOD	1800
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1030
	05-06	*	< LOD	< LOD	< LOD	< LOD	1151
	07-08	*	< LOD	< LOD	< LOD	< LOD	1284
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1068
	05-06	*	< LOD	< LOD	< LOD	< LOD	1268
	07-08	*	< LOD	< LOD	< LOD	< LOD	1280
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	505
	05-06	*	< LOD	< LOD	< LOD	< LOD	633
	07-08	*	< LOD	< LOD	< LOD	< LOD	490
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	568
	05-06	*	< LOD	< LOD	< LOD	< LOD	658
	07-08	*	< LOD	< LOD	< LOD	< LOD	569
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	893
	05-06	*	< LOD	< LOD	< LOD	< LOD	940
	07-08	*	< LOD	< LOD	< LOD	< LOD	1081

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

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

[Biomonitoring Summary](#)

Urinary Ethametsulfuron-methyl

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2321
	05-06	*	< LOD	< LOD	< LOD	< LOD	2634
	07-08	*	< LOD	< LOD	< LOD	< LOD	2458
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	294
	05-06	*	< LOD	< LOD	< LOD	< LOD	350
	07-08	*	< LOD	< LOD	< LOD	< LOD	366
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	671
	05-06	*	< LOD	< LOD	< LOD	< LOD	718
	07-08	*	< LOD	< LOD	< LOD	< LOD	381
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1356
	05-06	*	< LOD	< LOD	< LOD	< LOD	1566
	07-08	*	< LOD	< LOD	< LOD	< LOD	1711
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1132
	05-06	*	< LOD	< LOD	< LOD	< LOD	1247
	07-08	*	< LOD	< LOD	< LOD	< LOD	1218
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1189
	05-06	*	< LOD	< LOD	< LOD	< LOD	1387
	07-08	*	< LOD	< LOD	< LOD	< LOD	1240
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	590
	05-06	*	< LOD	< LOD	< LOD	< LOD	697
	07-08	*	< LOD	< LOD	< LOD	< LOD	468
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	608
	05-06	*	< LOD	< LOD	< LOD	< LOD	720
	07-08	*	< LOD	< LOD	< LOD	< LOD	534
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	974
	05-06	*	< LOD	< LOD	< LOD	< LOD	1007
	07-08	*	< LOD	< LOD	< LOD	< LOD	1052

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

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

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

[Biomonitoring Summary](#)

Urinary Ethametsulfuron-methyl (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2319
	05-06	*	< LOD	< LOD	< LOD	< LOD	2634
	07-08	*	< LOD	< LOD	< LOD	< LOD	2456
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	294
	05-06	*	< LOD	< LOD	< LOD	< LOD	350
	07-08	*	< LOD	< LOD	< LOD	< LOD	366
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	670
	05-06	*	< LOD	< LOD	< LOD	< LOD	718
	07-08	*	< LOD	< LOD	< LOD	< LOD	379
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1355
	05-06	*	< LOD	< LOD	< LOD	< LOD	1566
	07-08	*	< LOD	< LOD	< LOD	< LOD	1711
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1131
	05-06	*	< LOD	< LOD	< LOD	< LOD	1247
	07-08	*	< LOD	< LOD	< LOD	< LOD	1217
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1188
	05-06	*	< LOD	< LOD	< LOD	< LOD	1387
	07-08	*	< LOD	< LOD	< LOD	< LOD	1239
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	589
	05-06	*	< LOD	< LOD	< LOD	< LOD	697
	07-08	*	< LOD	< LOD	< LOD	< LOD	467
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	608
	05-06	*	< LOD	< LOD	< LOD	< LOD	720
	07-08	*	< LOD	< LOD	< LOD	< LOD	533
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	973
	05-06	*	< LOD	< LOD	< LOD	< LOD	1007
	07-08	*	< LOD	< LOD	< LOD	< LOD	1052

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

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

[Biomonitoring Summary](#)

Urinary Foramsulfuron

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2255
	05-06	*	< LOD	< LOD	< LOD	< LOD	2534
	07-08	*	< LOD	< LOD	< LOD	< LOD	2423
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	283
	05-06	*	< LOD	< LOD	< LOD	< LOD	334
	07-08	*	< LOD	< LOD	< LOD	< LOD	364
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	653
	05-06	*	< LOD	< LOD	< LOD	< LOD	688
	07-08	*	< LOD	< LOD	< LOD	< LOD	364
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1319
	05-06	*	< LOD	< LOD	< LOD	< LOD	1512
	07-08	*	< LOD	< LOD	< LOD	< LOD	1695
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1097
	05-06	*	< LOD	< LOD	< LOD	< LOD	1203
	07-08	*	< LOD	< LOD	< LOD	< LOD	1205
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1158
	05-06	*	< LOD	< LOD	< LOD	< LOD	1331
	07-08	*	< LOD	< LOD	< LOD	< LOD	1218
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	587
	05-06	*	< LOD	< LOD	< LOD	< LOD	632
	07-08	*	< LOD	< LOD	< LOD	< LOD	487
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	584
	05-06	*	< LOD	< LOD	< LOD	< LOD	711
	07-08	*	< LOD	< LOD	< LOD	< LOD	523
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	935
	05-06	*	< LOD	< LOD	< LOD	< LOD	990
	07-08	*	< LOD	< LOD	< LOD	< LOD	1004

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

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

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

[Biomonitoring Summary](#)

Urinary Foramsulfuron (creatinine corrected)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2253
	05-06	*	< LOD	< LOD	< LOD	< LOD	2534
	07-08	*	< LOD	< LOD	< LOD	< LOD	2421
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	283
	05-06	*	< LOD	< LOD	< LOD	< LOD	334
	07-08	*	< LOD	< LOD	< LOD	< LOD	364
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	652
	05-06	*	< LOD	< LOD	< LOD	< LOD	688
	07-08	*	< LOD	< LOD	< LOD	< LOD	362
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1318
	05-06	*	< LOD	< LOD	< LOD	< LOD	1512
	07-08	*	< LOD	< LOD	< LOD	< LOD	1695
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1096
	05-06	*	< LOD	< LOD	< LOD	< LOD	1203
	07-08	*	< LOD	< LOD	< LOD	< LOD	1204
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1157
	05-06	*	< LOD	< LOD	< LOD	< LOD	1331
	07-08	*	< LOD	< LOD	< LOD	< LOD	1217
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	586
	05-06	*	< LOD	< LOD	< LOD	< LOD	632
	07-08	*	< LOD	< LOD	< LOD	< LOD	486
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	584
	05-06	*	< LOD	< LOD	< LOD	< LOD	711
	07-08	*	< LOD	< LOD	< LOD	< LOD	522
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	934
	05-06	*	< LOD	< LOD	< LOD	< LOD	990
	07-08	*	< LOD	< LOD	< LOD	< LOD	1004

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

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

[Biomonitoring Summary](#)

Urinary Halosulfuron

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2356
	05-06	*	< LOD	< LOD	< LOD	< LOD	2485
	07-08	*	< LOD	< LOD	< LOD	< LOD	2530
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	291
	05-06	*	< LOD	< LOD	< LOD	< LOD	331
	07-08	*	< LOD	< LOD	< LOD	< LOD	377
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	672
	05-06	*	< LOD	< LOD	< LOD	< LOD	679
	07-08	*	< LOD	< LOD	< LOD	< LOD	385
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1393
	05-06	*	< LOD	< LOD	< LOD	< LOD	1475
	07-08	*	< LOD	< LOD	< LOD	< LOD	1768
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1148
	05-06	*	< LOD	< LOD	< LOD	< LOD	1184
	07-08	*	< LOD	< LOD	< LOD	< LOD	1261
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1208
	05-06	*	< LOD	< LOD	< LOD	< LOD	1301
	07-08	*	< LOD	< LOD	< LOD	< LOD	1269
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	592
	05-06	*	< LOD	< LOD	< LOD	< LOD	650
	07-08	*	< LOD	< LOD	< LOD	< LOD	485
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	609
	05-06	*	< LOD	< LOD	< LOD	< LOD	694
	07-08	*	< LOD	< LOD	< LOD	< LOD	565
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1005
	05-06	*	< LOD	< LOD	< LOD	< LOD	950
	07-08	*	< LOD	< LOD	< LOD	< LOD	1068

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

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

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

[Biomonitoring Summary](#)

Urinary Halosulfuron (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2354
	05-06	*	< LOD	< LOD	< LOD	< LOD	2485
	07-08	*	< LOD	< LOD	< LOD	< LOD	2528
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	291
	05-06	*	< LOD	< LOD	< LOD	< LOD	331
	07-08	*	< LOD	< LOD	< LOD	< LOD	377
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	671
	05-06	*	< LOD	< LOD	< LOD	< LOD	679
	07-08	*	< LOD	< LOD	< LOD	< LOD	383
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1392
	05-06	*	< LOD	< LOD	< LOD	< LOD	1475
	07-08	*	< LOD	< LOD	< LOD	< LOD	1768
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1147
	05-06	*	< LOD	< LOD	< LOD	< LOD	1184
	07-08	*	< LOD	< LOD	< LOD	< LOD	1260
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1207
	05-06	*	< LOD	< LOD	< LOD	< LOD	1301
	07-08	*	< LOD	< LOD	< LOD	< LOD	1268
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	591
	05-06	*	< LOD	< LOD	< LOD	< LOD	650
	07-08	*	< LOD	< LOD	< LOD	< LOD	484
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	609
	05-06	*	< LOD	< LOD	< LOD	< LOD	694
	07-08	*	< LOD	< LOD	< LOD	< LOD	564
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1004
	05-06	*	< LOD	< LOD	< LOD	< LOD	950
	07-08	*	< LOD	< LOD	< LOD	< LOD	1068

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

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

[Biomonitoring Summary](#)

Urinary Mesosulfuron-methyl

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2427
	05-06	*	< LOD	< LOD	< LOD	< LOD	2634
	07-08	*	< LOD	< LOD	< LOD	< LOD	2494
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	302
	05-06	*	< LOD	< LOD	< LOD	< LOD	350
	07-08	*	< LOD	< LOD	< LOD	< LOD	372
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	694
	05-06	*	< LOD	< LOD	< LOD	< LOD	718
	07-08	*	< LOD	< LOD	< LOD	< LOD	371
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1431
	05-06	*	< LOD	< LOD	< LOD	< LOD	1566
	07-08	*	< LOD	< LOD	< LOD	< LOD	1751
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1189
	05-06	*	< LOD	< LOD	< LOD	< LOD	1247
	07-08	*	< LOD	< LOD	< LOD	< LOD	1245
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1238
	05-06	*	< LOD	< LOD	< LOD	< LOD	1387
	07-08	*	< LOD	< LOD	< LOD	< LOD	1249
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	596
	05-06	*	< LOD	< LOD	< LOD	< LOD	697
	07-08	*	< LOD	< LOD	< LOD	< LOD	465
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	634
	05-06	*	< LOD	< LOD	< LOD	< LOD	720
	07-08	*	< LOD	< LOD	< LOD	< LOD	554
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1039
	05-06	*	< LOD	< LOD	< LOD	< LOD	1007
	07-08	*	< LOD	< LOD	< LOD	< LOD	1059

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

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

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

[Biomonitoring Summary](#)

Urinary Mesosulfuron-methyl (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2425
	05-06	*	< LOD	< LOD	< LOD	< LOD	2634
	07-08	*	< LOD	< LOD	< LOD	< LOD	2492
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	302
	05-06	*	< LOD	< LOD	< LOD	< LOD	350
	07-08	*	< LOD	< LOD	< LOD	< LOD	372
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	693
	05-06	*	< LOD	< LOD	< LOD	< LOD	718
	07-08	*	< LOD	< LOD	< LOD	< LOD	369
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1430
	05-06	*	< LOD	< LOD	< LOD	< LOD	1566
	07-08	*	< LOD	< LOD	< LOD	< LOD	1751
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1188
	05-06	*	< LOD	< LOD	< LOD	< LOD	1247
	07-08	*	< LOD	< LOD	< LOD	< LOD	1244
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1237
	05-06	*	< LOD	< LOD	< LOD	< LOD	1387
	07-08	*	< LOD	< LOD	< LOD	< LOD	1248
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	595
	05-06	*	< LOD	< LOD	< LOD	< LOD	697
	07-08	*	< LOD	< LOD	< LOD	< LOD	464
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	634
	05-06	*	< LOD	< LOD	< LOD	< LOD	720
	07-08	*	< LOD	< LOD	< LOD	< LOD	553
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1038
	05-06	*	< LOD	< LOD	< LOD	< LOD	1007
	07-08	*	< LOD	< LOD	< LOD	< LOD	1059

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

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

[Biomonitoring Summary](#)

Urinary Metsulfuron-methyl

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2360
	05-06	*	< LOD	< LOD	< LOD	< LOD	2634
	07-08	*	< LOD	< LOD	< LOD	< LOD	2494
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	297
	05-06	*	< LOD	< LOD	< LOD	< LOD	350
	07-08	*	< LOD	< LOD	< LOD	< LOD	373
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	675
	05-06	*	< LOD	< LOD	< LOD	< LOD	718
	07-08	*	< LOD	< LOD	< LOD	< LOD	374
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1388
	05-06	*	< LOD	< LOD	< LOD	< LOD	1566
	07-08	*	< LOD	< LOD	< LOD	< LOD	1747
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1152
	05-06	*	< LOD	< LOD	< LOD	< LOD	1247
	07-08	*	< LOD	< LOD	< LOD	< LOD	1246
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1208
	05-06	*	< LOD	< LOD	< LOD	< LOD	1387
	07-08	*	< LOD	< LOD	< LOD	< LOD	1248
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	595
	05-06	*	< LOD	< LOD	< LOD	< LOD	697
	07-08	*	< LOD	< LOD	< LOD	< LOD	470
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	596
	05-06	*	< LOD	< LOD	< LOD	< LOD	720
	07-08	*	< LOD	< LOD	< LOD	< LOD	538
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1013
	05-06	*	< LOD	< LOD	< LOD	< LOD	1007
	07-08	*	< LOD	< LOD	< LOD	< LOD	1066

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

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

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

[Biomonitoring Summary](#)

Urinary Metsulfuron-methyl (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2358
	05-06	*	< LOD	< LOD	< LOD	< LOD	2634
	07-08	*	< LOD	< LOD	< LOD	< LOD	2492
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	297
	05-06	*	< LOD	< LOD	< LOD	< LOD	350
	07-08	*	< LOD	< LOD	< LOD	< LOD	373
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	674
	05-06	*	< LOD	< LOD	< LOD	< LOD	718
	07-08	*	< LOD	< LOD	< LOD	< LOD	372
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1387
	05-06	*	< LOD	< LOD	< LOD	< LOD	1566
	07-08	*	< LOD	< LOD	< LOD	< LOD	1747
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1151
	05-06	*	< LOD	< LOD	< LOD	< LOD	1247
	07-08	*	< LOD	< LOD	< LOD	< LOD	1245
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1207
	05-06	*	< LOD	< LOD	< LOD	< LOD	1387
	07-08	*	< LOD	< LOD	< LOD	< LOD	1247
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	594
	05-06	*	< LOD	< LOD	< LOD	< LOD	697
	07-08	*	< LOD	< LOD	< LOD	< LOD	469
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	596
	05-06	*	< LOD	< LOD	< LOD	< LOD	720
	07-08	*	< LOD	< LOD	< LOD	< LOD	537
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1012
	05-06	*	< LOD	< LOD	< LOD	< LOD	1007
	07-08	*	< LOD	< LOD	< LOD	< LOD	1066

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

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

[Biomonitoring Summary](#)

Urinary Nicosulfuron

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2322
	05-06	*	< LOD	< LOD	< LOD	< LOD	2570
	07-08	*	< LOD	< LOD	< LOD	< LOD	2422
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	296
	05-06	*	< LOD	< LOD	< LOD	< LOD	341
	07-08	*	< LOD	< LOD	< LOD	< LOD	363
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	666
	05-06	*	< LOD	< LOD	< LOD	< LOD	699
	07-08	*	< LOD	< LOD	< LOD	< LOD	364
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1360
	05-06	*	< LOD	< LOD	< LOD	< LOD	1530
	07-08	*	< LOD	< LOD	< LOD	< LOD	1695
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1131
	05-06	*	< LOD	< LOD	< LOD	< LOD	1222
	07-08	*	< LOD	< LOD	< LOD	< LOD	1210
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1191
	05-06	*	< LOD	< LOD	< LOD	< LOD	1348
	07-08	*	< LOD	< LOD	< LOD	< LOD	1212
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	589
	05-06	*	< LOD	< LOD	< LOD	< LOD	656
	07-08	*	< LOD	< LOD	< LOD	< LOD	486
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	601
	05-06	*	< LOD	< LOD	< LOD	< LOD	719
	07-08	*	< LOD	< LOD	< LOD	< LOD	524
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	980
	05-06	*	< LOD	< LOD	< LOD	< LOD	993
	07-08	*	< LOD	< LOD	< LOD	< LOD	1007

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

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

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

[Biomonitoring Summary](#)

Urinary Nicosulfuron (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2320
	05-06	*	< LOD	< LOD	< LOD	< LOD	2570
	07-08	*	< LOD	< LOD	< LOD	< LOD	2420
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	296
	05-06	*	< LOD	< LOD	< LOD	< LOD	341
	07-08	*	< LOD	< LOD	< LOD	< LOD	363
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	665
	05-06	*	< LOD	< LOD	< LOD	< LOD	699
	07-08	*	< LOD	< LOD	< LOD	< LOD	362
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1359
	05-06	*	< LOD	< LOD	< LOD	< LOD	1530
	07-08	*	< LOD	< LOD	< LOD	< LOD	1695
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1130
	05-06	*	< LOD	< LOD	< LOD	< LOD	1222
	07-08	*	< LOD	< LOD	< LOD	< LOD	1209
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1190
	05-06	*	< LOD	< LOD	< LOD	< LOD	1348
	07-08	*	< LOD	< LOD	< LOD	< LOD	1211
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	588
	05-06	*	< LOD	< LOD	< LOD	< LOD	656
	07-08	*	< LOD	< LOD	< LOD	< LOD	485
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	601
	05-06	*	< LOD	< LOD	< LOD	< LOD	719
	07-08	*	< LOD	< LOD	< LOD	< LOD	523
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	979
	05-06	*	< LOD	< LOD	< LOD	< LOD	993
	07-08	*	< LOD	< LOD	< LOD	< LOD	1007

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

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

[Biomonitoring Summary](#)

Urinary Oxasulfuron

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2355
	05-06	*	< LOD	< LOD	< LOD	< LOD	2634
	07-08	*	< LOD	< LOD	< LOD	< LOD	2540
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	290
	05-06	*	< LOD	< LOD	< LOD	< LOD	350
	07-08	*	< LOD	< LOD	< LOD	< LOD	379
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	672
	05-06	*	< LOD	< LOD	< LOD	< LOD	718
	07-08	*	< LOD	< LOD	< LOD	< LOD	381
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1393
	05-06	*	< LOD	< LOD	< LOD	< LOD	1566
	07-08	*	< LOD	< LOD	< LOD	< LOD	1780
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1150
	05-06	*	< LOD	< LOD	< LOD	< LOD	1247
	07-08	*	< LOD	< LOD	< LOD	< LOD	1269
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1205
	05-06	*	< LOD	< LOD	< LOD	< LOD	1387
	07-08	*	< LOD	< LOD	< LOD	< LOD	1271
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	579
	05-06	*	< LOD	< LOD	< LOD	< LOD	697
	07-08	*	< LOD	< LOD	< LOD	< LOD	487
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	616
	05-06	*	< LOD	< LOD	< LOD	< LOD	720
	07-08	*	< LOD	< LOD	< LOD	< LOD	567
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1018
	05-06	*	< LOD	< LOD	< LOD	< LOD	1007
	07-08	*	< LOD	< LOD	< LOD	< LOD	1076

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

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

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

[Biomonitoring Summary](#)

Urinary Oxasulfuron (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2353
	05-06	*	< LOD	< LOD	< LOD	< LOD	2634
	07-08	*	< LOD	< LOD	< LOD	< LOD	2538
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	290
	05-06	*	< LOD	< LOD	< LOD	< LOD	350
	07-08	*	< LOD	< LOD	< LOD	< LOD	379
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	671
	05-06	*	< LOD	< LOD	< LOD	< LOD	718
	07-08	*	< LOD	< LOD	< LOD	< LOD	379
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1392
	05-06	*	< LOD	< LOD	< LOD	< LOD	1566
	07-08	*	< LOD	< LOD	< LOD	< LOD	1780
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1149
	05-06	*	< LOD	< LOD	< LOD	< LOD	1247
	07-08	*	< LOD	< LOD	< LOD	< LOD	1268
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1204
	05-06	*	< LOD	< LOD	< LOD	< LOD	1387
	07-08	*	< LOD	< LOD	< LOD	< LOD	1270
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	578
	05-06	*	< LOD	< LOD	< LOD	< LOD	697
	07-08	*	< LOD	< LOD	< LOD	< LOD	486
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	616
	05-06	*	< LOD	< LOD	< LOD	< LOD	720
	07-08	*	< LOD	< LOD	< LOD	< LOD	566
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1017
	05-06	*	< LOD	< LOD	< LOD	< LOD	1007
	07-08	*	< LOD	< LOD	< LOD	< LOD	1076

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

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

[Biomonitoring Summary](#)

Urinary Primisulfuron-methyl

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2250
	05-06	*	< LOD	< LOD	< LOD	< LOD	2455
	07-08	*	< LOD	< LOD	< LOD	< LOD	2422
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	285
	05-06	*	< LOD	< LOD	< LOD	< LOD	327
	07-08	*	< LOD	< LOD	< LOD	< LOD	356
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	627
	05-06	*	< LOD	< LOD	< LOD	< LOD	665
	07-08	*	< LOD	< LOD	< LOD	< LOD	376
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1338
	05-06	*	< LOD	< LOD	< LOD	< LOD	1463
	07-08	*	< LOD	< LOD	< LOD	< LOD	1690
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1107
	05-06	*	< LOD	< LOD	< LOD	< LOD	1160
	07-08	*	< LOD	< LOD	< LOD	< LOD	1207
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1143
	05-06	*	< LOD	< LOD	< LOD	< LOD	1295
	07-08	*	< LOD	< LOD	< LOD	< LOD	1215
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	574
	05-06	*	< LOD	< LOD	< LOD	< LOD	667
	07-08	*	< LOD	< LOD	< LOD	< LOD	456
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	556
	05-06	*	< LOD	< LOD	< LOD	< LOD	661
	07-08	*	< LOD	< LOD	< LOD	< LOD	549
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	975
	05-06	*	< LOD	< LOD	< LOD	< LOD	938
	07-08	*	< LOD	< LOD	< LOD	< LOD	1030

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

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

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

[Biomonitoring Summary](#)

Urinary Primisulfuron-methyl (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2249
	05-06	*	< LOD	< LOD	< LOD	< LOD	2455
	07-08	*	< LOD	< LOD	< LOD	< LOD	2420
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	285
	05-06	*	< LOD	< LOD	< LOD	< LOD	327
	07-08	*	< LOD	< LOD	< LOD	< LOD	356
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	626
	05-06	*	< LOD	< LOD	< LOD	< LOD	665
	07-08	*	< LOD	< LOD	< LOD	< LOD	374
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1338
	05-06	*	< LOD	< LOD	< LOD	< LOD	1463
	07-08	*	< LOD	< LOD	< LOD	< LOD	1690
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1107
	05-06	*	< LOD	< LOD	< LOD	< LOD	1160
	07-08	*	< LOD	< LOD	< LOD	< LOD	1206
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1142
	05-06	*	< LOD	< LOD	< LOD	< LOD	1295
	07-08	*	< LOD	< LOD	< LOD	< LOD	1214
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	573
	05-06	*	< LOD	< LOD	< LOD	< LOD	667
	07-08	*	< LOD	< LOD	< LOD	< LOD	455
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	556
	05-06	*	< LOD	< LOD	< LOD	< LOD	661
	07-08	*	< LOD	< LOD	< LOD	< LOD	548
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	975
	05-06	*	< LOD	< LOD	< LOD	< LOD	938
	07-08	*	< LOD	< LOD	< LOD	< LOD	1030

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

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

[Biomonitoring Summary](#)

Urinary Prosulfuron

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2247
	05-06	*	< LOD	< LOD	< LOD	< LOD	2461
	07-08	*	< LOD	< LOD	< LOD	< LOD	2566
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	284
	05-06	*	< LOD	< LOD	< LOD	< LOD	326
	07-08	*	< LOD	< LOD	< LOD	< LOD	380
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	640
	05-06	*	< LOD	< LOD	< LOD	< LOD	676
	07-08	*	< LOD	< LOD	< LOD	< LOD	386
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1323
	05-06	*	< LOD	< LOD	< LOD	< LOD	1459
	07-08	*	< LOD	< LOD	< LOD	< LOD	1800
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1100
	05-06	*	< LOD	< LOD	< LOD	< LOD	1165
	07-08	*	< LOD	< LOD	< LOD	< LOD	1285
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1147
	05-06	*	< LOD	< LOD	< LOD	< LOD	1296
	07-08	*	< LOD	< LOD	< LOD	< LOD	1281
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	589
	05-06	*	< LOD	< LOD	< LOD	< LOD	673
	07-08	*	< LOD	< LOD	< LOD	< LOD	491
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	565
	05-06	*	< LOD	< LOD	< LOD	< LOD	677
	07-08	*	< LOD	< LOD	< LOD	< LOD	570
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	940
	05-06	*	< LOD	< LOD	< LOD	< LOD	924
	07-08	*	< LOD	< LOD	< LOD	< LOD	1081

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

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

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

[Biomonitoring Summary](#)

Urinary Prosulfuron (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2245
	05-06	*	< LOD	< LOD	< LOD	< LOD	2461
	07-08	*	< LOD	< LOD	< LOD	< LOD	2564
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	284
	05-06	*	< LOD	< LOD	< LOD	< LOD	326
	07-08	*	< LOD	< LOD	< LOD	< LOD	380
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	639
	05-06	*	< LOD	< LOD	< LOD	< LOD	676
	07-08	*	< LOD	< LOD	< LOD	< LOD	384
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1322
	05-06	*	< LOD	< LOD	< LOD	< LOD	1459
	07-08	*	< LOD	< LOD	< LOD	< LOD	1800
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1099
	05-06	*	< LOD	< LOD	< LOD	< LOD	1165
	07-08	*	< LOD	< LOD	< LOD	< LOD	1284
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1146
	05-06	*	< LOD	< LOD	< LOD	< LOD	1296
	07-08	*	< LOD	< LOD	< LOD	< LOD	1280
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	588
	05-06	*	< LOD	< LOD	< LOD	< LOD	673
	07-08	*	< LOD	< LOD	< LOD	< LOD	490
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	565
	05-06	*	< LOD	< LOD	< LOD	< LOD	677
	07-08	*	< LOD	< LOD	< LOD	< LOD	569
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	939
	05-06	*	< LOD	< LOD	< LOD	< LOD	924
	07-08	*	< LOD	< LOD	< LOD	< LOD	1081

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

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

[Biomonitoring Summary](#)

Urinary Rimsulfuron

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2284
	05-06	*	< LOD	< LOD	< LOD	< LOD	2593
	07-08	*	< LOD	< LOD	< LOD	< LOD	2530
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	279
	05-06	*	< LOD	< LOD	< LOD	< LOD	346
	07-08	*	< LOD	< LOD	< LOD	< LOD	376
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	654
	05-06	*	< LOD	< LOD	< LOD	< LOD	706
	07-08	*	< LOD	< LOD	< LOD	< LOD	383
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1351
	05-06	*	< LOD	< LOD	< LOD	< LOD	1541
	07-08	*	< LOD	< LOD	< LOD	< LOD	1771
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1110
	05-06	*	< LOD	< LOD	< LOD	< LOD	1224
	07-08	*	< LOD	< LOD	< LOD	< LOD	1271
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1174
	05-06	*	< LOD	< LOD	< LOD	< LOD	1369
	07-08	*	< LOD	< LOD	< LOD	< LOD	1259
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	561
	05-06	*	< LOD	< LOD	< LOD	< LOD	675
	07-08	*	< LOD	< LOD	< LOD	< LOD	463
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	592
	05-06	*	< LOD	< LOD	< LOD	< LOD	715
	07-08	*	< LOD	< LOD	< LOD	< LOD	568
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	985
	05-06	*	< LOD	< LOD	< LOD	< LOD	998
	07-08	*	< LOD	< LOD	< LOD	< LOD	1080

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

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

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

[Biomonitoring Summary](#)

Urinary Rimsulfuron (creatinine corrected)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2282
	05-06	*	< LOD	< LOD	< LOD	< LOD	2593
	07-08	*	< LOD	< LOD	< LOD	< LOD	2528
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	279
	05-06	*	< LOD	< LOD	< LOD	< LOD	346
	07-08	*	< LOD	< LOD	< LOD	< LOD	376
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	653
	05-06	*	< LOD	< LOD	< LOD	< LOD	706
	07-08	*	< LOD	< LOD	< LOD	< LOD	381
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1350
	05-06	*	< LOD	< LOD	< LOD	< LOD	1541
	07-08	*	< LOD	< LOD	< LOD	< LOD	1771
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1109
	05-06	*	< LOD	< LOD	< LOD	< LOD	1224
	07-08	*	< LOD	< LOD	< LOD	< LOD	1270
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1173
	05-06	*	< LOD	< LOD	< LOD	< LOD	1369
	07-08	*	< LOD	< LOD	< LOD	< LOD	1258
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	560
	05-06	*	< LOD	< LOD	< LOD	< LOD	675
	07-08	*	< LOD	< LOD	< LOD	< LOD	462
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	592
	05-06	*	< LOD	< LOD	< LOD	< LOD	715
	07-08	*	< LOD	< LOD	< LOD	< LOD	567
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	984
	05-06	*	< LOD	< LOD	< LOD	< LOD	998
	07-08	*	< LOD	< LOD	< LOD	< LOD	1080

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

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

[Biomonitoring Summary](#)

Urinary Sulfometuron-methyl

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2067
	05-06	*	< LOD	< LOD	< LOD	< LOD	2598
	07-08	*	< LOD	< LOD	< LOD	< LOD	2458
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	252
	05-06	*	< LOD	< LOD	< LOD	< LOD	345
	07-08	*	< LOD	< LOD	< LOD	< LOD	352
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	587
	05-06	*	< LOD	< LOD	< LOD	< LOD	710
	07-08	*	< LOD	< LOD	< LOD	< LOD	373
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1228
	05-06	*	< LOD	< LOD	< LOD	< LOD	1543
	07-08	*	< LOD	< LOD	< LOD	< LOD	1733
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1007
	05-06	*	< LOD	< LOD	< LOD	< LOD	1233
	07-08	*	< LOD	< LOD	< LOD	< LOD	1226
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1060
	05-06	*	< LOD	< LOD	< LOD	< LOD	1365
	07-08	*	< LOD	< LOD	< LOD	< LOD	1232
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	441
	05-06	*	< LOD	< LOD	< LOD	< LOD	697
	07-08	*	< LOD	< LOD	< LOD	< LOD	454
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	569
	05-06	*	< LOD	< LOD	< LOD	< LOD	698
	07-08	*	< LOD	< LOD	< LOD	< LOD	557
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	916
	05-06	*	< LOD	< LOD	< LOD	< LOD	996
	07-08	*	< LOD	< LOD	< LOD	< LOD	1045

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

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

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

[Biomonitoring Summary](#)

Urinary Sulfometuron-methyl (creatinine corrected)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2065
	05-06	*	< LOD	< LOD	< LOD	< LOD	2598
	07-08	*	< LOD	< LOD	< LOD	< LOD	2456
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	252
	05-06	*	< LOD	< LOD	< LOD	< LOD	345
	07-08	*	< LOD	< LOD	< LOD	< LOD	352
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	586
	05-06	*	< LOD	< LOD	< LOD	< LOD	710
	07-08	*	< LOD	< LOD	< LOD	< LOD	371
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1227
	05-06	*	< LOD	< LOD	< LOD	< LOD	1543
	07-08	*	< LOD	< LOD	< LOD	< LOD	1733
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1006
	05-06	*	< LOD	< LOD	< LOD	< LOD	1233
	07-08	*	< LOD	< LOD	< LOD	< LOD	1225
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1059
	05-06	*	< LOD	< LOD	< LOD	< LOD	1365
	07-08	*	< LOD	< LOD	< LOD	< LOD	1231
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	440
	05-06	*	< LOD	< LOD	< LOD	< LOD	697
	07-08	*	< LOD	< LOD	< LOD	< LOD	453
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	569
	05-06	*	< LOD	< LOD	< LOD	< LOD	698
	07-08	*	< LOD	< LOD	< LOD	< LOD	556
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	915
	05-06	*	< LOD	< LOD	< LOD	< LOD	996
	07-08	*	< LOD	< LOD	< LOD	< LOD	1045

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

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

[Biomonitoring Summary](#)

Urinary Sulfosulfuron

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2391
	05-06	*	< LOD	< LOD	< LOD	< LOD	2593
	07-08	*	< LOD	< LOD	< LOD	< LOD	2530
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	294
	05-06	*	< LOD	< LOD	< LOD	< LOD	344
	07-08	*	< LOD	< LOD	< LOD	< LOD	377
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	681
	05-06	*	< LOD	< LOD	< LOD	< LOD	708
	07-08	*	< LOD	< LOD	< LOD	< LOD	385
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1416
	05-06	*	< LOD	< LOD	< LOD	< LOD	1541
	07-08	*	< LOD	< LOD	< LOD	< LOD	1768
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1170
	05-06	*	< LOD	< LOD	< LOD	< LOD	1230
	07-08	*	< LOD	< LOD	< LOD	< LOD	1261
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1221
	05-06	*	< LOD	< LOD	< LOD	< LOD	1363
	07-08	*	< LOD	< LOD	< LOD	< LOD	1269
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	594
	05-06	*	< LOD	< LOD	< LOD	< LOD	673
	07-08	*	< LOD	< LOD	< LOD	< LOD	485
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	617
	05-06	*	< LOD	< LOD	< LOD	< LOD	719
	07-08	*	< LOD	< LOD	< LOD	< LOD	565
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1026
	05-06	*	< LOD	< LOD	< LOD	< LOD	997
	07-08	*	< LOD	< LOD	< LOD	< LOD	1068

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

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

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

[Biomonitoring Summary](#)

Urinary Sulfosulfuron (creatinine corrected)

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

	Survey years	Geometric	Selected percentiles				Sample size
		mean (95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2389
	05-06	*	< LOD	< LOD	< LOD	< LOD	2593
	07-08	*	< LOD	< LOD	< LOD	< LOD	2528
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	294
	05-06	*	< LOD	< LOD	< LOD	< LOD	344
	07-08	*	< LOD	< LOD	< LOD	< LOD	377
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	680
	05-06	*	< LOD	< LOD	< LOD	< LOD	708
	07-08	*	< LOD	< LOD	< LOD	< LOD	383
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1415
	05-06	*	< LOD	< LOD	< LOD	< LOD	1541
	07-08	*	< LOD	< LOD	< LOD	< LOD	1768
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1169
	05-06	*	< LOD	< LOD	< LOD	< LOD	1230
	07-08	*	< LOD	< LOD	< LOD	< LOD	1260
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1220
	05-06	*	< LOD	< LOD	< LOD	< LOD	1363
	07-08	*	< LOD	< LOD	< LOD	< LOD	1268
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	593
	05-06	*	< LOD	< LOD	< LOD	< LOD	673
	07-08	*	< LOD	< LOD	< LOD	< LOD	484
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	617
	05-06	*	< LOD	< LOD	< LOD	< LOD	719
	07-08	*	< LOD	< LOD	< LOD	< LOD	564
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1025
	05-06	*	< LOD	< LOD	< LOD	< LOD	997
	07-08	*	< LOD	< LOD	< LOD	< LOD	1068

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

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

[Biomonitoring Summary](#)

Urinary Thifensulfuron-methyl

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2355
	05-06	*	< LOD	< LOD	< LOD	< LOD	2634
	07-08	*	< LOD	< LOD	< LOD	< LOD	2495
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	291
	05-06	*	< LOD	< LOD	< LOD	< LOD	350
	07-08	*	< LOD	< LOD	< LOD	< LOD	370
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	677
	05-06	*	< LOD	< LOD	< LOD	< LOD	718
	07-08	*	< LOD	< LOD	< LOD	< LOD	375
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1387
	05-06	*	< LOD	< LOD	< LOD	< LOD	1566
	07-08	*	< LOD	< LOD	< LOD	< LOD	1750
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1145
	05-06	*	< LOD	< LOD	< LOD	< LOD	1247
	07-08	*	< LOD	< LOD	< LOD	< LOD	1252
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1210
	05-06	*	< LOD	< LOD	< LOD	< LOD	1387
	07-08	*	< LOD	< LOD	< LOD	< LOD	1243
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	566
	05-06	*	< LOD	< LOD	< LOD	< LOD	697
	07-08	*	< LOD	< LOD	< LOD	< LOD	479
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	616
	05-06	*	< LOD	< LOD	< LOD	< LOD	720
	07-08	*	< LOD	< LOD	< LOD	< LOD	542
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1022
	05-06	*	< LOD	< LOD	< LOD	< LOD	1007
	07-08	*	< LOD	< LOD	< LOD	< LOD	1056

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

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

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

[Biomonitoring Summary](#)

Urinary Thifensulfuron-methyl (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2353
	05-06	*	< LOD	< LOD	< LOD	< LOD	2634
	07-08	*	< LOD	< LOD	< LOD	< LOD	2493
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	291
	05-06	*	< LOD	< LOD	< LOD	< LOD	350
	07-08	*	< LOD	< LOD	< LOD	< LOD	370
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	676
	05-06	*	< LOD	< LOD	< LOD	< LOD	718
	07-08	*	< LOD	< LOD	< LOD	< LOD	373
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1386
	05-06	*	< LOD	< LOD	< LOD	< LOD	1566
	07-08	*	< LOD	< LOD	< LOD	< LOD	1750
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1144
	05-06	*	< LOD	< LOD	< LOD	< LOD	1247
	07-08	*	< LOD	< LOD	< LOD	< LOD	1251
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1209
	05-06	*	< LOD	< LOD	< LOD	< LOD	1387
	07-08	*	< LOD	< LOD	< LOD	< LOD	1242
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	565
	05-06	*	< LOD	< LOD	< LOD	< LOD	697
	07-08	*	< LOD	< LOD	< LOD	< LOD	478
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	616
	05-06	*	< LOD	< LOD	< LOD	< LOD	720
	07-08	*	< LOD	< LOD	< LOD	< LOD	541
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1021
	05-06	*	< LOD	< LOD	< LOD	< LOD	1007
	07-08	*	< LOD	< LOD	< LOD	< LOD	1056

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

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

[Biomonitoring Summary](#)

Urinary Triasulfuron

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2250
	05-06	*	< LOD	< LOD	< LOD	< LOD	2557
	07-08	*	< LOD	< LOD	< LOD	< LOD	2530
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	278
	05-06	*	< LOD	< LOD	< LOD	< LOD	341
	07-08	*	< LOD	< LOD	< LOD	< LOD	378
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	643
	05-06	*	< LOD	< LOD	< LOD	< LOD	695
	07-08	*	< LOD	< LOD	< LOD	< LOD	385
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1329
	05-06	*	< LOD	< LOD	< LOD	< LOD	1521
	07-08	*	< LOD	< LOD	< LOD	< LOD	1767
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1101
	05-06	*	< LOD	< LOD	< LOD	< LOD	1210
	07-08	*	< LOD	< LOD	< LOD	< LOD	1265
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1149
	05-06	*	< LOD	< LOD	< LOD	< LOD	1347
	07-08	*	< LOD	< LOD	< LOD	< LOD	1265
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	549
	05-06	*	< LOD	< LOD	< LOD	< LOD	677
	07-08	*	< LOD	< LOD	< LOD	< LOD	488
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	580
	05-06	*	< LOD	< LOD	< LOD	< LOD	713
	07-08	*	< LOD	< LOD	< LOD	< LOD	547
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	973
	05-06	*	< LOD	< LOD	< LOD	< LOD	968
	07-08	*	< LOD	< LOD	< LOD	< LOD	1073

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

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

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

[Biomonitoring Summary](#)

Urinary Triasulfuron (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2248
	05-06	*	< LOD	< LOD	< LOD	< LOD	2557
	07-08	*	< LOD	< LOD	< LOD	< LOD	2528
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	278
	05-06	*	< LOD	< LOD	< LOD	< LOD	341
	07-08	*	< LOD	< LOD	< LOD	< LOD	378
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	642
	05-06	*	< LOD	< LOD	< LOD	< LOD	695
	07-08	*	< LOD	< LOD	< LOD	< LOD	383
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1328
	05-06	*	< LOD	< LOD	< LOD	< LOD	1521
	07-08	*	< LOD	< LOD	< LOD	< LOD	1767
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1100
	05-06	*	< LOD	< LOD	< LOD	< LOD	1210
	07-08	*	< LOD	< LOD	< LOD	< LOD	1264
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1148
	05-06	*	< LOD	< LOD	< LOD	< LOD	1347
	07-08	*	< LOD	< LOD	< LOD	< LOD	1264
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	548
	05-06	*	< LOD	< LOD	< LOD	< LOD	677
	07-08	*	< LOD	< LOD	< LOD	< LOD	487
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	580
	05-06	*	< LOD	< LOD	< LOD	< LOD	713
	07-08	*	< LOD	< LOD	< LOD	< LOD	546
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	972
	05-06	*	< LOD	< LOD	< LOD	< LOD	968
	07-08	*	< LOD	< LOD	< LOD	< LOD	1073

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

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

[Biomonitoring Summary](#)

Urinary Triflurosulfuron-methyl

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2427
	05-06	*	< LOD	< LOD	< LOD	< LOD	2562
	07-08	*	< LOD	< LOD	< LOD	< LOD	2494
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	302
	05-06	*	< LOD	< LOD	< LOD	< LOD	340
	07-08	*	< LOD	< LOD	< LOD	< LOD	374
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	694
	05-06	*	< LOD	< LOD	< LOD	< LOD	702
	07-08	*	< LOD	< LOD	< LOD	< LOD	381
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1431
	05-06	*	< LOD	< LOD	< LOD	< LOD	1520
	07-08	*	< LOD	< LOD	< LOD	< LOD	1739
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1189
	05-06	*	< LOD	< LOD	< LOD	< LOD	1216
	07-08	*	< LOD	< LOD	< LOD	< LOD	1240
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1238
	05-06	*	< LOD	< LOD	< LOD	< LOD	1346
	07-08	*	< LOD	< LOD	< LOD	< LOD	1254
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	596
	05-06	*	< LOD	< LOD	< LOD	< LOD	693
	07-08	*	< LOD	< LOD	< LOD	< LOD	477
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	634
	05-06	*	< LOD	< LOD	< LOD	< LOD	699
	07-08	*	< LOD	< LOD	< LOD	< LOD	558
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1039
	05-06	*	< LOD	< LOD	< LOD	< LOD	972
	07-08	*	< LOD	< LOD	< LOD	< LOD	1053

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

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

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

[Biomonitoring Summary](#)

Urinary Triflurosulfuron-methyl (creatinine corrected)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2425
	05-06	*	< LOD	< LOD	< LOD	< LOD	2562
	07-08	*	< LOD	< LOD	< LOD	< LOD	2492
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	302
	05-06	*	< LOD	< LOD	< LOD	< LOD	340
	07-08	*	< LOD	< LOD	< LOD	< LOD	374
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	693
	05-06	*	< LOD	< LOD	< LOD	< LOD	702
	07-08	*	< LOD	< LOD	< LOD	< LOD	379
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1430
	05-06	*	< LOD	< LOD	< LOD	< LOD	1520
	07-08	*	< LOD	< LOD	< LOD	< LOD	1739
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1188
	05-06	*	< LOD	< LOD	< LOD	< LOD	1216
	07-08	*	< LOD	< LOD	< LOD	< LOD	1239
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1237
	05-06	*	< LOD	< LOD	< LOD	< LOD	1346
	07-08	*	< LOD	< LOD	< LOD	< LOD	1253
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	595
	05-06	*	< LOD	< LOD	< LOD	< LOD	693
	07-08	*	< LOD	< LOD	< LOD	< LOD	476
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	634
	05-06	*	< LOD	< LOD	< LOD	< LOD	699
	07-08	*	< LOD	< LOD	< LOD	< LOD	557
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1038
	05-06	*	< LOD	< LOD	< LOD	< LOD	972
	07-08	*	< LOD	< LOD	< LOD	< LOD	1053

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

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

[Biomonitoring Summary](#)

Urinary Carbofuranphenol

Metabolite of Benfuracarb, Carbofuran, Carbosulfan, and Furathiocarb

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	.770 (<LOD-1.30)	1994
	01-02	*	< LOD	< LOD	< LOD	< LOD	2530
	03-04	*	< LOD	< LOD	< LOD	< LOD	1879
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	.450 (<LOD-2.20)	482
	01-02	*	< LOD	< LOD	< LOD	< LOD	578
	03-04	*	< LOD	< LOD	< LOD	< LOD	293
12-19 years	99-00	*	< LOD	< LOD	< LOD	.570 (<LOD-1.20)	681
	01-02	*	< LOD	< LOD	< LOD	< LOD	827
	03-04	*	< LOD	< LOD	< LOD	< LOD	684
20-59 years	99-00	*	< LOD	< LOD	< LOD	.840 (<LOD-1.50)	831
	01-02	*	< LOD	< LOD	< LOD	< LOD	1125
	03-04	*	< LOD	< LOD	< LOD	< LOD	902
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	.740 (<LOD-1.50)	973
	01-02	*	< LOD	< LOD	< LOD	< LOD	1190
	03-04	*	< LOD	< LOD	< LOD	< LOD	900
Females	99-00	*	< LOD	< LOD	< LOD	.840 (<LOD-1.50)	1021
	01-02	*	< LOD	< LOD	< LOD	< LOD	1340
	03-04	*	< LOD	< LOD	< LOD	< LOD	979
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	.590 (<LOD-2.00)	1.90 (<LOD-5.10)	696
	01-02	*	< LOD	< LOD	< LOD	< LOD	680
	03-04	*	< LOD	< LOD	< LOD	< LOD	464
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	.550 (<LOD-1.60)	521
	01-02	*	< LOD	< LOD	< LOD	< LOD	696
	03-04	*	< LOD	< LOD	< LOD	< LOD	544
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	.740 (<LOD-1.50)	603
	01-02	*	< LOD	< LOD	< LOD	< LOD	953
	03-04	*	< LOD	< LOD	< LOD	< LOD	741

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

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

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

[Biomonitoring Summary](#)

Urinary Carbofuranphenol (creatinine corrected)

Metabolite of Benfuracarb, Carbofuran, Carbosulfan, and Furathiocarb

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	.778 (<LOD-1.00)	1994
	01-02	*	< LOD	< LOD	< LOD	< LOD	2529
	03-04	*	< LOD	< LOD	< LOD	< LOD	1877
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	.988 (<LOD-2.80)	482
	01-02	*	< LOD	< LOD	< LOD	< LOD	578
	03-04	*	< LOD	< LOD	< LOD	< LOD	293
12-19 years	99-00	*	< LOD	< LOD	< LOD	.482 (<LOD-.853)	681
	01-02	*	< LOD	< LOD	< LOD	< LOD	826
	03-04	*	< LOD	< LOD	< LOD	< LOD	683
20-59 years	99-00	*	< LOD	< LOD	< LOD	.875 (<LOD-1.06)	831
	01-02	*	< LOD	< LOD	< LOD	< LOD	1125
	03-04	*	< LOD	< LOD	< LOD	< LOD	901
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	.667 (<LOD-1.08)	973
	01-02	*	< LOD	< LOD	< LOD	< LOD	1190
	03-04	*	< LOD	< LOD	< LOD	< LOD	899
Females	99-00	*	< LOD	< LOD	< LOD	.881 (<LOD-1.13)	1021
	01-02	*	< LOD	< LOD	< LOD	< LOD	1339
	03-04	*	< LOD	< LOD	< LOD	< LOD	978
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	.778 (<LOD-1.94)	1.83 (<LOD-4.16)	696
	01-02	*	< LOD	< LOD	< LOD	< LOD	680
	03-04	*	< LOD	< LOD	< LOD	< LOD	463
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	.700 (<LOD-1.08)	521
	01-02	*	< LOD	< LOD	< LOD	< LOD	695
	03-04	*	< LOD	< LOD	< LOD	< LOD	544
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	.737 (<LOD-.929)	603
	01-02	*	< LOD	< LOD	< LOD	< LOD	953
	03-04	*	< LOD	< LOD	< LOD	< LOD	740

< 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](#)

Urinary 2-Isopropoxyphenol

Metabolite of Propoxur

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

	Survey years	Geometric	Selected percentiles				Sample size
		mean (95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1917
	01-02	*	< LOD	< LOD	< LOD	< LOD	2503
	03-04	*	< LOD	< LOD	< LOD	< LOD	1881
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	< LOD	456
	01-02	*	< LOD	< LOD	< LOD	< LOD	574
	03-04	*	< LOD	< LOD	< LOD	< LOD	295
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	655
	01-02	*	< LOD	< LOD	< LOD	< LOD	820
	03-04	*	< LOD	< LOD	< LOD	< LOD	686
20-59 years	99-00	*	< LOD	< LOD	< LOD	< LOD	806
	01-02	*	< LOD	< LOD	< LOD	< LOD	1109
	03-04	*	< LOD	< LOD	< LOD	< LOD	900
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	936
	01-02	*	< LOD	< LOD	< LOD	< LOD	1178
	03-04	*	< LOD	< LOD	< LOD	< LOD	899
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	981
	01-02	*	< LOD	< LOD	< LOD	< LOD	1325
	03-04	*	< LOD	< LOD	< LOD	< LOD	982
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	664
	01-02	*	< LOD	< LOD	< LOD	< LOD	677
	03-04	*	< LOD	< LOD	< LOD	< LOD	484
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	500
	01-02	*	< LOD	< LOD	< LOD	< LOD	696
	03-04	*	< LOD	< LOD	< LOD	< LOD	535
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	585
	01-02	*	< LOD	< LOD	< LOD	< LOD	931
	03-04	*	< LOD	< LOD	< LOD	< LOD	736

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

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

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

[Biomonitoring Summary](#)

Urinary 2-Isopropoxyphenol (creatinine corrected)

Metabolite of Propoxur

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

	Survey years	Geometric	Selected percentiles				Sample size
		mean (95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	1917
	01-02	*	< LOD	< LOD	< LOD	< LOD	2502
	03-04	*	< LOD	< LOD	< LOD	< LOD	1879
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	< LOD	456
	01-02	*	< LOD	< LOD	< LOD	< LOD	574
	03-04	*	< LOD	< LOD	< LOD	< LOD	295
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	655
	01-02	*	< LOD	< LOD	< LOD	< LOD	819
	03-04	*	< LOD	< LOD	< LOD	< LOD	685
20-59 years	99-00	*	< LOD	< LOD	< LOD	< LOD	806
	01-02	*	< LOD	< LOD	< LOD	< LOD	1109
	03-04	*	< LOD	< LOD	< LOD	< LOD	899
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	936
	01-02	*	< LOD	< LOD	< LOD	< LOD	1178
	03-04	*	< LOD	< LOD	< LOD	< LOD	898
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	981
	01-02	*	< LOD	< LOD	< LOD	< LOD	1324
	03-04	*	< LOD	< LOD	< LOD	< LOD	981
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	664
	01-02	*	< LOD	< LOD	< LOD	< LOD	677
	03-04	*	< LOD	< LOD	< LOD	< LOD	483
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	500
	01-02	*	< LOD	< LOD	< LOD	< LOD	695
	03-04	*	< LOD	< LOD	< LOD	< LOD	535
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	585
	01-02	*	< LOD	< LOD	< LOD	< LOD	931
	03-04	*	< LOD	< LOD	< LOD	< LOD	735

< 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](#)

Urinary 2,4,5-Trichlorophenol

Metabolite of Several Organochlorine Insecticides

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	.100 (.100-.100)	.200 (.200-.300)	.400 (.300-.400)	2525
	05-06	*	< LOD	.100 (.100-.200)	.300 (.200-.300)	.400 (.300-.500)	2548
	07-08	*	< LOD	.100 (<LOD-.100)	.200 (.200-.200)	.300 (.200-.300)	2604
	09-10	*	< LOD	< LOD	.200 (.200-.200)	.300 (.200-.300)	2749
Age group							
6-11 years	03-04	*	< LOD	.100 (.100-.200)	.200 (.200-.300)	.300 (.200-.500)	314
	05-06	*	< LOD	.100 (.100-.200)	.300 (.200-.400)	.400 (.300-.500)	356
	07-08	*	< LOD	.100 (<LOD-.100)	.200 (.100-.300)	.300 (.200-.500)	389
	09-10	*	< LOD	< LOD	.200 (.100-.200)	.200 (.200-.300)	415
12-19 years	03-04	*	< LOD	.100 (.100-.200)	.200 (.200-.300)	.300 (.200-.500)	722
	05-06	*	< LOD	.100 (.100-.200)	.300 (.200-.300)	.400 (.300-.500)	702
	07-08	*	< LOD	.100 (<LOD-.100)	.200 (.100-.200)	.200 (.200-.500)	401
	09-10	*	< LOD	.100 (<LOD-.100)	.200 (.200-.300)	.300 (.200-.500)	420
20 years and older	03-04	*	< LOD	.100 (.100-.100)	.300 (.200-.300)	.400 (.300-.500)	1489
	05-06	*	< LOD	.100 (.100-.200)	.300 (.200-.300)	.400 (.300-.500)	1490
	07-08	*	< LOD	.100 (<LOD-.100)	.200 (.200-.300)	.300 (.200-.400)	1814
	09-10	*	< LOD	< LOD	.200 (.200-.200)	.300 (.200-.300)	1914
Gender							
Males	03-04	*	< LOD	.100 (.100-.100)	.200 (.200-.300)	.400 (.300-.400)	1231
	05-06	*	< LOD	.100 (.100-.200)	.200 (.200-.300)	.400 (.300-.500)	1270
	07-08	*	< LOD	.100 (<LOD-.100)	.200 (.200-.200)	.300 (.200-.300)	1294
	09-10	*	< LOD	< LOD	.200 (.200-.200)	.300 (.200-.300)	1399
Females	03-04	*	< LOD	.100 (.100-.200)	.200 (.200-.300)	.400 (.300-.400)	1294
	05-06	*	< LOD	.100 (.100-.200)	.300 (.200-.400)	.500 (.300-.500)	1278
	07-08	*	< LOD	.100 (<LOD-.100)	.200 (.200-.300)	.300 (.200-.400)	1310
	09-10	*	< LOD	.100 (<LOD-.100)	.200 (.200-.200)	.300 (.200-.300)	1350
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	.100 (<LOD-.200)	.200 (.200-.300)	.300 (.200-.400)	617
	05-06	*	< LOD	.100 (<LOD-.200)	.300 (.200-.300)	.400 (.300-.500)	637
	07-08	*	< LOD	< LOD	.200 (.100-.200)	.200 (.200-.300)	531
	09-10	*	< LOD	< LOD	.100 (<LOD-.200)	.200 (.100-.300)	566
Non-Hispanic blacks	03-04	*	< LOD	.200 (.100-.200)	.300 (.200-.500)	.400 (.300-.700)	636
	05-06	*	< LOD	.200 (.100-.200)	.300 (.200-.400)	.500 (.300-.500)	678
	07-08	*	< LOD	.100 (.100-.200)	.200 (.200-.300)	.400 (.300-.500)	597
	09-10	*	< LOD	.100 (<LOD-.100)	.200 (.200-.200)	.200 (.200-.300)	516
Non-Hispanic whites	03-04	*	< LOD	.100 (.100-.100)	.200 (.200-.300)	.400 (.300-.400)	1077
	05-06	*	< LOD	.100 (.100-.200)	.300 (.200-.300)	.400 (.300-.600)	1038
	07-08	*	< LOD	.100 (<LOD-.100)	.200 (.200-.300)	.300 (.200-.400)	1077
	09-10	*	< LOD	< LOD	.200 (.200-.200)	.300 (.200-.300)	1206

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

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

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

[Biomonitoring Summary](#)

Urinary 2,4,5-Trichlorophenol (creatinine corrected)

Metabolite of Several Organochlorine Insecticides

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	.170 (.160-.180)	.280 (.260-.310)	.370 (.330-.420)	2522
	05-06	*	< LOD	.160 (.150-.180)	.290 (.260-.320)	.410 (.360-.450)	2548
	07-08	*	< LOD	.150 (<LOD-.160)	.280 (.230-.320)	.390 (.330-.470)	2604
	09-10	*	< LOD	< LOD	.260 (.240-.280)	.350 (.320-.390)	2749
Age group							
6-11 years	03-04	*	< LOD	.180 (.150-.230)	.290 (.250-.320)	.370 (.310-.540)	314
	05-06	*	< LOD	.180 (.140-.200)	.310 (.210-.450)	.450 (.320-.610)	356
	07-08	*	< LOD	.180 (<LOD-.190)	.270 (.210-.390)	.430 (.270-.580)	389
	09-10	*	< LOD	< LOD	.320 (.240-.350)	.390 (.320-.470)	415
12-19 years	03-04	*	< LOD	.120 (.100-.140)	.200 (.170-.220)	.240 (.220-.280)	720
	05-06	*	< LOD	.120 (.110-.130)	.210 (.180-.240)	.290 (.240-.330)	702
	07-08	*	< LOD	.100 (<LOD-.120)	.170 (.150-.210)	.250 (.170-.310)	401
	09-10	*	< LOD	.110 (<LOD-.130)	.190 (.150-.250)	.280 (.190-.380)	420
20 years and older	03-04	*	< LOD	.180 (.160-.180)	.290 (.270-.320)	.390 (.350-.470)	1488
	05-06	*	< LOD	.170 (.150-.190)	.300 (.260-.330)	.410 (.370-.470)	1490
	07-08	*	< LOD	.150 (<LOD-.180)	.290 (.230-.350)	.410 (.340-.500)	1814
	09-10	*	< LOD	< LOD	.270 (.240-.280)	.350 (.320-.410)	1914
Gender							
Males	03-04	*	< LOD	.130 (.110-.150)	.230 (.190-.260)	.320 (.270-.350)	1230
	05-06	*	< LOD	.130 (.120-.140)	.220 (.190-.240)	.310 (.260-.360)	1270
	07-08	*	< LOD	.110 (<LOD-.120)	.190 (.180-.230)	.300 (.230-.340)	1294
	09-10	*	< LOD	< LOD	.210 (.190-.230)	.280 (.240-.330)	1399
Females	03-04	*	< LOD	.200 (.180-.210)	.320 (.290-.350)	.440 (.350-.510)	1292
	05-06	*	< LOD	.210 (.180-.230)	.350 (.300-.410)	.470 (.410-.550)	1278
	07-08	*	< LOD	.190 (<LOD-.230)	.330 (.280-.410)	.470 (.370-.580)	1310
	09-10	*	< LOD	.180 (<LOD-.190)	.300 (.280-.330)	.420 (.330-.470)	1350
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	.140 (<LOD-.150)	.240 (.200-.280)	.330 (.280-.460)	616
	05-06	*	< LOD	.140 (<LOD-.160)	.240 (.190-.320)	.350 (.290-.380)	637
	07-08	*	< LOD	< LOD	.210 (.180-.250)	.270 (.240-.320)	531
	09-10	*	< LOD	< LOD	.190 (<LOD-.230)	.290 (.220-.330)	566
Non-Hispanic blacks	03-04	*	< LOD	.120 (.100-.150)	.230 (.170-.290)	.310 (.230-.390)	635
	05-06	*	< LOD	.110 (.100-.140)	.210 (.170-.260)	.320 (.260-.360)	678
	07-08	*	< LOD	.120 (.100-.140)	.200 (.170-.250)	.290 (.230-.420)	597
	09-10	*	< LOD	.090 (<LOD-.110)	.160 (.130-.200)	.220 (.160-.380)	516
Non-Hispanic whites	03-04	*	< LOD	.180 (.160-.190)	.290 (.260-.320)	.370 (.340-.440)	1076
	05-06	*	< LOD	.180 (.160-.190)	.300 (.270-.350)	.410 (.360-.500)	1038
	07-08	*	< LOD	.160 (<LOD-.190)	.300 (.250-.360)	.440 (.330-.510)	1077
	09-10	*	< LOD	< LOD	.280 (.250-.320)	.370 (.330-.410)	1206

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

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

[Biomonitoring Summary](#)

Urinary 2,4,6-Trichlorophenol

Metabolite of Several Organochlorine Insecticides

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	.500 (<LOD-.600)	1.00 (.800-1.20)	1.40 (1.20-1.80)	2525
	05-06	*	< LOD	.600 (<LOD-.700)	1.00 (.800-1.20)	1.40 (1.20-1.80)	2548
	07-08	*	< LOD	< LOD	.800 (.700-.900)	1.20 (1.00-1.30)	2604
	09-10	*	< LOD	.500 (<LOD-.600)	.800 (.700-.900)	1.10 (1.00-1.40)	2749
Age group							
6-11 years	03-04	*	< LOD	.600 (.500-.700)	1.10 (.800-1.40)	1.90 (1.10-3.10)	314
	05-06	*	< LOD	.700 (.600-.900)	1.30 (1.00-2.30)	2.70 (1.30-5.40)	356
	07-08	*	< LOD	.600 (<LOD-.700)	1.10 (.900-1.40)	1.60 (1.30-2.10)	389
	09-10	*	< LOD	.500 (<LOD-.600)	.900 (.700-1.20)	1.30 (.900-2.20)	415
12-19 years	03-04	*	< LOD	.600 (.500-.800)	1.20 (.900-1.70)	1.80 (1.50-2.10)	722
	05-06	*	< LOD	.600 (<LOD-.800)	1.00 (.800-1.30)	1.30 (1.20-1.70)	702
	07-08	*	< LOD	.600 (<LOD-.700)	.800 (.700-1.10)	1.10 (.800-1.70)	401
	09-10	*	< LOD	.600 (<LOD-.700)	.900 (.700-1.30)	1.30 (.900-1.90)	420
20 years and older	03-04	*	< LOD	.500 (<LOD-.600)	1.00 (.800-1.10)	1.30 (1.10-1.70)	1489
	05-06	*	< LOD	.600 (<LOD-.700)	1.00 (.800-1.20)	1.30 (1.20-1.80)	1490
	07-08	*	< LOD	< LOD	.800 (.700-.900)	1.10 (.900-1.30)	1814
	09-10	*	< LOD	< LOD	.800 (.700-.900)	1.10 (1.00-1.20)	1914
Gender							
Males	03-04	*	< LOD	.600 (<LOD-.600)	1.00 (.800-1.10)	1.30 (1.10-1.80)	1231
	05-06	*	< LOD	.600 (<LOD-.800)	1.10 (.900-1.30)	1.60 (1.20-2.00)	1270
	07-08	*	< LOD	.500 (<LOD-.600)	.900 (.700-1.00)	1.20 (1.10-1.40)	1294
	09-10	*	< LOD	< LOD	.800 (.700-.900)	1.10 (1.00-1.20)	1399
Females	03-04	*	< LOD	.500 (<LOD-.600)	1.10 (.900-1.20)	1.40 (1.10-2.00)	1294
	05-06	*	< LOD	.500 (<LOD-.600)	.900 (.800-1.20)	1.30 (1.10-1.70)	1278
	07-08	*	< LOD	< LOD	.800 (.700-.900)	1.10 (.900-1.40)	1310
	09-10	*	< LOD	.500 (<LOD-.600)	.800 (.700-1.00)	1.10 (.900-1.60)	1350
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	.700 (.600-.800)	1.20 (1.10-1.60)	1.80 (1.30-2.00)	617
	05-06	*	< LOD	.600 (.500-.700)	1.00 (.800-1.20)	1.30 (1.20-1.70)	637
	07-08	*	< LOD	< LOD	.700 (.700-.900)	1.00 (.900-1.20)	531
	09-10	*	< LOD	.500 (<LOD-.600)	.900 (.700-1.10)	1.10 (.900-1.30)	566
Non-Hispanic blacks	03-04	*	< LOD	.900 (.700-1.00)	1.40 (1.10-1.90)	2.00 (1.50-2.70)	636
	05-06	*	< LOD	.800 (.700-1.10)	1.50 (1.20-1.90)	2.20 (1.60-3.30)	678
	07-08	*	< LOD	.600 (.500-.600)	1.00 (.900-1.10)	1.30 (1.10-1.60)	597
	09-10	*	< LOD	.700 (.600-.800)	1.10 (.900-1.30)	1.50 (1.20-2.00)	516
Non-Hispanic whites	03-04	*	< LOD	< LOD	.800 (.700-1.00)	1.20 (1.00-1.50)	1077
	05-06	*	< LOD	.500 (<LOD-.700)	.900 (.700-1.30)	1.30 (1.10-1.80)	1038
	07-08	*	< LOD	< LOD	.800 (.700-.900)	1.20 (1.00-1.40)	1077
	09-10	*	< LOD	< LOD	.700 (.600-.900)	1.00 (.800-1.30)	1206

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.5, 0.5, 0.5, and 0.5 respectively.

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

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

[Biomonitoring Summary](#)

Urinary 2,4,6-Trichlorophenol (creatinine corrected)

Metabolite of Several Organochlorine Insecticides

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	.710 (<LOD-.780)	1.25 (1.17-1.35)	1.75 (1.59-2.06)	2522
	05-06	*	< LOD	.720 (<LOD-.760)	1.27 (1.17-1.38)	1.75 (1.59-1.94)	2548
	07-08	*	< LOD	< LOD	1.25 (1.06-1.42)	1.75 (1.52-2.19)	2604
	09-10	*	< LOD	.710 (<LOD-.760)	1.21 (1.13-1.35)	1.67 (1.55-1.84)	2749
Age group							
6-11 years	03-04	*	< LOD	.920 (.850-1.13)	1.59 (1.22-1.91)	2.11 (1.46-4.55)	314
	05-06	*	< LOD	.880 (.740-1.06)	1.59 (1.21-2.06)	2.50 (1.61-5.20)	356
	07-08	*	< LOD	.900 (<LOD-.930)	1.46 (1.14-1.67)	2.33 (1.52-2.92)	389
	09-10	*	< LOD	.850 (<LOD-1.03)	1.59 (1.17-1.74)	1.85 (1.67-2.33)	415
12-19 years	03-04	*	< LOD	.580 (.510-.660)	.970 (.830-1.10)	1.21 (1.09-1.49)	720
	05-06	*	< LOD	.550 (<LOD-.630)	.970 (.690-1.17)	1.40 (1.08-1.59)	702
	07-08	*	< LOD	.550 (<LOD-.610)	.830 (.730-1.03)	1.30 (.930-1.48)	401
	09-10	*	< LOD	.590 (<LOD-.700)	.970 (.690-1.23)	1.23 (.920-1.66)	420
20 years and older	03-04	*	< LOD	.710 (<LOD-.770)	1.25 (1.17-1.35)	1.75 (1.59-2.00)	1488
	05-06	*	< LOD	.730 (<LOD-.780)	1.30 (1.17-1.40)	1.75 (1.57-2.06)	1490
	07-08	*	< LOD	< LOD	1.30 (1.06-1.46)	1.84 (1.52-2.33)	1814
	09-10	*	< LOD	< LOD	1.21 (1.13-1.35)	1.67 (1.52-1.94)	1914
Gender							
Males	03-04	*	< LOD	.560 (<LOD-.600)	.920 (.820-1.10)	1.30 (1.17-1.46)	1230
	05-06	*	< LOD	.600 (<LOD-.650)	1.00 (.850-1.13)	1.43 (1.25-1.59)	1270
	07-08	*	< LOD	.530 (<LOD-.600)	.930 (.830-1.06)	1.46 (1.18-1.59)	1294
	09-10	*	< LOD	< LOD	.980 (.850-1.12)	1.33 (1.13-1.59)	1399
Females	03-04	*	< LOD	.900 (<LOD-.960)	1.59 (1.35-1.75)	2.19 (1.75-2.63)	1292
	05-06	*	< LOD	.850 (<LOD-.970)	1.46 (1.30-1.67)	2.06 (1.67-2.50)	1278
	07-08	*	< LOD	< LOD	1.46 (1.23-1.75)	2.19 (1.67-2.50)	1310
	09-10	*	< LOD	.850 (<LOD-.920)	1.46 (1.30-1.59)	2.06 (1.62-2.33)	1350
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	.760 (.600-.900)	1.15 (.970-1.38)	1.59 (1.18-2.42)	616
	05-06	*	< LOD	.650 (.570-.700)	1.03 (.860-1.19)	1.46 (1.11-1.94)	637
	07-08	*	< LOD	< LOD	1.05 (.910-1.17)	1.35 (1.13-1.57)	531
	09-10	*	< LOD	.690 (<LOD-.760)	1.00 (.900-1.33)	1.67 (1.13-2.18)	566
Non-Hispanic blacks	03-04	*	< LOD	.600 (.560-.640)	.950 (.800-1.10)	1.34 (1.06-1.67)	635
	05-06	*	< LOD	.630 (.540-.740)	1.03 (.830-1.49)	1.59 (1.13-2.07)	678
	07-08	*	< LOD	.520 (.470-.620)	1.00 (.830-1.13)	1.40 (1.13-1.52)	597
	09-10	*	< LOD	.560 (.490-.610)	.830 (.750-.950)	1.17 (.920-1.52)	516
Non-Hispanic whites	03-04	*	< LOD	< LOD	1.30 (1.17-1.46)	1.75 (1.59-2.11)	1076
	05-06	*	< LOD	.760 (<LOD-.830)	1.35 (1.25-1.50)	1.79 (1.60-2.06)	1038
	07-08	*	< LOD	< LOD	1.35 (1.13-1.52)	1.84 (1.52-2.50)	1077
	09-10	*	< LOD	< LOD	1.30 (1.18-1.46)	1.73 (1.59-2.06)	1206

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

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

[Biomonitoring Summary](#)

Urinary 2,5-Dichlorophenol

Metabolite of 1,4-Dichlorobenzene (Paradichlorobenzene)

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

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

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

[Biomonitoring Summary](#)

Urinary 2,5-Dichlorophenol (creatinine corrected)

Metabolite of para-dichlorobenzene (p-dichlorobenzene)

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

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

[Biomonitoring Summary](#)

Urinary Acephate

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2491
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	309
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	715
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1467
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1221
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1270
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	608
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	647
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1077

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.1.

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

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

Urinary Acephate (creatinine corrected)

Geometric mean and selected percentiles of urine concentrations (in $\mu\text{g/g}$ of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2489
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	309
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	714
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1466
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1220
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1269
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	607
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	647
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1076

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

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

Urinary Dimethoate

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2455
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	306
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	708
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1441
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1197
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1258
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	605
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	629
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1068

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.1.

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

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

Urinary Dimethoate (creatinine corrected)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2453
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	306
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	707
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1440
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1196
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1257
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	604
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	629
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1067

< 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 Omethoate

Metabolite of Dimethoate

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2455
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	303
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	707
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1445
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1207
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1248
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	606
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	637
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1055

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.1.

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

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

Urinary Omethoate (creatinine corrected)

Metabolite of Dimethoate

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2453
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	303
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	706
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1444
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1206
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1247
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	605
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	637
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1054

< 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 Methamidophos

Also a metabolite of Acephate

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2379
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	295
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	683
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1401
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1171
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1208
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	564
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	631
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1034

Limit of detection (LOD, see Data Analysis section) for Survey year 03-04 is 0.1.

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

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

Urinary Methamidophos (creatinine corrected)

Also a metabolite of Acephate

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2377
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	295
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	682
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1400
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1170
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1207
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	563
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	631
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1033

< 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 Diethylphosphate (DEP)

Metabolite of Several Organophosphorus Insecticides

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	1.03 (.670-1.58)	1.20 (.750-1.70)	3.20 (2.30-4.80)	7.60 (5.00-12.0)	13.0 (7.70-23.0)	1949
	01-02	*	< LOD	2.90 (2.50-3.26)	6.68 (5.78-7.52)	10.6 (9.14-12.0)	3018
	03-04	*	< LOD	4.56 (3.57-5.83)	10.2 (9.00-11.5)	15.5 (13.5-16.8)	2453
	07-08	*	< LOD	2.48 (1.44-3.33)	8.74 (7.51-10.3)	15.3 (13.1-17.8)	2591
Age group							
6-11 years	99-00	1.32 (.757-2.29)	1.50 (.860-2.60)	4.50 (2.10-7.90)	11.0 (4.80-24.0)	16.0 (8.50-36.0)	471
	01-02	*	.290 (<LOD-1.04)	3.45 (2.36-4.47)	9.56 (6.33-18.0)	20.0 (9.44-38.2)	576
	03-04	*	< LOD	5.13 (2.48-7.94)	10.9 (8.08-15.9)	16.1 (10.9-18.5)	308
	07-08	*	< LOD	4.31 (.420-6.49)	12.9 (9.14-17.7)	20.2 (11.9-37.5)	385
12-19 years	99-00	1.21 (.758-1.94)	1.40 (.970-2.10)	3.70 (2.40-5.50)	8.00 (4.70-19.0)	20.0 (8.00-27.0)	664
	01-02	*	< LOD	2.86 (1.96-3.95)	7.58 (5.71-9.15)	11.0 (9.35-12.4)	822
	03-04	*	.530 (<LOD-2.32)	5.80 (4.34-7.67)	14.8 (9.12-19.8)	20.8 (14.8-32.7)	701
	07-08	*	< LOD	3.81 (<LOD-5.42)	10.7 (7.76-14.2)	23.3 (11.3-35.6)	391
20-59 years	99-00	.955 (.623-1.47)	1.10 (.700-1.60)	3.00 (1.80-4.80)	7.30 (4.70-11.0)	11.0 (6.80-22.0)	814
	01-02	*	< LOD	2.71 (2.34-3.12)	5.79 (5.05-7.21)	10.4 (7.43-12.3)	1122
	03-04	*	< LOD	4.37 (3.02-5.81)	9.74 (8.35-11.3)	14.2 (11.5-16.2)	922
	07-08	*	< LOD	1.55 (.470-2.48)	7.54 (6.10-8.98)	14.0 (9.62-15.7)	1178
60 years and older	01-02	*	.440 (<LOD-1.63)	3.30 (2.63-4.51)	7.06 (5.17-8.69)	9.41 (8.31-10.6)	498
	03-04	*	1.80 (<LOD-2.98)	4.73 (3.98-5.91)	10.0 (8.09-11.3)	13.6 (10.6-16.7)	522
	07-08	*	< LOD	3.55 (2.80-5.31)	9.86 (7.53-14.2)	17.1 (12.6-22.1)	637
Gender							
Males	99-00	1.11 (.717-1.73)	1.20 (.810-1.70)	3.80 (2.50-5.00)	8.00 (5.00-19.0)	19.0 (7.20-30.0)	952
	01-02	*	< LOD	3.21 (2.72-3.56)	6.99 (5.83-7.71)	11.5 (9.36-12.1)	1420
	03-04	*	< LOD	5.01 (3.90-6.50)	11.0 (10.1-12.7)	16.2 (14.3-18.8)	1198
	07-08	*	< LOD	1.95 (<LOD-3.34)	9.39 (7.90-11.8)	17.0 (13.7-21.5)	1295
Females	99-00	.954 (.599-1.52)	1.20 (.620-1.70)	2.90 (1.90-4.80)	7.50 (4.60-11.0)	11.0 (7.40-16.0)	997
	01-02	*	.290 (<LOD-.790)	2.63 (2.22-3.03)	6.21 (4.59-8.64)	10.2 (7.52-14.7)	1598
	03-04	*	.110 (<LOD-2.29)	4.29 (3.21-5.80)	9.38 (7.95-10.7)	13.3 (11.2-15.9)	1255
	07-08	*	< LOD	2.76 (1.69-3.62)	7.76 (6.23-10.7)	14.5 (10.7-18.8)	1296
Race/ethnicity							
Mexican Americans	99-00	1.22 (.740-2.01)	1.20 (.840-1.80)	4.10 (2.20-7.00)	11.0 (6.40-19.0)	18.0 (12.0-27.0)	672
	01-02	*	.600 (<LOD-1.49)	3.07 (2.22-3.83)	6.26 (5.00-7.82)	11.2 (7.82-12.3)	763
	03-04	*	1.18 (<LOD-2.97)	5.81 (3.99-7.59)	11.0 (8.48-16.1)	16.9 (12.1-24.0)	581
	07-08	*	< LOD	1.63 (<LOD-3.88)	8.36 (6.44-9.61)	14.8 (8.85-25.1)	501
Non-Hispanic blacks	99-00	1.56 (1.13-2.14)	1.60 (1.40-1.80)	4.30 (2.90-5.80)	10.0 (5.60-18.0)	18.0 (8.00-27.0)	509
	01-02	*	1.03 (<LOD-2.33)	4.81 (3.48-6.52)	9.98 (7.39-13.3)	15.1 (9.81-23.4)	756
	03-04	*	1.04 (<LOD-3.28)	6.29 (5.05-8.44)	11.9 (9.92-15.5)	16.2 (14.1-22.5)	628
	07-08	*	< LOD	3.92 (2.67-5.19)	11.3 (9.44-14.0)	19.5 (14.1-22.0)	574
Non-Hispanic whites	99-00	.981 (.579-1.66)	1.10 (.490-2.10)	3.30 (2.20-4.90)	7.70 (4.70-14.0)	14.0 (7.60-25.0)	595
	01-02	*	< LOD	2.63 (2.21-3.13)	5.79 (5.05-7.35)	9.90 (8.38-11.7)	1253
	03-04	*	< LOD	4.25 (3.12-5.77)	9.74 (8.37-11.3)	14.4 (12.4-16.0)	1055
	07-08	*	< LOD	2.14 (1.27-3.03)	7.57 (6.57-8.97)	14.5 (11.4-16.5)	1086

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, and 07-08 are 0.2, 0.2, and 0.1 and 0.37 respectively.

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

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

[Biomonitoring Summary](#)

Urinary Diethylphosphate (DEP) (creatinine corrected)

Metabolite of Several Organophosphorus Insecticides

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.924 (.608-1.41)	.920 (.570-1.40)	2.73 (1.68-4.60)	7.94 (4.40-12.2)	12.2 (8.00-19.6)	1949
	01-02	*	< LOD	2.56 (2.17-2.85)	5.36 (4.75-6.06)	8.72 (7.19-10.3)	3017
	03-04	*	< LOD	4.64 (3.82-5.79)	9.18 (7.85-10.8)	13.1 (10.5-16.1)	2450
	07-08	*	< LOD	3.20 (2.37-4.12)	8.86 (7.52-10.7)	15.7 (11.9-19.8)	2589
Age group							
6-11 years	99-00	1.43 (.870-2.34)	1.47 (1.02-2.41)	3.94 (2.20-8.57)	10.5 (4.55-20.8)	16.6 (10.5-32.7)	471
	01-02	*	.886 (<LOD-1.76)	4.02 (2.87-5.25)	8.85 (6.88-15.6)	18.4 (9.40-28.8)	576
	03-04	*	< LOD	6.10 (3.79-9.03)	11.9 (9.54-15.2)	16.1 (11.9-28.3)	308
	07-08	*	< LOD	4.67 (2.01-6.96)	17.2 (13.1-20.3)	28.2 (19.3-34.8)	385
12-19 years	99-00	.818 (.533-1.26)	.790 (.560-1.25)	2.35 (1.37-3.75)	5.44 (2.82-14.4)	12.4 (4.66-34.2)	664
	01-02	*	< LOD	2.05 (1.54-2.67)	4.40 (3.40-5.28)	7.28 (5.28-9.75)	821
	03-04	*	.438 (<LOD-2.05)	4.47 (3.90-5.43)	10.1 (7.10-13.5)	14.7 (9.82-26.4)	699
	07-08	*	< LOD	2.86 (<LOD-4.53)	8.56 (5.70-17.0)	17.0 (8.05-23.0)	389
20-59 years	99-00	.883 (.574-1.36)	.860 (.500-1.35)	2.66 (1.54-4.95)	7.37 (4.32-12.1)	12.1 (8.00-17.5)	814
	01-02	*	< LOD	2.28 (2.01-2.56)	4.75 (3.92-5.83)	7.37 (5.93-9.72)	1122
	03-04	*	< LOD	4.29 (2.98-5.71)	8.35 (6.09-11.3)	11.9 (9.02-14.7)	921
	07-08	*	< LOD	2.38 (1.81-3.27)	7.45 (6.11-9.43)	11.4 (9.22-15.8)	1178
Gender							
Males	99-00	.855 (.566-1.29)	.820 (.510-1.34)	2.61 (1.76-4.03)	7.69 (4.41-12.1)	12.2 (6.94-23.8)	952
	01-02	*	< LOD	2.20 (1.86-2.64)	4.49 (3.92-5.31)	7.50 (5.79-9.10)	1420
	03-04	*	< LOD	4.20 (3.28-5.30)	8.35 (7.10-10.1)	12.0 (9.33-14.7)	1197
	07-08	*	< LOD	2.17 (<LOD-3.23)	8.14 (6.35-10.7)	13.6 (9.79-18.6)	1294
Females	99-00	.996 (.620-1.60)	.960 (.540-1.62)	2.81 (1.45-5.85)	8.00 (4.00-13.0)	12.1 (6.67-19.6)	997
	01-02	*	.778 (<LOD-1.31)	2.81 (2.44-3.33)	6.49 (4.95-7.76)	9.61 (7.12-13.6)	1597
	03-04	*	.636 (<LOD-2.84)	5.06 (4.03-6.86)	9.85 (8.25-11.8)	13.8 (10.9-20.3)	1253
	07-08	*	< LOD	4.09 (2.80-4.91)	9.46 (8.43-11.5)	16.5 (13.1-20.9)	1295
Race/ethnicity							
Mexican Americans	99-00	1.09 (.633-1.89)	1.05 (.650-1.98)	3.78 (2.11-6.46)	9.84 (5.66-15.7)	15.7 (8.61-29.0)	672
	01-02	*	.891 (<LOD-1.41)	2.39 (1.77-3.14)	5.17 (4.10-6.53)	8.04 (6.40-10.9)	763
	03-04	*	1.07 (<LOD-2.79)	4.94 (3.30-7.01)	9.94 (7.89-13.3)	16.6 (10.1-22.4)	580
	07-08	*	< LOD	3.19 (<LOD-4.27)	8.56 (6.00-10.3)	13.3 (9.77-15.9)	500
Non-Hispanic blacks	99-00	1.07 (.773-1.47)	1.18 (.830-1.54)	2.61 (1.89-3.47)	5.98 (3.94-9.56)	11.9 (5.98-22.2)	509
	01-02	*	.797 (<LOD-1.62)	2.98 (2.57-3.61)	6.91 (5.17-8.69)	9.58 (7.82-12.1)	755
	03-04	*	.741 (<LOD-2.21)	4.25 (3.46-5.36)	8.30 (6.57-10.7)	11.7 (10.5-13.2)	627
	07-08	*	< LOD	3.33 (2.33-4.15)	8.72 (7.27-10.2)	16.7 (11.5-19.4)	573
Non-Hispanic whites	99-00	.932 (.549-1.58)	.900 (.430-1.68)	2.87 (1.51-5.88)	8.57 (4.40-14.4)	13.0 (8.21-23.8)	595
	01-02	*	< LOD	2.52 (2.08-2.95)	5.26 (4.57-5.93)	8.26 (6.61-10.8)	1253
	03-04	*	< LOD	4.65 (3.73-5.87)	9.12 (7.79-11.2)	12.7 (10.1-15.7)	1054
	07-08	*	< LOD	3.10 (2.19-4.18)	8.44 (6.84-9.74)	13.6 (10.9-17.5)	1086

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

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

[Biomonitoring Summary](#)

Urinary Dimethylphosphate (DMP)

Metabolite of Several Organophosphorus Insecticides

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	.740 (<LOD-1.40)	2.90 (2.10-4.00)	7.90 (6.20-8.90)	14.0 (10.0-19.0)	1949
	01-02	*	< LOD	3.32 (2.90-3.74)	8.40 (7.11-9.23)	13.4 (11.4-14.9)	3017
	03-04	*	< LOD	4.15 (3.39-4.94)	9.54 (7.46-11.9)	15.1 (12.8-18.2)	2494
	07-08	*	< LOD	7.91 (6.64-9.07)	20.8 (18.2-24.4)	35.6 (30.3-39.4)	2593
Age group							
6-11 years	99-00	1.58 (1.15-2.18)	1.10 (.580-2.20)	4.40 (2.80-6.80)	10.0 (7.80-21.0)	22.0 (15.0-33.0)	471
	01-02	*	.970 (<LOD-2.00)	5.04 (3.31-7.66)	12.2 (9.10-15.1)	18.3 (12.6-41.7)	576
	03-04	*	< LOD	4.53 (3.34-5.96)	11.0 (5.62-17.9)	16.2 (7.46-28.3)	310
	07-08	*	< LOD	12.5 (7.22-16.4)	29.7 (20.3-39.1)	43.3 (29.7-62.7)	385
12-19 years	99-00	*	.670 (<LOD-1.80)	3.80 (2.50-4.90)	9.90 (6.20-18.0)	22.0 (13.0-29.0)	664
	01-02	*	.670 (<LOD-1.31)	4.27 (3.41-5.35)	9.27 (7.80-12.3)	14.7 (11.8-21.3)	822
	03-04	*	1.20 (<LOD-2.27)	4.61 (3.47-6.72)	10.9 (7.90-15.0)	20.9 (12.5-26.8)	717
	07-08	*	< LOD	10.0 (7.22-14.5)	25.5 (16.8-35.6)	36.2 (25.5-49.6)	391
20-59 years	99-00	*	.680 (<LOD-1.30)	2.70 (1.80-3.70)	6.60 (5.70-8.10)	9.70 (8.80-14.0)	814
	01-02	*	< LOD	2.95 (2.35-3.41)	6.95 (5.80-8.82)	11.5 (9.66-13.7)	1121
	03-04	*	< LOD	3.75 (2.84-4.88)	8.52 (6.86-10.7)	14.1 (10.8-17.5)	938
	07-08	*	< LOD	6.07 (4.26-7.69)	18.0 (13.6-22.6)	30.3 (23.2-37.9)	1180
60 years and older	01-02	*	.700 (<LOD-1.50)	3.68 (2.91-4.56)	8.93 (6.79-10.7)	14.4 (9.60-19.1)	498
	03-04	*	2.04 (<LOD-2.63)	4.60 (3.83-5.15)	11.3 (7.68-13.4)	16.3 (12.4-19.4)	529
	07-08	*	< LOD	10.8 (8.64-13.0)	24.9 (19.2-32.4)	40.5 (32.5-47.4)	637
Gender							
Males	99-00	*	.670 (<LOD-1.30)	2.90 (2.20-4.00)	7.90 (6.00-9.30)	18.0 (10.0-24.0)	952
	01-02	*	< LOD	3.49 (2.90-4.15)	8.40 (6.95-10.3)	12.8 (11.3-14.7)	1420
	03-04	*	< LOD	4.03 (3.30-4.91)	8.49 (6.82-11.9)	15.1 (11.3-20.0)	1221
	07-08	*	< LOD	7.75 (6.50-9.63)	20.8 (17.6-26.6)	36.1 (27.0-47.4)	1295
Females	99-00	*	.790 (<LOD-1.60)	2.90 (2.00-4.20)	7.80 (5.70-9.00)	11.0 (9.00-18.0)	997
	01-02	*	< LOD	3.06 (2.63-3.63)	8.38 (6.56-9.63)	13.7 (10.9-17.6)	1597
	03-04	*	1.08 (<LOD-1.92)	4.29 (3.31-5.28)	10.4 (7.64-12.9)	14.8 (13.3-18.0)	1273
	07-08	*	< LOD	7.91 (6.18-9.36)	20.6 (16.5-25.5)	34.2 (26.6-41.5)	1298
Race/ethnicity							
Mexican Americans	99-00	*	1.10 (<LOD-1.80)	3.80 (2.70-5.30)	9.60 (6.00-16.0)	16.0 (8.90-31.0)	672
	01-02	*	.710 (<LOD-1.52)	3.34 (2.45-4.42)	9.13 (7.29-10.7)	14.4 (11.0-20.6)	763
	03-04	*	< LOD	4.37 (3.12-6.86)	10.3 (7.85-17.4)	22.3 (9.61-31.6)	610
	07-08	*	< LOD	6.85 (3.69-8.82)	20.9 (14.1-26.4)	35.6 (26.3-49.4)	501
Non-Hispanic blacks	99-00	1.42 (1.16-1.74)	1.00 (.650-1.50)	3.60 (2.50-5.50)	8.90 (6.90-15.0)	21.0 (14.0-24.0)	509
	01-02	*	.890 (<LOD-2.20)	4.71 (3.68-6.62)	10.7 (8.54-13.9)	19.4 (14.7-22.8)	755
	03-04	*	< LOD	5.28 (4.18-6.37)	10.8 (8.33-12.5)	15.8 (12.2-23.4)	631
	07-08	*	< LOD	8.67 (6.43-11.1)	23.7 (18.3-28.6)	38.0 (27.7-48.1)	574
Non-Hispanic whites	99-00	*	< LOD	2.90 (1.80-4.20)	7.90 (5.90-9.00)	11.0 (9.00-18.0)	595
	01-02	*	< LOD	3.13 (2.49-3.58)	7.79 (6.67-9.22)	12.5 (10.3-14.7)	1253
	03-04	*	< LOD	3.95 (3.23-4.91)	8.83 (6.56-12.5)	14.8 (11.9-20.0)	1061
	07-08	*	< LOD	7.46 (6.27-9.03)	20.7 (17.5-25.5)	35.6 (28.7-39.1)	1088

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, and 07-08 are 0.58, 0.5, and 0.5 and 0.47 respectively.

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

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

[Biomonitoring Summary](#)

Urinary Dimethylphosphate (DMP) (creatinine corrected)

Metabolite of Several Organophosphorus Insecticides

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	*	.810 (<LOD-1.15)	2.93 (2.11-3.92)	8.50 (6.96-10.4)	16.1 (13.3-17.6)	1949
	01-02	*	< LOD	3.16 (2.69-3.59)	8.00 (7.12-9.28)	12.9 (11.5-15.0)	3016
	03-04	*	< LOD	4.05 (3.50-5.15)	9.96 (8.78-11.2)	15.0 (13.0-18.1)	2491
	07-08	*	< LOD	9.10 (8.08-10.2)	20.0 (18.0-24.2)	33.6 (28.8-40.2)	2591
Age group							
6-11 years	99-00	1.71 (1.29-2.27)	1.38 (.890-2.38)	4.48 (2.88-7.89)	16.7 (8.21-21.2)	22.1 (19.2-30.1)	471
	01-02	*	1.93 (<LOD-2.97)	5.99 (4.32-8.28)	12.9 (9.34-18.5)	20.6 (13.3-34.8)	576
	03-04	*	< LOD	6.87 (3.80-9.00)	13.9 (9.68-19.3)	19.6 (13.9-25.9)	310
	07-08	*	< LOD	15.6 (10.8-21.6)	35.3 (27.6-39.2)	54.3 (36.5-67.1)	385
12-19 years	99-00	*	.590 (<LOD-.950)	2.28 (1.70-2.80)	7.78 (4.16-14.4)	16.0 (8.70-35.3)	664
	01-02	*	.913 (<LOD-1.27)	3.29 (2.76-3.78)	6.29 (5.51-7.30)	9.83 (7.94-14.2)	821
	03-04	*	1.00 (<LOD-1.68)	4.16 (3.37-5.07)	8.81 (7.78-10.2)	12.7 (10.3-17.7)	715
	07-08	*	< LOD	9.10 (5.62-10.9)	19.9 (15.5-22.5)	26.1 (19.8-27.2)	389
20-59 years	99-00	*	.760 (<LOD-1.12)	2.88 (1.89-3.99)	8.11 (5.89-10.3)	14.6 (10.4-16.8)	814
	01-02	*	< LOD	2.55 (2.05-3.03)	6.92 (5.85-8.00)	11.5 (9.38-13.6)	1121
	03-04	*	< LOD	3.77 (2.72-4.55)	8.78 (6.68-10.5)	13.5 (11.2-15.6)	937
	07-08	*	< LOD	7.32 (6.02-8.62)	17.2 (13.0-20.0)	28.2 (19.3-40.7)	1180
Gender							
Males	99-00	*	.620 (<LOD-.940)	2.38 (1.86-3.18)	7.58 (4.64-11.6)	15.2 (9.74-19.5)	952
	01-02	*	< LOD	2.77 (2.32-3.19)	7.06 (5.44-8.80)	11.2 (9.70-12.7)	1420
	03-04	*	< LOD	3.27 (2.55-3.94)	8.58 (6.79-10.4)	12.5 (10.5-15.4)	1220
	07-08	*	< LOD	7.08 (5.54-8.54)	17.5 (15.1-20.4)	28.0 (21.2-35.4)	1294
Females	99-00	*	1.00 (<LOD-1.71)	3.63 (2.30-5.19)	9.12 (7.82-11.7)	16.4 (11.7-19.7)	997
	01-02	*	< LOD	3.50 (2.86-4.49)	9.09 (7.83-10.8)	15.0 (12.5-17.8)	1596
	03-04	*	1.67 (<LOD-2.25)	5.28 (4.05-6.49)	11.2 (9.65-13.8)	18.1 (14.8-20.6)	1271
	07-08	*	< LOD	10.7 (9.10-12.4)	24.3 (19.5-28.2)	38.6 (27.2-54.6)	1297
Race/ethnicity							
Mexican Americans	99-00	*	1.06 (<LOD-1.55)	3.89 (2.54-5.45)	9.41 (7.69-11.5)	16.7 (11.7-23.6)	672
	01-02	*	.947 (<LOD-1.35)	3.18 (2.54-3.80)	8.44 (6.24-10.9)	14.3 (11.4-16.2)	763
	03-04	*	< LOD	4.16 (2.57-6.30)	12.3 (7.50-16.5)	18.8 (15.3-21.5)	609
	07-08	*	< LOD	7.47 (5.57-9.46)	19.9 (16.8-24.7)	29.8 (24.7-33.4)	500
Non-Hispanic blacks	99-00	.973 (.780-1.21)	.690 (.530-1.06)	2.67 (1.89-3.77)	7.07 (5.09-11.4)	14.0 (10.6-19.1)	509
	01-02	*	.851 (<LOD-1.34)	3.36 (2.68-4.22)	7.63 (6.35-9.18)	13.2 (10.1-14.9)	754
	03-04	*	< LOD	3.70 (2.84-4.48)	7.52 (6.59-8.89)	12.7 (8.89-19.3)	630
	07-08	*	< LOD	6.75 (4.80-8.65)	20.1 (15.5-25.1)	30.7 (24.2-37.7)	573
Non-Hispanic whites	99-00	*	< LOD	3.15 (1.97-4.32)	8.73 (5.89-13.3)	15.8 (10.0-21.2)	595
	01-02	*	< LOD	3.12 (2.50-3.76)	8.30 (6.91-10.0)	13.6 (11.2-16.9)	1253
	03-04	*	< LOD	4.05 (3.49-5.64)	10.2 (8.83-11.8)	14.8 (12.1-19.2)	1060
	07-08	*	< LOD	9.33 (7.92-10.8)	20.0 (17.5-24.2)	35.1 (27.2-43.9)	1088

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

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

[Biomonitoring Summary](#)

Urinary Diethylthiophosphate (DETP)

Metabolite of Several Organophosphorus Insecticides

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	*	.500 (<LOD-.690)	.760 (.620-1.10)	1.40 (1.10-1.80)	2.20 (1.70-2.80)	1949
	01-02	.484 (.381-.615)	.630 (.450-.930)	1.53 (1.33-1.80)	2.57 (2.28-3.01)	3.94 (3.26-4.94)	3016
	03-04	*	< LOD	.830 (.710-.960)	1.83 (1.51-2.30)	3.00 (2.39-3.78)	2422
	07-08	*	< LOD	1.00 (.880-1.16)	2.18 (1.75-2.75)	4.35 (2.95-6.01)	2590
Age group							
6-11 years	99-00	*	.600 (<LOD-.810)	.910 (.720-1.30)	1.70 (1.20-3.20)	3.20 (1.70-7.30)	471
	01-02	.453 (.350-.585)	.550 (.350-.850)	1.58 (1.33-2.04)	2.75 (2.22-3.38)	4.08 (2.95-5.16)	575
	03-04	*	< LOD	.820 (.580-.970)	1.45 (1.05-2.16)	2.18 (1.45-4.13)	296
	07-08	*	< LOD	1.18 (.990-1.42)	2.93 (2.06-5.58)	6.44 (2.87-13.2)	385
12-19 years	99-00	*	.210 (<LOD-.710)	.780 (.600-1.20)	1.50 (1.20-2.30)	2.30 (1.60-4.30)	664
	01-02	.505 (.388-.657)	.690 (.440-.960)	1.61 (1.32-1.94)	2.57 (2.23-3.39)	4.08 (2.73-5.86)	822
	03-04	*	.260 (<LOD-.400)	.930 (.750-1.13)	2.14 (1.75-2.89)	3.27 (2.69-4.83)	690
	07-08	*	< LOD	1.04 (.880-1.45)	2.20 (1.58-3.11)	4.02 (2.16-7.07)	390
20-59 years	99-00	*	.490 (<LOD-.670)	.740 (.600-.930)	1.30 (.990-1.80)	2.00 (1.50-2.60)	814
	01-02	.449 (.340-.592)	.540 (.380-.880)	1.45 (1.19-1.79)	2.46 (2.11-3.17)	3.83 (2.96-5.34)	1122
	03-04	*	< LOD	.800 (.650-.960)	1.76 (1.37-2.32)	2.65 (2.31-3.89)	919
	07-08	*	< LOD	.930 (.780-1.22)	2.16 (1.68-2.76)	4.20 (2.76-5.92)	1179
60 years and older	01-02	.662 (.571-.768)	1.00 (.740-1.14)	1.77 (1.50-2.10)	2.81 (2.44-3.46)	4.45 (2.93-8.31)	497
	03-04	*	.310 (<LOD-.520)	.890 (.740-1.05)	1.99 (1.52-2.67)	3.72 (2.19-6.81)	517
	07-08	*	< LOD	.980 (.860-1.16)	2.04 (1.60-3.01)	4.25 (2.76-5.40)	636
Gender							
Males	99-00	*	.510 (<LOD-.700)	.790 (.680-1.10)	1.50 (1.20-2.20)	2.70 (1.90-4.10)	952
	01-02	.495 (.393-.623)	.660 (.470-.900)	1.53 (1.37-1.82)	2.68 (2.28-3.34)	3.96 (3.07-5.85)	1419
	03-04	*	.250 (<LOD-.380)	.890 (.780-1.04)	2.20 (1.65-2.41)	3.15 (2.42-4.29)	1174
	07-08	*	< LOD	1.03 (.890-1.25)	2.49 (1.82-3.29)	4.79 (3.44-5.92)	1293
Females	99-00	*	< LOD	.720 (.570-1.00)	1.30 (.910-1.60)	1.70 (1.30-3.20)	997
	01-02	.474 (.360-.624)	.620 (.410-.960)	1.51 (1.22-1.86)	2.49 (2.15-3.04)	3.94 (2.82-5.27)	1597
	03-04	*	< LOD	.770 (.600-.930)	1.59 (1.24-2.08)	2.67 (2.07-3.81)	1248
	07-08	*	< LOD	.960 (.840-1.14)	2.00 (1.60-2.50)	4.01 (2.41-6.59)	1297
Race/ethnicity							
Mexican Americans	99-00	*	.570 (<LOD-.780)	.840 (.740-.980)	1.50 (1.20-1.90)	2.20 (2.00-2.90)	672
	01-02	.549 (.403-.749)	.710 (.470-.960)	1.40 (1.04-1.97)	2.63 (2.06-3.14)	3.98 (2.75-5.21)	763
	03-04	*	.250 (<LOD-.380)	.970 (.720-1.52)	2.35 (1.69-3.83)	4.19 (2.38-8.80)	584
	07-08	*	< LOD	.970 (.830-1.15)	1.98 (1.60-2.65)	3.46 (2.78-4.46)	500
Non-Hispanic blacks	99-00	.343 (.201-.584)	.570 (<LOD-.750)	.820 (.690-1.20)	1.80 (1.30-3.20)	3.60 (2.00-4.80)	509
	01-02	.755 (.589-.966)	1.17 (.740-1.46)	1.85 (1.73-1.99)	3.54 (2.95-3.87)	5.27 (3.89-6.74)	755
	03-04	.466 (.384-.564)	.430 (.210-.710)	1.08 (.930-1.29)	2.32 (1.74-2.70)	3.25 (2.55-4.83)	605
	07-08	*	< LOD	1.23 (.890-1.40)	2.85 (2.05-4.12)	4.81 (4.00-6.59)	574
Non-Hispanic whites	99-00	*	.160 (<LOD-.700)	.740 (.580-1.10)	1.30 (.960-1.90)	1.90 (1.50-2.80)	595
	01-02	.464 (.344-.626)	.600 (.410-.950)	1.53 (1.27-1.83)	2.46 (2.15-3.17)	3.75 (2.82-5.54)	1252
	03-04	*	< LOD	.750 (.610-.890)	1.75 (1.33-2.20)	2.68 (2.20-3.78)	1044
	07-08	*	< LOD	.910 (.820-1.04)	1.80 (1.56-2.46)	3.52 (2.20-5.61)	1087

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, and 07-08 are 0.09, 0.1, and 0.2 and 0.56 respectively.

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

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

[Biomonitoring Summary](#)

Urinary Diethylthiophosphate (DETP) (creatinine corrected)

Metabolite of Several Organophosphorus Insecticides

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	*	.250 (<LOD-.480)	.710 (.460-1.07)	1.72 (1.17-2.32)	2.64 (2.08-3.06)	1949
	01-02	.496 (.388-.636)	.569 (.403-.789)	1.42 (1.16-1.79)	3.11 (2.58-3.82)	4.88 (3.78-6.65)	3015
	03-04	*	< LOD	.740 (.667-.839)	1.59 (1.32-2.05)	2.87 (2.22-3.77)	2420
	07-08	*	< LOD	1.24 (1.15-1.37)	2.46 (1.98-3.11)	3.92 (3.05-5.12)	2588
Age group							
6-11 years	99-00	*	.470 (<LOD-.870)	1.08 (.800-1.32)	1.75 (1.44-2.36)	2.45 (2.04-5.32)	471
	01-02	.591 (.471-.742)	.636 (.397-1.05)	1.63 (1.31-1.94)	3.22 (2.72-4.16)	5.70 (3.84-6.80)	575
	03-04	*	< LOD	.869 (.592-1.09)	1.57 (1.08-2.67)	2.67 (1.57-4.05)	296
	07-08	*	< LOD	1.89 (1.32-2.09)	3.74 (2.46-5.55)	6.54 (3.49-16.0)	385
12-19 years	99-00	*	.180 (<LOD-.400)	.510 (.320-.820)	1.07 (.720-1.61)	1.97 (1.07-3.92)	664
	01-02	.393 (.300-.515)	.534 (.313-.735)	1.23 (.978-1.53)	2.19 (1.61-3.07)	3.14 (2.25-3.97)	821
	03-04	*	.300 (<LOD-.354)	.645 (.559-.734)	1.49 (1.16-1.60)	1.97 (1.57-2.43)	689
	07-08	*	< LOD	.902 (.692-1.15)	1.78 (1.15-3.32)	3.32 (1.68-5.48)	388
20-59 years	99-00	*	.250 (<LOD-.460)	.680 (.440-1.08)	1.79 (1.08-2.39)	2.75 (2.02-3.22)	814
	01-02	.447 (.335-.597)	.494 (.316-.742)	1.32 (.986-1.71)	2.87 (2.08-3.95)	4.69 (3.20-7.81)	1122
	03-04	*	< LOD	.700 (.550-.875)	1.47 (1.11-2.23)	2.82 (2.02-3.81)	918
	07-08	*	< LOD	1.24 (1.09-1.40)	2.27 (1.79-3.07)	3.51 (2.59-4.78)	1179
Gender							
Males	99-00	*	.270 (<LOD-.470)	.670 (.520-.840)	1.34 (1.08-2.17)	2.67 (1.67-3.23)	952
	01-02	.410 (.319-.526)	.517 (.342-.721)	1.22 (1.02-1.41)	2.46 (1.71-3.18)	3.67 (2.70-4.71)	1419
	03-04	*	.276 (<LOD-.326)	.667 (.560-.804)	1.49 (1.15-1.91)	2.87 (1.74-3.72)	1173
	07-08	*	< LOD	1.02 (.943-1.09)	1.94 (1.60-2.39)	3.22 (2.50-4.42)	1292
Females	99-00	*	< LOD	.790 (.380-1.50)	1.89 (1.07-2.52)	2.52 (1.89-3.75)	997
	01-02	.597 (.457-.779)	.647 (.423-.961)	1.77 (1.34-2.50)	3.82 (2.93-5.14)	6.57 (4.34-9.28)	1596
	03-04	*	< LOD	.821 (.700-.946)	1.76 (1.34-2.29)	3.02 (2.25-4.33)	1247
	07-08	*	< LOD	1.47 (1.28-1.72)	2.86 (2.29-3.51)	4.48 (3.30-5.73)	1296
Race/ethnicity							
Mexican Americans	99-00	*	.330 (<LOD-.790)	.830 (.550-1.20)	1.69 (1.20-2.43)	2.71 (1.75-3.78)	672
	01-02	.520 (.390-.693)	.570 (.416-.824)	1.30 (1.05-1.74)	2.58 (1.82-3.72)	3.82 (2.77-6.43)	763
	03-04	*	.329 (<LOD-.414)	.824 (.555-1.22)	2.03 (1.26-3.63)	3.74 (2.47-6.18)	584
	07-08	*	< LOD	1.20 (.989-1.32)	2.20 (1.83-2.86)	3.32 (2.59-5.11)	499
Non-Hispanic blacks	99-00	.234 (.136-.403)	.310 (<LOD-.580)	.720 (.510-.850)	1.39 (1.03-2.10)	2.91 (1.49-4.24)	509
	01-02	.556 (.457-.676)	.726 (.565-.938)	1.50 (1.34-1.70)	2.80 (2.35-3.30)	4.00 (3.29-4.99)	754
	03-04	.321 (.270-.381)	.313 (.231-.407)	.699 (.561-.831)	1.45 (1.09-1.75)	2.64 (1.71-3.64)	604
	07-08	*	< LOD	1.07 (.880-1.21)	2.40 (1.85-2.89)	4.12 (3.19-5.67)	573
Non-Hispanic whites	99-00	*	.230 (<LOD-.550)	.710 (.390-1.22)	1.88 (1.05-2.58)	2.64 (2.08-3.07)	595
	01-02	.506 (.373-.687)	.579 (.368-.850)	1.51 (1.18-2.00)	3.38 (2.64-4.35)	5.83 (3.95-7.81)	1252
	03-04	*	< LOD	.735 (.636-.848)	1.52 (1.20-2.07)	2.69 (2.07-3.97)	1043
	07-08	*	< LOD	1.24 (1.07-1.39)	2.28 (1.71-3.30)	3.49 (2.56-4.60)	1087

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

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

[Biomonitoring Summary](#)

Urinary Dimethylthiophosphate (DMTP)

Metabolite of Several Organophosphorus Insecticides

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	1.82 (1.36-2.44)	2.70 (1.40-4.10)	11.0 (8.40-16.0)	38.0 (25.0-41.0)	48.0 (38.0-62.0)	1948
	01-02	*	.580 (<LOD-1.45)	4.23 (3.10-5.88)	17.5 (13.0-22.7)	32.9 (27.2-45.3)	3016
	03-04	2.25 (1.98-2.56)	2.03 (1.73-2.37)	6.36 (5.11-7.34)	19.6 (16.2-21.5)	35.3 (27.4-45.3)	2494
	07-08	2.28 (1.97-2.64)	2.10 (1.77-2.44)	5.90 (4.94-7.01)	18.3 (13.5-23.0)	36.8 (27.8-45.7)	2591
Age group							
6-11 years	99-00	2.72 (1.93-3.85)	4.20 (2.50-7.20)	20.0 (13.0-29.0)	40.0 (38.0-52.0)	62.0 (40.0-92.0)	471
	01-02	*	1.46 (.600-2.69)	8.33 (5.75-14.0)	28.4 (19.7-41.4)	45.7 (28.5-74.5)	575
	03-04	2.79 (2.25-3.45)	2.67 (1.81-3.88)	6.95 (5.64-8.58)	19.4 (10.5-27.4)	30.9 (19.4-76.5)	310
	07-08	3.43 (2.88-4.09)	3.50 (2.69-4.10)	9.90 (7.14-13.9)	32.0 (19.1-45.7)	52.5 (36.7-67.4)	385
12-19 years	99-00	2.53 (1.64-3.92)	3.70 (1.70-6.80)	16.0 (11.0-31.0)	38.0 (33.0-58.0)	69.0 (38.0-260)	664
	01-02	*	1.04 (<LOD-2.12)	4.83 (3.35-6.48)	20.8 (12.2-27.9)	34.9 (23.6-54.7)	822
	03-04	2.21 (1.81-2.70)	1.83 (1.46-2.16)	5.91 (4.04-8.78)	18.7 (12.2-33.9)	47.1 (22.2-80.8)	717
	07-08	2.10 (1.68-2.61)	1.82 (1.53-2.31)	5.18 (3.55-7.48)	13.6 (8.16-27.9)	31.5 (12.4-54.5)	391
20-59 years	99-00	1.59 (1.17-2.16)	2.30 (.830-3.80)	9.10 (7.10-13.0)	38.0 (19.0-39.0)	39.0 (38.0-58.0)	813
	01-02	*	< LOD	3.32 (2.29-4.96)	13.6 (9.50-20.0)	30.0 (20.5-45.3)	1121
	03-04	1.98 (1.71-2.30)	1.78 (1.48-2.18)	5.11 (4.31-6.53)	16.7 (12.1-20.8)	28.5 (24.1-40.0)	938
	07-08	2.03 (1.68-2.46)	1.90 (1.46-2.39)	5.18 (4.24-6.09)	13.3 (10.4-19.2)	30.6 (21.4-44.6)	1179
60 years and older	01-02	*	.860 (<LOD-2.16)	5.85 (3.33-9.56)	19.6 (13.0-27.9)	32.9 (22.7-51.0)	498
	03-04	3.18 (2.47-4.08)	2.64 (2.16-3.81)	9.63 (6.32-15.5)	25.0 (15.5-45.3)	45.3 (20.9-119)	529
	07-08	2.91 (2.37-3.58)	2.57 (1.99-3.18)	9.19 (5.54-13.0)	26.2 (19.4-32.5)	42.7 (30.5-54.1)	636
Gender							
Males	99-00	2.10 (1.48-2.98)	3.50 (2.20-4.80)	14.0 (8.00-24.0)	38.0 (21.0-49.0)	42.0 (38.0-53.0)	952
	01-02	*	.690 (<LOD-1.52)	4.44 (3.32-6.48)	18.3 (12.7-25.6)	31.1 (25.0-43.3)	1420
	03-04	2.30 (1.95-2.70)	2.15 (1.70-2.53)	6.42 (4.90-7.75)	18.8 (13.3-22.5)	30.0 (23.3-45.3)	1221
	07-08	2.33 (2.00-2.71)	2.15 (1.85-2.50)	5.98 (4.78-7.26)	16.7 (11.8-24.7)	31.5 (21.2-48.9)	1293
Females	99-00	1.59 (1.23-2.06)	2.00 (.690-3.60)	9.70 (7.30-14.0)	38.0 (26.0-39.0)	52.0 (38.0-110)	996
	01-02	*	.430 (<LOD-1.45)	3.81 (2.68-5.85)	16.0 (10.9-22.7)	35.2 (25.0-46.1)	1596
	03-04	2.21 (1.92-2.55)	1.95 (1.68-2.29)	6.27 (4.93-7.39)	20.4 (16.4-24.0)	36.7 (27.7-47.8)	1273
	07-08	2.24 (1.88-2.66)	1.99 (1.57-2.52)	5.85 (4.92-7.31)	18.7 (13.4-26.0)	37.7 (27.0-50.1)	1298
Race/ethnicity							
Mexican Americans	99-00	1.79 (1.05-3.05)	2.00 (.530-4.40)	11.0 (6.70-17.0)	39.0 (32.0-62.0)	140 (46.0-230)	671
	01-02	*	< LOD	3.93 (3.05-5.06)	15.1 (11.1-19.1)	35.6 (22.7-46.0)	763
	03-04	2.41 (1.88-3.09)	2.54 (1.41-3.98)	6.43 (4.90-8.02)	17.2 (12.0-22.3)	28.9 (19.2-39.8)	610
	07-08	2.10 (1.83-2.42)	1.98 (1.63-2.31)	5.18 (4.17-6.61)	13.6 (11.5-20.0)	31.0 (20.0-43.5)	501
Non-Hispanic blacks	99-00	2.13 (1.57-2.88)	3.60 (2.10-4.70)	12.0 (8.80-18.0)	38.0 (20.0-41.0)	41.0 (37.0-110)	509
	01-02	1.54 (1.15-2.07)	1.18 (.580-1.97)	5.21 (3.11-8.25)	20.0 (13.4-27.2)	39.1 (25.9-62.8)	755
	03-04	2.13 (1.83-2.48)	1.85 (1.65-2.20)	5.44 (3.87-8.28)	20.4 (15.8-24.9)	31.1 (24.9-51.9)	631
	07-08	2.12 (1.89-2.38)	1.97 (1.64-2.26)	5.63 (4.15-6.94)	20.8 (12.9-23.9)	33.5 (26.3-47.6)	573
Non-Hispanic whites	99-00	1.77 (1.23-2.53)	2.70 (.830-4.40)	11.0 (7.50-17.0)	38.0 (17.0-53.0)	48.0 (38.0-69.0)	595
	01-02	*	.540 (<LOD-1.71)	4.21 (2.77-6.48)	18.8 (10.9-25.4)	33.1 (26.6-46.5)	1252
	03-04	2.31 (2.00-2.66)	2.07 (1.73-2.41)	6.51 (5.12-7.85)	19.8 (15.4-23.3)	36.7 (27.4-47.8)	1061
	07-08	2.22 (1.83-2.69)	1.96 (1.57-2.48)	5.84 (4.70-7.68)	17.1 (12.4-24.3)	37.3 (25.9-48.7)	1088

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, and 07-08 are 0.18, 0.4, and 0.5 and 0.55 respectively.

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

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

[Biomonitoring Summary](#)

Urinary Dimethylthiophosphate (DMTP) (creatinine corrected)

Metabolite of Several Organophosphorus Insecticides

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	1.64 (1.22-2.20)	2.12 (1.22-3.35)	9.57 (6.59-15.8)	32.0 (23.9-41.1)	51.0 (39.0-70.1)	1948
	01-02	*	.933 (<LOD-1.40)	4.08 (2.65-6.06)	14.6 (11.5-20.5)	28.9 (24.7-39.4)	3015
	03-04	2.21 (1.92-2.55)	1.98 (1.69-2.38)	5.96 (5.07-7.16)	19.1 (14.8-22.4)	32.6 (25.8-41.9)	2491
	07-08	2.34 (2.05-2.66)	2.00 (1.77-2.31)	5.91 (4.88-7.09)	17.5 (13.9-23.2)	33.7 (25.7-45.9)	2589
Age group							
6-11 years	99-00	2.95 (2.25-3.86)	5.32 (3.75-6.33)	19.1 (12.2-28.0)	47.0 (32.1-60.3)	66.1 (50.9-95.0)	471
	01-02	*	2.16 (1.32-3.12)	10.6 (7.84-13.6)	28.7 (18.8-45.0)	48.1 (33.4-71.1)	575
	03-04	3.40 (2.70-4.28)	3.41 (2.40-4.17)	7.91 (6.43-12.2)	25.2 (16.7-34.2)	36.1 (25.4-67.7)	310
	07-08	4.35 (3.78-5.01)	4.26 (3.36-4.75)	14.1 (9.35-16.6)	32.8 (23.8-45.4)	51.3 (41.1-77.9)	385
12-19 years	99-00	1.71 (1.07-2.75)	2.14 (.890-4.83)	13.5 (6.46-22.6)	36.0 (25.6-51.4)	61.5 (41.7-109)	664
	01-02	*	.933 (<LOD-1.57)	3.56 (2.38-5.57)	12.2 (8.96-16.0)	22.5 (13.2-34.7)	821
	03-04	1.66 (1.37-2.03)	1.52 (1.19-1.82)	4.38 (3.29-5.66)	13.3 (9.94-20.5)	26.5 (15.5-36.0)	715
	07-08	1.62 (1.27-2.06)	1.46 (1.19-1.74)	4.14 (3.12-5.52)	11.1 (5.52-20.5)	20.5 (9.61-32.2)	389
20-59 years	99-00	1.47 (1.07-2.02)	1.90 (.870-3.11)	8.09 (5.19-14.6)	27.0 (19.8-37.6)	47.5 (34.2-70.1)	813
	01-02	*	< LOD	3.16 (1.99-4.62)	11.9 (7.79-17.2)	25.2 (15.9-37.0)	1121
	03-04	1.88 (1.61-2.19)	1.67 (1.45-1.94)	4.88 (4.20-5.68)	13.9 (10.3-19.7)	30.3 (19.7-38.2)	937
	07-08	2.02 (1.73-2.36)	1.79 (1.52-2.05)	4.53 (3.90-5.90)	13.2 (9.47-17.2)	26.7 (17.1-41.8)	1179
Gender							
Males	99-00	1.61 (1.11-2.34)	2.39 (1.27-3.51)	9.27 (6.00-16.9)	28.9 (19.0-40.4)	41.1 (34.9-52.9)	952
	01-02	*	.778 (<LOD-1.14)	3.82 (2.65-4.98)	13.6 (10.0-17.8)	25.2 (17.2-37.6)	1420
	03-04	1.88 (1.58-2.23)	1.76 (1.51-2.12)	4.87 (3.87-6.31)	14.4 (9.18-20.4)	25.7 (17.7-36.9)	1220
	07-08	1.93 (1.68-2.21)	1.62 (1.42-1.94)	4.36 (3.77-5.50)	14.2 (10.4-17.7)	25.9 (18.2-39.7)	1292
Females	99-00	1.66 (1.26-2.18)	2.01 (.870-3.33)	10.0 (6.67-16.2)	34.9 (26.2-47.1)	70.1 (39.0-118)	996
	01-02	*	1.08 (<LOD-1.65)	4.44 (2.55-7.02)	17.4 (11.9-24.8)	38.0 (27.4-51.6)	1595
	03-04	2.60 (2.23-3.02)	2.24 (1.83-2.63)	7.11 (5.54-10.2)	22.8 (18.9-28.7)	41.6 (29.2-58.9)	1271
	07-08	2.81 (2.40-3.29)	2.50 (2.07-2.93)	7.40 (5.83-8.83)	21.9 (16.7-27.4)	41.2 (27.4-60.8)	1297
Race/ethnicity							
Mexican Americans	99-00	1.60 (.899-2.86)	1.83 (.680-4.23)	10.4 (5.95-16.9)	37.0 (23.1-63.1)	112 (40.5-190)	671
	01-02	*	< LOD	3.55 (2.65-4.68)	13.8 (9.88-22.9)	30.4 (22.9-47.2)	763
	03-04	2.20 (1.65-2.94)	2.24 (1.70-3.00)	5.95 (4.14-8.68)	15.7 (10.7-20.1)	24.5 (18.9-36.9)	609
	07-08	2.14 (1.92-2.38)	1.88 (1.61-2.22)	4.84 (4.08-6.48)	13.2 (10.0-18.6)	26.2 (18.6-34.1)	500
Non-Hispanic blacks	99-00	1.45 (1.03-2.06)	1.75 (1.17-3.06)	8.48 (4.36-13.4)	25.5 (15.4-39.3)	54.4 (25.5-97.6)	509
	01-02	1.13 (.889-1.44)	1.00 (.693-1.23)	3.62 (2.29-5.41)	12.4 (9.17-17.5)	23.3 (17.4-43.1)	754
	03-04	1.46 (1.28-1.67)	1.22 (1.06-1.37)	3.90 (2.77-5.34)	12.7 (8.09-18.7)	26.0 (14.6-38.7)	630
	07-08	1.61 (1.45-1.80)	1.38 (1.22-1.61)	4.26 (3.41-5.20)	14.7 (10.7-18.8)	27.5 (20.9-37.4)	572
Non-Hispanic whites	99-00	1.68 (1.16-2.43)	2.22 (.870-3.51)	9.40 (5.58-17.0)	33.3 (20.6-49.4)	52.9 (39.0-71.1)	595
	01-02	*	.966 (<LOD-1.61)	4.22 (2.41-7.00)	15.9 (11.6-24.1)	33.1 (24.8-45.4)	1252
	03-04	2.40 (2.05-2.81)	2.12 (1.75-2.53)	6.27 (5.10-8.10)	20.0 (15.3-25.7)	36.2 (25.7-52.7)	1060
	07-08	2.40 (1.99-2.90)	2.04 (1.67-2.57)	6.00 (4.64-7.49)	16.9 (13.0-25.3)	37.6 (23.1-54.2)	1088

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

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

[Biomonitoring Summary](#)

Urinary Diethyldithiophosphate (DEDTP)

Metabolite of Several Organophosphorus Insecticides

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	.090 (<LOD-.140)	.210 (.140-.290)	.470 (.380-.640)	.870 (.640-1.10)	1949
	01-02	*	< LOD	< LOD	.610 (.410-.780)	.890 (.710-1.32)	3013
	03-04	*	< LOD	< LOD	< LOD	.290 (.160-.510)	2494
	07-08	*	< LOD	< LOD	< LOD	< LOD	2585
Age group							
6-11 years	99-00	*	.090 (<LOD-.160)	.190 (.130-.280)	.430 (.300-.650)	.850 (.470-1.00)	471
	01-02	*	< LOD	< LOD	.630 (<LOD-.870)	.940 (.690-1.42)	576
	03-04	*	< LOD	< LOD	< LOD	.540 (<LOD-.650)	310
	07-08	*	< LOD	< LOD	< LOD	< LOD	383
12-19 years	99-00	*	.080 (<LOD-.180)	.260 (.120-.350)	.640 (.420-.840)	.930 (.720-1.30)	664
	01-02	*	< LOD	< LOD	.560 (<LOD-.730)	.820 (.610-.990)	822
	03-04	*	< LOD	< LOD	.150 (<LOD-.350)	.450 (.370-.570)	717
	07-08	*	< LOD	< LOD	< LOD	< LOD	390
20-59 years	99-00	*	.090 (<LOD-.130)	.210 (.130-.290)	.450 (.360-.640)	.900 (.610-1.10)	814
	01-02	*	< LOD	< LOD	.620 (.430-.760)	.830 (.700-1.32)	1118
	03-04	*	< LOD	< LOD	< LOD	.220 (<LOD-.580)	938
	07-08	*	< LOD	< LOD	< LOD	< LOD	1176
60 years and older	01-02	*	< LOD	< LOD	.630 (<LOD-1.08)	1.11 (.610-1.41)	497
	03-04	*	< LOD	< LOD	< LOD	.150 (<LOD-.550)	529
	07-08	*	< LOD	< LOD	< LOD	< LOD	636
Gender							
Males	99-00	*	.090 (<LOD-.150)	.220 (.140-.310)	.490 (.380-.680)	.870 (.680-1.10)	952
	01-02	*	< LOD	< LOD	.600 (<LOD-.740)	.780 (.700-1.03)	1420
	03-04	*	< LOD	< LOD	< LOD	.390 (.160-.540)	1221
	07-08	*	< LOD	< LOD	< LOD	< LOD	1290
Females	99-00	*	.090 (<LOD-.130)	.190 (.110-.310)	.460 (.320-.840)	.870 (.440-1.40)	997
	01-02	*	< LOD	< LOD	.660 (.460-.880)	1.03 (.700-1.47)	1593
	03-04	*	< LOD	< LOD	< LOD	.230 (<LOD-.600)	1273
	07-08	*	< LOD	< LOD	< LOD	< LOD	1295
Race/ethnicity							
Mexican Americans	99-00	.130 (.099-.171)	.100 (.050-.200)	.310 (.230-.390)	.650 (.530-.860)	1.10 (.860-1.60)	672
	01-02	*	< LOD	< LOD	.720 (.410-1.12)	1.12 (.700-1.58)	763
	03-04	*	< LOD	< LOD	.110 (<LOD-.680)	.680 (.180-1.15)	610
	07-08	*	< LOD	< LOD	< LOD	< LOD	495
Non-Hispanic blacks	99-00	.117 (.084-.162)	.090 (<LOD-.230)	.270 (.140-.410)	.560 (.400-.830)	.870 (.650-1.20)	509
	01-02	*	< LOD	< LOD	.620 (.440-.800)	.810 (.670-.930)	754
	03-04	*	< LOD	< LOD	< LOD	.250 (.110-.540)	631
	07-08	*	< LOD	< LOD	< LOD	< LOD	574
Non-Hispanic whites	99-00	*	.080 (<LOD-.160)	.190 (.120-.290)	.450 (.310-.720)	.870 (.510-1.30)	595
	01-02	*	< LOD	< LOD	.610 (<LOD-.800)	.910 (.660-1.41)	1252
	03-04	*	< LOD	< LOD	< LOD	.240 (.120-.540)	1061
	07-08	*	< LOD	< LOD	< LOD	< LOD	1087

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, and 07-08 are 0.05, 0.39, and 0.1 and 0.39 respectively.

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

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

[Biomonitoring Summary](#)

Urinary Diethyldithiophosphate (DEDTP) (creatinine corrected)

Metabolite of Several Organophosphorus Insecticides

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	.070 (<LOD-.110)	.200 (.140-.290)	.550 (.390-.700)	.860 (.670-1.14)	1949
	01-02	*	< LOD	< LOD	.604 (.389-.783)	1.08 (.768-1.52)	3012
	03-04	*	< LOD	< LOD	< LOD	.412 (.350-.507)	2491
	07-08	*	< LOD	< LOD	< LOD	< LOD	2583
Age group							
6-11 years	99-00	*	.100 (<LOD-.140)	.190 (.150-.270)	.570 (.410-.760)	1.03 (.570-1.58)	471
	01-02	*	< LOD	< LOD	.778 (<LOD-1.12)	1.36 (1.02-1.86)	576
	03-04	*	< LOD	< LOD	< LOD	.475 (<LOD-.967)	310
	07-08	*	< LOD	< LOD	< LOD	< LOD	383
12-19 years	99-00	*	.050 (<LOD-.080)	.170 (.100-.220)	.440 (.230-.730)	.730 (.380-1.09)	664
	01-02	*	< LOD	< LOD	.359 (<LOD-.537)	.667 (.375-.987)	821
	03-04	*	< LOD	< LOD	.226 (<LOD-.259)	.333 (.241-.600)	715
	07-08	*	< LOD	< LOD	< LOD	< LOD	388
20-59 years	99-00	*	.080 (<LOD-.110)	.210 (.140-.310)	.550 (.360-.730)	.860 (.650-1.20)	814
	01-02	*	< LOD	< LOD	.583 (.379-.740)	1.03 (.699-1.60)	1118
	03-04	*	< LOD	< LOD	< LOD	.400 (<LOD-.537)	937
	07-08	*	< LOD	< LOD	< LOD	< LOD	1176
Gender							
Males	99-00	*	.070 (<LOD-.110)	.190 (.140-.230)	.410 (.340-.500)	.720 (.520-.940)	952
	01-02	*	< LOD	< LOD	.389 (<LOD-.658)	.768 (.637-1.01)	1420
	03-04	*	< LOD	< LOD	< LOD	.339 (.269-.412)	1220
	07-08	*	< LOD	< LOD	< LOD	< LOD	1289
Females	99-00	*	.090 (<LOD-.120)	.220 (.140-.360)	.670 (.410-.870)	.890 (.660-1.62)	997
	01-02	*	< LOD	< LOD	.733 (.527-1.03)	1.27 (.868-2.37)	1592
	03-04	*	< LOD	< LOD	< LOD	.500 (<LOD-.604)	1271
	07-08	*	< LOD	< LOD	< LOD	< LOD	1294
Race/ethnicity							
Mexican Americans	99-00	.116 (.084-.161)	.090 (.060-.170)	.300 (.190-.410)	.810 (.570-.990)	1.19 (.860-2.66)	672
	01-02	*	< LOD	< LOD	.845 (.487-1.24)	1.29 (.901-1.67)	763
	03-04	*	< LOD	< LOD	.318 (<LOD-.467)	.579 (.404-.940)	609
	07-08	*	< LOD	< LOD	< LOD	< LOD	494
Non-Hispanic blacks	99-00	.080 (.057-.111)	.070 (<LOD-.110)	.170 (.110-.280)	.450 (.300-.580)	.700 (.500-1.02)	509
	01-02	*	< LOD	< LOD	.456 (.362-.593)	.769 (.541-1.07)	753
	03-04	*	< LOD	< LOD	< LOD	.269 (.196-.368)	630
	07-08	*	< LOD	< LOD	< LOD	< LOD	573
Non-Hispanic whites	99-00	*	.070 (<LOD-.120)	.200 (.140-.310)	.560 (.380-.730)	.880 (.600-1.38)	595
	01-02	*	< LOD	< LOD	.583 (<LOD-.868)	1.14 (.682-1.70)	1252
	03-04	*	< LOD	< LOD	< LOD	.389 (.333-.523)	1060
	07-08	*	< LOD	< LOD	< LOD	< LOD	1087

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

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

[Biomonitoring Summary](#)

Urinary Dimethyldithiophosphate (DMDTP)

Metabolite of Several Organophosphorus Insecticides

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	< LOD	2.30 (1.30-3.90)	13.0 (5.00-17.0)	19.0 (17.0-38.0)	1949
	01-02	*	< LOD	.920 (.330-1.30)	2.61 (2.04-3.45)	5.96 (4.41-7.90)	3015
	03-04	*	< LOD	.700 (.570-.920)	2.54 (1.64-3.87)	5.74 (3.63-9.85)	2458
	07-08	*	< LOD	< LOD	2.37 (1.93-2.93)	5.60 (4.62-6.79)	2571
Age group							
6-11 years	99-00	.691 (.425-1.12)	.740 (.080-1.80)	4.30 (2.40-8.60)	17.0 (6.90-37.0)	32.0 (17.0-44.0)	471
	01-02	*	< LOD	1.30 (.750-2.11)	3.53 (2.20-4.50)	7.33 (4.32-9.74)	575
	03-04	*	< LOD	.900 (.620-1.14)	2.94 (1.14-5.48)	5.48 (2.94-8.53)	306
	07-08	*	< LOD	.950 (<LOD-1.48)	3.80 (2.45-5.70)	6.66 (5.11-9.64)	379
12-19 years	99-00	*	< LOD	2.30 (1.40-4.50)	13.0 (5.40-20.0)	20.0 (17.0-38.0)	664
	01-02	*	< LOD	.830 (.400-1.14)	2.52 (1.85-3.07)	4.63 (3.59-5.83)	821
	03-04	*	< LOD	.580 (.350-.770)	1.46 (1.12-1.99)	2.67 (1.82-4.49)	699
	07-08	*	< LOD	< LOD	1.45 (.810-2.03)	2.45 (1.65-3.93)	384
20-59 years	99-00	*	< LOD	2.10 (.840-3.60)	11.0 (4.00-17.0)	17.0 (7.70-50.0)	814
	01-02	*	< LOD	.840 (<LOD-1.31)	2.32 (1.70-3.40)	4.90 (2.90-9.52)	1122
	03-04	*	< LOD	.610 (.350-.800)	2.00 (1.36-3.63)	5.07 (3.62-8.62)	925
	07-08	*	< LOD	< LOD	1.84 (1.34-2.32)	4.27 (2.84-6.79)	1172
60 years and older	01-02	*	< LOD	1.02 (.540-1.37)	3.57 (2.58-5.96)	8.16 (5.04-16.1)	497
	03-04	*	< LOD	1.39 (.720-2.34)	4.09 (2.35-13.4)	13.4 (3.36-33.3)	528
	07-08	*	< LOD	1.03 (<LOD-1.99)	5.47 (4.31-6.33)	8.89 (6.33-12.2)	636
Gender							
Males	99-00	*	.110 (<LOD-.610)	2.30 (1.20-4.90)	16.0 (5.70-17.0)	19.0 (17.0-38.0)	952
	01-02	*	< LOD	.890 (.370-1.28)	2.59 (1.88-3.41)	5.96 (4.47-7.86)	1420
	03-04	*	< LOD	.680 (.360-1.01)	2.26 (1.14-4.45)	5.30 (3.20-10.2)	1209
	07-08	*	< LOD	< LOD	2.38 (1.76-3.70)	5.70 (3.80-10.0)	1278
Females	99-00	*	< LOD	2.20 (1.10-3.90)	11.0 (4.20-17.0)	20.0 (13.0-40.0)	997
	01-02	*	< LOD	.960 (.250-1.37)	2.61 (1.96-3.68)	5.72 (3.79-9.87)	1595
	03-04	*	< LOD	.730 (.590-.970)	2.83 (1.99-3.96)	6.15 (3.91-11.3)	1249
	07-08	*	< LOD	< LOD	2.34 (1.79-3.12)	5.54 (4.06-6.69)	1293
Race/ethnicity							
Mexican Americans	99-00	*	.250 (<LOD-.870)	1.90 (1.10-3.00)	5.80 (4.10-9.70)	12.0 (5.90-28.0)	672
	01-02	*	< LOD	1.08 (.780-1.38)	2.80 (2.19-3.54)	4.93 (3.73-7.42)	763
	03-04	*	< LOD	.730 (.360-1.21)	2.11 (1.38-3.15)	5.26 (2.31-6.94)	610
	07-08	*	< LOD	< LOD	1.63 (1.18-2.12)	3.88 (2.12-6.07)	491
Non-Hispanic blacks	99-00	*	.330 (<LOD-1.20)	3.20 (1.40-7.00)	14.0 (5.70-30.0)	19.0 (17.0-39.0)	509
	01-02	*	< LOD	.640 (<LOD-1.41)	1.96 (1.36-4.15)	4.42 (2.68-8.38)	755
	03-04	*	< LOD	.590 (.310-.730)	1.77 (1.05-3.33)	4.77 (2.75-7.80)	604
	07-08	*	< LOD	< LOD	2.04 (1.54-2.65)	4.27 (2.66-7.79)	568
Non-Hispanic whites	99-00	*	< LOD	2.00 (.800-4.00)	13.0 (3.90-20.0)	20.0 (16.0-40.0)	595
	01-02	*	< LOD	1.01 (.180-1.43)	2.74 (1.94-4.18)	6.72 (4.88-8.54)	1252
	03-04	*	< LOD	.740 (.540-1.04)	2.66 (1.55-4.56)	5.89 (3.63-11.6)	1056
	07-08	*	< LOD	< LOD	2.32 (1.75-3.28)	5.60 (4.46-6.88)	1087

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, and 07-08 are 0.08, 0.1, and 0.1 and 0.51 respectively.

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

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

[Biomonitoring Summary](#)

Urinary Dimethyldithiophosphate (DMDTP) (creatinine corrected)

Metabolite of Several Organophosphorus Insecticides

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	*	< LOD	1.88 (.970-3.86)	10.1 (5.31-18.3)	21.7 (12.8-33.7)	1949
	01-02	*	< LOD	.717 (.389-1.12)	2.80 (2.21-3.96)	6.84 (4.96-8.09)	3014
	03-04	*	< LOD	.572 (.411-.772)	2.62 (1.72-4.12)	6.40 (3.85-9.75)	2455
	07-08	*	< LOD	< LOD	2.63 (2.17-3.08)	6.12 (4.15-8.24)	2569
Age group							
6-11 years	99-00	.748 (.474-1.18)	.790 (.190-1.60)	4.07 (2.31-7.18)	16.2 (8.22-27.0)	30.8 (20.2-38.9)	471
	01-02	*	< LOD	1.36 (.805-2.31)	4.10 (2.67-6.24)	6.98 (4.40-12.8)	575
	03-04	*	< LOD	.962 (.584-1.57)	3.39 (2.29-6.15)	7.12 (4.48-7.55)	306
	07-08	*	< LOD	1.50 (<LOD-1.95)	4.35 (3.05-6.59)	8.01 (4.75-12.9)	379
12-19 years	99-00	*	< LOD	1.52 (.620-3.47)	9.48 (4.04-16.8)	21.5 (9.48-42.3)	664
	01-02	*	< LOD	.543 (.306-.773)	2.02 (1.49-2.40)	3.13 (2.51-4.67)	820
	03-04	*	< LOD	.361 (.241-.584)	1.02 (.628-1.57)	2.46 (1.33-3.39)	697
	07-08	*	< LOD	< LOD	1.16 (.782-1.85)	1.94 (1.39-3.79)	382
20-59 years	99-00	*	< LOD	1.71 (.850-3.56)	8.50 (4.00-19.1)	20.5 (8.57-40.7)	814
	01-02	*	< LOD	.605 (<LOD-1.05)	2.56 (1.64-4.03)	6.33 (3.96-8.17)	1122
	03-04	*	< LOD	.451 (.340-.583)	2.17 (1.10-3.64)	5.71 (2.47-10.1)	924
	07-08	*	< LOD	< LOD	1.99 (1.80-2.32)	4.15 (2.77-6.77)	1172
Gender							
Males	99-00	*	.150 (<LOD-.370)	1.79 (.840-3.97)	11.0 (4.62-17.4)	18.1 (7.51-44.7)	952
	01-02	*	< LOD	.628 (.333-.850)	2.39 (1.75-3.13)	5.37 (4.23-7.29)	1420
	03-04	*	< LOD	.467 (.280-.743)	2.03 (.990-3.56)	5.38 (2.29-8.25)	1208
	07-08	*	< LOD	< LOD	1.89 (1.44-2.71)	4.92 (2.77-8.44)	1277
Females	99-00	*	< LOD	2.06 (.940-4.00)	9.30 (4.96-25.5)	27.0 (9.66-47.5)	997
	01-02	*	< LOD	.831 (.412-1.50)	3.35 (2.50-4.96)	7.81 (5.29-11.9)	1594
	03-04	*	< LOD	.680 (.538-.887)	3.59 (2.41-5.18)	7.12 (4.13-13.1)	1247
	07-08	*	< LOD	< LOD	3.05 (2.44-4.00)	7.18 (4.22-11.1)	1292
Race/ethnicity							
Mexican Americans	99-00	*	.270 (<LOD-.660)	1.35 (.860-2.53)	6.55 (3.83-11.8)	16.7 (6.25-38.8)	672
	01-02	*	< LOD	.833 (.589-1.15)	2.72 (2.05-3.32)	5.16 (3.69-7.83)	763
	03-04	*	< LOD	.651 (.318-1.09)	2.04 (1.10-3.74)	4.50 (2.17-5.88)	609
	07-08	*	< LOD	< LOD	1.97 (1.50-2.77)	4.30 (2.77-6.92)	490
Non-Hispanic blacks	99-00	*	.250 (<LOD-.700)	2.40 (.690-5.44)	9.41 (4.81-17.8)	17.9 (11.5-40.7)	509
	01-02	*	< LOD	.403 (<LOD-.847)	1.69 (.793-3.50)	3.50 (2.19-5.91)	754
	03-04	*	< LOD	.343 (.242-.477)	1.07 (.727-1.84)	3.21 (1.45-6.07)	603
	07-08	*	< LOD	< LOD	1.79 (1.38-2.31)	4.27 (2.44-6.16)	567
Non-Hispanic whites	99-00	*	< LOD	1.77 (.780-4.02)	11.4 (4.07-21.5)	21.5 (11.4-34.8)	595
	01-02	*	< LOD	.787 (.389-1.37)	3.42 (2.48-5.24)	7.75 (5.80-9.47)	1252
	03-04	*	< LOD	.631 (.412-.897)	3.06 (1.75-5.84)	6.74 (4.42-12.0)	1055
	07-08	*	< LOD	< LOD	2.74 (2.12-3.58)	5.92 (4.00-9.71)	1087

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

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

[Biomonitoring Summary](#)

Urinary Antimony

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.132 (.120-.145)	.130 (.120-.150)	.220 (.200-.230)	.330 (.300-.350)	.430 (.390-.470)	2276
	01-02	.134 (.126-.142)	.130 (.130-.140)	.190 (.180-.200)	.270 (.250-.310)	.350 (.320-.400)	2690
	03-04	*	.080 (<LOD-.090)	.130 (.120-.150)	.200 (.190-.220)	.280 (.250-.320)	2558
	05-06	.073 (.066-.081)	.070 (.070-.080)	.120 (.110-.140)	.220 (.180-.250)	.300 (.270-.360)	2576
	07-08	.061 (.057-.066)	.060 (.060-.060)	.100 (.090-.110)	.170 (.140-.200)	.240 (.220-.260)	2627
	09-10	.056 (.053-.059)	.050 (.050-.060)	.090 (.090-.100)	.170 (.140-.180)	.230 (.200-.280)	2847
Age group							
6-11 years	99-00	.176 (.154-.200)	.190 (.160-.210)	.260 (.230-.280)	.350 (.300-.400)	.440 (.320-.600)	316
	01-02	.146 (.134-.160)	.150 (.130-.160)	.200 (.180-.210)	.270 (.240-.330)	.340 (.280-.440)	368
	03-04	.099 (.087-.114)	.100 (.070-.120)	.160 (.120-.200)	.240 (.190-.310)	.310 (.230-.330)	290
	05-06	.075 (.063-.088)	.080 (.060-.090)	.110 (.090-.130)	.190 (.120-.260)	.240 (.170-.340)	355
	07-08	.068 (.061-.077)	.070 (.060-.080)	.110 (.090-.130)	.170 (.150-.210)	.230 (.180-.280)	394
	09-10	.069 (.061-.079)	.070 (.060-.080)	.120 (.100-.150)	.220 (.150-.260)	.260 (.230-.350)	378
12-19 years	99-00	.158 (.141-.178)	.170 (.150-.180)	.240 (.210-.270)	.350 (.290-.420)	.460 (.350-.510)	663
	01-02	.169 (.156-.184)	.160 (.150-.180)	.240 (.220-.260)	.350 (.320-.410)	.460 (.400-.500)	762
	03-04	.105 (.095-.115)	.100 (.090-.120)	.150 (.140-.160)	.230 (.200-.270)	.290 (.250-.370)	725
	05-06	.092 (.083-.101)	.090 (.080-.100)	.140 (.130-.160)	.240 (.200-.270)	.280 (.250-.320)	701
	07-08	.079 (.069-.091)	.080 (.070-.090)	.130 (.110-.140)	.210 (.150-.230)	.230 (.210-.340)	376
	09-10	.063 (.056-.071)	.060 (.050-.070)	.100 (.090-.120)	.180 (.150-.210)	.270 (.180-.370)	451
20 years and older	99-00	.123 (.112-.137)	.120 (.110-.130)	.200 (.180-.220)	.310 (.290-.350)	.430 (.390-.470)	1297
	01-02	.128 (.119-.136)	.130 (.120-.130)	.180 (.170-.190)	.250 (.220-.300)	.330 (.280-.390)	1560
	03-04	*	.070 (<LOD-.080)	.120 (.100-.140)	.190 (.170-.210)	.270 (.220-.320)	1543
	05-06	.070 (.064-.078)	.070 (.060-.080)	.120 (.110-.140)	.220 (.180-.270)	.320 (.260-.420)	1520
	07-08	.058 (.054-.062)	.060 (.050-.060)	.090 (.090-.100)	.160 (.130-.190)	.240 (.210-.270)	1857
	09-10	.054 (.051-.057)	.050 (.050-.050)	.090 (.080-.090)	.150 (.140-.180)	.220 (.190-.270)	2018
Gender							
Males	99-00	.143 (.131-.157)	.150 (.130-.160)	.240 (.220-.260)	.350 (.330-.390)	.470 (.390-.570)	1132
	01-02	.145 (.136-.154)	.140 (.130-.150)	.200 (.190-.210)	.310 (.280-.330)	.390 (.350-.440)	1335
	03-04	.095 (.088-.103)	.090 (.080-.100)	.140 (.130-.160)	.220 (.200-.250)	.320 (.270-.350)	1281
	05-06	.085 (.076-.095)	.080 (.080-.090)	.140 (.120-.160)	.250 (.210-.290)	.350 (.260-.460)	1271
	07-08	.068 (.062-.076)	.070 (.060-.070)	.110 (.100-.120)	.210 (.170-.230)	.280 (.230-.340)	1327
	09-10	.060 (.055-.065)	.060 (.050-.070)	.100 (.090-.110)	.170 (.150-.200)	.250 (.200-.290)	1397
Females	99-00	.122 (.109-.137)	.120 (.110-.140)	.200 (.180-.220)	.300 (.280-.340)	.400 (.350-.460)	1144
	01-02	.125 (.117-.133)	.120 (.120-.130)	.180 (.160-.190)	.240 (.220-.280)	.320 (.260-.360)	1355
	03-04	*	< LOD	.120 (.090-.140)	.180 (.150-.220)	.230 (.190-.330)	1277
	05-06	.063 (.057-.071)	.060 (.050-.070)	.100 (.090-.120)	.180 (.150-.230)	.270 (.200-.330)	1305
	07-08	.055 (.052-.058)	.050 (.050-.060)	.090 (.080-.100)	.130 (.120-.150)	.200 (.170-.230)	1300
	09-10	.052 (.049-.056)	.050 (.040-.050)	.090 (.080-.090)	.150 (.130-.170)	.220 (.190-.270)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.04, 0.04, 0.07, 0.032, 0.032, and 0.032 respectively.

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

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

[Biomonitoring Summary](#)

Urinary Antimony

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	.132 (.108-.161)	.140 (.120-.170)	.210 (.180-.240)	.300 (.260-.390)	.430 (.330-.560)	787
	01-02	.142 (.130-.154)	.130 (.130-.150)	.200 (.170-.230)	.260 (.240-.320)	.360 (.300-.400)	683
	03-04	.093 (.079-.110)	.090 (<LOD-.120)	.140 (.120-.160)	.190 (.160-.260)	.270 (.210-.330)	618
	05-06	.093 (.082-.105)	.090 (.080-.100)	.150 (.140-.170)	.250 (.210-.340)	.470 (.270-.850)	652
	07-08	.069 (.060-.079)	.070 (.060-.080)	.110 (.100-.120)	.190 (.150-.250)	.270 (.220-.390)	515
	09-10	.063 (.060-.067)	.060 (.060-.070)	.110 (.090-.120)	.170 (.150-.200)	.250 (.200-.270)	613
Non-Hispanic blacks	99-00	.175 (.148-.207)	.180 (.150-.200)	.260 (.230-.300)	.400 (.310-.490)	.490 (.410-.710)	554
	01-02	.180 (.164-.197)	.170 (.160-.190)	.250 (.220-.280)	.360 (.320-.410)	.460 (.370-.530)	667
	03-04	.108 (.098-.119)	.110 (.100-.120)	.160 (.150-.190)	.230 (.200-.280)	.310 (.250-.360)	723
	05-06	.088 (.077-.100)	.090 (.080-.100)	.140 (.130-.170)	.210 (.190-.250)	.280 (.240-.320)	692
	07-08	.085 (.079-.092)	.080 (.080-.090)	.130 (.120-.140)	.210 (.180-.250)	.290 (.250-.370)	589
	09-10	.073 (.065-.081)	.070 (.060-.080)	.120 (.110-.140)	.190 (.160-.250)	.280 (.220-.350)	544
Non-Hispanic whites	99-00	.128 (.115-.144)	.130 (.110-.140)	.210 (.190-.230)	.330 (.280-.350)	.400 (.360-.500)	768
	01-02	.126 (.117-.135)	.130 (.120-.130)	.180 (.170-.190)	.250 (.230-.300)	.340 (.310-.390)	1132
	03-04	*	.070 (<LOD-.080)	.130 (.110-.140)	.190 (.170-.210)	.280 (.230-.320)	1074
	05-06	.069 (.062-.077)	.070 (.060-.080)	.110 (.100-.130)	.210 (.170-.260)	.300 (.240-.380)	1041
	07-08	.057 (.052-.063)	.060 (.050-.060)	.090 (.080-.110)	.150 (.130-.200)	.230 (.190-.260)	1095
	09-10	.053 (.050-.057)	.050 (.040-.050)	.090 (.080-.090)	.160 (.130-.190)	.230 (.190-.280)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.04, 0.04, 0.07, 0.032, 0.032, and 0.032 respectively.

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

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

[Biomonitoring Summary](#)

Urinary Antimony (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.124 (.108-.143)	.119 (.102-.143)	.185 (.164-.214)	.276 (.233-.333)	.385 (.333-.430)	2276
	01-02	.126 (.119-.134)	.120 (.115-.126)	.173 (.162-.188)	.267 (.242-.300)	.364 (.320-.414)	2689
	03-04	*	.080 (<LOD-.086)	.135 (.119-.143)	.208 (.192-.230)	.277 (.250-.294)	2558
	05-06	.072 (.068-.077)	.070 (.060-.070)	.100 (.100-.110)	.160 (.150-.190)	.230 (.190-.290)	2576
	07-08	.064 (.060-.068)	.060 (.060-.060)	.090 (.080-.100)	.140 (.140-.160)	.200 (.170-.230)	2627
	09-10	.060 (.056-.064)	.060 (.050-.060)	.090 (.080-.090)	.140 (.120-.160)	.200 (.180-.230)	2847
Age group							
6-11 years	99-00	.191 (.147-.248)	.185 (.156-.220)	.250 (.200-.417)	.447 (.271-.741)	.741 (.333-1.30)	316
	01-02	.178 (.159-.200)	.173 (.150-.193)	.228 (.200-.272)	.338 (.265-.480)	.471 (.313-.727)	368
	03-04	.116 (.103-.130)	.118 (.098-.136)	.167 (.146-.187)	.256 (.194-.317)	.333 (.250-.500)	290
	05-06	.092 (.081-.104)	.090 (.080-.110)	.130 (.110-.150)	.180 (.150-.210)	.220 (.180-.270)	355
	07-08	.089 (.079-.100)	.090 (.070-.100)	.120 (.110-.140)	.200 (.150-.240)	.300 (.200-.370)	394
	09-10	.094 (.084-.106)	.090 (.080-.100)	.140 (.120-.160)	.200 (.170-.250)	.280 (.220-.320)	378
12-19 years	99-00	.121 (.104-.140)	.120 (.095-.146)	.176 (.146-.207)	.259 (.206-.310)	.310 (.228-.421)	663
	01-02	.121 (.112-.131)	.115 (.106-.127)	.160 (.138-.186)	.224 (.199-.245)	.266 (.244-.310)	762
	03-04	.075 (.068-.082)	.068 (.061-.077)	.100 (.092-.113)	.156 (.126-.173)	.193 (.172-.255)	725
	05-06	.070 (.065-.076)	.070 (.060-.080)	.100 (.090-.110)	.140 (.120-.150)	.170 (.150-.250)	701
	07-08	.062 (.054-.070)	.060 (.050-.070)	.090 (.070-.100)	.120 (.100-.160)	.160 (.110-.240)	376
	09-10	.059 (.053-.066)	.060 (.050-.060)	.090 (.070-.100)	.130 (.110-.170)	.180 (.150-.220)	451
20 years and older	99-00	.118 (.104-.135)	.111 (.097-.135)	.175 (.149-.209)	.263 (.227-.320)	.352 (.320-.391)	1297
	01-02	.122 (.115-.129)	.115 (.108-.121)	.167 (.153-.181)	.265 (.241-.300)	.364 (.318-.405)	1559
	03-04	*	.079 (<LOD-.087)	.135 (.116-.145)	.209 (.195-.233)	.278 (.250-.294)	1543
	05-06	.070 (.066-.075)	.060 (.060-.070)	.100 (.090-.110)	.170 (.150-.190)	.250 (.190-.300)	1520
	07-08	.062 (.058-.066)	.060 (.050-.060)	.090 (.080-.100)	.140 (.130-.160)	.200 (.160-.240)	1857
	09-10	.057 (.053-.061)	.050 (.050-.060)	.080 (.080-.090)	.130 (.120-.140)	.190 (.160-.220)	2018
Gender							
Males	99-00	.112 (.099-.127)	.109 (.095-.127)	.164 (.146-.181)	.226 (.204-.268)	.320 (.235-.391)	1132
	01-02	.114 (.107-.123)	.108 (.103-.115)	.153 (.138-.171)	.228 (.205-.250)	.333 (.281-.438)	1334
	03-04	.080 (.076-.084)	.075 (.069-.081)	.122 (.111-.132)	.192 (.173-.209)	.253 (.230-.278)	1281
	05-06	.070 (.064-.077)	.060 (.060-.070)	.100 (.090-.120)	.160 (.130-.220)	.250 (.170-.310)	1271
	07-08	.061 (.057-.066)	.060 (.050-.060)	.090 (.080-.100)	.140 (.130-.160)	.210 (.160-.260)	1327
	09-10	.055 (.050-.060)	.050 (.050-.060)	.080 (.070-.100)	.130 (.120-.150)	.190 (.160-.210)	1397
Females	99-00	.137 (.117-.161)	.131 (.108-.164)	.213 (.176-.247)	.320 (.263-.417)	.429 (.357-.485)	1144
	01-02	.139 (.131-.148)	.132 (.124-.140)	.196 (.178-.211)	.295 (.267-.317)	.371 (.333-.444)	1355
	03-04	*	< LOD	.143 (.125-.161)	.225 (.188-.261)	.288 (.250-.333)	1277
	05-06	.074 (.070-.078)	.070 (.070-.070)	.110 (.100-.110)	.170 (.150-.190)	.220 (.180-.300)	1305
	07-08	.067 (.062-.071)	.060 (.060-.070)	.100 (.090-.100)	.140 (.130-.160)	.200 (.160-.230)	1300
	09-10	.064 (.060-.069)	.060 (.060-.070)	.090 (.090-.100)	.150 (.130-.170)	.220 (.180-.260)	1450

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

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

[Biomonitoring Summary](#)

Urinary Antimony (creatinine corrected)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	.120 (.107-.135)	.114 (.105-.129)	.167 (.148-.203)	.250 (.209-.315)	.333 (.280-.357)	787
	01-02	.138 (.128-.149)	.130 (.117-.143)	.182 (.159-.203)	.269 (.229-.308)	.338 (.308-.429)	682
	03-04	.086 (.076-.098)	.082 (<LOD-.092)	.129 (.107-.151)	.189 (.154-.238)	.238 (.185-.321)	618
	05-06	.087 (.076-.099)	.080 (.070-.080)	.120 (.110-.130)	.190 (.150-.310)	.370 (.200-.800)	652
	07-08	.069 (.059-.081)	.060 (.050-.080)	.100 (.080-.120)	.160 (.130-.180)	.200 (.160-.360)	515
	09-10	.066 (.063-.071)	.060 (.060-.060)	.100 (.080-.110)	.160 (.130-.190)	.240 (.190-.280)	613
Non-Hispanic blacks	99-00	.114 (.099-.133)	.112 (.098-.130)	.163 (.144-.183)	.236 (.195-.338)	.343 (.255-.425)	554
	01-02	.123 (.113-.134)	.115 (.106-.127)	.163 (.150-.181)	.233 (.208-.267)	.300 (.248-.373)	667
	03-04	.078 (.071-.085)	.074 (.069-.082)	.109 (.096-.124)	.170 (.148-.192)	.222 (.179-.257)	723
	05-06	.064 (.058-.071)	.060 (.050-.070)	.090 (.080-.090)	.130 (.120-.150)	.190 (.150-.220)	692
	07-08	.062 (.059-.066)	.060 (.050-.070)	.090 (.080-.090)	.140 (.120-.160)	.180 (.160-.220)	589
	09-10	.058 (.053-.063)	.060 (.050-.060)	.080 (.070-.090)	.130 (.110-.160)	.170 (.150-.190)	544
Non-Hispanic whites	99-00	.129 (.109-.152)	.125 (.102-.152)	.195 (.167-.225)	.298 (.239-.352)	.400 (.333-.444)	768
	01-02	.127 (.117-.138)	.120 (.113-.130)	.176 (.159-.198)	.280 (.241-.317)	.380 (.318-.471)	1132
	03-04	*	.081 (<LOD-.089)	.139 (.124-.147)	.217 (.200-.238)	.286 (.253-.333)	1074
	05-06	.072 (.068-.077)	.070 (.060-.070)	.110 (.100-.110)	.170 (.150-.190)	.230 (.190-.280)	1041
	07-08	.064 (.060-.069)	.060 (.050-.070)	.090 (.080-.100)	.140 (.140-.160)	.210 (.170-.230)	1095
	09-10	.060 (.055-.065)	.060 (.050-.060)	.090 (.080-.100)	.140 (.120-.170)	.200 (.170-.250)	1225

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

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

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Urinary Total Arsenic

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	8.30 (7.19-9.57)	7.70 (6.90-8.90)	16.0 (14.1-18.7)	37.4 (31.6-43.5)	65.4 (48.7-83.3)	2557
	05-06	9.29 (8.05-10.7)	8.65 (7.48-9.99)	17.1 (14.9-20.6)	41.1 (33.3-49.7)	66.7 (53.7-87.0)	2576
	07-08	8.10 (7.44-8.83)	7.49 (6.90-8.12)	14.9 (13.2-17.0)	33.3 (29.8-38.7)	50.8 (42.3-65.1)	2605
	09-10	9.28 (8.47-10.2)	8.15 (7.20-8.98)	18.0 (15.3-20.8)	44.6 (39.0-55.1)	85.6 (64.7-114)	2860
Age group							
6-11 years	03-04	7.08 (5.66-8.84)	6.80 (5.90-7.70)	10.9 (8.90-14.2)	24.6 (13.8-61.8)	46.9 (17.5-178)	290
	05-06	7.19 (5.81-8.90)	6.96 (5.32-8.88)	11.5 (9.19-16.0)	19.6 (13.1-51.5)	34.1 (19.6-58.5)	355
	07-08	6.85 (5.98-7.83)	6.40 (5.74-7.23)	10.8 (9.75-12.3)	22.5 (16.9-34.7)	41.0 (21.1-52.8)	390
	09-10	6.63 (5.74-7.66)	5.94 (5.14-7.19)	10.8 (9.37-12.5)	26.0 (18.2-33.4)	37.7 (27.8-65.6)	378
12-19 years	03-04	8.55 (7.34-9.97)	8.10 (6.80-9.40)	15.2 (12.2-17.8)	30.5 (23.1-40.4)	46.1 (32.9-62.5)	725
	05-06	8.19 (6.87-9.77)	7.92 (6.37-9.50)	14.0 (11.6-18.1)	28.2 (22.9-32.9)	41.9 (32.7-48.0)	701
	07-08	7.09 (6.17-8.14)	6.87 (5.88-7.86)	11.4 (9.41-13.7)	20.4 (16.1-26.6)	38.2 (21.6-53.3)	373
	09-10	6.45 (5.58-7.47)	6.11 (5.26-6.89)	10.8 (8.59-13.7)	25.9 (16.2-32.9)	38.8 (27.8-55.1)	454
20 years and older	03-04	8.41 (7.25-9.77)	7.90 (7.00-9.10)	17.0 (15.0-19.7)	40.5 (34.9-46.2)	66.2 (51.2-93.1)	1542
	05-06	9.76 (8.43-11.3)	9.12 (7.85-10.4)	18.9 (15.8-22.9)	44.2 (35.2-56.1)	71.4 (57.7-98.3)	1520
	07-08	8.43 (7.70-9.22)	7.94 (7.09-8.67)	16.2 (14.5-18.6)	35.2 (30.4-42.3)	59.0 (44.2-75.6)	1842
	09-10	10.2 (9.14-11.3)	8.75 (7.95-9.81)	20.4 (17.2-24.1)	52.1 (42.4-66.1)	93.1 (74.2-127)	2028
Gender							
Males	03-04	9.50 (8.34-10.8)	8.90 (7.70-9.80)	17.6 (15.2-20.1)	41.6 (32.5-52.8)	65.8 (48.7-95.4)	1281
	05-06	10.1 (8.61-11.8)	8.95 (8.05-10.0)	18.3 (15.5-22.9)	40.8 (31.0-52.6)	63.7 (46.4-78.7)	1271
	07-08	9.25 (8.28-10.3)	8.50 (7.37-9.53)	17.0 (14.6-19.4)	36.0 (32.1-44.2)	62.5 (44.3-84.6)	1318
	09-10	10.1 (9.06-11.3)	8.80 (7.80-9.75)	20.4 (16.1-23.9)	47.4 (42.1-64.1)	89.1 (71.6-114)	1401
Females	03-04	7.30 (6.02-8.84)	6.90 (5.90-8.30)	15.0 (11.3-19.5)	33.4 (26.5-41.7)	60.5 (40.8-77.1)	1276
	05-06	8.60 (7.38-10.0)	8.18 (6.64-9.97)	15.9 (13.7-19.9)	41.5 (32.2-53.7)	72.6 (54.8-122)	1305
	07-08	7.14 (6.51-7.82)	6.54 (6.09-7.14)	12.7 (11.6-14.4)	30.1 (26.0-34.0)	49.1 (40.1-57.5)	1287
	09-10	8.55 (7.44-9.83)	7.63 (6.45-8.62)	15.8 (13.1-19.9)	41.5 (31.7-55.5)	81.5 (54.3-132)	1459
Race/ethnicity							
Mexican Americans	03-04	9.29 (8.12-10.6)	9.20 (8.10-10.3)	16.2 (13.5-19.9)	34.4 (24.0-60.5)	68.2 (41.3-111)	618
	05-06	9.55 (8.54-10.7)	9.11 (7.99-10.3)	15.6 (14.0-17.1)	29.2 (21.4-56.8)	67.6 (41.7-81.4)	652
	07-08	8.98 (8.13-9.92)	8.84 (7.80-9.48)	15.4 (12.3-19.7)	35.2 (25.0-46.0)	53.0 (44.2-77.4)	510
	09-10	8.47 (7.30-9.84)	7.96 (6.87-9.08)	13.9 (11.3-17.7)	34.7 (25.0-53.2)	60.9 (49.3-78.7)	613
Non-Hispanic blacks	03-04	11.6 (9.50-14.1)	10.4 (7.90-11.8)	21.5 (14.9-34.4)	43.5 (36.2-61.8)	78.0 (43.6-141)	722
	05-06	11.0 (8.60-14.0)	9.55 (6.99-13.3)	21.9 (14.9-28.9)	44.9 (31.1-71.4)	82.3 (49.2-164)	692
	07-08	10.5 (9.40-11.7)	9.21 (8.22-10.4)	18.4 (16.1-21.5)	42.4 (32.9-52.8)	65.6 (45.5-112)	585
	09-10	10.9 (9.46-12.5)	9.26 (7.70-11.4)	21.7 (17.6-24.2)	49.1 (32.2-81.7)	84.8 (51.3-174)	546
Non-Hispanic whites	03-04	7.12 (6.13-8.27)	7.00 (6.10-7.90)	13.7 (11.3-15.8)	29.0 (22.6-35.9)	53.1 (38.4-65.6)	1074
	05-06	8.66 (7.20-10.4)	8.05 (6.52-9.66)	16.3 (13.4-20.6)	40.8 (29.4-50.2)	58.5 (46.0-88.0)	1041
	07-08	6.98 (6.31-7.71)	6.46 (5.93-7.29)	12.4 (11.3-14.3)	28.3 (21.6-32.6)	42.1 (32.3-50.0)	1088
	09-10	8.18 (7.46-8.96)	7.24 (6.46-8.21)	14.8 (12.7-17.4)	38.9 (31.7-44.4)	66.3 (49.3-88.7)	1224

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.74, 0.74, 0.74, and 0.74 respectively.

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Urinary Total Arsenic (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	8.24 (7.07-9.59)	7.04 (5.93-8.51)	14.1 (11.6-17.2)	30.4 (26.0-38.7)	50.4 (40.3-64.5)	2557
	05-06	9.15 (7.93-10.6)	7.70 (6.55-8.98)	15.2 (11.7-19.4)	35.1 (26.5-44.7)	62.8 (44.7-85.0)	2576
	07-08	8.46 (7.78-9.21)	7.06 (6.56-7.74)	13.8 (12.5-15.2)	28.9 (24.2-36.7)	49.0 (38.8-70.5)	2605
	09-10	9.90 (9.06-10.8)	7.90 (6.98-8.97)	17.6 (15.4-20.2)	45.2 (36.6-53.3)	80.8 (60.5-94.4)	2860
Age group							
6-11 years	03-04	8.25 (6.58-10.3)	7.18 (5.93-9.45)	11.7 (9.10-16.3)	22.2 (12.0-69.5)	40.1 (14.7-188)	290
	05-06	8.88 (7.05-11.2)	7.87 (6.19-9.42)	11.8 (9.32-18.9)	24.5 (13.0-62.8)	45.4 (22.9-80.9)	355
	07-08	8.87 (8.06-9.77)	7.53 (6.73-7.88)	13.4 (10.2-16.0)	26.7 (19.9-34.0)	37.2 (28.6-71.4)	390
	09-10	8.97 (7.93-10.2)	7.42 (6.70-8.32)	11.0 (9.90-14.0)	33.5 (17.0-54.6)	60.8 (36.6-84.9)	378
12-19 years	03-04	6.11 (5.23-7.13)	5.06 (4.47-6.04)	9.66 (7.44-11.2)	17.8 (12.0-26.0)	27.8 (20.7-35.9)	725
	05-06	6.30 (5.56-7.14)	5.19 (4.80-6.19)	9.62 (8.12-11.1)	19.4 (13.9-25.8)	28.0 (21.9-33.2)	701
	07-08	5.50 (4.91-6.16)	4.96 (4.25-5.40)	7.69 (6.09-9.31)	16.8 (10.8-21.1)	22.5 (16.8-29.1)	373
	09-10	6.06 (5.34-6.87)	4.95 (4.39-5.81)	9.18 (7.00-11.0)	19.2 (14.5-21.3)	28.4 (20.8-35.7)	454
20 years and older	03-04	8.64 (7.38-10.1)	7.47 (6.20-9.01)	15.4 (12.7-18.8)	33.8 (27.3-41.2)	53.9 (45.4-64.5)	1542
	05-06	9.75 (8.46-11.2)	8.22 (6.98-9.75)	17.0 (12.8-21.3)	41.0 (29.6-52.5)	68.4 (52.8-89.7)	1520
	07-08	9.00 (8.20-9.88)	7.55 (6.79-8.53)	14.9 (13.1-17.1)	32.5 (25.8-41.0)	59.4 (41.0-86.2)	1842
	09-10	10.8 (9.71-12.0)	8.73 (7.69-9.71)	20.1 (16.5-24.2)	50.8 (40.5-59.7)	87.3 (70.0-105)	2028
Gender							
Males	03-04	8.00 (6.81-9.40)	6.75 (5.66-8.35)	13.7 (11.0-18.0)	28.7 (25.1-36.4)	45.6 (35.3-62.1)	1281
	05-06	8.26 (7.09-9.63)	7.16 (5.87-8.54)	12.9 (10.2-18.0)	28.8 (22.9-36.3)	46.1 (35.1-66.5)	1271
	07-08	8.30 (7.49-9.18)	6.79 (6.39-7.61)	13.2 (11.8-15.2)	28.9 (23.5-38.5)	47.7 (35.7-68.1)	1318
	09-10	9.21 (8.55-9.93)	7.22 (6.43-8.67)	17.0 (14.9-18.6)	41.8 (35.4-47.9)	66.9 (52.0-81.5)	1401
Females	03-04	8.47 (7.12-10.1)	7.33 (6.10-8.75)	14.4 (11.7-17.7)	32.3 (24.2-46.6)	58.4 (42.8-75.0)	1276
	05-06	10.1 (8.72-11.7)	8.29 (7.23-9.87)	17.4 (13.0-21.4)	43.8 (29.2-61.5)	74.1 (55.0-96.2)	1305
	07-08	8.63 (7.91-9.41)	7.13 (6.53-8.33)	14.1 (12.3-16.9)	27.9 (24.1-37.0)	51.4 (39.7-83.3)	1287
	09-10	10.6 (9.36-12.0)	8.38 (7.40-9.41)	18.6 (14.9-23.9)	50.8 (35.1-72.9)	87.8 (66.8-109)	1459
Race/ethnicity							
Mexican Americans	03-04	8.61 (7.33-10.1)	7.76 (6.30-9.44)	12.6 (10.2-15.9)	24.0 (17.7-34.8)	42.4 (24.8-62.4)	618
	05-06	8.98 (7.89-10.2)	7.48 (6.72-8.87)	12.8 (11.0-16.3)	28.1 (21.1-35.5)	49.1 (31.0-108)	652
	07-08	8.88 (7.71-10.2)	7.38 (6.51-8.63)	14.1 (10.6-17.8)	28.6 (22.5-35.3)	48.2 (31.1-75.7)	510
	09-10	8.88 (7.87-10.0)	7.62 (6.69-8.45)	13.2 (10.7-17.2)	31.4 (23.7-38.5)	49.8 (37.5-68.9)	613
Non-Hispanic blacks	03-04	8.31 (6.99-9.88)	6.88 (5.66-8.41)	13.8 (11.5-17.0)	27.6 (17.9-56.0)	54.3 (27.5-120)	722
	05-06	7.96 (6.40-9.92)	6.48 (5.21-8.30)	13.4 (10.0-18.6)	32.5 (18.7-66.5)	71.4 (35.6-98.8)	692
	07-08	7.72 (6.98-8.54)	6.60 (6.01-7.56)	13.4 (11.5-15.4)	25.7 (22.1-30.0)	42.7 (31.4-60.3)	585
	09-10	8.67 (7.54-9.98)	7.26 (5.96-9.02)	15.6 (12.4-21.3)	38.7 (31.5-48.7)	63.9 (43.1-102)	546
Non-Hispanic whites	03-04	7.50 (6.25-9.01)	6.32 (5.28-7.96)	12.5 (9.86-17.1)	26.8 (21.8-32.0)	40.0 (31.3-53.9)	1074
	05-06	9.01 (7.57-10.7)	7.68 (6.18-9.56)	14.3 (11.1-20.8)	31.9 (24.1-46.1)	59.4 (37.9-96.2)	1041
	07-08	7.82 (7.05-8.68)	6.72 (6.00-7.54)	12.5 (11.1-13.9)	24.6 (19.6-32.3)	43.1 (29.1-64.0)	1088
	09-10	9.14 (8.35-10.0)	7.10 (6.43-8.06)	15.8 (13.7-18.4)	40.9 (30.4-50.8)	66.4 (50.9-90.0)	1224

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Urinary Arsenic (V) acid

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	1.10 (<LOD-1.50)	2568
	05-06	*	< LOD	< LOD	< LOD	1.06 (<LOD-1.43)	2588
	07-08	*	< LOD	< LOD	< LOD	< LOD	2576
	09-10	*	< LOD	< LOD	< LOD	< LOD	2852
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	1.10 (<LOD-1.30)	292
	05-06	*	< LOD	< LOD	< LOD	< LOD	354
	07-08	*	< LOD	< LOD	< LOD	< LOD	390
	09-10	*	< LOD	< LOD	< LOD	< LOD	379
12-19 years	03-04	*	< LOD	< LOD	< LOD	1.20 (<LOD-1.60)	728
	05-06	*	< LOD	< LOD	< LOD	1.00 (<LOD-1.30)	703
	07-08	*	< LOD	< LOD	< LOD	< LOD	366
	09-10	*	< LOD	< LOD	< LOD	< LOD	453
20 years and older	03-04	*	< LOD	< LOD	< LOD	1.10 (<LOD-1.50)	1548
	05-06	*	< LOD	< LOD	< LOD	1.09 (<LOD-1.71)	1531
	07-08	*	< LOD	< LOD	< LOD	< LOD	1820
	09-10	*	< LOD	< LOD	< LOD	< LOD	2020
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	1.20 (<LOD-1.50)	1284
	05-06	*	< LOD	< LOD	< LOD	1.14 (<LOD-1.71)	1276
	07-08	*	< LOD	< LOD	< LOD	< LOD	1289
	09-10	*	< LOD	< LOD	< LOD	< LOD	1396
Females	03-04	*	< LOD	< LOD	< LOD	1.10 (<LOD-1.30)	1284
	05-06	*	< LOD	< LOD	< LOD	1.01 (<LOD-1.22)	1312
	07-08	*	< LOD	< LOD	< LOD	< LOD	1287
	09-10	*	< LOD	< LOD	< LOD	< LOD	1456
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	1.20 (<LOD-1.60)	621
	05-06	*	< LOD	< LOD	< LOD	< LOD	651
	07-08	*	< LOD	< LOD	< LOD	< LOD	513
	09-10	*	< LOD	< LOD	< LOD	< LOD	618
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	1.20 (<LOD-1.80)	725
	05-06	*	< LOD	< LOD	< LOD	< LOD	695
	07-08	*	< LOD	< LOD	< LOD	< LOD	586
	09-10	*	< LOD	< LOD	< LOD	< LOD	543
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	1.10 (<LOD-1.50)	1078
	05-06	*	< LOD	< LOD	< LOD	1.10 (<LOD-1.74)	1050
	07-08	*	< LOD	< LOD	< LOD	< LOD	1063
	09-10	*	< LOD	< LOD	< LOD	< LOD	1210

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 1.0, 1.0, 1.0, and 1.0 respectively.
 < LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

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

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Urinary Arsenic (V) acid (creatinine corrected)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	3.04 (<LOD-3.50)	2568
	05-06	*	< LOD	< LOD	< LOD	3.23 (<LOD-3.55)	2588
	07-08	*	< LOD	< LOD	< LOD	< LOD	2576
	09-10	*	< LOD	< LOD	< LOD	< LOD	2851
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	2.80 (<LOD-4.00)	292
	05-06	*	< LOD	< LOD	< LOD	< LOD	354
	07-08	*	< LOD	< LOD	< LOD	< LOD	390
	09-10	*	< LOD	< LOD	< LOD	< LOD	378
12-19 years	03-04	*	< LOD	< LOD	< LOD	1.75 (<LOD-2.41)	728
	05-06	*	< LOD	< LOD	< LOD	1.69 (<LOD-2.73)	703
	07-08	*	< LOD	< LOD	< LOD	< LOD	366
	09-10	*	< LOD	< LOD	< LOD	< LOD	453
20 years and older	03-04	*	< LOD	< LOD	< LOD	3.18 (<LOD-3.70)	1548
	05-06	*	< LOD	< LOD	< LOD	3.38 (<LOD-3.94)	1531
	07-08	*	< LOD	< LOD	< LOD	< LOD	1820
	09-10	*	< LOD	< LOD	< LOD	< LOD	2020
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	2.61 (<LOD-3.18)	1284
	05-06	*	< LOD	< LOD	< LOD	2.14 (<LOD-2.73)	1276
	07-08	*	< LOD	< LOD	< LOD	< LOD	1289
	09-10	*	< LOD	< LOD	< LOD	< LOD	1395
Females	03-04	*	< LOD	< LOD	< LOD	3.33 (<LOD-3.89)	1284
	05-06	*	< LOD	< LOD	< LOD	3.55 (<LOD-4.44)	1312
	07-08	*	< LOD	< LOD	< LOD	< LOD	1287
	09-10	*	< LOD	< LOD	< LOD	< LOD	1456
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	2.69 (<LOD-3.50)	621
	05-06	*	< LOD	< LOD	< LOD	< LOD	651
	07-08	*	< LOD	< LOD	< LOD	< LOD	513
	09-10	*	< LOD	< LOD	< LOD	< LOD	618
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	1.75 (<LOD-2.19)	725
	05-06	*	< LOD	< LOD	< LOD	< LOD	695
	07-08	*	< LOD	< LOD	< LOD	< LOD	586
	09-10	*	< LOD	< LOD	< LOD	< LOD	542
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	3.33 (<LOD-3.95)	1078
	05-06	*	< LOD	< LOD	< LOD	3.38 (<LOD-3.80)	1050
	07-08	*	< LOD	< LOD	< LOD	< LOD	1063
	09-10	*	< LOD	< LOD	< LOD	< LOD	1210

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Arsenobetaine

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	1.55 (1.31-1.83)	1.00 (.800-1.40)	5.20 (4.00-6.50)	16.8 (12.7-22.3)	35.0 (27.6-44.6)	2568
	05-06	1.86 (1.43-2.41)	1.53 (.980-2.26)	6.73 (4.80-8.91)	22.6 (16.5-30.3)	40.6 (30.7-59.4)	2588
	07-08	*	.670 (.510-.910)	4.26 (3.53-4.88)	16.6 (12.5-20.2)	29.5 (22.8-37.1)	2576
	09-10	1.59 (1.38-1.83)	.940 (.720-1.26)	6.18 (4.67-7.87)	23.5 (19.8-30.1)	50.4 (35.7-63.2)	2870
Age group							
6-11 years	03-04	*	< LOD	1.80 (.800-4.00)	8.80 (3.90-29.9)	29.9 (6.20-190)	292
	05-06	*	< LOD	2.22 (.620-5.35)	7.14 (2.34-29.9)	18.9 (5.46-45.0)	354
	07-08	*	< LOD	1.24 (.780-2.42)	6.71 (3.37-8.38)	13.0 (7.22-25.2)	390
	09-10	*	< LOD	1.20 (.590-3.12)	7.98 (5.20-15.7)	19.4 (9.25-47.9)	380
12-19 years	03-04	*	.600 (.400-.800)	3.20 (2.00-4.70)	13.9 (7.20-25.1)	31.8 (17.2-35.8)	728
	05-06	*	.550 (<LOD-1.14)	3.76 (1.95-7.16)	12.4 (9.15-20.4)	25.6 (16.4-32.4)	703
	07-08	*	< LOD	1.72 (.780-2.62)	4.88 (3.49-9.17)	10.4 (6.81-23.6)	366
	09-10	*	< LOD	2.07 (1.26-3.60)	11.0 (5.35-16.7)	17.8 (12.8-24.0)	455
20 years and older	03-04	1.74 (1.48-2.05)	1.30 (1.00-1.60)	6.10 (4.90-7.10)	18.5 (14.0-23.5)	35.5 (26.8-50.5)	1548
	05-06	2.20 (1.71-2.84)	1.89 (1.41-2.64)	8.14 (5.86-10.4)	27.6 (18.7-35.7)	43.9 (36.0-67.9)	1531
	07-08	1.46 (1.28-1.67)	.960 (.750-1.22)	5.08 (4.30-6.20)	19.1 (14.3-23.7)	31.7 (23.9-46.1)	1820
	09-10	1.92 (1.63-2.26)	1.33 (.960-1.91)	7.60 (6.06-9.90)	28.2 (21.9-34.9)	59.5 (45.7-76.7)	2035
Gender							
Males	03-04	1.66 (1.43-1.93)	1.20 (.900-1.50)	5.80 (4.40-7.10)	18.6 (13.9-23.7)	35.0 (26.8-40.5)	1284
	05-06	1.83 (1.40-2.40)	1.44 (.920-2.04)	6.63 (5.06-8.66)	23.2 (12.8-33.4)	37.1 (28.5-51.3)	1276
	07-08	*	.910 (.660-1.26)	5.07 (4.01-6.81)	19.1 (13.8-22.6)	30.3 (22.8-46.1)	1289
	09-10	1.71 (1.48-1.97)	.990 (.780-1.33)	7.14 (5.38-9.86)	26.8 (21.5-31.8)	57.4 (36.4-64.6)	1402
Females	03-04	1.45 (1.17-1.80)	.900 (.700-1.40)	4.70 (3.40-6.20)	15.6 (11.1-25.3)	32.7 (21.1-51.3)	1284
	05-06	1.88 (1.42-2.50)	1.64 (.950-2.51)	6.81 (4.03-9.88)	21.8 (17.3-30.1)	43.3 (33.8-67.9)	1312
	07-08	*	.530 (.410-.650)	3.52 (2.94-4.35)	14.0 (10.9-17.5)	29.5 (19.4-34.0)	1287
	09-10	1.49 (1.20-1.84)	.890 (.590-1.35)	5.54 (3.56-7.74)	21.2 (14.7-32.7)	47.1 (32.5-76.4)	1468
Race/ethnicity							
Mexican Americans	03-04	1.19 (.871-1.62)	.800 (.500-1.30)	3.20 (1.80-5.20)	10.2 (6.70-21.4)	31.4 (16.3-39.1)	621
	05-06	1.44 (1.23-1.69)	1.04 (.770-1.35)	3.90 (3.03-5.06)	16.8 (11.1-32.0)	41.4 (23.4-57.9)	651
	07-08	*	.560 (<LOD-.910)	3.27 (2.00-5.65)	16.9 (9.73-20.8)	29.6 (19.3-40.5)	513
	09-10	*	.640 (.440-.800)	3.58 (1.80-5.89)	15.5 (7.83-24.6)	31.9 (18.7-44.7)	617
Non-Hispanic blacks	03-04	2.29 (1.60-3.28)	2.00 (1.20-3.50)	7.70 (5.00-12.0)	23.7 (13.2-38.7)	45.6 (25.1-94.0)	725
	05-06	2.55 (1.64-3.99)	2.42 (1.15-4.58)	8.74 (6.01-14.4)	23.8 (15.9-48.9)	59.6 (30.5-121)	695
	07-08	1.58 (1.31-1.90)	1.11 (.750-1.60)	5.88 (4.12-8.13)	21.9 (16.4-24.9)	35.9 (25.4-47.7)	586
	09-10	1.99 (1.60-2.47)	1.79 (1.05-2.41)	7.61 (5.34-10.0)	25.5 (15.4-37.6)	51.2 (31.0-90.9)	546
Non-Hispanic whites	03-04	1.37 (1.11-1.68)	.800 (.700-1.20)	4.30 (2.50-6.30)	13.3 (9.70-21.4)	29.3 (21.4-35.5)	1078
	05-06	1.74 (1.27-2.40)	1.41 (.750-2.27)	6.40 (3.93-9.04)	22.4 (14.1-30.1)	38.4 (27.8-66.8)	1050
	07-08	*	.530 (<LOD-.780)	3.63 (3.06-4.38)	12.6 (9.08-17.1)	24.3 (17.6-30.3)	1063
	09-10	1.43 (1.24-1.65)	.800 (.610-1.18)	5.40 (3.77-7.27)	20.6 (17.7-24.5)	41.3 (30.6-59.5)	1226

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

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

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

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Urinary Arsenobetaine (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	1.54 (1.30-1.82)	1.16 (.959-1.43)	5.00 (3.62-6.91)	16.2 (12.5-20.3)	29.4 (24.0-36.4)	2568
	05-06	1.82 (1.40-2.37)	1.64 (1.10-2.41)	6.64 (4.48-8.79)	20.3 (14.5-28.1)	37.0 (27.5-58.3)	2588
	07-08	*	1.00 (.850-1.18)	4.07 (3.36-4.98)	14.7 (11.1-17.8)	27.7 (18.9-45.4)	2576
	09-10	1.69 (1.45-1.97)	1.23 (.980-1.47)	6.48 (4.90-8.00)	23.6 (18.5-30.7)	49.6 (36.6-61.3)	2869
Age group							
6-11 years	03-04	*	< LOD	2.00 (1.15-4.83)	12.2 (4.13-39.7)	29.6 (6.80-153)	292
	05-06	*	< LOD	2.88 (1.04-6.25)	8.77 (2.88-40.5)	23.6 (6.86-74.8)	354
	07-08	*	< LOD	2.11 (1.27-3.79)	8.98 (4.76-14.8)	16.4 (8.98-23.8)	390
	09-10	*	< LOD	1.70 (1.21-3.02)	9.52 (5.08-20.7)	24.9 (9.81-50.7)	379
12-19 years	03-04	*	.531 (.400-.638)	2.14 (1.39-3.51)	9.29 (4.29-14.7)	17.3 (10.4-28.7)	728
	05-06	*	.620 (<LOD-.800)	2.82 (1.58-4.77)	10.5 (7.03-13.7)	15.4 (11.8-22.3)	703
	07-08	*	< LOD	1.28 (.650-1.72)	5.17 (2.31-6.53)	9.88 (5.72-16.0)	366
	09-10	*	< LOD	2.25 (1.17-3.76)	8.69 (5.03-12.8)	14.0 (9.82-15.5)	455
20 years and older	03-04	1.79 (1.51-2.12)	1.47 (1.15-1.88)	5.91 (4.32-7.72)	17.2 (13.4-21.8)	30.1 (26.1-36.4)	1548
	05-06	2.19 (1.70-2.82)	2.13 (1.40-2.83)	7.79 (5.38-10.2)	24.4 (16.6-32.9)	43.1 (30.5-71.4)	1531
	07-08	1.55 (1.36-1.78)	1.29 (1.13-1.52)	5.27 (3.91-6.40)	16.6 (12.2-21.6)	33.4 (21.0-55.9)	1820
	09-10	2.03 (1.70-2.42)	1.52 (1.18-2.16)	7.65 (6.04-10.4)	27.7 (22.1-35.9)	57.0 (39.7-71.9)	2035
Gender							
Males	03-04	1.40 (1.18-1.67)	1.11 (.909-1.28)	4.78 (3.61-6.70)	14.4 (11.1-18.5)	26.5 (18.6-29.9)	1284
	05-06	1.50 (1.15-1.96)	1.25 (.800-1.93)	5.11 (3.41-7.54)	15.3 (11.2-20.8)	30.5 (19.6-44.0)	1276
	07-08	*	1.04 (.870-1.25)	4.11 (3.16-5.30)	14.9 (10.1-17.9)	27.0 (17.8-49.2)	1289
	09-10	1.56 (1.35-1.80)	1.04 (.880-1.34)	6.20 (4.34-7.79)	23.4 (18.7-27.6)	39.2 (32.0-54.8)	1401
Females	03-04	1.68 (1.37-2.05)	1.25 (.938-1.67)	5.58 (3.50-7.43)	17.2 (12.3-24.5)	32.9 (25.6-46.3)	1284
	05-06	2.20 (1.65-2.93)	2.04 (1.30-2.92)	7.86 (5.38-10.8)	26.4 (16.6-35.6)	46.2 (30.3-74.3)	1312
	07-08	*	.980 (.800-1.18)	4.06 (3.35-5.29)	14.6 (11.1-17.8)	29.6 (18.2-50.0)	1287
	09-10	1.83 (1.48-2.26)	1.36 (1.04-1.75)	6.65 (4.68-9.21)	24.1 (16.5-37.3)	57.0 (36.3-71.3)	1468
Race/ethnicity							
Mexican Americans	03-04	1.10 (.786-1.55)	.877 (.612-1.40)	2.93 (1.78-5.21)	8.88 (5.50-15.4)	19.0 (9.64-29.4)	621
	05-06	1.35 (1.13-1.62)	.970 (.810-1.19)	4.21 (2.79-5.68)	16.6 (10.5-21.3)	36.9 (18.4-69.5)	651
	07-08	*	.780 (<LOD-1.21)	3.04 (1.99-5.09)	13.7 (9.09-16.7)	28.9 (16.2-46.7)	513
	09-10	*	.790 (.670-.940)	3.64 (2.28-4.41)	13.5 (7.78-19.1)	26.8 (16.5-42.0)	617
Non-Hispanic blacks	03-04	1.65 (1.19-2.30)	1.53 (.901-2.45)	5.81 (4.25-7.82)	13.6 (9.76-27.9)	32.9 (13.4-82.1)	725
	05-06	1.84 (1.20-2.83)	1.71 (.910-2.95)	6.07 (3.83-9.25)	19.4 (10.4-45.2)	47.5 (25.3-62.0)	695
	07-08	1.16 (.955-1.41)	.830 (.620-1.12)	4.44 (3.23-6.58)	14.9 (10.5-17.6)	25.1 (17.4-40.0)	586
	09-10	1.59 (1.29-1.96)	1.30 (.850-2.04)	5.92 (4.20-8.40)	19.5 (13.5-27.1)	37.9 (26.1-51.7)	545
Non-Hispanic whites	03-04	1.44 (1.15-1.80)	1.05 (.833-1.36)	4.47 (2.73-6.83)	14.3 (10.9-18.6)	26.5 (18.6-32.0)	1078
	05-06	1.81 (1.32-2.47)	1.65 (.970-2.55)	6.65 (3.95-9.34)	19.7 (12.6-30.5)	36.6 (25.1-71.4)	1050
	07-08	*	.970 (<LOD-1.18)	3.56 (2.93-4.53)	11.6 (8.98-16.6)	23.8 (15.5-41.7)	1063
	09-10	1.60 (1.36-1.87)	1.15 (.900-1.43)	5.85 (4.33-7.65)	22.8 (15.6-29.4)	38.5 (32.0-57.0)	1226

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

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

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Urinary Arsenocholine

Geometric mean and selected percentiles of urine concentrations (in $\mu\text{g As/L}$) for the U.S. population from the National Health and Nutrition Examination Survey.

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2568
	05-06	*	< LOD	< LOD	< LOD	< LOD	2588
	07-08	*	< LOD	< LOD	< LOD	< LOD	2576
	09-10	*	< LOD	< LOD	< LOD	< LOD	2871
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	292
	05-06	*	< LOD	< LOD	< LOD	< LOD	354
	07-08	*	< LOD	< LOD	< LOD	< LOD	390
	09-10	*	< LOD	< LOD	< LOD	< LOD	380
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	728
	05-06	*	< LOD	< LOD	< LOD	< LOD	703
	07-08	*	< LOD	< LOD	< LOD	< LOD	366
	09-10	*	< LOD	< LOD	< LOD	< LOD	456
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1548
	05-06	*	< LOD	< LOD	< LOD	< LOD	1531
	07-08	*	< LOD	< LOD	< LOD	< LOD	1820
	09-10	*	< LOD	< LOD	< LOD	< LOD	2035
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1284
	05-06	*	< LOD	< LOD	< LOD	< LOD	1276
	07-08	*	< LOD	< LOD	< LOD	< LOD	1289
	09-10	*	< LOD	< LOD	< LOD	< LOD	1403
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1284
	05-06	*	< LOD	< LOD	< LOD	< LOD	1312
	07-08	*	< LOD	< LOD	< LOD	< LOD	1287
	09-10	*	< LOD	< LOD	< LOD	< LOD	1468
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	621
	05-06	*	< LOD	< LOD	< LOD	< LOD	651
	07-08	*	< LOD	< LOD	< LOD	< LOD	513
	09-10	*	< LOD	< LOD	< LOD	< LOD	618
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	725
	05-06	*	< LOD	< LOD	< LOD	< LOD	695
	07-08	*	< LOD	< LOD	< LOD	< LOD	586
	09-10	*	< LOD	< LOD	< LOD	< LOD	546
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1078
	05-06	*	< LOD	< LOD	< LOD	< LOD	1050
	07-08	*	< LOD	< LOD	< LOD	< LOD	1063
	09-10	*	< LOD	< LOD	< LOD	< LOD	1226

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.6, 0.6, 0.6, and 0.6 respectively.
 < LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

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

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Urinary Arsenocholine (creatinine corrected)

Geometric mean and selected percentiles of urine concentrations (in $\mu\text{g As/g}$ of creatinine) for the U.S. population from the National Health and Nutrition Examination Survey.

	Survey years	Geometric	Selected percentiles				Sample size
		mean (95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2568
	05-06	*	< LOD	< LOD	< LOD	< LOD	2588
	07-08	*	< LOD	< LOD	< LOD	< LOD	2576
	09-10	*	< LOD	< LOD	< LOD	< LOD	2870
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	292
	05-06	*	< LOD	< LOD	< LOD	< LOD	354
	07-08	*	< LOD	< LOD	< LOD	< LOD	390
	09-10	*	< LOD	< LOD	< LOD	< LOD	379
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	728
	05-06	*	< LOD	< LOD	< LOD	< LOD	703
	07-08	*	< LOD	< LOD	< LOD	< LOD	366
	09-10	*	< LOD	< LOD	< LOD	< LOD	456
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1548
	05-06	*	< LOD	< LOD	< LOD	< LOD	1531
	07-08	*	< LOD	< LOD	< LOD	< LOD	1820
	09-10	*	< LOD	< LOD	< LOD	< LOD	2035
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1284
	05-06	*	< LOD	< LOD	< LOD	< LOD	1276
	07-08	*	< LOD	< LOD	< LOD	< LOD	1289
	09-10	*	< LOD	< LOD	< LOD	< LOD	1402
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1284
	05-06	*	< LOD	< LOD	< LOD	< LOD	1312
	07-08	*	< LOD	< LOD	< LOD	< LOD	1287
	09-10	*	< LOD	< LOD	< LOD	< LOD	1468
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	621
	05-06	*	< LOD	< LOD	< LOD	< LOD	651
	07-08	*	< LOD	< LOD	< LOD	< LOD	513
	09-10	*	< LOD	< LOD	< LOD	< LOD	618
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	725
	05-06	*	< LOD	< LOD	< LOD	< LOD	695
	07-08	*	< LOD	< LOD	< LOD	< LOD	586
	09-10	*	< LOD	< LOD	< LOD	< LOD	545
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1078
	05-06	*	< LOD	< LOD	< LOD	< LOD	1050
	07-08	*	< LOD	< LOD	< LOD	< LOD	1063
	09-10	*	< LOD	< LOD	< LOD	< LOD	1226

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Arsenous (III) acid

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2568
	05-06	*	< LOD	< LOD	< LOD	< LOD	2588
	07-08	*	< LOD	< LOD	< LOD	< LOD	2576
	09-10	*	< LOD	< LOD	< LOD	< LOD	2871
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	292
	05-06	*	< LOD	< LOD	< LOD	< LOD	354
	07-08	*	< LOD	< LOD	< LOD	< LOD	390
	09-10	*	< LOD	< LOD	< LOD	< LOD	380
12-19 years	03-04	*	< LOD	< LOD	< LOD	1.40 (<LOD-1.70)	728
	05-06	*	< LOD	< LOD	< LOD	1.20 (<LOD-1.40)	703
	07-08	*	< LOD	< LOD	< LOD	< LOD	366
	09-10	*	< LOD	< LOD	< LOD	< LOD	456
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1548
	05-06	*	< LOD	< LOD	< LOD	< LOD	1531
	07-08	*	< LOD	< LOD	< LOD	< LOD	1820
	09-10	*	< LOD	< LOD	< LOD	< LOD	2035
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1284
	05-06	*	< LOD	< LOD	< LOD	1.26 (<LOD-1.73)	1276
	07-08	*	< LOD	< LOD	< LOD	< LOD	1289
	09-10	*	< LOD	< LOD	< LOD	1.24 (<LOD-1.50)	1403
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1284
	05-06	*	< LOD	< LOD	< LOD	< LOD	1312
	07-08	*	< LOD	< LOD	< LOD	< LOD	1287
	09-10	*	< LOD	< LOD	< LOD	< LOD	1468
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	2.00 (<LOD-3.00)	621
	05-06	*	< LOD	< LOD	< LOD	< LOD	651
	07-08	*	< LOD	< LOD	< LOD	1.20 (<LOD-1.76)	513
	09-10	*	< LOD	< LOD	< LOD	< LOD	618
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	1.20 (<LOD-1.80)	725
	05-06	*	< LOD	< LOD	< LOD	< LOD	695
	07-08	*	< LOD	< LOD	< LOD	< LOD	586
	09-10	*	< LOD	< LOD	< LOD	< LOD	546
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1078
	05-06	*	< LOD	< LOD	< LOD	< LOD	1050
	07-08	*	< LOD	< LOD	< LOD	< LOD	1063
	09-10	*	< LOD	< LOD	< LOD	< LOD	1226

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 1.2, 1.2, 1.2, and 1.2 respectively.
 < LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Arsenous (III) acid (creatinine corrected)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2568
	05-06	*	< LOD	< LOD	< LOD	< LOD	2588
	07-08	*	< LOD	< LOD	< LOD	< LOD	2576
	09-10	*	< LOD	< LOD	< LOD	< LOD	2870
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	292
	05-06	*	< LOD	< LOD	< LOD	< LOD	354
	07-08	*	< LOD	< LOD	< LOD	< LOD	390
	09-10	*	< LOD	< LOD	< LOD	< LOD	379
12-19 years	03-04	*	< LOD	< LOD	< LOD	1.95 (<LOD-2.76)	728
	05-06	*	< LOD	< LOD	< LOD	2.02 (<LOD-3.04)	703
	07-08	*	< LOD	< LOD	< LOD	< LOD	366
	09-10	*	< LOD	< LOD	< LOD	< LOD	456
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1548
	05-06	*	< LOD	< LOD	< LOD	< LOD	1531
	07-08	*	< LOD	< LOD	< LOD	< LOD	1820
	09-10	*	< LOD	< LOD	< LOD	< LOD	2035
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1284
	05-06	*	< LOD	< LOD	< LOD	2.43 (<LOD-3.15)	1276
	07-08	*	< LOD	< LOD	< LOD	< LOD	1289
	09-10	*	< LOD	< LOD	< LOD	2.93 (<LOD-3.54)	1402
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1284
	05-06	*	< LOD	< LOD	< LOD	< LOD	1312
	07-08	*	< LOD	< LOD	< LOD	< LOD	1287
	09-10	*	< LOD	< LOD	< LOD	< LOD	1468
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	3.08 (<LOD-4.44)	621
	05-06	*	< LOD	< LOD	< LOD	< LOD	651
	07-08	*	< LOD	< LOD	< LOD	3.54 (<LOD-4.72)	513
	09-10	*	< LOD	< LOD	< LOD	< LOD	618
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	2.00 (<LOD-2.29)	725
	05-06	*	< LOD	< LOD	< LOD	< LOD	695
	07-08	*	< LOD	< LOD	< LOD	< LOD	586
	09-10	*	< LOD	< LOD	< LOD	< LOD	545
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1078
	05-06	*	< LOD	< LOD	< LOD	< LOD	1050
	07-08	*	< LOD	< LOD	< LOD	< LOD	1063
	09-10	*	< LOD	< LOD	< LOD	< LOD	1226

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Dimethylarsinic acid

Metabolite of Arsenic

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	3.71 (3.33-4.14)	3.90 (3.00-4.00)	6.00 (5.00-7.00)	11.0 (9.20-12.0)	16.0 (13.0-17.8)	2568
	05-06	3.95 (3.59-4.35)	3.90 (3.46-4.31)	6.17 (5.53-7.04)	10.3 (9.00-12.2)	15.0 (12.2-17.8)	2588
	07-08	3.67 (3.44-3.91)	3.58 (3.44-3.84)	5.96 (5.44-6.57)	9.78 (8.72-11.2)	13.3 (11.8-15.3)	2576
	09-10	3.67 (3.43-3.93)	3.50 (3.25-3.76)	6.16 (5.59-6.73)	11.5 (9.35-13.7)	17.4 (14.0-21.0)	2871
Age group							
6-11 years	03-04	3.73 (3.12-4.45)	4.00 (3.00-4.00)	6.00 (5.00-7.00)	9.00 (7.00-12.0)	12.0 (8.00-22.0)	292
	05-06	3.96 (3.49-4.49)	3.94 (3.20-4.71)	5.94 (5.01-7.10)	10.5 (7.10-12.1)	13.0 (10.7-15.3)	354
	07-08	3.86 (3.45-4.32)	3.76 (3.47-4.01)	6.10 (5.29-6.99)	10.4 (7.57-13.9)	15.2 (9.32-39.2)	390
	09-10	3.53 (3.17-3.92)	3.27 (2.81-3.87)	5.76 (5.07-6.53)	10.7 (7.84-11.9)	12.8 (11.0-14.4)	380
12-19 years	03-04	3.85 (3.34-4.42)	4.00 (3.00-4.00)	6.00 (5.00-7.10)	9.30 (7.70-12.0)	13.0 (10.0-16.0)	728
	05-06	3.97 (3.46-4.55)	3.97 (3.31-4.64)	5.74 (5.11-7.10)	9.43 (7.63-11.6)	12.0 (10.7-13.9)	703
	07-08	3.60 (3.16-4.09)	3.66 (3.24-4.26)	5.53 (4.75-6.72)	8.90 (7.33-9.95)	10.7 (9.08-13.3)	366
	09-10	3.08 (2.77-3.43)	2.89 (2.64-3.29)	5.05 (4.44-5.77)	7.89 (6.87-10.1)	11.3 (8.75-13.8)	456
20 years and older	03-04	3.69 (3.31-4.11)	3.70 (3.00-4.00)	6.00 (5.00-7.00)	11.0 (10.0-12.0)	16.0 (13.0-19.0)	1548
	05-06	3.95 (3.58-4.36)	3.87 (3.46-4.32)	6.30 (5.59-7.28)	10.3 (9.25-13.3)	16.2 (12.5-19.4)	1531
	07-08	3.66 (3.43-3.91)	3.56 (3.41-3.80)	5.97 (5.44-6.63)	9.89 (8.72-11.4)	13.8 (11.8-15.5)	1820
	09-10	3.79 (3.51-4.09)	3.60 (3.33-3.87)	6.40 (5.71-7.03)	12.1 (9.52-16.0)	18.2 (15.8-23.6)	2035
Gender							
Males	03-04	4.12 (3.60-4.71)	4.00 (3.70-4.30)	6.00 (5.60-7.70)	11.0 (9.00-15.0)	17.0 (12.1-22.0)	1284
	05-06	4.17 (3.79-4.59)	4.04 (3.68-4.43)	6.32 (5.41-7.61)	10.5 (8.68-13.3)	14.8 (11.8-19.2)	1276
	07-08	4.05 (3.73-4.40)	3.96 (3.63-4.27)	6.53 (5.77-7.15)	10.3 (9.31-12.0)	14.6 (11.6-20.2)	1289
	09-10	3.89 (3.50-4.32)	3.71 (3.35-4.11)	6.33 (5.80-7.02)	11.6 (8.80-17.3)	19.2 (13.0-24.7)	1403
Females	03-04	3.37 (3.00-3.78)	3.00 (3.00-4.00)	5.50 (4.80-6.20)	10.0 (8.00-11.0)	14.0 (11.0-17.7)	1284
	05-06	3.75 (3.37-4.18)	3.70 (3.28-4.21)	6.03 (5.46-6.99)	9.95 (8.81-12.2)	15.5 (11.6-19.0)	1312
	07-08	3.34 (3.13-3.57)	3.37 (3.15-3.53)	5.48 (5.00-6.05)	8.99 (7.97-10.4)	11.9 (10.7-13.9)	1287
	09-10	3.48 (3.22-3.76)	3.28 (2.95-3.63)	5.85 (5.21-6.69)	11.5 (9.42-13.3)	16.1 (13.8-17.7)	1468
Race/ethnicity							
Mexican Americans	03-04	4.72 (4.27-5.22)	4.80 (4.00-5.00)	7.00 (6.00-9.00)	12.0 (10.0-16.0)	17.0 (12.0-25.0)	621
	05-06	4.43 (4.15-4.72)	4.66 (4.26-5.13)	6.93 (6.38-7.58)	9.51 (8.70-11.1)	13.1 (10.3-15.1)	651
	07-08	4.36 (4.05-4.69)	4.62 (4.07-5.07)	7.14 (6.23-7.76)	9.67 (8.39-10.8)	11.7 (9.96-17.6)	513
	09-10	3.90 (3.45-4.40)	3.98 (3.18-4.63)	6.53 (5.61-7.15)	10.7 (8.95-13.2)	16.2 (13.1-19.2)	618
Non-Hispanic blacks	03-04	4.27 (3.71-4.92)	4.00 (3.50-5.00)	7.00 (6.00-8.00)	11.6 (9.00-15.0)	16.0 (14.0-18.7)	725
	05-06	4.28 (3.68-4.98)	4.02 (3.37-4.82)	6.42 (5.31-7.36)	10.9 (8.22-13.1)	15.2 (11.5-27.1)	695
	07-08	4.19 (3.92-4.49)	3.98 (3.63-4.27)	6.69 (5.80-7.43)	11.2 (10.1-12.5)	14.7 (12.1-19.2)	586
	09-10	4.09 (3.63-4.61)	3.93 (3.31-4.36)	7.13 (5.99-8.63)	12.3 (10.1-17.0)	18.2 (13.7-27.8)	546
Non-Hispanic whites	03-04	3.27 (2.95-3.62)	3.00 (3.00-3.80)	5.00 (4.60-6.00)	9.00 (7.00-10.0)	12.0 (9.50-15.0)	1078
	05-06	3.69 (3.28-4.15)	3.60 (3.19-4.08)	5.66 (5.10-6.70)	9.62 (8.11-11.8)	13.9 (10.6-17.8)	1050
	07-08	3.23 (3.01-3.48)	3.34 (3.04-3.53)	5.14 (4.77-5.59)	8.27 (7.48-9.07)	10.5 (9.25-13.2)	1063
	09-10	3.21 (3.07-3.37)	3.12 (2.91-3.29)	5.32 (5.00-5.66)	8.65 (7.23-10.1)	12.0 (10.1-14.4)	1226

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 1.7, 1.7, 1.7, and 1.7 respectively.

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Dimethylarsinic acid (creatinine corrected)

Metabolite of Arsenic

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	3.69 (3.24-4.19)	3.37 (2.94-3.91)	5.71 (4.69-6.74)	9.09 (7.61-11.5)	13.0 (10.7-16.0)	2568
	05-06	3.88 (3.57-4.22)	3.66 (3.39-3.93)	5.71 (5.10-6.43)	9.57 (7.95-10.9)	12.3 (10.6-15.0)	2588
	07-08	3.83 (3.60-4.07)	3.62 (3.37-3.93)	5.80 (5.33-6.32)	9.01 (8.00-9.97)	11.6 (9.97-14.4)	2576
	09-10	3.90 (3.64-4.18)	3.53 (3.30-3.80)	6.03 (5.36-6.62)	10.2 (9.15-11.8)	14.9 (12.3-19.2)	2870
Age group							
6-11 years	03-04	4.34 (3.57-5.28)	4.03 (3.20-4.80)	6.32 (4.65-8.33)	10.3 (7.00-13.9)	13.9 (7.86-21.8)	292
	05-06	4.89 (4.22-5.65)	4.31 (3.64-5.69)	6.85 (5.71-7.69)	10.0 (7.54-14.7)	14.7 (10.0-18.8)	354
	07-08	5.07 (4.56-5.64)	4.54 (4.08-4.82)	6.90 (6.14-7.76)	12.0 (8.39-17.1)	20.9 (12.0-40.8)	390
	09-10	4.77 (4.34-5.23)	4.48 (4.12-4.85)	6.41 (5.66-6.82)	10.0 (7.63-15.3)	16.5 (9.33-27.0)	379
12-19 years	03-04	2.74 (2.39-3.14)	2.55 (2.27-2.94)	3.77 (3.17-4.44)	5.88 (4.65-6.67)	7.18 (6.16-11.7)	728
	05-06	3.05 (2.78-3.34)	2.92 (2.55-3.29)	4.25 (3.87-4.84)	6.68 (5.49-8.06)	9.08 (7.11-10.6)	703
	07-08	2.80 (2.54-3.09)	2.69 (2.37-2.93)	3.91 (3.46-4.56)	6.27 (4.72-8.21)	8.21 (5.77-10.1)	366
	09-10	2.89 (2.61-3.20)	2.60 (2.36-2.86)	4.08 (3.43-4.80)	6.67 (5.71-8.57)	10.0 (7.61-12.6)	456
20 years and older	03-04	3.79 (3.34-4.31)	3.48 (3.00-4.00)	5.95 (4.86-7.05)	9.45 (8.00-12.0)	13.5 (11.1-18.6)	1548
	05-06	3.93 (3.62-4.27)	3.71 (3.42-4.02)	5.82 (5.22-6.47)	9.74 (8.00-11.2)	12.6 (10.9-15.8)	1531
	07-08	3.89 (3.64-4.16)	3.69 (3.44-4.02)	5.96 (5.47-6.58)	9.10 (8.00-10.0)	11.6 (9.74-14.5)	1820
	09-10	4.00 (3.70-4.32)	3.61 (3.33-3.90)	6.25 (5.57-6.88)	10.8 (9.23-12.9)	16.1 (12.6-22.2)	2035
Gender							
Males	03-04	3.48 (2.95-4.10)	3.16 (2.70-3.82)	5.46 (4.17-6.90)	8.59 (6.92-12.0)	12.3 (8.84-18.9)	1284
	05-06	3.43 (3.13-3.75)	3.24 (2.91-3.63)	5.11 (4.25-6.08)	7.90 (6.65-9.77)	11.0 (9.29-13.0)	1276
	07-08	3.63 (3.41-3.85)	3.44 (3.22-3.68)	5.33 (5.00-5.82)	8.31 (7.21-10.1)	12.1 (9.73-14.9)	1289
	09-10	3.54 (3.29-3.80)	3.20 (3.04-3.38)	5.31 (4.80-5.99)	9.24 (7.80-10.8)	13.3 (10.3-16.5)	1402
Females	03-04	3.89 (3.49-4.34)	3.57 (3.13-4.06)	5.78 (4.95-6.67)	9.32 (8.00-11.5)	13.7 (10.6-18.6)	1284
	05-06	4.37 (4.03-4.75)	4.03 (3.72-4.51)	6.26 (5.71-6.84)	10.0 (8.50-12.6)	14.4 (11.2-19.3)	1312
	07-08	4.02 (3.75-4.32)	3.80 (3.46-4.26)	6.15 (5.58-7.06)	9.23 (8.11-10.1)	10.9 (9.52-14.9)	1287
	09-10	4.28 (3.96-4.63)	4.00 (3.62-4.32)	6.55 (5.98-7.14)	11.0 (9.64-13.2)	17.2 (13.2-24.4)	1468
Race/ethnicity							
Mexican Americans	03-04	4.38 (3.80-5.05)	4.11 (3.29-4.90)	6.25 (4.84-8.15)	10.3 (8.00-11.8)	12.9 (11.1-15.2)	621
	05-06	4.16 (3.83-4.52)	4.00 (3.65-4.36)	5.94 (5.40-6.49)	8.69 (7.23-9.65)	10.2 (9.52-13.2)	651
	07-08	4.34 (3.87-4.88)	4.19 (3.66-4.83)	6.23 (5.31-7.44)	9.14 (8.00-11.0)	12.1 (10.1-15.1)	513
	09-10	4.06 (3.63-4.54)	3.95 (3.33-4.44)	6.32 (5.36-7.10)	9.23 (8.10-10.6)	11.7 (10.2-14.8)	618
Non-Hispanic blacks	03-04	3.08 (2.69-3.52)	2.86 (2.60-3.24)	4.34 (3.82-5.05)	7.81 (5.82-9.45)	10.4 (7.61-16.9)	725
	05-06	3.08 (2.70-3.52)	2.91 (2.52-3.32)	4.21 (3.75-4.91)	7.33 (5.40-10.7)	11.6 (7.66-17.9)	695
	07-08	3.08 (2.87-3.31)	2.77 (2.56-3.13)	4.74 (4.31-5.22)	7.29 (6.58-8.26)	9.67 (8.26-11.0)	586
	09-10	3.26 (2.90-3.66)	2.86 (2.47-3.34)	5.10 (4.43-6.06)	10.0 (7.39-11.7)	13.1 (11.1-15.2)	545
Non-Hispanic whites	03-04	3.44 (2.97-3.98)	3.17 (2.80-3.73)	5.16 (4.03-6.49)	8.00 (6.32-10.9)	11.1 (8.00-15.4)	1078
	05-06	3.82 (3.47-4.21)	3.64 (3.30-3.93)	5.71 (4.90-6.51)	9.23 (7.26-10.6)	11.6 (9.93-13.9)	1050
	07-08	3.62 (3.38-3.87)	3.48 (3.20-3.76)	5.38 (4.95-5.80)	8.00 (7.28-8.86)	10.0 (8.96-11.1)	1063
	09-10	3.58 (3.36-3.81)	3.31 (3.09-3.49)	5.30 (4.87-5.75)	8.12 (7.06-9.21)	11.5 (9.43-14.3)	1226

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Urinary Monomethylarsonic acid

Metabolite of Arsenic

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	1.20 (1.00-1.30)	1.90 (1.60-2.10)	2.40 (2.00-2.80)	2567
	05-06	*	< LOD	1.19 (1.05-1.34)	1.72 (1.51-1.94)	2.12 (1.79-2.70)	2588
	07-08	*	< LOD	1.11 (1.00-1.20)	1.61 (1.51-1.69)	2.09 (1.91-2.26)	2576
	09-10	*	< LOD	1.02 (.920-1.10)	1.64 (1.41-1.83)	2.01 (1.82-2.28)	2871
Age group							
6-11 years	03-04	*	< LOD	1.00 (<LOD-1.40)	1.80 (1.30-2.60)	2.30 (1.70-2.90)	292
	05-06	*	< LOD	1.03 (<LOD-1.37)	1.54 (1.37-2.12)	2.12 (1.51-2.73)	354
	07-08	*	< LOD	1.05 (<LOD-1.28)	1.60 (1.32-1.83)	2.04 (1.64-2.86)	390
	09-10	*	< LOD	< LOD	1.38 (1.00-1.84)	1.81 (1.26-2.13)	380
12-19 years	03-04	*	< LOD	1.50 (1.10-1.80)	2.20 (1.70-3.00)	2.90 (2.20-3.60)	728
	05-06	*	< LOD	1.31 (1.09-1.46)	1.99 (1.62-2.23)	2.41 (2.04-2.89)	703
	07-08	*	< LOD	1.26 (1.11-1.35)	1.83 (1.54-2.22)	2.31 (1.87-2.90)	366
	09-10	*	< LOD	1.10 (.910-1.25)	1.62 (1.33-1.92)	2.03 (1.74-2.30)	456
20 years and older	03-04	*	< LOD	1.20 (1.00-1.30)	1.80 (1.50-2.10)	2.30 (2.00-2.60)	1547
	05-06	*	< LOD	1.20 (1.05-1.33)	1.70 (1.48-1.90)	2.06 (1.74-2.75)	1531
	07-08	*	< LOD	1.08 (.970-1.17)	1.58 (1.44-1.71)	1.98 (1.82-2.21)	1820
	09-10	*	< LOD	1.02 (.930-1.11)	1.65 (1.42-1.86)	2.03 (1.81-2.35)	2035
Gender							
Males	03-04	*	< LOD	1.30 (1.10-1.60)	2.00 (1.80-2.40)	2.60 (2.10-3.00)	1283
	05-06	*	< LOD	1.31 (1.12-1.49)	1.79 (1.57-2.09)	2.23 (1.85-2.86)	1276
	07-08	*	< LOD	1.24 (1.13-1.35)	1.78 (1.63-1.94)	2.33 (1.97-2.71)	1289
	09-10	*	< LOD	1.07 (.970-1.23)	1.77 (1.47-2.01)	2.19 (1.83-2.68)	1403
Females	03-04	*	< LOD	1.00 (<LOD-1.20)	1.60 (1.30-1.90)	2.10 (1.70-2.60)	1284
	05-06	*	< LOD	1.08 (.920-1.24)	1.57 (1.36-1.90)	2.04 (1.67-2.50)	1312
	07-08	*	< LOD	.970 (<LOD-1.06)	1.42 (1.30-1.57)	1.81 (1.68-1.90)	1287
	09-10	*	< LOD	.950 (<LOD-1.06)	1.52 (1.27-1.74)	1.89 (1.66-2.12)	1468
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	1.50 (1.20-1.90)	2.20 (1.70-2.80)	2.80 (2.00-4.40)	621
	05-06	*	< LOD	1.19 (1.10-1.32)	1.73 (1.51-1.97)	2.04 (1.67-2.51)	651
	07-08	*	< LOD	1.22 (1.02-1.35)	1.69 (1.43-2.12)	2.32 (1.75-2.85)	513
	09-10	*	< LOD	1.02 (<LOD-1.37)	1.65 (1.38-1.90)	2.02 (1.65-2.33)	618
Non-Hispanic blacks	03-04	*	< LOD	1.10 (<LOD-1.30)	1.80 (1.40-2.00)	2.20 (1.70-2.70)	725
	05-06	*	< LOD	1.02 (.950-1.07)	1.35 (1.29-1.44)	1.70 (1.50-1.88)	695
	07-08	*	< LOD	1.21 (1.09-1.33)	1.79 (1.61-2.05)	2.32 (2.15-2.63)	586
	09-10	*	< LOD	1.02 (<LOD-1.18)	1.51 (1.36-1.84)	1.88 (1.73-2.24)	546
Non-Hispanic whites	03-04	*	< LOD	1.10 (.900-1.30)	1.80 (1.40-2.00)	2.10 (1.80-2.50)	1077
	05-06	*	< LOD	1.22 (1.02-1.39)	1.75 (1.42-2.12)	2.14 (1.72-2.93)	1050
	07-08	*	< LOD	1.04 (.930-1.15)	1.50 (1.37-1.63)	1.91 (1.69-2.09)	1063
	09-10	*	< LOD	.940 (<LOD-1.04)	1.45 (1.24-1.76)	1.90 (1.65-2.12)	1226

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.9, 0.9, 0.9, and 0.9 respectively.

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

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

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Urinary Monomethylarsonic acid (creatinine corrected)

Metabolite of Arsenic

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	1.33 (1.18-1.54)	2.22 (1.82-2.57)	2.86 (2.40-3.53)	2567
	05-06	*	< LOD	1.28 (1.14-1.52)	2.37 (1.94-2.78)	3.13 (2.67-3.76)	2588
	07-08	*	< LOD	1.31 (1.23-1.42)	2.24 (2.00-2.56)	3.19 (2.78-3.58)	2576
	09-10	*	< LOD	1.36 (1.25-1.45)	2.16 (2.00-2.29)	2.91 (2.67-3.15)	2870
Age group							
6-11 years	03-04	*	< LOD	1.63 (<LOD-1.81)	2.31 (1.88-2.50)	2.52 (2.31-3.07)	292
	05-06	*	< LOD	1.44 (<LOD-1.83)	2.37 (1.65-3.20)	3.13 (2.29-4.92)	354
	07-08	*	< LOD	1.69 (<LOD-2.06)	2.46 (2.09-2.91)	3.20 (2.56-4.32)	390
	09-10	*	< LOD	< LOD	2.37 (2.07-2.78)	3.16 (2.55-3.76)	379
12-19 years	03-04	*	< LOD	1.10 (.853-1.23)	1.53 (1.30-1.85)	2.07 (1.71-2.22)	728
	05-06	*	< LOD	1.05 (.930-1.14)	1.56 (1.49-1.73)	1.97 (1.78-2.13)	703
	07-08	*	< LOD	.970 (.880-1.07)	1.45 (1.19-1.73)	1.97 (1.49-2.34)	366
	09-10	*	< LOD	1.21 (1.02-1.45)	1.98 (1.60-2.56)	2.56 (1.94-4.57)	456
20 years and older	03-04	*	< LOD	1.36 (1.18-1.58)	2.28 (1.82-2.79)	3.00 (2.43-3.53)	1547
	05-06	*	< LOD	1.31 (1.13-1.58)	2.46 (2.00-2.91)	3.20 (2.78-3.81)	1531
	07-08	*	< LOD	1.32 (1.23-1.45)	2.35 (2.02-2.67)	3.38 (2.78-3.83)	1820
	09-10	*	< LOD	1.36 (1.25-1.45)	2.18 (2.00-2.29)	2.91 (2.78-3.20)	2035
Gender							
Males	03-04	*	< LOD	1.20 (1.05-1.36)	1.88 (1.53-2.34)	2.50 (2.07-3.45)	1283
	05-06	*	< LOD	1.11 (.950-1.28)	1.78 (1.47-2.29)	2.46 (1.88-3.32)	1276
	07-08	*	< LOD	1.18 (1.07-1.26)	2.06 (1.85-2.34)	2.71 (2.46-3.37)	1289
	09-10	*	< LOD	1.16 (1.07-1.25)	1.79 (1.64-1.99)	2.29 (2.08-2.78)	1402
Females	03-04	*	< LOD	1.50 (<LOD-1.77)	2.40 (1.96-2.86)	3.00 (2.61-3.53)	1284
	05-06	*	< LOD	1.58 (1.36-1.76)	2.78 (2.29-3.20)	3.56 (3.05-4.35)	1312
	07-08	*	< LOD	1.45 (<LOD-1.60)	2.41 (1.94-2.91)	3.56 (2.78-4.27)	1287
	09-10	*	< LOD	1.56 (<LOD-1.73)	2.46 (2.29-2.62)	3.37 (2.91-3.56)	1468
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	1.46 (1.11-1.93)	2.30 (1.84-3.00)	3.16 (2.40-3.85)	621
	05-06	*	< LOD	1.19 (1.08-1.35)	1.92 (1.60-2.13)	2.53 (2.06-2.91)	651
	07-08	*	< LOD	1.28 (1.10-1.60)	2.27 (1.64-2.71)	3.05 (2.35-3.76)	513
	09-10	*	< LOD	1.31 (<LOD-1.49)	2.00 (1.73-2.56)	3.05 (2.29-3.56)	618
Non-Hispanic blacks	03-04	*	< LOD	.816 (<LOD-.985)	1.37 (1.14-1.61)	1.88 (1.46-2.17)	725
	05-06	*	< LOD	.790 (.720-.880)	1.11 (.980-1.34)	1.57 (1.23-1.98)	695
	07-08	*	< LOD	.920 (.840-1.06)	1.45 (1.33-1.73)	2.09 (1.73-2.56)	586
	09-10	*	< LOD	.970 (<LOD-1.08)	1.73 (1.39-1.94)	2.29 (1.83-2.91)	545
Non-Hispanic whites	03-04	*	< LOD	1.33 (1.15-1.62)	2.28 (1.73-2.86)	2.86 (2.35-3.75)	1077
	05-06	*	< LOD	1.35 (1.16-1.64)	2.50 (2.00-3.05)	3.20 (2.78-3.81)	1050
	07-08	*	< LOD	1.35 (1.23-1.52)	2.37 (2.04-2.78)	3.37 (2.78-4.00)	1063
	09-10	*	< LOD	1.36 (<LOD-1.52)	2.21 (1.99-2.37)	2.91 (2.67-3.20)	1226

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

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

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Urinary Trimethylarsine oxide

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2568
	05-06	*	< LOD	< LOD	< LOD	< LOD	2588
	07-08	*	< LOD	< LOD	< LOD	< LOD	2576
	09-10	*	< LOD	< LOD	< LOD	< LOD	2871
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	292
	05-06	*	< LOD	< LOD	< LOD	< LOD	354
	07-08	*	< LOD	< LOD	< LOD	< LOD	390
	09-10	*	< LOD	< LOD	< LOD	< LOD	380
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	728
	05-06	*	< LOD	< LOD	< LOD	< LOD	703
	07-08	*	< LOD	< LOD	< LOD	< LOD	366
	09-10	*	< LOD	< LOD	< LOD	< LOD	456
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1548
	05-06	*	< LOD	< LOD	< LOD	< LOD	1531
	07-08	*	< LOD	< LOD	< LOD	< LOD	1820
	09-10	*	< LOD	< LOD	< LOD	< LOD	2035
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1284
	05-06	*	< LOD	< LOD	< LOD	< LOD	1276
	07-08	*	< LOD	< LOD	< LOD	< LOD	1289
	09-10	*	< LOD	< LOD	< LOD	< LOD	1403
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1284
	05-06	*	< LOD	< LOD	< LOD	< LOD	1312
	07-08	*	< LOD	< LOD	< LOD	< LOD	1287
	09-10	*	< LOD	< LOD	< LOD	< LOD	1468
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	621
	05-06	*	< LOD	< LOD	< LOD	< LOD	651
	07-08	*	< LOD	< LOD	< LOD	< LOD	513
	09-10	*	< LOD	< LOD	< LOD	< LOD	618
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	725
	05-06	*	< LOD	< LOD	< LOD	< LOD	695
	07-08	*	< LOD	< LOD	< LOD	< LOD	586
	09-10	*	< LOD	< LOD	< LOD	< LOD	546
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1078
	05-06	*	< LOD	< LOD	< LOD	< LOD	1050
	07-08	*	< LOD	< LOD	< LOD	< LOD	1063
	09-10	*	< LOD	< LOD	< LOD	< LOD	1226

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 1.0, 1.0, 1.0, and 1.0 respectively.
 < LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

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

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Urinary Trimethylarsine oxide (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2568
	05-06	*	< LOD	< LOD	< LOD	< LOD	2588
	07-08	*	< LOD	< LOD	< LOD	< LOD	2576
	09-10	*	< LOD	< LOD	< LOD	< LOD	2870
Age group							
6-11 years	03-04	*	< LOD	< LOD	< LOD	< LOD	292
	05-06	*	< LOD	< LOD	< LOD	< LOD	354
	07-08	*	< LOD	< LOD	< LOD	< LOD	390
	09-10	*	< LOD	< LOD	< LOD	< LOD	379
12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	728
	05-06	*	< LOD	< LOD	< LOD	< LOD	703
	07-08	*	< LOD	< LOD	< LOD	< LOD	366
	09-10	*	< LOD	< LOD	< LOD	< LOD	456
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1548
	05-06	*	< LOD	< LOD	< LOD	< LOD	1531
	07-08	*	< LOD	< LOD	< LOD	< LOD	1820
	09-10	*	< LOD	< LOD	< LOD	< LOD	2035
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1284
	05-06	*	< LOD	< LOD	< LOD	< LOD	1276
	07-08	*	< LOD	< LOD	< LOD	< LOD	1289
	09-10	*	< LOD	< LOD	< LOD	< LOD	1402
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1284
	05-06	*	< LOD	< LOD	< LOD	< LOD	1312
	07-08	*	< LOD	< LOD	< LOD	< LOD	1287
	09-10	*	< LOD	< LOD	< LOD	< LOD	1468
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	621
	05-06	*	< LOD	< LOD	< LOD	< LOD	651
	07-08	*	< LOD	< LOD	< LOD	< LOD	513
	09-10	*	< LOD	< LOD	< LOD	< LOD	618
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	725
	05-06	*	< LOD	< LOD	< LOD	< LOD	695
	07-08	*	< LOD	< LOD	< LOD	< LOD	586
	09-10	*	< LOD	< LOD	< LOD	< LOD	545
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	1078
	05-06	*	< LOD	< LOD	< LOD	< LOD	1050
	07-08	*	< LOD	< LOD	< LOD	< LOD	1063
	09-10	*	< LOD	< LOD	< LOD	< LOD	1226

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Barium

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	1.50 (1.35-1.66)	1.60 (1.50-1.90)	3.10 (2.70-3.40)	5.40 (4.60-6.10)	6.90 (6.20-8.40)	2180
	01-02	1.52 (1.41-1.65)	1.63 (1.50-1.76)	3.12 (2.77-3.51)	5.24 (4.73-5.84)	7.48 (6.54-8.12)	2690
	03-04	1.49 (1.36-1.64)	1.51 (1.35-1.72)	2.91 (2.64-3.28)	5.36 (4.86-5.71)	7.54 (6.93-8.63)	2558
	05-06	1.52 (1.39-1.66)	1.58 (1.44-1.70)	2.99 (2.63-3.41)	5.34 (4.82-5.83)	7.10 (6.46-8.18)	2576
	07-08	1.56 (1.45-1.69)	1.64 (1.49-1.80)	3.01 (2.72-3.34)	4.93 (4.39-5.69)	7.04 (6.07-8.20)	2627
	09-10	1.47 (1.34-1.60)	1.48 (1.35-1.62)	2.81 (2.52-3.06)	4.66 (4.34-5.35)	6.78 (5.86-7.76)	2848
Age group							
6-11 years	99-00	2.15 (1.70-2.72)	2.20 (1.90-2.50)	4.00 (2.60-6.10)	6.40 (5.20-8.30)	8.30 (5.00-76.2)	297
	01-02	1.80 (1.44-2.26)	2.09 (1.74-2.49)	3.63 (2.86-4.39)	5.37 (4.26-7.38)	6.88 (5.37-8.49)	368
	03-04	2.21 (1.81-2.71)	2.50 (1.81-2.75)	4.76 (3.80-5.65)	8.63 (5.59-11.8)	11.8 (6.87-14.8)	290
	05-06	1.73 (1.53-1.97)	1.87 (1.61-2.03)	3.55 (2.41-4.30)	6.21 (4.30-7.32)	7.72 (6.26-8.92)	355
	07-08	1.75 (1.50-2.04)	1.86 (1.58-2.23)	3.41 (2.85-3.79)	5.57 (4.49-6.59)	7.32 (5.71-9.18)	394
	09-10	1.49 (1.28-1.74)	1.50 (1.22-1.68)	2.72 (2.19-3.13)	4.63 (4.02-5.37)	6.59 (5.24-7.72)	378
12-19 years	99-00	1.97 (1.78-2.19)	2.00 (1.70-2.30)	3.50 (3.10-4.00)	5.90 (4.80-7.00)	9.70 (5.90-13.1)	621
	01-02	2.03 (1.76-2.34)	2.27 (1.96-2.53)	4.11 (3.48-4.72)	6.73 (5.55-7.87)	9.02 (7.25-11.4)	762
	03-04	2.16 (1.93-2.41)	2.35 (2.06-2.63)	4.11 (3.48-4.71)	7.18 (6.00-8.29)	9.63 (8.15-11.4)	725
	05-06	2.16 (1.92-2.42)	2.33 (1.99-2.56)	3.80 (3.60-4.21)	6.35 (5.48-7.49)	8.24 (6.06-10.5)	701
	07-08	2.18 (1.99-2.39)	2.31 (2.07-2.59)	3.62 (3.34-4.10)	6.19 (4.75-7.51)	8.20 (6.22-11.1)	376
	09-10	1.79 (1.52-2.09)	1.90 (1.46-2.45)	3.25 (2.82-4.14)	5.43 (4.45-6.07)	6.87 (5.73-8.16)	451
20 years and older	99-00	1.36 (1.24-1.51)	1.50 (1.30-1.70)	2.80 (2.60-3.20)	5.10 (4.30-5.50)	6.40 (5.70-8.40)	1262
	01-02	1.43 (1.32-1.54)	1.50 (1.39-1.65)	2.85 (2.55-3.27)	4.86 (4.53-5.47)	7.14 (6.08-8.12)	1560
	03-04	1.34 (1.20-1.50)	1.39 (1.19-1.56)	2.54 (2.21-2.91)	4.61 (3.99-5.30)	6.61 (5.57-7.43)	1543
	05-06	1.42 (1.28-1.57)	1.43 (1.28-1.63)	2.75 (2.47-3.11)	5.12 (4.45-5.81)	6.83 (6.14-7.90)	1520
	07-08	1.46 (1.35-1.58)	1.51 (1.39-1.67)	2.79 (2.54-3.15)	4.61 (4.19-5.42)	6.80 (5.50-8.37)	1857
	09-10	1.42 (1.30-1.55)	1.43 (1.31-1.58)	2.67 (2.36-3.02)	4.58 (4.22-5.14)	6.80 (5.70-8.63)	2019
Gender							
Males	99-00	1.70 (1.54-1.88)	1.90 (1.80-2.00)	3.20 (3.00-3.60)	5.50 (4.20-6.70)	7.50 (5.90-9.70)	1083
	01-02	1.64 (1.47-1.82)	1.80 (1.65-1.98)	3.15 (2.76-3.73)	5.52 (4.82-6.35)	7.87 (6.49-9.32)	1335
	03-04	1.62 (1.47-1.78)	1.69 (1.49-1.85)	3.09 (2.81-3.54)	5.65 (5.14-6.16)	8.56 (6.71-9.67)	1281
	05-06	1.66 (1.48-1.85)	1.71 (1.50-1.94)	3.21 (2.76-3.79)	5.48 (4.68-6.22)	7.10 (6.18-8.84)	1271
	07-08	1.62 (1.48-1.77)	1.80 (1.57-1.93)	3.14 (2.79-3.42)	5.00 (4.31-5.70)	6.84 (5.83-7.72)	1327
	09-10	1.53 (1.35-1.74)	1.57 (1.36-1.82)	3.01 (2.53-3.36)	4.83 (4.25-5.77)	6.81 (5.77-8.76)	1398
Females	99-00	1.33 (1.15-1.53)	1.50 (1.20-1.60)	2.80 (2.30-3.30)	5.20 (4.20-5.90)	6.80 (5.60-10.4)	1097
	01-02	1.43 (1.30-1.56)	1.44 (1.29-1.63)	3.11 (2.74-3.43)	4.93 (4.44-5.88)	7.15 (6.32-7.86)	1355
	03-04	1.38 (1.24-1.54)	1.39 (1.18-1.57)	2.71 (2.41-3.15)	4.95 (4.29-5.51)	6.87 (5.65-8.10)	1277
	05-06	1.40 (1.27-1.54)	1.42 (1.30-1.63)	2.70 (2.39-3.19)	5.21 (4.65-5.71)	7.09 (6.24-7.94)	1305
	07-08	1.51 (1.36-1.68)	1.54 (1.38-1.70)	2.84 (2.52-3.37)	4.87 (4.23-6.13)	7.18 (5.94-8.83)	1300
	09-10	1.40 (1.30-1.51)	1.38 (1.31-1.47)	2.61 (2.41-2.90)	4.58 (4.33-4.95)	6.59 (5.37-7.86)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.12, 0.12, 0.31, 0.12, 0.12, and 0.12 respectively.

[Biomonitoring Summary](#)

Urinary Barium

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	1.35 (1.25-1.46)	1.40 (1.20-1.50)	2.60 (2.30-2.90)	4.50 (4.10-5.30)	6.30 (5.50-6.80)	692
	01-02	1.21 (1.06-1.37)	1.25 (1.11-1.46)	2.56 (2.04-2.91)	4.35 (3.65-5.49)	6.43 (5.21-8.22)	683
	03-04	1.40 (1.15-1.70)	1.45 (1.22-1.73)	2.62 (1.78-3.38)	4.07 (2.95-6.37)	6.01 (4.01-7.88)	618
	05-06	1.33 (1.24-1.42)	1.36 (1.22-1.50)	2.63 (2.35-2.89)	4.47 (3.80-5.23)	6.21 (5.23-7.00)	652
	07-08	1.33 (1.16-1.53)	1.37 (1.19-1.48)	2.60 (2.29-2.84)	4.21 (3.53-4.90)	5.79 (4.90-8.00)	515
	09-10	1.24 (1.07-1.45)	1.18 (1.05-1.40)	2.25 (1.88-2.71)	4.15 (3.55-5.40)	6.35 (5.00-8.75)	613
Non-Hispanic blacks	99-00	1.34 (1.12-1.62)	1.40 (1.20-1.60)	2.50 (2.30-2.90)	5.10 (3.70-6.60)	7.40 (5.40-13.9)	540
	01-02	1.30 (1.14-1.48)	1.42 (1.22-1.62)	2.61 (2.31-2.82)	4.30 (3.70-5.18)	5.99 (4.87-7.26)	667
	03-04	1.27 (1.17-1.39)	1.38 (1.26-1.48)	2.34 (2.05-2.59)	3.77 (3.35-4.36)	5.86 (4.76-7.45)	723
	05-06	1.25 (1.15-1.37)	1.31 (1.21-1.41)	2.40 (2.22-2.61)	4.24 (3.69-4.83)	6.19 (5.23-6.96)	692
	07-08	1.17 (1.07-1.28)	1.23 (1.12-1.37)	2.14 (2.01-2.34)	3.70 (3.27-4.00)	5.00 (3.93-5.90)	589
	09-10	1.22 (1.08-1.38)	1.22 (1.07-1.38)	2.13 (1.91-2.51)	3.76 (3.09-4.88)	5.50 (4.06-7.32)	544
Non-Hispanic whites	99-00	1.56 (1.36-1.80)	1.80 (1.60-2.00)	3.30 (2.80-3.70)	5.50 (4.50-6.30)	7.50 (6.20-8.80)	765
	01-02	1.61 (1.46-1.77)	1.68 (1.54-1.85)	3.31 (2.87-3.74)	5.66 (4.94-6.30)	7.73 (6.61-8.49)	1132
	03-04	1.56 (1.37-1.78)	1.61 (1.28-1.92)	3.12 (2.75-3.70)	5.57 (5.04-6.43)	8.08 (6.87-9.53)	1074
	05-06	1.59 (1.42-1.78)	1.66 (1.50-1.86)	3.08 (2.63-3.79)	5.50 (4.90-6.08)	7.10 (6.46-8.24)	1041
	07-08	1.71 (1.55-1.88)	1.82 (1.62-1.97)	3.36 (2.91-3.71)	5.38 (4.51-6.30)	7.18 (6.22-9.05)	1095
	09-10	1.56 (1.42-1.73)	1.60 (1.40-1.76)	3.00 (2.64-3.36)	4.89 (4.48-5.84)	7.16 (6.12-9.31)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.12, 0.12, 0.31, 0.12, 0.12, and 0.12 respectively.

[Biomonitoring Summary](#)

Urinary Barium (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	1.40 (1.26-1.56)	1.41 (1.28-1.54)	2.54 (2.20-2.91)	4.68 (3.85-5.47)	6.33 (5.47-8.09)	2180
	01-02	1.44 (1.31-1.58)	1.49 (1.35-1.63)	2.76 (2.51-3.03)	4.58 (4.15-4.96)	6.24 (5.28-7.27)	2689
	03-04	1.48 (1.37-1.60)	1.41 (1.31-1.58)	2.68 (2.44-2.89)	4.92 (4.39-5.45)	7.10 (6.29-7.77)	2558
	05-06	1.50 (1.40-1.61)	1.48 (1.37-1.61)	2.75 (2.50-3.03)	4.65 (4.09-5.10)	6.38 (5.62-7.56)	2576
	07-08	1.63 (1.51-1.75)	1.60 (1.51-1.72)	2.92 (2.72-3.16)	4.85 (4.40-5.57)	7.20 (5.94-8.59)	2627
	09-10	1.56 (1.45-1.68)	1.55 (1.42-1.64)	2.72 (2.54-2.97)	4.69 (4.12-5.16)	6.24 (5.60-7.43)	2848
Age group							
6-11 years	99-00	2.37 (1.68-3.32)	2.38 (1.84-2.92)	4.47 (2.55-6.46)	10.2 (3.75-22.0)	11.4 (5.46-22.0)	297
	01-02	2.20 (1.91-2.52)	2.41 (2.19-2.83)	3.91 (3.29-4.51)	5.01 (4.58-6.00)	6.71 (5.20-8.47)	368
	03-04	2.58 (2.22-2.99)	3.00 (2.35-3.29)	4.45 (3.57-5.54)	6.69 (5.59-7.70)	10.3 (6.53-21.0)	290
	05-06	2.14 (1.85-2.48)	2.15 (1.76-2.51)	3.83 (3.10-4.73)	6.19 (4.84-7.83)	10.0 (5.76-11.1)	355
	07-08	2.28 (2.04-2.54)	2.41 (2.05-2.59)	4.43 (3.87-4.70)	6.58 (5.05-9.46)	9.89 (7.13-13.3)	394
	09-10	2.03 (1.78-2.30)	2.00 (1.77-2.40)	3.33 (2.81-3.79)	5.04 (4.17-7.39)	8.76 (5.93-10.8)	378
12-19 years	99-00	1.51 (1.34-1.70)	1.40 (1.26-1.59)	2.48 (1.97-3.06)	4.36 (3.23-5.39)	7.62 (4.24-11.4)	621
	01-02	1.45 (1.33-1.59)	1.56 (1.31-1.77)	2.89 (2.68-3.12)	4.52 (3.84-5.20)	5.55 (4.81-6.10)	762
	03-04	1.54 (1.36-1.75)	1.59 (1.39-1.87)	2.60 (2.24-3.48)	4.97 (4.34-5.58)	6.47 (5.38-7.77)	725
	05-06	1.66 (1.50-1.84)	1.73 (1.52-1.93)	3.15 (2.76-3.42)	4.25 (3.88-4.56)	5.00 (4.46-6.68)	701
	07-08	1.71 (1.52-1.92)	1.70 (1.48-1.96)	3.03 (2.51-3.65)	4.80 (3.96-5.47)	6.17 (4.80-8.12)	376
	09-10	1.67 (1.48-1.88)	1.66 (1.54-1.84)	2.69 (2.24-3.18)	3.98 (3.40-5.29)	6.42 (4.61-9.33)	451
20 years and older	99-00	1.30 (1.19-1.42)	1.33 (1.20-1.46)	2.32 (2.08-2.62)	4.29 (3.63-4.96)	5.65 (5.28-6.33)	1262
	01-02	1.37 (1.24-1.50)	1.40 (1.24-1.52)	2.53 (2.23-2.84)	4.38 (4.02-5.00)	6.55 (5.00-7.64)	1559
	03-04	1.38 (1.26-1.50)	1.32 (1.22-1.41)	2.39 (2.13-2.70)	4.39 (3.77-5.16)	7.00 (5.45-8.50)	1543
	05-06	1.42 (1.30-1.54)	1.39 (1.26-1.55)	2.59 (2.33-2.82)	4.53 (3.65-5.40)	6.34 (5.37-7.67)	1520
	07-08	1.56 (1.44-1.69)	1.55 (1.40-1.66)	2.80 (2.55-3.04)	4.64 (4.05-5.43)	7.20 (5.78-8.65)	1857
	09-10	1.50 (1.40-1.61)	1.46 (1.38-1.55)	2.67 (2.42-2.92)	4.71 (4.07-5.23)	6.03 (5.53-7.34)	2019
Gender							
Males	99-00	1.32 (1.22-1.42)	1.36 (1.23-1.47)	2.39 (2.11-2.57)	4.24 (3.48-5.00)	5.61 (4.39-10.2)	1083
	01-02	1.30 (1.16-1.45)	1.34 (1.19-1.50)	2.46 (2.14-2.83)	4.51 (3.73-4.96)	5.42 (4.81-7.51)	1334
	03-04	1.36 (1.26-1.47)	1.31 (1.19-1.43)	2.60 (2.37-2.75)	4.36 (3.97-4.72)	6.01 (5.45-6.96)	1281
	05-06	1.36 (1.23-1.50)	1.38 (1.25-1.52)	2.36 (2.19-2.73)	4.24 (3.65-4.82)	5.69 (4.75-7.36)	1271
	07-08	1.45 (1.34-1.55)	1.50 (1.32-1.60)	2.59 (2.34-2.79)	4.30 (3.84-4.72)	5.56 (5.05-6.30)	1327
	09-10	1.40 (1.28-1.52)	1.38 (1.29-1.50)	2.39 (2.13-2.68)	4.05 (3.52-4.71)	5.55 (4.89-6.77)	1398
Females	99-00	1.49 (1.27-1.74)	1.48 (1.29-1.68)	2.65 (2.13-3.46)	4.91 (3.96-6.38)	7.36 (5.25-11.3)	1097
	01-02	1.59 (1.45-1.75)	1.64 (1.48-1.79)	2.98 (2.75-3.30)	4.76 (4.38-5.31)	6.97 (5.86-7.52)	1355
	03-04	1.60 (1.45-1.77)	1.55 (1.35-1.73)	2.78 (2.34-3.25)	5.50 (4.43-6.86)	7.88 (6.28-11.5)	1277
	05-06	1.65 (1.54-1.76)	1.63 (1.45-1.83)	3.09 (2.71-3.38)	4.87 (4.48-5.65)	7.48 (6.04-10.0)	1305
	07-08	1.83 (1.63-2.05)	1.74 (1.52-2.06)	3.22 (2.82-3.89)	5.94 (4.57-7.38)	8.15 (7.18-9.49)	1300
	09-10	1.73 (1.60-1.87)	1.71 (1.62-1.86)	3.06 (2.72-3.41)	5.06 (4.59-5.74)	6.58 (5.88-8.19)	1450

[Biomonitoring Summary](#)

Urinary Barium (creatinine corrected)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	1.21 (1.10-1.33)	1.18 (1.05-1.38)	2.39 (2.10-2.59)	4.00 (3.33-4.80)	5.31 (4.80-6.51)	692
	01-02	1.18 (1.03-1.34)	1.16 (1.00-1.38)	2.33 (1.90-2.61)	3.68 (3.29-4.10)	4.96 (4.24-6.80)	682
	03-04	1.29 (1.08-1.55)	1.28 (1.03-1.53)	2.25 (1.73-2.97)	3.99 (2.79-5.03)	4.99 (4.24-6.56)	618
	05-06	1.25 (1.17-1.33)	1.21 (1.09-1.33)	2.27 (1.84-2.61)	3.66 (3.07-4.35)	5.11 (4.00-5.95)	652
	07-08	1.33 (1.16-1.53)	1.28 (1.14-1.49)	2.40 (1.87-2.90)	4.23 (3.45-4.87)	6.18 (4.75-7.27)	515
	09-10	1.30 (1.18-1.44)	1.26 (1.14-1.41)	2.33 (1.98-2.79)	3.55 (3.11-4.42)	5.50 (4.27-6.58)	613
Non-Hispanic blacks	99-00	.881 (.703-1.11)	.905 (.710-1.06)	1.64 (1.36-2.00)	3.27 (2.26-4.76)	4.84 (3.57-10.8)	540
	01-02	.891 (.777-1.02)	.921 (.754-1.11)	1.64 (1.44-2.03)	2.86 (2.48-3.37)	4.02 (3.52-4.68)	667
	03-04	.915 (.832-1.01)	.963 (.880-1.04)	1.51 (1.39-1.75)	2.62 (2.29-3.04)	3.76 (3.22-4.72)	723
	05-06	.909 (.845-.979)	.880 (.820-.970)	1.78 (1.56-1.97)	2.99 (2.63-3.14)	3.91 (3.39-4.73)	692
	07-08	.858 (.807-.913)	.850 (.790-.920)	1.53 (1.34-1.61)	2.51 (2.01-3.03)	3.43 (2.83-5.05)	589
	09-10	.965 (.853-1.09)	.930 (.860-1.05)	1.63 (1.40-1.85)	2.92 (2.33-3.34)	3.71 (3.24-4.69)	544
Non-Hispanic whites	99-00	1.56 (1.38-1.77)	1.55 (1.36-1.74)	2.72 (2.27-3.24)	5.00 (3.81-6.02)	6.60 (5.52-10.2)	765
	01-02	1.62 (1.49-1.76)	1.66 (1.49-1.82)	3.04 (2.76-3.32)	4.96 (4.55-5.41)	6.74 (5.57-7.64)	1132
	03-04	1.64 (1.49-1.82)	1.60 (1.40-1.76)	2.88 (2.56-3.26)	5.38 (4.67-6.28)	7.57 (6.69-9.27)	1074
	05-06	1.65 (1.52-1.80)	1.61 (1.46-1.83)	2.95 (2.70-3.26)	4.82 (4.32-5.65)	7.21 (5.69-8.51)	1041
	07-08	1.91 (1.74-2.10)	1.85 (1.65-2.09)	3.22 (2.84-3.76)	5.42 (4.55-6.91)	7.81 (6.33-9.45)	1095
	09-10	1.75 (1.59-1.92)	1.70 (1.58-1.86)	2.99 (2.67-3.33)	5.00 (4.14-5.69)	6.63 (5.69-8.50)	1225

[Biomonitoring Summary](#)

Urinary Beryllium

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	2465
	01-02	*	< LOD	< LOD	< LOD	< LOD	2690
	03-04	*	< LOD	< LOD	< LOD	< LOD	2558
	05-06	*	< LOD	< LOD	< LOD	< LOD	2576
	07-08	*	< LOD	< LOD	< LOD	< LOD	2627
	09-10	*	< LOD	< LOD	< LOD	< LOD	2848
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	< LOD	340
	01-02	*	< LOD	< LOD	< LOD	< LOD	368
	03-04	*	< LOD	< LOD	< LOD	< LOD	290
	05-06	*	< LOD	< LOD	< LOD	< LOD	355
	07-08	*	< LOD	< LOD	< LOD	< LOD	394
	09-10	*	< LOD	< LOD	< LOD	< LOD	378
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	719
	01-02	*	< LOD	< LOD	< LOD	.140 (<LOD-.170)	762
	03-04	*	< LOD	< LOD	< LOD	< LOD	725
	05-06	*	< LOD	< LOD	< LOD	< LOD	701
	07-08	*	< LOD	< LOD	< LOD	< LOD	376
	09-10	*	< LOD	< LOD	< LOD	< LOD	451
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1406
	01-02	*	< LOD	< LOD	< LOD	< LOD	1560
	03-04	*	< LOD	< LOD	< LOD	< LOD	1543
	05-06	*	< LOD	< LOD	< LOD	< LOD	1520
	07-08	*	< LOD	< LOD	< LOD	< LOD	1857
	09-10	*	< LOD	< LOD	< LOD	< LOD	2019
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	1227
	01-02	*	< LOD	< LOD	< LOD	.130 (<LOD-.150)	1335
	03-04	*	< LOD	< LOD	< LOD	< LOD	1281
	05-06	*	< LOD	< LOD	< LOD	< LOD	1271
	07-08	*	< LOD	< LOD	< LOD	< LOD	1327
	09-10	*	< LOD	< LOD	< LOD	< LOD	1398
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	1238
	01-02	*	< LOD	< LOD	< LOD	< LOD	1355
	03-04	*	< LOD	< LOD	< LOD	< LOD	1277
	05-06	*	< LOD	< LOD	< LOD	< LOD	1305
	07-08	*	< LOD	< LOD	< LOD	< LOD	1300
	09-10	*	< LOD	< LOD	< LOD	< LOD	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.13, 0.13, 0.13, 0.072, 0.072, and 0.072 respectively.

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

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

[Biomonitoring Summary](#)

Urinary Beryllium

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

Race/ethnicity	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	884
	01-02	*	< LOD	< LOD	< LOD	.130 (<LOD-.160)	683
	03-04	*	< LOD	< LOD	< LOD	< LOD	618
	05-06	*	< LOD	< LOD	< LOD	< LOD	652
	07-08	*	< LOD	< LOD	< LOD	< LOD	515
	09-10	*	< LOD	< LOD	< LOD	< LOD	613
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	568
	01-02	*	< LOD	< LOD	< LOD	< LOD	667
	03-04	*	< LOD	< LOD	< LOD	< LOD	723
	05-06	*	< LOD	< LOD	< LOD	< LOD	692
	07-08	*	< LOD	< LOD	< LOD	< LOD	589
	09-10	*	< LOD	< LOD	< LOD	< LOD	544
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	822
	01-02	*	< LOD	< LOD	< LOD	< LOD	1132
	03-04	*	< LOD	< LOD	< LOD	< LOD	1074
	05-06	*	< LOD	< LOD	< LOD	< LOD	1041
	07-08	*	< LOD	< LOD	< LOD	< LOD	1095
	09-10	*	< LOD	< LOD	< LOD	< LOD	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.13, 0.13, 0.13, 0.072, 0.072, and 0.072 respectively.
 < LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

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

[Biomonitoring Summary](#)

Urinary Beryllium (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	2465
	01-02	*	< LOD	< LOD	< LOD	< LOD	2689
	03-04	*	< LOD	< LOD	< LOD	< LOD	2558
	05-06	*	< LOD	< LOD	< LOD	< LOD	2576
	07-08	*	< LOD	< LOD	< LOD	< LOD	2627
	09-10	*	< LOD	< LOD	< LOD	< LOD	2848
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	< LOD	340
	01-02	*	< LOD	< LOD	< LOD	< LOD	368
	03-04	*	< LOD	< LOD	< LOD	< LOD	290
	05-06	*	< LOD	< LOD	< LOD	< LOD	355
	07-08	*	< LOD	< LOD	< LOD	< LOD	394
	09-10	*	< LOD	< LOD	< LOD	< LOD	378
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	719
	01-02	*	< LOD	< LOD	< LOD	.231 (<LOD-.273)	762
	03-04	*	< LOD	< LOD	< LOD	< LOD	725
	05-06	*	< LOD	< LOD	< LOD	< LOD	701
	07-08	*	< LOD	< LOD	< LOD	< LOD	376
	09-10	*	< LOD	< LOD	< LOD	< LOD	451
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1406
	01-02	*	< LOD	< LOD	< LOD	< LOD	1559
	03-04	*	< LOD	< LOD	< LOD	< LOD	1543
	05-06	*	< LOD	< LOD	< LOD	< LOD	1520
	07-08	*	< LOD	< LOD	< LOD	< LOD	1857
	09-10	*	< LOD	< LOD	< LOD	< LOD	2019
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	1227
	01-02	*	< LOD	< LOD	< LOD	.281 (<LOD-.333)	1334
	03-04	*	< LOD	< LOD	< LOD	< LOD	1281
	05-06	*	< LOD	< LOD	< LOD	< LOD	1271
	07-08	*	< LOD	< LOD	< LOD	< LOD	1327
	09-10	*	< LOD	< LOD	< LOD	< LOD	1398
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	1238
	01-02	*	< LOD	< LOD	< LOD	< LOD	1355
	03-04	*	< LOD	< LOD	< LOD	< LOD	1277
	05-06	*	< LOD	< LOD	< LOD	< LOD	1305
	07-08	*	< LOD	< LOD	< LOD	< LOD	1300
	09-10	*	< LOD	< LOD	< LOD	< LOD	1450

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

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

[Biomonitoring Summary](#)

Urinary Beryllium (creatinine corrected)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	884
	01-02	*	< LOD	< LOD	< LOD	.346 (<LOD-.391)	682
	03-04	*	< LOD	< LOD	< LOD	< LOD	618
	05-06	*	< LOD	< LOD	< LOD	< LOD	652
	07-08	*	< LOD	< LOD	< LOD	< LOD	515
	09-10	*	< LOD	< LOD	< LOD	< LOD	613
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	568
	01-02	*	< LOD	< LOD	< LOD	< LOD	667
	03-04	*	< LOD	< LOD	< LOD	< LOD	723
	05-06	*	< LOD	< LOD	< LOD	< LOD	692
	07-08	*	< LOD	< LOD	< LOD	< LOD	589
	09-10	*	< LOD	< LOD	< LOD	< LOD	544
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	822
	01-02	*	< LOD	< LOD	< LOD	< LOD	1132
	03-04	*	< LOD	< LOD	< LOD	< LOD	1074
	05-06	*	< LOD	< LOD	< LOD	< LOD	1041
	07-08	*	< LOD	< LOD	< LOD	< LOD	1095
	09-10	*	< LOD	< LOD	< LOD	< LOD	1225

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

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

[Biomonitoring Summary](#)

Blood Cadmium

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.412 (.378-.449)	.400 (.300-.400)	.600 (.500-.700)	1.00 (1.00-1.10)	1.40 (1.30-1.40)	7970
	01-02	*	.300 (.300-.400)	.500 (.500-.600)	1.00 (.900-1.10)	1.40 (1.20-1.70)	8945
	03-04	.304 (.289-.320)	.300 (.300-.300)	.500 (.500-.600)	1.10 (1.00-1.20)	1.60 (1.50-1.60)	8372
	05-06	.310 (.294-.327)	.270 (.250-.280)	.510 (.460-.560)	1.02 (.910-1.13)	1.53 (1.34-1.75)	8407
	07-08	.315 (.300-.331)	.270 (.260-.280)	.500 (.460-.560)	1.00 (.900-1.13)	1.52 (1.30-1.77)	8266
	09-10	.302 (.293-.311)	.260 (.250-.270)	.480 (.460-.510)	.960 (.880-1.01)	1.40 (1.29-1.53)	8793
Age group							
1-5 years	99-00	*	< LOD	.300 (<LOD-.400)	.400 (.300-.400)	.400 (.300-.700)	723
	01-02	*	< LOD	< LOD	< LOD	.300 (.300-.300)	898
	03-04	*	< LOD	< LOD	.200 (.200-.300)	.200 (.200-.400)	910
	05-06	*	< LOD	< LOD	< LOD	.230 (.210-.250)	968
	07-08	*	< LOD	< LOD	.210 (<LOD-.230)	.240 (.220-.260)	817
	09-10	*	< LOD	< LOD	.200 (<LOD-.210)	.220 (.200-.240)	836
6-11 years	99-00	*	< LOD	.300 (<LOD-.400)	.400 (.300-.500)	.500 (.400-.500)	905
	01-02	*	< LOD	< LOD	.300 (.300-.300)	.400 (.400-.400)	1044
	03-04	*	< LOD	.200 (<LOD-.200)	.300 (.200-.300)	.300 (.300-.300)	856
	05-06	*	< LOD	< LOD	.220 (.200-.240)	.260 (.230-.280)	934
	07-08	*	< LOD	< LOD	.230 (.210-.240)	.260 (.240-.280)	1011
	09-10	*	< LOD	< LOD	.210 (.200-.240)	.240 (.220-.280)	1009
12-19 years	99-00	.333 (.304-.366)	.300 (.300-.400)	.400 (.400-.500)	.800 (.600-1.00)	1.10 (.900-1.20)	2135
	01-02	*	< LOD	.300 (.300-.400)	.500 (.400-.700)	.900 (.700-1.20)	2231
	03-04	*	.200 (<LOD-.200)	.300 (.300-.300)	.600 (.500-.700)	.900 (.800-1.10)	2081
	05-06	*	< LOD	.250 (.240-.270)	.520 (.410-.680)	.960 (.820-1.08)	1996
	07-08	*	< LOD	.260 (.240-.270)	.520 (.400-.670)	.900 (.730-1.19)	1074
	09-10	*	< LOD	.240 (.220-.260)	.340 (.310-.450)	.620 (.460-.850)	1183
20 years and older	99-00	.468 (.426-.513)	.400 (.400-.500)	.700 (.600-.800)	1.10 (1.00-1.20)	1.50 (1.40-1.60)	4207
	01-02	.425 (.400-.452)	.400 (.400-.400)	.600 (.600-.700)	1.10 (1.00-1.30)	1.60 (1.40-1.90)	4772
	03-04	.378 (.359-.398)	.400 (.300-.400)	.600 (.600-.700)	1.20 (1.20-1.30)	1.80 (1.60-1.90)	4525
	05-06	.373 (.352-.395)	.330 (.310-.350)	.610 (.570-.660)	1.17 (1.06-1.26)	1.72 (1.53-1.95)	4509
	07-08	.376 (.354-.399)	.330 (.310-.350)	.600 (.550-.670)	1.16 (1.02-1.30)	1.70 (1.50-1.96)	5364
	09-10	.358 (.347-.370)	.320 (.310-.330)	.580 (.550-.600)	1.10 (1.00-1.18)	1.55 (1.43-1.72)	5765
Gender							
Males	99-00	.403 (.368-.441)	.400 (.300-.400)	.600 (.500-.700)	1.00 (.900-1.10)	1.40 (1.30-1.50)	3913
	01-02	*	.300 (<LOD-.300)	.500 (.500-.600)	1.00 (.900-1.10)	1.50 (1.20-1.80)	4339
	03-04	.283 (.266-.300)	.300 (.200-.300)	.500 (.500-.500)	1.10 (1.00-1.20)	1.60 (1.50-1.60)	4131
	05-06	*	.240 (.220-.260)	.470 (.420-.530)	1.02 (.910-1.12)	1.53 (1.27-1.86)	4092
	07-08	.299 (.283-.317)	.250 (.230-.260)	.470 (.420-.540)	1.05 (.930-1.19)	1.60 (1.30-1.90)	4147
	09-10	.279 (.268-.289)	.230 (.220-.240)	.410 (.390-.460)	.920 (.830-1.00)	1.45 (1.30-1.58)	4366
Females	99-00	.421 (.386-.460)	.400 (.400-.400)	.600 (.500-.700)	1.00 (1.00-1.10)	1.30 (1.20-1.40)	4057
	01-02	.382 (.362-.403)	.400 (.300-.400)	.600 (.500-.600)	1.00 (.900-1.10)	1.40 (1.20-1.70)	4606
	03-04	.326 (.309-.344)	.300 (.300-.300)	.600 (.500-.600)	1.10 (1.00-1.20)	1.60 (1.50-1.70)	4241
	05-06	.329 (.311-.349)	.290 (.280-.310)	.530 (.480-.580)	1.02 (.870-1.18)	1.54 (1.33-1.79)	4315
	07-08	.331 (.316-.348)	.290 (.280-.310)	.530 (.480-.570)	.980 (.860-1.10)	1.43 (1.29-1.63)	4119
	09-10	.326 (.314-.339)	.290 (.280-.310)	.520 (.490-.550)	.960 (.880-1.10)	1.40 (1.20-1.53)	4427

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.3, 0.3, 0.14, 0.2, 0.2, and 0.2 respectively.

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

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

Blood Cadmium

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	.395 (.367-.424)	.400 (.400-.400)	.500 (.500-.600)	.800 (.700-1.00)	1.20 (.900-1.30)	2742
	01-02	*	< LOD	.400 (.400-.500)	.600 (.500-.800)	1.00 (.700-1.30)	2268
	03-04	.235 (.216-.255)	.200 (.200-.300)	.400 (.300-.400)	.600 (.500-.800)	1.00 (.800-1.50)	2085
	05-06	*	.220 (.200-.240)	.350 (.300-.400)	.580 (.510-.680)	.820 (.710-1.00)	2236
	07-08	*	.220 (.210-.230)	.350 (.320-.370)	.570 (.510-.660)	.840 (.690-1.02)	1712
	09-10	*	.220 (.200-.230)	.330 (.300-.370)	.580 (.500-.670)	.800 (.690-.960)	1966
Non-Hispanic blacks	99-00	.393 (.361-.427)	.400 (.300-.400)	.600 (.500-.600)	1.00 (.900-1.20)	1.40 (1.20-1.60)	1842
	01-02	*	.300 (<LOD-.300)	.500 (.500-.600)	1.00 (.900-1.10)	1.40 (1.20-1.70)	2219
	03-04	.304 (.275-.337)	.300 (.300-.300)	.500 (.400-.600)	1.00 (.900-1.20)	1.50 (1.30-1.70)	2292
	05-06	.307 (.290-.326)	.260 (.250-.280)	.490 (.440-.570)	1.03 (.880-1.21)	1.50 (1.23-1.79)	2193
	07-08	.333 (.316-.352)	.280 (.270-.300)	.550 (.480-.620)	1.20 (1.01-1.36)	1.81 (1.45-2.13)	1746
	09-10	.328 (.310-.347)	.280 (.260-.290)	.550 (.490-.640)	1.10 (1.00-1.20)	1.52 (1.38-1.73)	1593
Non-Hispanic whites	99-00	.420 (.376-.470)	.400 (.300-.500)	.600 (.500-.700)	1.10 (1.00-1.20)	1.40 (1.30-1.50)	2716
	01-02	*	.300 (.300-.400)	.600 (.500-.600)	1.00 (.900-1.20)	1.50 (1.30-1.80)	3806
	03-04	.313 (.296-.331)	.300 (.300-.300)	.600 (.500-.600)	1.10 (1.00-1.20)	1.60 (1.50-1.70)	3478
	05-06	.321 (.300-.343)	.270 (.250-.300)	.540 (.470-.610)	1.08 (.930-1.23)	1.64 (1.40-1.94)	3310
	07-08	.321 (.303-.341)	.270 (.260-.290)	.520 (.470-.580)	1.05 (.920-1.20)	1.55 (1.30-1.80)	3461
	09-10	.307 (.297-.318)	.270 (.260-.280)	.490 (.460-.540)	.990 (.900-1.10)	1.50 (1.36-1.60)	3760

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.3, 0.3, 0.14, 0.2, 0.2, and 0.2 respectively.
 < LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Cadmium

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.193 (.169-.220)	.232 (.214-.249)	.475 (.436-.519)	.858 (.763-.980)	1.20 (1.06-1.34)	2257
	01-02	.210 (.189-.235)	.230 (.207-.255)	.458 (.423-.482)	.839 (.753-.919)	1.20 (1.07-1.28)	2690
	03-04	.211 (.196-.226)	.210 (.200-.230)	.450 (.400-.500)	.800 (.730-.880)	1.15 (.980-1.26)	2543
	05-06	.191 (.170-.216)	.200 (.170-.220)	.400 (.360-.460)	.780 (.700-.860)	1.05 (.960-1.17)	2576
	07-08	.185 (.172-.198)	.180 (.170-.200)	.380 (.360-.400)	.700 (.650-.770)	1.00 (.920-1.12)	2627
	09-10	.179 (.169-.190)	.180 (.170-.200)	.370 (.340-.400)	.690 (.630-.770)	1.03 (.910-1.13)	2848
Age group							
6-11 years	99-00	*	.078 (.061-.101)	.141 (.115-.173)	.219 (.178-.233)	.279 (.211-.507)	310
	01-02	.061 (<LOD-.081)	.077 (.067-.092)	.140 (.112-.160)	.219 (.184-.262)	.282 (.260-.326)	368
	03-04	.077 (.065-.090)	.080 (.060-.090)	.120 (.100-.160)	.180 (.160-.310)	.310 (.170-.610)	287
	05-06	.066 (.056-.078)	.060 (.050-.080)	.110 (.090-.130)	.180 (.130-.240)	.240 (.160-.290)	355
	07-08	.064 (.058-.071)	.060 (.050-.070)	.110 (.090-.130)	.180 (.140-.210)	.230 (.180-.310)	394
	09-10	.057 (.053-.061)	.060 (.050-.060)	.090 (.080-.100)	.130 (.120-.160)	.170 (.140-.230)	378
12-19 years	99-00	.092 (.067-.126)	.128 (.107-.148)	.203 (.183-.232)	.329 (.272-.372)	.426 (.366-.596)	648
	01-02	.109 (.087-.136)	.135 (.114-.157)	.210 (.189-.247)	.327 (.289-.366)	.452 (.366-.480)	762
	03-04	.121 (.109-.134)	.130 (.110-.150)	.200 (.170-.210)	.300 (.260-.360)	.390 (.330-.490)	724
	05-06	.099 (.090-.109)	.110 (.100-.120)	.170 (.150-.190)	.240 (.210-.280)	.310 (.250-.430)	701
	07-08	.089 (.080-.100)	.080 (.070-.110)	.160 (.140-.170)	.260 (.200-.300)	.330 (.280-.410)	376
	09-10	.081 (.076-.086)	.080 (.070-.080)	.140 (.120-.150)	.220 (.180-.250)	.280 (.240-.300)	451
20 years and older	99-00	.281 (.253-.313)	.306 (.261-.339)	.551 (.510-.623)	.980 (.836-1.13)	1.32 (1.13-1.57)	1299
	01-02	.273 (.249-.299)	.280 (.261-.308)	.545 (.493-.607)	.972 (.855-1.06)	1.28 (1.20-1.43)	1560
	03-04	.260 (.238-.284)	.270 (.240-.300)	.530 (.470-.580)	.890 (.800-.990)	1.25 (1.09-1.46)	1532
	05-06	.241 (.213-.272)	.250 (.220-.290)	.490 (.440-.560)	.860 (.790-.930)	1.21 (1.06-1.32)	1520
	07-08	.232 (.215-.251)	.240 (.210-.260)	.450 (.410-.490)	.790 (.730-.870)	1.13 (.990-1.44)	1857
	09-10	.229 (.213-.245)	.230 (.210-.260)	.430 (.400-.470)	.790 (.700-.910)	1.13 (1.03-1.28)	2019
Gender							
Males	99-00	.199 (.165-.241)	.227 (.193-.263)	.462 (.381-.539)	.892 (.748-1.15)	1.41 (.980-1.83)	1121
	01-02	.201 (.177-.229)	.223 (.191-.257)	.445 (.393-.481)	.875 (.741-1.03)	1.22 (1.12-1.38)	1335
	03-04	.206 (.190-.222)	.210 (.190-.230)	.440 (.390-.490)	.790 (.700-.870)	1.01 (.890-1.25)	1277
	05-06	.195 (.176-.217)	.210 (.190-.230)	.400 (.360-.440)	.800 (.730-.890)	1.17 (1.01-1.30)	1271
	07-08	.179 (.162-.197)	.180 (.160-.200)	.360 (.320-.400)	.670 (.540-.780)	.950 (.800-1.16)	1327
	09-10	.170 (.157-.185)	.180 (.150-.200)	.350 (.310-.380)	.650 (.560-.700)	.950 (.770-1.14)	1398
Females	99-00	.187 (.153-.229)	.239 (.220-.255)	.492 (.456-.540)	.818 (.705-.980)	1.10 (1.01-1.19)	1136
	01-02	.219 (.192-.251)	.234 (.202-.265)	.466 (.433-.519)	.817 (.733-.886)	1.17 (.918-1.36)	1355
	03-04	.216 (.195-.238)	.210 (.200-.240)	.450 (.400-.530)	.820 (.700-.960)	1.20 (1.02-1.37)	1266
	05-06	.188 (.160-.221)	.190 (.160-.220)	.400 (.350-.480)	.750 (.640-.860)	.980 (.830-1.20)	1305
	07-08	.191 (.177-.207)	.190 (.170-.200)	.400 (.370-.430)	.740 (.660-.840)	1.09 (.940-1.38)	1300
	09-10	.188 (.172-.206)	.200 (.170-.210)	.400 (.360-.440)	.740 (.620-.880)	1.07 (.910-1.31)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.06, 0.06, 0.06, 0.042, 0.042, and 0.042 respectively.

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Urinary Cadmium

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	.191 (.157-.233)	.202 (.167-.221)	.447 (.351-.551)	.813 (.686-.977)	1.12 (.886-1.38)	780
	01-02	.160 (.135-.189)	.181 (.171-.198)	.322 (.285-.362)	.559 (.430-.733)	.766 (.633-1.15)	683
	03-04	.175 (.151-.203)	.170 (.150-.210)	.350 (.290-.430)	.680 (.520-.820)	1.04 (.820-1.20)	614
	05-06	.173 (.152-.196)	.180 (.160-.200)	.340 (.300-.380)	.560 (.500-.630)	.780 (.660-.900)	652
	07-08	.159 (.139-.181)	.170 (.140-.200)	.320 (.290-.370)	.570 (.510-.620)	.710 (.630-.830)	515
	09-10	.153 (.136-.173)	.150 (.130-.170)	.300 (.240-.360)	.530 (.440-.680)	.790 (.610-.840)	613
Non-Hispanic blacks	99-00	.283 (.208-.387)	.316 (.243-.412)	.633 (.498-.806)	1.22 (.892-1.38)	1.48 (1.30-1.72)	546
	01-02	.277 (.229-.336)	.302 (.257-.354)	.589 (.476-.713)	1.04 (.843-1.38)	1.51 (1.28-1.74)	667
	03-04	.265 (.237-.295)	.270 (.220-.320)	.550 (.440-.640)	.960 (.810-1.17)	1.52 (1.06-1.82)	717
	05-06	.236 (.218-.254)	.240 (.210-.260)	.480 (.420-.530)	.830 (.670-.930)	1.04 (.870-1.26)	692
	07-08	.246 (.218-.277)	.260 (.220-.300)	.460 (.420-.530)	.840 (.690-.980)	1.40 (.900-1.85)	589
	09-10	.234 (.211-.260)	.240 (.220-.270)	.450 (.410-.540)	.910 (.750-1.06)	1.42 (.990-1.74)	544
Non-Hispanic whites	99-00	.175 (.148-.206)	.220 (.194-.246)	.455 (.388-.510)	.848 (.714-1.01)	1.17 (.963-1.47)	760
	01-02	.204 (.179-.231)	.221 (.191-.255)	.445 (.394-.479)	.817 (.717-.875)	1.17 (.989-1.24)	1132
	03-04	.209 (.192-.226)	.200 (.190-.220)	.440 (.390-.500)	.790 (.700-.860)	1.13 (.940-1.26)	1070
	05-06	.185 (.159-.216)	.200 (.160-.230)	.400 (.330-.480)	.780 (.670-.920)	1.05 (.940-1.25)	1041
	07-08	.177 (.161-.195)	.170 (.150-.190)	.370 (.320-.400)	.690 (.620-.780)	1.00 (.880-1.13)	1095
	09-10	.171 (.158-.186)	.180 (.150-.200)	.350 (.320-.390)	.680 (.590-.780)	1.05 (.880-1.18)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.06, 0.06, 0.06, 0.06, 0.042, 0.042, and 0.042 respectively.

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

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

**All results are corrected for molybdenum oxide interference in the ICP-MS method.

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Urinary Cadmium (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.181 (.157-.209)	.219 (.199-.238)	.423 (.391-.446)	.712 (.645-.757)	.941 (.826-1.07)	2257
	01-02	.199 (.181-.218)	.212 (.194-.232)	.404 (.377-.440)	.690 (.630-.754)	.919 (.813-.998)	2689
	03-04	.210 (.201-.219)	.208 (.189-.226)	.412 (.381-.438)	.678 (.650-.716)	.940 (.833-1.04)	2543
	05-06	.189 (.169-.210)	.180 (.160-.200)	.370 (.310-.430)	.650 (.590-.720)	.910 (.770-1.08)	2576
	07-08	.193 (.177-.210)	.190 (.180-.210)	.370 (.330-.410)	.660 (.580-.740)	.960 (.840-1.06)	2627
	09-10	.191 (.184-.199)	.180 (.170-.190)	.370 (.340-.400)	.680 (.630-.730)	.910 (.840-1.00)	2848
Age group							
6-11 years	99-00	*	.085 (.063-.107)	.148 (.123-.182)	.210 (.171-.316)	.316 (.184-.607)	310
	01-02	.075 (<LOD-.094)	.100 (.083-.112)	.166 (.136-.192)	.233 (.206-.281)	.318 (.221-.440)	368
	03-04	.090 (.078-.104)	.091 (.075-.104)	.126 (.111-.156)	.200 (.147-.350)	.308 (.178-.415)	287
	05-06	.081 (.072-.092)	.080 (.070-.090)	.130 (.110-.140)	.170 (.150-.190)	.200 (.180-.240)	355
	07-08	.084 (.076-.092)	.080 (.080-.090)	.120 (.110-.140)	.170 (.150-.240)	.260 (.180-.430)	394
	09-10	.077 (.070-.085)	.080 (.070-.090)	.110 (.100-.130)	.160 (.130-.220)	.230 (.140-.280)	378
12-19 years	99-00	.071 (.051-.098)	.093 (.084-.106)	.147 (.130-.163)	.215 (.204-.240)	.283 (.222-.404)	648
	01-02	.078 (.067-.091)	.091 (.085-.101)	.137 (.123-.143)	.191 (.175-.234)	.280 (.234-.321)	762
	03-04	.086 (.077-.096)	.084 (.074-.097)	.122 (.113-.135)	.176 (.154-.198)	.234 (.187-.274)	724
	05-06	.076 (.071-.081)	.080 (.070-.090)	.120 (.110-.130)	.150 (.140-.180)	.210 (.160-.240)	701
	07-08	.070 (.062-.079)	.070 (.070-.080)	.110 (.100-.110)	.150 (.140-.160)	.180 (.160-.210)	376
	09-10	.076 (.068-.084)	.080 (.070-.090)	.120 (.100-.130)	.160 (.140-.180)	.190 (.170-.270)	451
20 years and older	99-00	.267 (.247-.289)	.288 (.261-.304)	.484 (.433-.545)	.769 (.727-.818)	1.07 (.927-1.17)	1299
	01-02	.261 (.236-.289)	.273 (.247-.303)	.481 (.426-.518)	.779 (.691-.850)	.979 (.874-1.12)	1559
	03-04	.268 (.255-.281)	.270 (.247-.292)	.490 (.444-.538)	.767 (.688-.830)	1.02 (.909-1.14)	1532
	05-06	.240 (.216-.267)	.230 (.200-.260)	.440 (.400-.500)	.730 (.660-.820)	1.02 (.850-1.18)	1520
	07-08	.247 (.227-.270)	.240 (.220-.270)	.430 (.390-.470)	.740 (.670-.840)	1.05 (.930-1.16)	1857
	09-10	.242 (.232-.253)	.230 (.220-.250)	.440 (.420-.460)	.760 (.700-.820)	1.01 (.910-1.14)	2019
Gender							
Males	99-00	.154 (.131-.182)	.176 (.158-.191)	.329 (.293-.382)	.617 (.537-.700)	.789 (.696-.929)	1121
	01-02	.159 (.143-.177)	.168 (.157-.182)	.335 (.304-.364)	.536 (.491-.653)	.757 (.690-.856)	1334
	03-04	.173 (.161-.187)	.162 (.143-.185)	.325 (.300-.352)	.591 (.560-.631)	.740 (.678-.795)	1277
	05-06	.160 (.145-.177)	.150 (.130-.160)	.300 (.260-.340)	.620 (.560-.670)	.820 (.710-.990)	1271
	07-08	.160 (.146-.175)	.160 (.140-.180)	.290 (.260-.330)	.520 (.440-.650)	.740 (.600-.960)	1327
	09-10	.155 (.149-.161)	.140 (.140-.160)	.280 (.250-.300)	.540 (.510-.600)	.800 (.670-.900)	1398
Females	99-00	.211 (.170-.261)	.267 (.239-.308)	.473 (.423-.551)	.783 (.690-.917)	1.09 (.813-1.38)	1136
	01-02	.245 (.216-.278)	.263 (.228-.297)	.479 (.414-.541)	.792 (.687-.884)	.985 (.876-1.16)	1355
	03-04	.252 (.238-.266)	.253 (.227-.288)	.487 (.438-.533)	.802 (.716-.906)	1.06 (.940-1.21)	1266
	05-06	.220 (.193-.252)	.220 (.180-.250)	.420 (.370-.470)	.690 (.590-.850)	.990 (.780-1.31)	1305
	07-08	.231 (.210-.254)	.230 (.200-.270)	.440 (.390-.480)	.770 (.700-.860)	1.08 (.970-1.16)	1300
	09-10	.233 (.218-.248)	.240 (.220-.260)	.450 (.420-.490)	.770 (.680-.860)	1.09 (.910-1.19)	1450

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

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

**All results are corrected for molybdenum oxide interference in the ICP-MS method.

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Urinary Cadmium (creatinine corrected)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	.175 (.137-.223)	.181 (.144-.225)	.331 (.266-.418)	.622 (.441-.828)	.856 (.674-1.13)	780
	01-02	.156 (.136-.178)	.170 (.150-.184)	.282 (.263-.340)	.501 (.388-.614)	.693 (.507-.839)	682
	03-04	.163 (.147-.181)	.159 (.140-.183)	.296 (.256-.311)	.531 (.418-.667)	.718 (.562-.950)	614
	05-06	.162 (.146-.181)	.150 (.140-.170)	.280 (.220-.340)	.480 (.430-.510)	.570 (.520-.640)	652
	07-08	.159 (.141-.178)	.160 (.130-.180)	.270 (.220-.330)	.480 (.370-.620)	.720 (.520-.950)	515
	09-10	.161 (.149-.173)	.150 (.130-.170)	.280 (.240-.320)	.510 (.410-.630)	.720 (.540-.890)	613
	Non-Hispanic blacks	99-00	.183 (.140-.240)	.202 (.168-.241)	.414 (.343-.472)	.663 (.516-.827)	.873 (.722-.962)
01-02		.190 (.156-.232)	.196 (.174-.225)	.387 (.336-.449)	.686 (.559-.850)	.917 (.725-1.08)	667
03-04		.190 (.173-.210)	.185 (.168-.207)	.338 (.288-.431)	.700 (.500-.818)	.865 (.708-1.10)	717
05-06		.171 (.159-.183)	.160 (.140-.180)	.320 (.290-.370)	.550 (.500-.580)	.700 (.610-.730)	692
07-08		.180 (.164-.197)	.170 (.160-.190)	.330 (.290-.390)	.600 (.470-.700)	.770 (.690-.900)	589
09-10		.186 (.170-.203)	.180 (.160-.200)	.360 (.310-.430)	.680 (.570-.760)	.860 (.740-1.04)	544
Non-Hispanic whites		99-00	.175 (.146-.209)	.219 (.191-.250)	.432 (.387-.470)	.729 (.666-.783)	1.00 (.826-1.16)
	01-02	.205 (.184-.229)	.224 (.208-.242)	.421 (.382-.470)	.719 (.668-.784)	.931 (.806-1.05)	1132
	03-04	.220 (.207-.235)	.221 (.197-.253)	.434 (.398-.476)	.687 (.647-.767)	1.00 (.830-1.08)	1070
	05-06	.193 (.169-.221)	.180 (.160-.220)	.390 (.310-.480)	.680 (.630-.750)	.930 (.800-1.07)	1041
	07-08	.199 (.178-.222)	.200 (.180-.230)	.380 (.340-.440)	.700 (.630-.810)	1.03 (.880-1.13)	1095
	09-10	.192 (.183-.201)	.180 (.170-.200)	.390 (.340-.420)	.700 (.630-.760)	.910 (.840-1.02)	1225

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

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

**All results are corrected for molybdenum oxide interference in the ICP-MS method.

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Urinary Cesium

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	4.35 (4.00-4.74)	4.90 (4.40-5.40)	7.10 (6.60-7.70)	9.60 (8.80-10.3)	11.5 (10.2-13.0)	2464
	01-02	4.81 (4.40-5.26)	5.49 (5.12-5.90)	7.91 (7.47-8.39)	10.4 (9.56-11.4)	12.6 (11.1-13.8)	2690
	03-04	4.67 (4.39-4.97)	5.14 (4.84-5.49)	7.68 (7.20-8.21)	10.6 (9.55-11.4)	12.7 (11.5-13.9)	2558
	05-06	4.69 (4.41-4.98)	5.19 (4.91-5.43)	7.68 (7.21-8.09)	10.1 (9.65-10.9)	12.6 (12.0-13.4)	2576
	07-08	4.42 (4.25-4.60)	4.90 (4.64-5.12)	7.02 (6.79-7.38)	9.46 (9.04-9.86)	11.3 (10.5-11.8)	2627
	09-10	4.06 (3.87-4.26)	4.47 (4.22-4.66)	6.54 (6.35-6.75)	8.98 (8.25-9.68)	11.0 (10.1-11.6)	2848
Age group							
6-11 years	99-00	4.87 (4.08-5.81)	5.70 (4.60-6.70)	7.30 (6.70-8.00)	9.00 (7.90-10.1)	9.70 (9.00-10.8)	340
	01-02	4.87 (4.08-5.82)	5.64 (4.69-6.56)	7.96 (6.77-8.84)	9.88 (8.64-10.6)	11.1 (10.2-12.4)	368
	03-04	5.21 (4.74-5.71)	5.50 (4.76-6.37)	8.08 (7.10-8.83)	11.5 (8.86-12.9)	12.9 (10.8-13.6)	290
	05-06	4.74 (4.31-5.21)	5.38 (4.67-5.60)	7.00 (6.38-7.50)	9.30 (8.60-9.95)	11.2 (9.62-12.9)	355
	07-08	4.58 (4.22-4.96)	5.10 (4.50-5.44)	6.91 (6.45-7.47)	8.25 (7.77-8.93)	9.88 (8.47-10.9)	394
	09-10	4.21 (3.84-4.62)	4.58 (4.01-5.12)	6.68 (6.25-6.98)	8.28 (7.47-9.11)	9.56 (8.68-11.9)	378
12-19 years	99-00	4.55 (4.09-5.05)	5.20 (4.40-5.60)	6.90 (6.10-7.80)	8.80 (8.10-9.50)	10.7 (8.90-12.5)	718
	01-02	5.22 (4.57-5.95)	5.62 (5.16-6.12)	7.55 (7.13-8.04)	9.77 (9.12-11.1)	12.0 (10.0-15.0)	762
	03-04	5.04 (4.59-5.54)	5.70 (5.16-6.07)	7.53 (6.91-8.37)	9.71 (8.80-10.4)	11.6 (9.92-13.2)	725
	05-06	4.76 (4.24-5.34)	5.27 (4.80-5.74)	7.50 (6.71-8.04)	9.60 (8.52-10.5)	10.6 (9.68-11.8)	701
	07-08	4.58 (4.10-5.13)	5.14 (4.30-5.76)	6.93 (6.33-7.37)	9.20 (7.67-9.91)	10.6 (8.91-15.1)	376
	09-10	3.70 (3.39-4.02)	4.11 (3.54-4.70)	6.17 (5.72-6.47)	8.20 (7.16-8.79)	9.52 (8.66-10.6)	451
20 years and older	99-00	4.26 (3.94-4.62)	4.80 (4.40-5.30)	7.10 (6.50-7.60)	9.80 (8.90-10.7)	11.7 (10.2-13.4)	1406
	01-02	4.74 (4.32-5.20)	5.43 (5.05-5.87)	7.97 (7.43-8.52)	10.6 (9.73-11.5)	12.9 (11.2-14.2)	1560
	03-04	4.56 (4.23-4.90)	5.03 (4.60-5.42)	7.66 (7.01-8.34)	10.7 (9.40-11.5)	12.9 (11.5-14.9)	1543
	05-06	4.67 (4.38-4.99)	5.14 (4.84-5.44)	7.77 (7.32-8.30)	10.4 (9.72-11.5)	13.2 (12.4-13.9)	1520
	07-08	4.38 (4.20-4.58)	4.79 (4.59-4.99)	7.12 (6.81-7.52)	9.69 (9.23-10.2)	11.4 (10.6-12.0)	1857
	09-10	4.10 (3.88-4.34)	4.49 (4.21-4.71)	6.57 (6.33-6.84)	9.26 (8.37-10.1)	11.1 (10.3-11.9)	2019
Gender							
Males	99-00	4.84 (4.35-5.38)	5.50 (4.60-6.00)	7.50 (7.00-8.20)	9.70 (8.80-11.3)	11.7 (10.3-13.0)	1226
	01-02	5.34 (4.89-5.84)	6.13 (5.61-6.64)	8.27 (7.84-9.08)	10.8 (10.1-12.1)	12.8 (11.3-15.0)	1335
	03-04	5.03 (4.73-5.36)	5.59 (5.17-6.00)	7.98 (7.31-8.63)	11.0 (9.53-11.8)	12.9 (11.5-16.1)	1281
	05-06	5.13 (4.78-5.51)	5.37 (5.03-5.71)	7.92 (7.61-8.41)	10.9 (9.96-11.6)	13.2 (12.4-13.9)	1271
	07-08	4.77 (4.59-4.96)	5.26 (4.98-5.43)	7.18 (6.93-7.54)	9.68 (8.93-10.6)	11.6 (10.6-12.6)	1327
	09-10	4.27 (4.00-4.55)	4.70 (4.46-5.00)	6.57 (6.39-6.81)	8.67 (7.91-9.57)	10.7 (9.66-11.3)	1398
Females	99-00	3.95 (3.63-4.29)	4.50 (4.20-4.90)	6.70 (6.20-7.30)	9.10 (8.30-10.0)	11.2 (9.90-12.9)	1238
	01-02	4.36 (3.95-4.81)	4.87 (4.45-5.25)	7.33 (6.71-8.01)	9.77 (9.07-11.0)	12.4 (10.4-13.8)	1355
	03-04	4.35 (4.03-4.70)	4.79 (4.25-5.26)	7.30 (6.87-7.81)	10.2 (9.40-11.0)	12.1 (11.2-13.6)	1277
	05-06	4.30 (3.98-4.65)	4.89 (4.58-5.25)	7.43 (6.99-7.83)	9.79 (9.30-10.5)	12.1 (10.6-13.1)	1305
	07-08	4.12 (3.88-4.37)	4.40 (4.17-4.74)	6.84 (6.32-7.36)	9.31 (8.69-9.76)	10.5 (9.93-11.7)	1300
	09-10	3.88 (3.63-4.14)	4.13 (3.83-4.55)	6.46 (5.95-6.90)	9.29 (8.62-10.0)	11.2 (10.3-12.1)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.14, 0.14, 0.2, 0.066, 0.066, and 0.066 respectively.

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Urinary Cesium

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Race/ethnicity							
Mexican Americans	99-00	4.32 (3.82-4.89)	4.80 (4.30-5.20)	6.70 (6.40-7.20)	9.10 (8.00-9.90)	11.1 (9.60-12.7)	884
	01-02	4.63 (4.10-5.24)	5.29 (4.59-5.89)	7.08 (6.42-7.99)	9.13 (7.86-11.3)	11.3 (8.81-14.9)	683
	03-04	4.94 (4.64-5.27)	5.62 (5.01-6.09)	7.86 (7.15-8.46)	10.3 (8.99-11.3)	11.9 (10.7-14.7)	618
	05-06	4.64 (4.41-4.88)	5.18 (4.91-5.55)	7.29 (6.74-7.73)	9.52 (8.76-9.98)	11.5 (9.88-11.9)	652
	07-08	4.50 (4.06-4.99)	4.93 (4.40-5.56)	6.98 (6.38-7.49)	9.12 (8.25-9.82)	10.8 (9.45-12.1)	515
	09-10	4.20 (3.95-4.48)	4.47 (4.16-4.87)	6.49 (6.00-7.01)	8.64 (7.81-9.40)	10.2 (9.15-11.4)	613
Non-Hispanic blacks	99-00	4.94 (4.33-5.64)	5.40 (4.80-6.40)	7.50 (6.90-8.40)	9.80 (8.80-10.8)	11.6 (9.80-13.1)	568
	01-02	4.93 (4.70-5.17)	5.33 (5.05-5.64)	7.36 (6.97-7.59)	9.44 (8.71-9.68)	10.7 (10.1-12.3)	667
	03-04	4.71 (4.47-4.97)	5.12 (4.71-5.49)	7.17 (6.72-7.60)	9.13 (8.52-9.99)	10.7 (9.99-11.4)	723
	05-06	4.78 (4.42-5.18)	5.26 (5.03-5.44)	7.20 (6.63-7.66)	9.14 (8.26-10.6)	11.0 (9.63-13.7)	692
	07-08	4.64 (4.29-5.01)	4.90 (4.48-5.31)	6.90 (6.35-7.42)	9.39 (8.29-10.3)	11.3 (9.59-12.6)	589
	09-10	4.07 (3.82-4.35)	4.68 (4.29-4.84)	6.56 (6.19-7.01)	8.98 (8.12-9.31)	9.97 (9.27-11.3)	544
Non-Hispanic whites	99-00	4.25 (3.83-4.72)	4.80 (4.20-5.50)	7.20 (6.60-7.90)	9.70 (8.90-10.7)	11.8 (10.3-13.3)	821
	01-02	4.77 (4.27-5.32)	5.49 (4.99-6.05)	7.98 (7.45-8.61)	10.4 (9.54-11.4)	12.6 (11.0-13.8)	1132
	03-04	4.56 (4.22-4.94)	5.02 (4.59-5.42)	7.60 (7.00-8.23)	10.7 (9.26-11.8)	12.9 (11.5-14.7)	1074
	05-06	4.64 (4.25-5.05)	5.19 (4.76-5.49)	7.77 (7.18-8.46)	10.3 (9.62-11.5)	13.1 (12.1-13.9)	1041
	07-08	4.29 (4.07-4.53)	4.76 (4.48-5.08)	7.02 (6.67-7.49)	9.50 (8.91-9.93)	11.3 (10.3-12.2)	1095
	09-10	3.96 (3.73-4.20)	4.38 (4.10-4.64)	6.43 (6.15-6.63)	8.62 (7.86-9.29)	10.5 (9.35-11.5)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.14, 0.14, 0.2, 0.066, 0.066, and 0.066 respectively.

[Biomonitoring Summary](#)

Urinary Cesium (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	4.10 (3.96-4.25)	4.13 (3.97-4.27)	5.41 (5.21-5.70)	7.14 (6.83-7.50)	8.64 (8.00-9.30)	2464
	01-02	4.54 (4.30-4.79)	4.44 (4.20-4.64)	6.06 (5.66-6.47)	8.18 (7.62-8.95)	10.2 (8.84-11.7)	2689
	03-04	4.64 (4.42-4.87)	4.42 (4.21-4.74)	6.11 (5.76-6.48)	8.51 (7.99-9.15)	10.6 (9.75-11.0)	2558
	05-06	4.62 (4.37-4.88)	4.51 (4.20-4.76)	6.19 (5.90-6.55)	8.84 (8.14-9.24)	10.8 (9.71-12.1)	2576
	07-08	4.62 (4.42-4.82)	4.58 (4.36-4.79)	6.23 (5.96-6.61)	8.67 (7.79-9.52)	10.6 (9.78-11.2)	2627
	09-10	4.33 (4.17-4.49)	4.28 (4.12-4.45)	6.00 (5.70-6.23)	8.06 (7.76-8.36)	9.75 (9.05-10.4)	2848
Age group							
6-11 years	99-00	5.34 (5.03-5.67)	5.42 (5.03-6.04)	6.63 (6.18-7.13)	8.23 (7.13-9.41)	9.90 (7.88-10.1)	340
	01-02	5.95 (5.48-6.46)	5.91 (5.43-6.53)	7.77 (7.00-8.28)	9.27 (8.35-11.9)	11.9 (9.38-12.3)	368
	03-04	6.07 (5.63-6.53)	6.02 (5.45-6.49)	8.30 (7.16-8.99)	10.8 (9.15-11.8)	11.9 (10.3-15.8)	290
	05-06	5.85 (5.41-6.34)	5.74 (5.21-6.41)	7.65 (6.67-9.11)	10.1 (9.38-10.8)	11.6 (10.1-14.9)	355
	07-08	5.96 (5.53-6.43)	6.12 (5.79-6.55)	7.88 (7.33-8.53)	10.7 (8.91-12.1)	12.5 (10.9-14.1)	394
	09-10	5.74 (5.30-6.22)	5.58 (5.15-6.12)	7.16 (6.71-7.87)	9.19 (8.13-10.4)	12.2 (8.69-14.8)	378
12-19 years	99-00	3.43 (3.29-3.58)	3.54 (3.29-3.68)	4.35 (4.17-4.56)	5.31 (4.97-5.79)	6.67 (5.33-8.09)	718
	01-02	3.73 (3.41-4.08)	3.55 (3.36-3.74)	4.74 (4.40-5.14)	6.10 (5.35-7.63)	8.08 (6.44-9.82)	762
	03-04	3.60 (3.37-3.85)	3.51 (3.33-3.72)	4.53 (4.24-4.87)	6.08 (5.14-6.94)	7.27 (6.13-9.07)	725
	05-06	3.66 (3.40-3.93)	3.59 (3.40-3.83)	4.76 (4.30-5.20)	5.93 (5.62-6.62)	7.62 (6.03-8.07)	701
	07-08	3.58 (3.31-3.88)	3.70 (3.22-3.96)	4.98 (4.60-5.17)	6.36 (5.38-7.28)	7.93 (6.06-9.76)	376
	09-10	3.46 (3.27-3.65)	3.48 (3.23-3.74)	4.39 (4.16-4.70)	5.54 (5.01-6.32)	6.56 (5.95-7.35)	451
20 years and older	99-00	4.08 (3.88-4.29)	4.06 (3.85-4.29)	5.39 (5.04-5.85)	7.17 (6.84-7.58)	8.61 (7.91-9.30)	1406
	01-02	4.54 (4.30-4.78)	4.43 (4.20-4.59)	5.94 (5.64-6.40)	8.15 (7.46-8.97)	10.2 (8.74-11.7)	1559
	03-04	4.68 (4.46-4.91)	4.47 (4.27-4.80)	6.11 (5.83-6.43)	8.47 (7.76-9.17)	10.5 (9.68-11.2)	1543
	05-06	4.67 (4.42-4.93)	4.54 (4.25-4.78)	6.24 (5.93-6.66)	8.92 (8.29-9.31)	11.2 (9.71-12.7)	1520
	07-08	4.67 (4.46-4.88)	4.58 (4.34-4.82)	6.19 (5.93-6.61)	8.65 (7.79-9.52)	10.6 (9.68-11.3)	1857
	09-10	4.34 (4.17-4.53)	4.28 (4.10-4.49)	6.07 (5.70-6.33)	8.20 (7.81-8.65)	9.80 (9.05-11.1)	2019
Gender							
Males	99-00	3.78 (3.65-3.91)	3.78 (3.61-3.96)	4.96 (4.72-5.20)	6.50 (6.18-6.70)	7.71 (7.01-8.64)	1226
	01-02	4.22 (3.96-4.51)	4.10 (3.87-4.41)	5.60 (5.27-6.03)	7.67 (6.90-8.48)	9.46 (8.22-11.5)	1334
	03-04	4.24 (3.99-4.50)	4.12 (3.89-4.37)	5.66 (5.19-6.06)	7.66 (6.90-8.40)	9.00 (8.36-10.3)	1281
	05-06	4.21 (3.94-4.50)	4.11 (3.72-4.46)	5.75 (5.14-6.11)	7.68 (6.91-8.78)	9.33 (8.84-9.84)	1271
	07-08	4.27 (4.04-4.51)	4.19 (4.02-4.42)	5.81 (5.46-6.29)	7.84 (7.20-8.65)	9.61 (8.65-10.2)	1327
	09-10	3.89 (3.70-4.09)	3.85 (3.60-4.06)	5.29 (4.89-5.69)	7.02 (6.76-7.42)	8.38 (7.87-9.18)	1398
Females	99-00	4.43 (4.20-4.68)	4.45 (4.14-4.77)	5.92 (5.36-6.47)	7.70 (7.16-8.07)	9.41 (8.00-10.4)	1238
	01-02	4.86 (4.58-5.16)	4.72 (4.50-5.06)	6.54 (5.93-7.00)	8.50 (7.84-9.79)	10.3 (8.95-12.2)	1355
	03-04	5.05 (4.77-5.35)	4.77 (4.44-5.14)	6.58 (6.14-7.22)	9.43 (8.56-10.5)	11.3 (10.7-12.3)	1277
	05-06	5.05 (4.78-5.33)	4.86 (4.57-5.17)	6.72 (6.31-7.23)	9.65 (9.23-10.3)	12.6 (11.0-13.3)	1305
	07-08	4.98 (4.76-5.20)	4.90 (4.69-5.20)	6.72 (6.20-7.06)	9.50 (8.37-10.5)	11.3 (10.7-12.1)	1300
	09-10	4.79 (4.63-4.97)	4.69 (4.50-4.93)	6.57 (6.34-6.85)	8.88 (8.36-9.33)	10.5 (9.56-12.0)	1450

[Biomonitoring Summary](#)

Urinary Cesium (creatinine corrected)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	3.99 (3.73-4.25)	3.95 (3.65-4.17)	5.09 (4.79-5.39)	6.65 (6.08-7.10)	7.98 (7.20-8.95)	884
	01-02	4.51 (4.00-5.08)	4.51 (3.82-4.95)	5.91 (5.31-6.64)	7.77 (6.60-10.0)	10.0 (7.60-20.5)	682
	03-04	4.58 (4.16-5.05)	4.51 (4.10-4.92)	5.74 (5.42-6.09)	7.53 (6.59-8.91)	9.44 (8.24-10.6)	618
	05-06	4.36 (4.10-4.64)	4.40 (3.97-4.73)	5.69 (5.24-6.22)	7.23 (6.69-7.80)	8.14 (7.65-9.33)	652
	07-08	4.50 (4.22-4.79)	4.39 (3.96-4.86)	6.07 (5.57-6.59)	7.63 (7.30-7.89)	9.06 (7.89-10.5)	515
	09-10	4.41 (4.17-4.65)	4.38 (4.04-4.59)	5.70 (5.34-6.07)	7.68 (7.17-8.24)	8.89 (8.50-9.52)	613
Non-Hispanic blacks	99-00	3.21 (2.90-3.56)	3.26 (3.05-3.44)	4.30 (4.00-4.55)	5.50 (5.00-5.98)	6.33 (5.91-7.04)	568
	01-02	3.38 (3.19-3.57)	3.35 (3.05-3.60)	4.41 (4.15-4.78)	5.87 (5.63-6.29)	6.75 (6.41-7.03)	667
	03-04	3.38 (3.21-3.56)	3.30 (3.08-3.50)	4.31 (4.02-4.62)	5.79 (5.12-6.47)	6.98 (6.38-7.18)	723
	05-06	3.47 (3.34-3.60)	3.40 (3.21-3.60)	4.47 (4.25-4.68)	5.94 (5.52-6.31)	6.95 (6.20-7.51)	692
	07-08	3.39 (3.21-3.58)	3.33 (3.18-3.54)	4.50 (4.21-4.78)	5.84 (5.41-6.18)	6.87 (5.94-7.58)	589
	09-10	3.23 (3.05-3.42)	3.20 (2.99-3.46)	4.31 (4.12-4.59)	5.88 (5.30-6.28)	6.69 (6.32-7.89)	544
Non-Hispanic whites	99-00	4.26 (4.07-4.47)	4.28 (4.05-4.50)	5.66 (5.26-6.05)	7.27 (6.84-7.83)	8.75 (7.93-9.38)	821
	01-02	4.81 (4.55-5.08)	4.63 (4.42-4.96)	6.33 (5.91-6.68)	8.46 (7.84-9.39)	10.3 (9.04-11.8)	1132
	03-04	4.81 (4.52-5.12)	4.56 (4.31-4.98)	6.28 (5.95-6.71)	8.63 (7.99-9.28)	10.6 (9.43-11.0)	1074
	05-06	4.82 (4.50-5.17)	4.68 (4.32-5.04)	6.41 (6.00-6.81)	9.18 (8.67-9.53)	11.0 (9.71-12.7)	1041
	07-08	4.81 (4.54-5.09)	4.73 (4.42-5.12)	6.43 (6.01-6.80)	9.24 (8.20-9.82)	11.0 (10.2-11.7)	1095
	09-10	4.42 (4.23-4.63)	4.36 (4.15-4.54)	6.16 (5.82-6.51)	8.13 (7.68-8.65)	9.83 (8.79-11.4)	1225

[Biomonitoring Summary](#)

Urinary Cobalt

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.375 (.336-.419)	.410 (.370-.450)	.630 (.570-.680)	.950 (.890-1.03)	1.32 (1.16-1.48)	2465
	01-02	.379 (.355-.404)	.410 (.380-.430)	.610 (.570-.660)	.940 (.870-1.00)	1.28 (1.15-1.44)	2690
	03-04	.316 (.291-.343)	.330 (.300-.350)	.520 (.490-.550)	.820 (.750-.890)	1.16 (1.08-1.26)	2558
	05-06	.374 (.357-.392)	.390 (.370-.410)	.600 (.560-.630)	.880 (.840-.950)	1.33 (1.17-1.47)	2576
	07-08	.369 (.351-.389)	.380 (.360-.390)	.580 (.550-.600)	.920 (.840-1.01)	1.32 (1.10-1.43)	2627
	09-10	.369 (.341-.398)	.380 (.350-.400)	.600 (.560-.650)	.960 (.870-1.06)	1.40 (1.20-1.58)	2848
Age group							
6-11 years	99-00	.499 (.427-.583)	.530 (.450-.640)	.750 (.610-.900)	1.03 (.880-1.12)	1.22 (1.03-1.50)	340
	01-02	.452 (.377-.543)	.520 (.430-.610)	.710 (.670-.810)	1.07 (.940-1.21)	1.32 (1.17-1.53)	368
	03-04	.454 (.393-.523)	.460 (.410-.520)	.750 (.590-.900)	1.24 (.910-1.47)	1.68 (1.26-1.81)	290
	05-06	.424 (.383-.468)	.450 (.410-.490)	.660 (.580-.710)	.870 (.830-1.04)	1.16 (.910-1.39)	355
	07-08	.433 (.367-.509)	.450 (.360-.550)	.700 (.560-.810)	.960 (.790-1.28)	1.40 (.880-1.82)	394
	09-10	.424 (.379-.474)	.440 (.400-.490)	.670 (.610-.740)	.960 (.850-1.10)	1.14 (1.01-1.69)	378
12-19 years	99-00	.519 (.463-.581)	.520 (.490-.570)	.820 (.670-.890)	1.17 (1.01-1.47)	1.52 (1.26-2.56)	719
	01-02	.515 (.469-.564)	.520 (.480-.570)	.750 (.690-.840)	1.24 (1.07-1.32)	1.59 (1.37-1.99)	762
	03-04	.461 (.428-.496)	.480 (.450-.520)	.740 (.650-.800)	1.03 (.940-1.23)	1.60 (1.14-1.92)	725
	05-06	.510 (.451-.577)	.500 (.460-.570)	.820 (.690-.980)	1.30 (1.08-1.40)	1.74 (1.39-2.08)	701
	07-08	.529 (.478-.585)	.510 (.450-.570)	.820 (.690-.960)	1.36 (1.09-1.53)	1.70 (1.40-1.78)	376
	09-10	.465 (.406-.533)	.460 (.430-.530)	.830 (.710-.920)	1.21 (1.05-1.51)	1.56 (1.19-2.11)	451
20 years and older	99-00	.343 (.305-.386)	.370 (.330-.420)	.570 (.520-.640)	.880 (.810-.980)	1.28 (1.07-1.39)	1406
	01-02	.352 (.333-.373)	.380 (.350-.410)	.560 (.520-.590)	.860 (.800-.930)	1.15 (1.04-1.42)	1560
	03-04	.285 (.259-.313)	.300 (.270-.330)	.460 (.410-.510)	.690 (.660-.730)	1.06 (.890-1.14)	1543
	05-06	.351 (.332-.371)	.370 (.350-.390)	.550 (.520-.600)	.810 (.760-.880)	1.30 (1.05-1.47)	1520
	07-08	.343 (.326-.362)	.350 (.340-.370)	.530 (.500-.560)	.830 (.750-.920)	1.20 (1.00-1.38)	1857
	09-10	.351 (.322-.382)	.350 (.330-.380)	.570 (.520-.630)	.890 (.800-1.02)	1.35 (1.12-1.58)	2019
Gender							
Males	99-00	.371 (.331-.416)	.410 (.370-.450)	.580 (.540-.640)	.820 (.740-.900)	1.01 (.900-1.12)	1227
	01-02	.367 (.338-.399)	.390 (.360-.420)	.550 (.520-.600)	.790 (.740-.850)	1.05 (.960-1.14)	1335
	03-04	.294 (.270-.319)	.320 (.290-.340)	.480 (.440-.500)	.670 (.620-.710)	.870 (.790-.920)	1281
	05-06	.369 (.354-.383)	.380 (.370-.400)	.540 (.510-.570)	.760 (.690-.850)	1.06 (.910-1.27)	1271
	07-08	.350 (.330-.371)	.370 (.350-.390)	.530 (.500-.560)	.750 (.690-.820)	1.00 (.860-1.14)	1327
	09-10	.336 (.307-.368)	.360 (.330-.380)	.530 (.480-.570)	.750 (.690-.850)	.960 (.850-1.12)	1398
Females	99-00	.379 (.333-.431)	.410 (.340-.460)	.680 (.590-.790)	1.17 (.930-1.36)	1.50 (1.28-2.05)	1238
	01-02	.390 (.364-.417)	.430 (.400-.450)	.670 (.620-.700)	1.06 (.980-1.16)	1.46 (1.22-1.81)	1355
	03-04	.339 (.308-.372)	.340 (.310-.370)	.580 (.540-.610)	1.04 (.900-1.13)	1.47 (1.33-1.73)	1277
	05-06	.379 (.351-.409)	.410 (.370-.440)	.660 (.620-.700)	1.04 (.900-1.21)	1.54 (1.30-1.93)	1305
	07-08	.389 (.367-.411)	.390 (.360-.410)	.650 (.590-.690)	1.08 (.980-1.26)	1.43 (1.34-1.62)	1300
	09-10	.403 (.364-.447)	.400 (.360-.440)	.700 (.640-.770)	1.19 (1.05-1.36)	1.68 (1.51-2.11)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.07, 0.07, 0.08, 0.041, 0.041, and 0.041 respectively.

[Biomonitoring Summary](#)

Urinary Cobalt

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	.418 (.348-.502)	.470 (.370-.530)	.670 (.630-.770)	1.05 (.950-1.19)	1.47 (1.25-1.67)	884
	01-02	.398 (.373-.424)	.430 (.410-.450)	.650 (.600-.710)	.950 (.850-1.03)	1.20 (1.06-1.48)	683
	03-04	.374 (.350-.398)	.350 (.340-.390)	.580 (.530-.620)	1.09 (.920-1.16)	1.33 (1.16-1.73)	618
	05-06	.437 (.404-.473)	.450 (.420-.500)	.680 (.620-.720)	1.11 (.940-1.30)	1.58 (1.33-1.79)	652
	07-08	.396 (.349-.450)	.400 (.330-.480)	.610 (.560-.710)	.980 (.870-1.08)	1.26 (1.05-1.69)	515
	09-10	.378 (.351-.407)	.380 (.360-.410)	.590 (.560-.640)	.920 (.860-1.04)	1.24 (1.04-1.58)	613
Non-Hispanic blacks	99-00	.434 (.405-.465)	.430 (.390-.470)	.680 (.620-.760)	1.17 (1.04-1.26)	1.45 (1.23-2.04)	568
	01-02	.435 (.388-.487)	.420 (.380-.460)	.650 (.540-.810)	1.16 (.850-1.64)	1.75 (1.32-2.22)	667
	03-04	.380 (.348-.414)	.380 (.360-.410)	.600 (.540-.680)	1.01 (.890-1.09)	1.28 (1.01-2.03)	723
	05-06	.412 (.374-.453)	.410 (.360-.440)	.600 (.560-.670)	.930 (.830-1.11)	1.47 (1.12-2.00)	692
	07-08	.403 (.367-.443)	.390 (.360-.420)	.620 (.560-.740)	1.06 (.880-1.31)	1.57 (1.22-1.86)	589
	09-10	.368 (.335-.403)	.380 (.340-.400)	.590 (.520-.650)	.990 (.870-1.15)	1.47 (1.20-1.58)	544
Non-Hispanic whites	99-00	.369 (.316-.431)	.410 (.350-.460)	.630 (.550-.700)	.930 (.830-1.08)	1.29 (1.02-1.65)	822
	01-02	.359 (.327-.394)	.390 (.360-.430)	.590 (.520-.660)	.870 (.800-.950)	1.16 (1.04-1.32)	1132
	03-04	.301 (.270-.334)	.310 (.280-.340)	.500 (.460-.540)	.760 (.690-.850)	1.09 (.950-1.26)	1074
	05-06	.361 (.340-.384)	.380 (.360-.410)	.580 (.530-.630)	.860 (.800-.940)	1.30 (1.06-1.50)	1041
	07-08	.358 (.338-.379)	.370 (.350-.390)	.560 (.520-.600)	.900 (.780-1.00)	1.32 (1.02-1.46)	1095
	09-10	.369 (.335-.408)	.370 (.350-.400)	.600 (.540-.660)	.970 (.850-1.10)	1.40 (1.17-1.64)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.07, 0.07, 0.08, 0.041, 0.041, and 0.041 respectively.

[Biomonitoring Summary](#)

Urinary Cobalt (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.353 (.319-.391)	.328 (.302-.365)	.515 (.457-.581)	.821 (.679-.963)	1.16 (.938-1.50)	2465
	01-02	.358 (.333-.384)	.335 (.313-.360)	.523 (.487-.562)	.844 (.750-.955)	1.16 (1.00-1.28)	2689
	03-04	.314 (.303-.325)	.290 (.278-.306)	.455 (.434-.481)	.737 (.703-.781)	1.02 (.911-1.10)	2558
	05-06	.368 (.353-.384)	.340 (.320-.360)	.520 (.490-.550)	.810 (.750-.920)	1.17 (.990-1.27)	2576
	07-08	.385 (.366-.406)	.360 (.350-.380)	.560 (.520-.590)	.870 (.760-.990)	1.22 (1.01-1.46)	2627
	09-10	.393 (.372-.415)	.370 (.350-.390)	.560 (.530-.600)	.890 (.830-.940)	1.29 (1.08-1.49)	2848
Age group							
6-11 years	99-00	.547 (.467-.640)	.554 (.449-.647)	.774 (.626-.938)	1.00 (.833-1.49)	1.25 (.895-1.50)	340
	01-02	.552 (.508-.599)	.548 (.503-.609)	.756 (.660-.829)	1.00 (.900-1.27)	1.30 (1.03-1.73)	368
	03-04	.529 (.471-.593)	.500 (.463-.543)	.689 (.634-.750)	1.04 (.760-1.29)	1.29 (1.04-1.36)	290
	05-06	.523 (.494-.554)	.520 (.480-.570)	.720 (.660-.760)	.900 (.840-1.04)	1.27 (.980-1.45)	355
	07-08	.564 (.501-.635)	.580 (.500-.630)	.760 (.660-.910)	1.12 (.830-1.46)	1.39 (1.06-1.81)	394
	09-10	.578 (.538-.620)	.570 (.530-.620)	.760 (.690-.840)	1.06 (.920-1.21)	1.26 (1.06-1.58)	378
12-19 years	99-00	.391 (.353-.433)	.378 (.329-.407)	.537 (.469-.595)	.824 (.638-1.17)	1.44 (.821-3.54)	719
	01-02	.368 (.343-.396)	.352 (.327-.372)	.534 (.471-.611)	.851 (.673-.949)	1.06 (.932-1.24)	762
	03-04	.329 (.304-.355)	.316 (.277-.348)	.495 (.442-.561)	.738 (.630-.847)	.952 (.792-1.09)	725
	05-06	.392 (.360-.427)	.360 (.330-.400)	.530 (.480-.620)	.810 (.720-.920)	1.02 (.870-1.48)	701
	07-08	.414 (.382-.448)	.390 (.340-.450)	.610 (.520-.700)	.880 (.750-1.13)	1.17 (.890-1.35)	376
	09-10	.435 (.398-.476)	.410 (.370-.470)	.610 (.550-.700)	.960 (.790-1.07)	1.30 (1.00-1.53)	451
20 years and older	99-00	.328 (.297-.362)	.306 (.280-.328)	.471 (.428-.522)	.727 (.632-.905)	1.12 (.861-1.36)	1406
	01-02	.337 (.313-.363)	.313 (.294-.337)	.475 (.435-.513)	.792 (.704-.955)	1.15 (.963-1.33)	1559
	03-04	.293 (.282-.304)	.271 (.257-.286)	.400 (.380-.429)	.691 (.616-.744)	.976 (.829-1.10)	1543
	05-06	.350 (.334-.367)	.320 (.300-.340)	.490 (.450-.520)	.780 (.690-.940)	1.17 (.970-1.31)	1520
	07-08	.366 (.348-.384)	.340 (.330-.360)	.510 (.480-.540)	.830 (.720-.960)	1.19 (.980-1.47)	1857
	09-10	.371 (.350-.394)	.340 (.320-.360)	.520 (.490-.550)	.840 (.750-.930)	1.29 (1.02-1.52)	2019
Gender							
Males	99-00	.290 (.259-.324)	.279 (.248-.301)	.402 (.365-.449)	.608 (.534-.728)	.838 (.667-1.10)	1227
	01-02	.290 (.272-.310)	.278 (.256-.297)	.392 (.361-.425)	.644 (.574-.707)	.848 (.786-.929)	1334
	03-04	.247 (.237-.259)	.234 (.215-.250)	.333 (.313-.352)	.513 (.476-.585)	.700 (.630-.753)	1281
	05-06	.302 (.289-.317)	.290 (.270-.300)	.410 (.370-.440)	.610 (.580-.640)	.770 (.710-.850)	1271
	07-08	.313 (.298-.329)	.300 (.280-.310)	.420 (.400-.440)	.630 (.580-.680)	.830 (.680-1.02)	1327
	09-10	.306 (.290-.323)	.290 (.280-.300)	.420 (.390-.450)	.630 (.570-.690)	.810 (.720-.920)	1398
Females	99-00	.426 (.378-.479)	.407 (.362-.457)	.606 (.550-.694)	.960 (.781-1.29)	1.50 (1.11-1.83)	1238
	01-02	.435 (.404-.468)	.408 (.382-.438)	.635 (.560-.708)	1.00 (.879-1.19)	1.29 (1.12-1.60)	1355
	03-04	.393 (.378-.409)	.361 (.342-.381)	.554 (.513-.615)	.937 (.850-1.00)	1.29 (1.10-1.33)	1277
	05-06	.445 (.423-.468)	.420 (.400-.440)	.630 (.590-.700)	.990 (.900-1.17)	1.34 (1.18-1.60)	1305
	07-08	.470 (.442-.499)	.450 (.430-.480)	.690 (.630-.750)	1.09 (.930-1.27)	1.46 (1.26-1.69)	1300
	09-10	.498 (.465-.534)	.460 (.450-.480)	.690 (.650-.720)	1.09 (.990-1.33)	1.64 (1.34-2.15)	1450

[Biomonitoring Summary](#)

Urinary Cobalt (creatinine corrected)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	.386 (.339-.439)	.376 (.333-.419)	.598 (.500-.669)	.898 (.826-1.00)	1.23 (1.11-1.35)	884
	01-02	.388 (.361-.417)	.361 (.333-.394)	.591 (.500-.662)	.872 (.777-.990)	1.10 (.990-1.27)	682
	03-04	.346 (.326-.368)	.327 (.296-.349)	.542 (.487-.594)	.850 (.753-.963)	1.14 (.963-1.35)	618
	05-06	.411 (.388-.436)	.380 (.360-.400)	.580 (.520-.650)	.900 (.820-1.02)	1.19 (1.05-1.35)	652
	07-08	.396 (.348-.450)	.370 (.330-.410)	.560 (.470-.690)	.900 (.770-1.12)	1.17 (.990-1.54)	515
	09-10	.396 (.367-.427)	.380 (.340-.420)	.590 (.530-.650)	.930 (.820-1.03)	1.22 (1.04-1.30)	613
Non-Hispanic blacks	99-00	.282 (.275-.289)	.257 (.243-.279)	.417 (.378-.462)	.723 (.600-.785)	.975 (.757-1.60)	568
	01-02	.298 (.275-.323)	.268 (.251-.296)	.444 (.393-.505)	.728 (.582-.917)	1.03 (.740-1.55)	667
	03-04	.273 (.248-.300)	.259 (.239-.281)	.388 (.344-.461)	.700 (.563-.842)	.964 (.733-1.15)	723
	05-06	.299 (.281-.318)	.280 (.240-.300)	.420 (.380-.460)	.700 (.570-.780)	.950 (.790-1.17)	692
	07-08	.295 (.277-.314)	.270 (.260-.290)	.420 (.390-.450)	.710 (.570-.860)	1.07 (.850-1.28)	589
	09-10	.291 (.271-.314)	.280 (.240-.310)	.420 (.380-.480)	.700 (.610-.750)	.840 (.750-1.06)	544
Non-Hispanic whites	99-00	.369 (.324-.421)	.352 (.313-.387)	.533 (.452-.611)	.861 (.667-1.16)	1.25 (.895-1.57)	822
	01-02	.362 (.331-.396)	.343 (.313-.368)	.523 (.479-.562)	.830 (.736-.983)	1.16 (.983-1.33)	1132
	03-04	.317 (.301-.334)	.291 (.274-.309)	.457 (.425-.488)	.738 (.683-.804)	1.00 (.857-1.13)	1074
	05-06	.376 (.357-.395)	.350 (.330-.370)	.520 (.490-.580)	.810 (.710-.950)	1.18 (.950-1.43)	1041
	07-08	.401 (.380-.423)	.380 (.360-.400)	.590 (.530-.630)	.890 (.760-1.06)	1.27 (.980-1.55)	1095
	09-10	.413 (.388-.440)	.390 (.360-.410)	.580 (.530-.620)	.910 (.830-.980)	1.33 (1.08-1.58)	1225

[Biomonitoring Summary](#)

Blood Lead

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	1.66 (1.60-1.72)	1.60 (1.60-1.70)	2.50 (2.40-2.60)	3.80 (3.60-4.00)	5.00 (4.70-5.50)	7970
	01-02	1.45 (1.39-1.51)	1.40 (1.40-1.50)	2.20 (2.10-2.30)	3.40 (3.20-3.60)	4.50 (4.20-4.70)	8945
	03-04	1.43 (1.36-1.50)	1.40 (1.30-1.50)	2.10 (2.10-2.20)	3.20 (3.10-3.30)	4.20 (3.90-4.40)	8373
	05-06	1.29 (1.23-1.36)	1.27 (1.20-1.34)	2.01 (1.91-2.11)	3.05 (2.86-3.22)	3.91 (3.64-4.18)	8407
	07-08	1.27 (1.21-1.34)	1.22 (1.18-1.30)	1.90 (1.80-2.00)	2.80 (2.67-2.96)	3.70 (3.50-3.90)	8266
	09-10	1.12 (1.08-1.16)	1.07 (1.03-1.12)	1.70 (1.62-1.77)	2.58 (2.45-2.71)	3.34 (3.14-3.57)	8793
Age group							
1-5 years	99-00	2.23 (1.96-2.53)	2.20 (1.90-2.50)	3.40 (2.80-3.90)	4.90 (4.00-6.60)	7.00 (6.10-8.30)	723
	01-02	1.70 (1.55-1.87)	1.60 (1.50-1.80)	2.50 (2.20-2.90)	4.20 (3.50-5.20)	5.80 (4.70-6.90)	898
	03-04	1.77 (1.60-1.95)	1.70 (1.50-1.90)	2.50 (2.30-2.80)	3.90 (3.30-4.60)	5.10 (4.10-6.60)	911
	05-06	1.46 (1.36-1.57)	1.43 (1.34-1.55)	2.10 (1.97-2.20)	2.98 (2.72-3.32)	3.80 (3.49-4.54)	968
	07-08	1.51 (1.37-1.66)	1.43 (1.30-1.60)	2.20 (1.98-2.31)	3.20 (2.65-3.85)	4.10 (3.40-5.19)	817
	09-10	1.17 (1.08-1.26)	1.15 (1.03-1.27)	1.70 (1.50-1.87)	2.39 (2.08-2.65)	3.37 (2.63-4.11)	836
6-11 years	99-00	1.51 (1.36-1.66)	1.40 (1.30-1.60)	2.10 (1.80-2.50)	3.30 (2.80-3.80)	4.50 (3.40-6.20)	905
	01-02	1.25 (1.14-1.36)	1.20 (1.00-1.30)	1.70 (1.60-2.00)	2.80 (2.50-3.10)	3.70 (3.00-4.70)	1044
	03-04	1.25 (1.12-1.39)	1.20 (1.10-1.40)	1.80 (1.50-2.10)	2.60 (2.10-3.10)	3.30 (2.50-4.60)	856
	05-06	1.02 (.948-1.10)	.970 (.890-1.01)	1.40 (1.28-1.55)	2.06 (1.80-2.72)	3.00 (2.26-3.81)	934
	07-08	.988 (.914-1.07)	.960 (.880-1.07)	1.31 (1.22-1.49)	1.90 (1.70-2.11)	2.50 (2.10-2.88)	1011
	09-10	.838 (.792-.887)	.810 (.740-.840)	1.13 (1.06-1.21)	1.64 (1.45-1.84)	2.01 (1.88-2.25)	1009
12-19 years	99-00	1.10 (1.04-1.17)	1.10 (1.00-1.20)	1.50 (1.40-1.70)	2.30 (2.10-2.40)	2.90 (2.70-3.00)	2135
	01-02	.942 (.899-.986)	.900 (.900-1.00)	1.30 (1.20-1.40)	2.00 (1.90-2.10)	2.70 (2.40-2.90)	2231
	03-04	.946 (.878-1.02)	.900 (.800-1.00)	1.30 (1.20-1.40)	1.90 (1.70-2.10)	2.60 (2.20-3.00)	2081
	05-06	.797 (.746-.852)	.740 (.690-.790)	1.08 (.990-1.20)	1.69 (1.50-1.85)	2.23 (1.98-2.46)	1996
	07-08	.800 (.744-.859)	.760 (.720-.820)	1.04 (.980-1.16)	1.50 (1.35-1.70)	1.90 (1.70-2.32)	1074
	09-10	.680 (.636-.727)	.660 (.590-.700)	.910 (.840-.990)	1.29 (1.19-1.43)	1.72 (1.52-1.86)	1183
20 years and older	99-00	1.75 (1.68-1.81)	1.70 (1.60-1.80)	2.60 (2.50-2.70)	3.90 (3.70-4.10)	5.20 (4.80-5.60)	4207
	01-02	1.56 (1.49-1.62)	1.60 (1.50-1.60)	2.30 (2.30-2.40)	3.60 (3.40-3.70)	4.60 (4.30-5.00)	4772
	03-04	1.52 (1.45-1.60)	1.50 (1.40-1.60)	2.30 (2.20-2.40)	3.30 (3.20-3.50)	4.30 (4.00-4.60)	4525
	05-06	1.41 (1.34-1.48)	1.41 (1.33-1.48)	2.17 (2.04-2.31)	3.22 (3.05-3.43)	4.12 (3.82-4.38)	4509
	07-08	1.38 (1.31-1.46)	1.34 (1.26-1.42)	2.06 (1.94-2.18)	3.00 (2.80-3.14)	3.90 (3.68-4.23)	5364
	09-10	1.23 (1.19-1.28)	1.20 (1.14-1.25)	1.85 (1.78-1.93)	2.77 (2.60-2.93)	3.57 (3.29-3.84)	5765
Gender							
Males	99-00	2.01 (1.93-2.09)	1.90 (1.90-2.00)	2.90 (2.80-3.00)	4.50 (4.10-4.80)	6.00 (5.50-6.50)	3913
	01-02	1.78 (1.71-1.86)	1.80 (1.70-1.80)	2.70 (2.50-2.80)	3.90 (3.80-4.10)	5.40 (5.00-5.50)	4339
	03-04	1.69 (1.62-1.75)	1.60 (1.50-1.70)	2.50 (2.40-2.60)	3.70 (3.40-3.90)	4.80 (4.50-5.20)	4132
	05-06	1.52 (1.42-1.62)	1.49 (1.41-1.58)	2.30 (2.12-2.51)	3.48 (3.20-3.75)	4.36 (4.04-4.76)	4092
	07-08	1.47 (1.39-1.56)	1.40 (1.32-1.50)	2.17 (2.00-2.30)	3.21 (3.01-3.53)	4.41 (4.10-4.88)	4147
	09-10	1.31 (1.25-1.36)	1.26 (1.20-1.32)	1.96 (1.89-2.03)	2.93 (2.72-3.15)	3.84 (3.54-4.39)	4366
Females	99-00	1.37 (1.32-1.43)	1.30 (1.30-1.40)	2.00 (1.90-2.10)	3.10 (2.90-3.30)	4.00 (3.80-4.20)	4057
	01-02	1.19 (1.14-1.25)	1.20 (1.10-1.20)	1.80 (1.70-1.90)	2.60 (2.50-2.80)	3.60 (3.10-4.00)	4606
	03-04	1.22 (1.14-1.31)	1.20 (1.10-1.30)	1.80 (1.70-2.00)	2.70 (2.50-3.00)	3.50 (3.10-3.80)	4241
	05-06	1.11 (1.05-1.17)	1.06 (.980-1.15)	1.73 (1.61-1.84)	2.59 (2.44-2.74)	3.25 (3.12-3.44)	4315
	07-08	1.11 (1.06-1.16)	1.09 (1.00-1.14)	1.64 (1.54-1.74)	2.41 (2.35-2.50)	3.00 (2.81-3.20)	4119
	09-10	.966 (.929-1.01)	.940 (.890-.970)	1.43 (1.36-1.53)	2.18 (2.08-2.30)	2.81 (2.63-2.93)	4427

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.3, 0.3, 0.28, 0.25, 0.25, and 0.25 respectively.

[Biomonitoring Summary](#) [Factsheet](#)

Blood Lead

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	1.83 (1.75-1.91)	1.80 (1.70-1.90)	2.80 (2.60-2.90)	4.20 (3.90-4.60)	5.80 (5.10-6.60)	2742
	01-02	1.46 (1.34-1.60)	1.50 (1.30-1.60)	2.30 (2.10-2.60)	3.60 (3.40-4.20)	5.40 (4.40-6.70)	2268
	03-04	1.55 (1.43-1.69)	1.50 (1.40-1.60)	2.30 (2.10-2.50)	3.50 (2.90-4.20)	4.90 (3.90-6.40)	2085
	05-06	1.29 (1.21-1.38)	1.26 (1.15-1.36)	2.00 (1.87-2.20)	3.16 (2.79-3.58)	4.22 (3.47-5.36)	2236
	07-08	1.25 (1.15-1.36)	1.20 (1.10-1.31)	1.88 (1.70-2.06)	2.81 (2.60-3.20)	3.92 (3.20-5.00)	1712
	09-10	1.14 (1.03-1.28)	1.04 (.940-1.18)	1.76 (1.52-1.99)	2.93 (2.63-3.30)	3.92 (3.60-4.69)	1966
Non-Hispanic blacks	99-00	1.87 (1.75-2.00)	1.80 (1.70-2.00)	2.80 (2.60-3.00)	4.30 (4.00-4.60)	5.70 (5.20-6.10)	1842
	01-02	1.65 (1.52-1.80)	1.60 (1.40-1.70)	2.60 (2.30-2.90)	4.20 (3.80-4.70)	5.80 (5.30-6.50)	2219
	03-04	1.69 (1.52-1.89)	1.60 (1.40-1.80)	2.60 (2.20-3.00)	4.10 (3.50-4.70)	5.30 (4.60-6.60)	2293
	05-06	1.39 (1.26-1.53)	1.31 (1.19-1.45)	2.16 (1.95-2.42)	3.48 (3.19-3.80)	4.65 (4.21-5.14)	2193
	07-08	1.39 (1.30-1.48)	1.30 (1.20-1.42)	2.10 (2.00-2.20)	3.22 (3.08-3.50)	4.50 (4.00-4.80)	1746
	09-10	1.24 (1.18-1.30)	1.19 (1.12-1.25)	1.87 (1.76-1.99)	2.90 (2.68-3.18)	3.86 (3.57-4.29)	1593
Non-Hispanic whites	99-00	1.62 (1.55-1.69)	1.60 (1.50-1.70)	2.40 (2.30-2.50)	3.60 (3.40-3.90)	5.00 (4.40-5.70)	2716
	01-02	1.43 (1.37-1.48)	1.40 (1.30-1.50)	2.20 (2.10-2.20)	3.20 (3.10-3.40)	4.20 (3.90-4.50)	3806
	03-04	1.37 (1.32-1.43)	1.30 (1.30-1.40)	2.10 (2.00-2.10)	3.00 (2.80-3.20)	3.90 (3.60-4.30)	3478
	05-06	1.28 (1.19-1.37)	1.27 (1.17-1.38)	1.97 (1.86-2.14)	2.99 (2.73-3.25)	3.82 (3.41-4.20)	3310
	07-08	1.24 (1.16-1.33)	1.20 (1.10-1.30)	1.86 (1.72-2.00)	2.70 (2.54-2.90)	3.50 (3.20-3.89)	3461
	09-10	1.10 (1.04-1.16)	1.07 (1.00-1.15)	1.67 (1.59-1.76)	2.49 (2.35-2.63)	3.14 (2.99-3.36)	3760

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.3, 0.3, 0.28, 0.25, 0.25, and 0.25 respectively.

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Urinary Lead

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.766 (.708-.828)	.800 (.800-.900)	1.40 (1.30-1.50)	2.20 (2.00-2.30)	2.90 (2.60-3.30)	2465
	01-02	.677 (.637-.718)	.700 (.700-.800)	1.20 (1.20-1.30)	2.00 (1.90-2.20)	2.70 (2.50-2.80)	2690
	03-04	.636 (.595-.680)	.640 (.580-.690)	1.04 (.960-1.12)	1.73 (1.52-1.86)	2.29 (2.03-2.62)	2558
	05-06	.554 (.523-.587)	.570 (.540-.600)	.990 (.910-1.05)	1.58 (1.44-1.73)	2.14 (1.94-2.45)	2576
	07-08	.493 (.467-.520)	.500 (.470-.530)	.850 (.790-.910)	1.38 (1.23-1.58)	1.97 (1.75-2.17)	2627
	09-10	.458 (.441-.476)	.470 (.450-.480)	.790 (.750-.830)	1.24 (1.11-1.38)	1.65 (1.46-1.84)	2848
Age group							
6-11 years	99-00	1.07 (.955-1.20)	1.10 (.900-1.30)	1.50 (1.40-1.70)	2.40 (1.80-3.10)	3.40 (2.40-5.00)	340
	01-02	.753 (.661-.857)	.800 (.600-.900)	1.20 (1.10-1.40)	2.10 (1.60-2.40)	2.60 (2.10-3.70)	368
	03-04	.795 (.671-.941)	.790 (.640-.900)	1.35 (.970-1.86)	2.27 (1.62-4.09)	3.33 (2.23-4.41)	290
	05-06	.508 (.447-.579)	.510 (.440-.560)	.740 (.620-.980)	1.33 (1.00-1.86)	1.90 (1.33-2.60)	355
	07-08	.494 (.411-.593)	.520 (.410-.590)	.790 (.660-.900)	1.23 (.980-1.73)	1.90 (1.51-2.18)	394
	09-10	.443 (.399-.493)	.460 (.430-.490)	.710 (.630-.820)	1.09 (.880-1.33)	1.40 (1.06-1.82)	378
12-19 years	99-00	.659 (.579-.749)	.700 (.600-.800)	1.10 (.900-1.30)	1.80 (1.40-2.20)	2.20 (1.90-2.80)	719
	01-02	.564 (.526-.605)	.600 (.500-.600)	1.00 (.800-1.10)	1.60 (1.40-1.70)	2.00 (1.80-2.40)	762
	03-04	.604 (.553-.660)	.630 (.570-.680)	.920 (.810-1.02)	1.32 (1.14-1.80)	1.86 (1.44-2.29)	725
	05-06	.472 (.421-.530)	.490 (.450-.540)	.780 (.710-.830)	1.19 (1.10-1.45)	1.65 (1.34-1.80)	701
	07-08	.386 (.346-.431)	.380 (.350-.410)	.640 (.560-.720)	1.03 (.870-1.24)	1.38 (1.09-1.91)	376
	09-10	.320 (.283-.361)	.320 (.270-.370)	.530 (.460-.630)	.830 (.710-1.10)	1.16 (.860-1.37)	451
20 years and older	99-00	.752 (.691-.818)	.800 (.700-.900)	1.40 (1.30-1.50)	2.20 (2.00-2.40)	2.90 (2.60-3.30)	1406
	01-02	.688 (.641-.738)	.700 (.700-.800)	1.20 (1.20-1.30)	2.00 (1.90-2.30)	2.80 (2.50-2.90)	1560
	03-04	.625 (.579-.674)	.620 (.560-.700)	1.04 (.960-1.11)	1.70 (1.52-1.80)	2.21 (2.04-2.49)	1543
	05-06	.574 (.539-.612)	.600 (.560-.640)	1.02 (.970-1.13)	1.65 (1.53-1.81)	2.21 (1.99-2.57)	1520
	07-08	.512 (.485-.540)	.530 (.490-.560)	.900 (.820-.950)	1.49 (1.29-1.64)	2.01 (1.78-2.33)	1857
	09-10	.486 (.465-.507)	.490 (.470-.520)	.830 (.780-.880)	1.32 (1.16-1.46)	1.71 (1.52-2.03)	2019
Gender							
Males	99-00	.923 (.822-1.04)	.900 (.900-1.00)	1.60 (1.40-1.80)	2.50 (2.20-2.90)	3.40 (2.90-3.80)	1227
	01-02	.808 (.757-.862)	.800 (.800-.900)	1.40 (1.30-1.50)	2.50 (2.20-2.70)	3.20 (2.90-3.50)	1335
	03-04	.731 (.680-.785)	.730 (.680-.800)	1.17 (1.07-1.27)	2.03 (1.78-2.22)	2.66 (2.33-2.91)	1281
	05-06	.672 (.638-.707)	.690 (.620-.760)	1.16 (1.04-1.28)	1.78 (1.60-2.00)	2.45 (2.00-2.97)	1271
	07-08	.560 (.518-.606)	.570 (.530-.620)	.930 (.840-1.02)	1.63 (1.36-1.97)	2.30 (1.97-3.07)	1327
	09-10	.527 (.491-.566)	.540 (.480-.580)	.880 (.820-.960)	1.41 (1.25-1.58)	1.83 (1.62-2.21)	1398
Females	99-00	.642 (.589-.701)	.700 (.600-.800)	1.20 (1.10-1.30)	1.90 (1.60-2.20)	2.40 (2.10-3.00)	1238
	01-02	.573 (.535-.613)	.600 (.600-.600)	1.10 (1.00-1.10)	1.60 (1.50-1.80)	2.20 (1.90-2.40)	1355
	03-04	.558 (.506-.616)	.540 (.480-.620)	.920 (.820-1.04)	1.49 (1.24-1.75)	1.82 (1.59-2.30)	1277
	05-06	.461 (.425-.499)	.460 (.430-.510)	.810 (.730-.880)	1.27 (1.17-1.46)	1.86 (1.54-2.17)	1305
	07-08	.436 (.412-.461)	.430 (.400-.480)	.760 (.690-.830)	1.22 (1.05-1.34)	1.67 (1.44-1.81)	1300
	09-10	.400 (.378-.424)	.420 (.390-.440)	.690 (.660-.740)	1.05 (.990-1.13)	1.42 (1.26-1.59)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.1, 0.1, 0.33, 0.1, 0.1, and 0.1 respectively.

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Urinary Lead

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	1.02 (.915-1.13)	1.10 (.900-1.20)	1.80 (1.60-1.90)	2.90 (2.50-3.40)	4.30 (3.10-5.40)	884
	01-02	.833 (.745-.931)	.900 (.700-1.00)	1.50 (1.20-1.70)	2.50 (2.00-2.90)	3.30 (2.70-3.80)	683
	03-04	.815 (.710-.935)	.840 (.700-.990)	1.31 (1.18-1.59)	2.19 (1.86-2.50)	2.66 (2.13-3.97)	618
	05-06	.729 (.653-.815)	.770 (.680-.860)	1.32 (1.15-1.59)	2.22 (1.81-2.64)	3.08 (2.50-4.03)	652
	07-08	.607 (.528-.698)	.610 (.530-.690)	.990 (.890-1.21)	1.76 (1.37-2.17)	2.29 (1.82-2.80)	515
	09-10	.546 (.483-.618)	.520 (.460-.580)	.930 (.800-1.09)	1.66 (1.34-1.89)	2.16 (1.80-2.87)	613
Non-Hispanic blacks	99-00	1.11 (1.00-1.23)	1.10 (1.00-1.20)	1.90 (1.50-2.10)	3.00 (2.40-3.50)	4.20 (3.30-5.70)	568
	01-02	.940 (.833-1.06)	.900 (.800-1.00)	1.60 (1.30-1.80)	2.70 (2.10-3.40)	3.70 (2.90-4.80)	667
	03-04	.848 (.729-.986)	.850 (.710-1.00)	1.40 (1.10-1.72)	2.14 (1.78-2.64)	2.82 (2.31-3.89)	723
	05-06	.666 (.604-.734)	.660 (.590-.760)	1.09 (.980-1.18)	1.62 (1.42-1.85)	2.24 (1.65-2.90)	692
	07-08	.618 (.558-.685)	.620 (.560-.690)	1.01 (.920-1.13)	1.56 (1.38-1.90)	2.06 (1.88-2.60)	589
	09-10	.560 (.522-.601)	.550 (.490-.600)	.910 (.830-1.01)	1.53 (1.26-1.71)	1.96 (1.68-2.80)	544
Non-Hispanic whites	99-00	.695 (.625-.773)	.700 (.700-.900)	1.30 (1.10-1.40)	2.00 (1.80-2.40)	2.70 (2.30-3.10)	822
	01-02	.610 (.572-.651)	.700 (.600-.700)	1.10 (1.10-1.20)	1.90 (1.70-2.00)	2.40 (2.30-2.60)	1132
	03-04	.591 (.556-.628)	.590 (.540-.650)	.960 (.910-.990)	1.52 (1.40-1.75)	2.14 (1.78-2.51)	1074
	05-06	.520 (.477-.566)	.540 (.490-.580)	.950 (.820-1.05)	1.53 (1.30-1.76)	2.07 (1.78-2.45)	1041
	07-08	.452 (.422-.485)	.460 (.430-.490)	.780 (.700-.880)	1.23 (1.03-1.50)	1.79 (1.58-1.97)	1095
	09-10	.431 (.406-.458)	.450 (.410-.480)	.750 (.690-.820)	1.11 (1.05-1.24)	1.51 (1.39-1.67)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.1, 0.1, 0.33, 0.1, 0.1, and 0.1 respectively.

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Urinary Lead (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.721 (.700-.742)	.701 (.677-.725)	1.11 (1.05-1.15)	1.70 (1.62-1.85)	2.38 (2.22-2.79)	2465
	01-02	.639 (.603-.677)	.635 (.588-.676)	1.03 (.963-1.08)	1.52 (1.43-1.61)	2.03 (1.89-2.22)	2689
	03-04	.632 (.603-.662)	.622 (.594-.655)	.979 (.920-1.03)	1.49 (1.33-1.64)	1.97 (1.73-2.26)	2558
	05-06	.546 (.520-.573)	.530 (.510-.560)	.860 (.810-.900)	1.27 (1.15-1.37)	1.71 (1.50-1.89)	2576
	07-08	.514 (.482-.548)	.500 (.460-.530)	.800 (.720-.880)	1.30 (1.23-1.42)	1.85 (1.73-1.96)	2627
	09-10	.488 (.466-.512)	.470 (.440-.500)	.760 (.710-.810)	1.16 (1.08-1.28)	1.53 (1.41-1.62)	2848
Age group							
6-11 years	99-00	1.17 (.975-1.41)	1.06 (.918-1.22)	1.55 (1.22-1.97)	2.71 (1.67-4.66)	4.66 (1.97-18.0)	340
	01-02	.918 (.841-1.00)	.870 (.800-.933)	1.27 (1.12-1.43)	2.33 (1.59-3.64)	3.64 (1.89-5.56)	368
	03-04	.926 (.812-1.06)	.914 (.781-1.03)	1.45 (1.17-1.72)	2.14 (1.62-3.47)	3.47 (2.19-5.31)	290
	05-06	.628 (.563-701)	.590 (.530-.680)	.870 (.770-.940)	1.29 (1.03-1.82)	1.96 (1.32-2.42)	355
	07-08	.643 (.543-.763)	.630 (.530-.730)	1.02 (.770-1.24)	1.50 (1.24-2.02)	2.04 (1.70-2.58)	394
	09-10	.604 (.551-.662)	.580 (.520-.650)	.870 (.780-1.00)	1.32 (1.09-1.51)	1.60 (1.38-1.75)	378
12-19 years	99-00	.496 (.460-.535)	.469 (.408-.508)	.709 (.655-.828)	1.11 (.981-1.28)	1.65 (1.15-2.79)	719
	01-02	.404 (.380-.428)	.375 (.342-.400)	.603 (.541-.702)	.990 (.882-1.18)	1.41 (1.07-1.63)	762
	03-04	.432 (.404-.461)	.404 (.383-.436)	.623 (.551-.730)	.938 (.828-1.06)	1.23 (1.09-1.35)	725
	05-06	.363 (.333-.395)	.340 (.310-.360)	.510 (.460-.600)	.800 (.690-.930)	1.07 (.940-1.23)	701
	07-08	.302 (.270-.337)	.290 (.250-.340)	.430 (.400-.490)	.670 (.550-.790)	.900 (.700-1.09)	376
	09-10	.299 (.273-.328)	.290 (.260-.320)	.420 (.370-.490)	.620 (.550-.760)	.880 (.740-1.01)	451
20 years and older	99-00	.720 (.683-.758)	.712 (.667-.739)	1.10 (1.02-1.18)	1.69 (1.53-1.87)	2.31 (2.15-2.62)	1406
	01-02	.658 (.617-.703)	.652 (.608-.702)	1.05 (.992-1.11)	1.51 (1.40-1.61)	2.00 (1.85-2.19)	1559
	03-04	.641 (.606-.679)	.633 (.605-.670)	.988 (.917-1.04)	1.47 (1.28-1.63)	1.94 (1.72-2.12)	1543
	05-06	.573 (.548-.600)	.570 (.530-.600)	.890 (.850-.960)	1.32 (1.22-1.41)	1.77 (1.53-1.94)	1520
	07-08	.545 (.513-.579)	.530 (.490-.570)	.840 (.760-.910)	1.36 (1.27-1.49)	1.92 (1.78-2.08)	1857
	09-10	.514 (.489-.539)	.500 (.460-.530)	.790 (.730-.840)	1.22 (1.10-1.35)	1.57 (1.46-1.71)	2019
Gender							
Males	99-00	.720 (.679-.763)	.693 (.645-.734)	1.10 (.992-1.22)	1.68 (1.50-2.09)	2.43 (2.15-3.03)	1227
	01-02	.639 (.607-.673)	.638 (.586-.686)	1.01 (.957-1.08)	1.55 (1.41-1.61)	2.06 (1.88-2.43)	1334
	03-04	.615 (.588-.644)	.593 (.561-.639)	.914 (.862-.977)	1.44 (1.25-1.53)	2.00 (1.71-2.28)	1281
	05-06	.551 (.522-.582)	.530 (.510-.580)	.830 (.770-.910)	1.25 (1.13-1.39)	1.77 (1.42-2.20)	1271
	07-08	.501 (.471-.534)	.490 (.450-.530)	.750 (.700-.810)	1.29 (1.15-1.49)	1.88 (1.71-1.98)	1327
	09-10	.481 (.458-.505)	.450 (.430-.490)	.740 (.690-.800)	1.15 (1.04-1.29)	1.56 (1.37-1.70)	1398
Females	99-00	.722 (.681-.765)	.707 (.667-.746)	1.11 (1.05-1.18)	1.74 (1.50-2.02)	2.38 (2.03-2.88)	1238
	01-02	.639 (.594-.688)	.625 (.571-.682)	1.03 (.946-1.11)	1.50 (1.39-1.61)	1.98 (1.85-2.15)	1355
	03-04	.648 (.601-.698)	.649 (.604-.718)	1.03 (.938-1.10)	1.56 (1.34-1.73)	1.96 (1.72-2.20)	1277
	05-06	.541 (.507-.577)	.530 (.500-.580)	.880 (.820-.940)	1.28 (1.12-1.41)	1.64 (1.38-1.91)	1305
	07-08	.527 (.489-.568)	.500 (.470-.550)	.840 (.740-.960)	1.34 (1.23-1.47)	1.79 (1.56-2.08)	1300
	09-10	.495 (.466-.526)	.480 (.450-.520)	.780 (.710-.830)	1.20 (1.08-1.32)	1.52 (1.39-1.62)	1450

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Urinary Lead (creatinine corrected)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	.940 (.876-1.01)	.887 (.796-1.03)	1.43 (1.37-1.58)	2.38 (2.08-2.77)	3.46 (2.78-4.18)	884
	01-02	.810 (.731-.898)	.774 (.702-.893)	1.29 (1.09-1.44)	2.05 (1.75-2.50)	2.78 (2.56-3.33)	682
	03-04	.755 (.681-.838)	.708 (.612-.851)	1.18 (1.09-1.31)	1.86 (1.50-2.26)	2.31 (1.98-2.92)	618
	05-06	.686 (.638-.737)	.680 (.620-.740)	1.00 (.930-1.13)	1.63 (1.39-1.88)	2.20 (1.77-3.20)	652
	07-08	.607 (.514-.717)	.590 (.500-.690)	.970 (.770-1.19)	1.56 (1.25-2.07)	2.20 (1.78-2.46)	515
	09-10	.573 (.526-.623)	.540 (.470-.610)	.950 (.780-1.06)	1.59 (1.41-1.82)	2.02 (1.82-2.40)	613
Non-Hispanic blacks	99-00	.722 (.659-.790)	.671 (.583-.753)	1.11 (.988-1.20)	2.00 (1.56-2.51)	2.83 (2.20-3.88)	568
	01-02	.644 (.559-.742)	.608 (.510-.710)	.962 (.853-1.20)	1.79 (1.36-2.33)	2.75 (2.04-3.98)	667
	03-04	.609 (.529-.701)	.569 (.492-.698)	.900 (.793-1.03)	1.48 (1.11-1.97)	2.24 (1.65-2.88)	723
	05-06	.483 (.459-.508)	.470 (.440-.490)	.740 (.670-.820)	1.18 (1.06-1.29)	1.60 (1.37-1.85)	692
	07-08	.452 (.414-.492)	.440 (.400-.490)	.710 (.610-.780)	1.13 (.930-1.33)	1.57 (1.21-1.88)	589
	09-10	.444 (.417-.473)	.420 (.390-.470)	.680 (.600-.740)	1.07 (.940-1.18)	1.51 (1.18-1.65)	544
Non-Hispanic whites	99-00	.696 (.668-.725)	.677 (.645-.718)	1.07 (.997-1.14)	1.66 (1.50-1.83)	2.31 (1.94-2.82)	822
	01-02	.615 (.579-.654)	.621 (.571-.667)	1.00 (.933-1.07)	1.46 (1.37-1.52)	1.88 (1.62-2.03)	1132
	03-04	.623 (.592-.655)	.618 (.587-.657)	.971 (.914-1.03)	1.44 (1.25-1.61)	1.85 (1.64-2.10)	1074
	05-06	.541 (.500-.585)	.530 (.490-.580)	.850 (.790-.920)	1.24 (1.12-1.37)	1.62 (1.37-1.94)	1041
	07-08	.506 (.466-.550)	.490 (.460-.540)	.790 (.700-.880)	1.27 (1.15-1.42)	1.81 (1.59-1.96)	1095
	09-10	.482 (.448-.518)	.460 (.430-.500)	.740 (.690-.820)	1.15 (1.01-1.30)	1.46 (1.32-1.59)	1225

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Total Blood Mercury

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	.797 (.703-.903)	.800 (.700-.900)	1.70 (1.50-1.90)	3.30 (2.90-3.90)	4.90 (4.30-5.50)	8373
	05-06	.863 (.787-.946)	.830 (.760-.920)	1.66 (1.48-1.93)	3.20 (2.87-3.54)	4.64 (4.17-5.25)	8407
	07-08	.769 (.689-.859)	.740 (.660-.830)	1.48 (1.29-1.69)	2.95 (2.46-3.59)	4.64 (3.74-5.79)	8266
	09-10	.863 (.792-.941)	.790 (.730-.880)	1.68 (1.49-1.91)	3.43 (3.07-3.84)	5.13 (4.57-5.67)	8793
Age group							
1-5 years	03-04	.326 (.285-.372)	.300 (.300-.300)	.500 (.500-.700)	1.00 (.800-1.60)	1.80 (1.30-2.50)	911
	05-06	*	< LOD	.500 (.470-.550)	.940 (.820-1.24)	1.43 (1.25-1.59)	968
	07-08	*	< LOD	.440 (.380-.540)	.830 (.620-1.12)	1.32 (.960-2.40)	817
	09-10	*	< LOD	.490 (.430-.590)	.890 (.740-1.08)	1.30 (1.08-1.52)	836
6-11 years	03-04	.419 (.363-.484)	.400 (.400-.500)	.700 (.700-.900)	1.30 (1.00-1.60)	1.90 (1.40-3.50)	856
	05-06	*	.410 (.330-.460)	.740 (.630-1.00)	1.43 (1.21-1.87)	2.34 (1.53-3.42)	934
	07-08	*	.380 (.340-.440)	.700 (.600-.790)	1.21 (.970-1.36)	1.56 (1.34-1.80)	1011
	09-10	*	.360 (<LOD-.400)	.670 (.590-.770)	1.22 (1.05-1.45)	1.88 (1.43-2.61)	1009
12-19 years	03-04	.490 (.418-.574)	.500 (.400-.600)	1.00 (.800-1.20)	1.80 (1.40-2.30)	2.60 (2.10-3.30)	2081
	05-06	.513 (.461-.570)	.460 (.390-.530)	.850 (.740-1.04)	1.66 (1.31-1.98)	2.41 (2.12-2.90)	1996
	07-08	.469 (.426-.516)	.440 (.390-.490)	.800 (.670-.970)	1.55 (1.30-1.72)	2.05 (1.77-2.34)	1074
	09-10	.534 (.473-.602)	.450 (.370-.540)	.910 (.770-1.11)	2.04 (1.53-2.55)	3.01 (2.53-3.63)	1183
20 years and older	03-04	.979 (.860-1.12)	1.00 (.800-1.10)	2.00 (1.70-2.30)	3.80 (3.20-4.40)	5.40 (4.60-6.70)	4525
	05-06	1.06 (.967-1.15)	1.03 (.930-1.15)	1.98 (1.73-2.22)	3.64 (3.33-4.01)	5.31 (4.82-5.67)	4509
	07-08	.944 (.833-1.07)	.890 (.780-1.03)	1.73 (1.47-2.09)	3.41 (2.82-4.17)	5.32 (4.32-6.72)	5364
	09-10	1.04 (.956-1.14)	.970 (.870-1.08)	2.00 (1.80-2.20)	3.96 (3.55-4.27)	5.75 (5.14-6.50)	5765
Gender							
Males	03-04	.814 (.714-.927)	.800 (.700-.900)	1.80 (1.50-2.00)	3.70 (3.20-4.30)	5.40 (4.60-6.50)	4132
	05-06	.864 (.783-.954)	.810 (.720-.940)	1.69 (1.48-2.01)	3.30 (2.86-3.73)	4.83 (4.08-5.45)	4092
	07-08	.809 (.709-.923)	.760 (.670-.850)	1.56 (1.31-1.81)	3.21 (2.72-4.06)	5.16 (4.12-6.97)	4147
	09-10	.883 (.810-.962)	.790 (.730-.870)	1.75 (1.54-2.02)	3.84 (3.35-4.26)	5.65 (5.13-6.34)	4366
Females	03-04	.781 (.689-.886)	.800 (.700-.900)	1.60 (1.40-1.80)	3.00 (2.50-3.50)	4.40 (3.60-5.30)	4241
	05-06	.864 (.791-.943)	.850 (.770-.920)	1.63 (1.44-1.89)	3.09 (2.75-3.46)	4.51 (4.01-5.28)	4315
	07-08	.748 (.677-.827)	.720 (.660-.810)	1.42 (1.24-1.60)	2.70 (2.27-3.27)	3.93 (3.17-5.16)	4119
	09-10	.845 (.772-.924)	.800 (.720-.880)	1.61 (1.43-1.81)	3.13 (2.76-3.48)	4.43 (4.04-5.11)	4427
Race/ethnicity							
Mexican Americans	03-04	.563 (.472-.672)	.600 (.500-.700)	1.00 (.800-1.30)	1.90 (1.60-2.40)	3.00 (2.20-3.80)	2085
	05-06	.597 (.524-.679)	.580 (.490-.670)	1.04 (.870-1.24)	1.70 (1.40-2.12)	2.58 (1.96-3.31)	2236
	07-08	.594 (.536-.658)	.580 (.520-.670)	1.03 (.900-1.17)	1.73 (1.49-2.04)	2.48 (2.10-2.91)	1712
	09-10	.613 (.571-.659)	.580 (.540-.630)	1.01 (.890-1.15)	1.63 (1.47-1.90)	2.45 (2.03-2.93)	1966
Non-Hispanic blacks	03-04	.877 (.753-1.02)	.900 (.800-1.00)	1.60 (1.40-1.80)	3.00 (2.30-4.00)	4.40 (3.30-6.00)	2293
	05-06	.823 (.697-.972)	.800 (.670-.940)	1.50 (1.21-1.92)	2.72 (2.14-3.59)	4.09 (3.22-5.16)	2193
	07-08	.766 (.711-.825)	.780 (.710-.830)	1.32 (1.23-1.42)	2.25 (1.99-2.58)	3.42 (2.74-3.90)	1746
	09-10	.928 (.805-1.07)	.900 (.800-1.02)	1.67 (1.38-1.96)	2.93 (2.20-4.21)	4.56 (3.34-6.69)	1593
Non-Hispanic whites	03-04	.776 (.655-.919)	.800 (.700-.900)	1.70 (1.40-2.00)	3.20 (2.60-3.90)	4.70 (4.00-5.60)	3478
	05-06	.891 (.801-.992)	.870 (.770-1.00)	1.74 (1.50-2.10)	3.37 (2.88-3.76)	4.76 (4.18-5.37)	3310
	07-08	.743 (.651-.847)	.720 (.620-.820)	1.43 (1.18-1.70)	2.79 (2.33-3.41)	4.18 (3.57-4.83)	3461
	09-10	.856 (.766-.957)	.790 (.690-.920)	1.70 (1.46-1.98)	3.43 (2.94-3.94)	4.92 (4.30-5.65)	3760

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.2, 0.33, 0.33, and 0.33 respectively.

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

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

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Inorganic Blood Mercury

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	.600 (.500-.600)	.700 (.700-.700)	8147
	05-06	*	< LOD	< LOD	.540 (.500-.580)	.660 (.620-.710)	8371
	07-08	*	< LOD	.350 (<LOD-.370)	.520 (.500-.540)	.650 (.620-.690)	8162
	09-10	*	< LOD	< LOD	.390 (.360-.430)	.510 (.480-.570)	8733
Age group 1-5 years	03-04	*	< LOD	< LOD	< LOD	.500 (<LOD-.600)	792
	05-06	*	< LOD	< LOD	.430 (<LOD-.470)	.510 (.430-.670)	948
	07-08	*	< LOD	< LOD	.350 (<LOD-.450)	.500 (.410-.550)	726
	09-10	*	< LOD	< LOD	< LOD	.360 (<LOD-.460)	789
6-11 years	03-04	*	< LOD	< LOD	< LOD	.600 (.500-.600)	842
	05-06	*	< LOD	< LOD	.450 (<LOD-.520)	.560 (.470-.640)	932
	07-08	*	< LOD	< LOD	.380 (.350-.410)	.470 (.420-.520)	1010
	09-10	*	< LOD	< LOD	< LOD	.380 (.350-.440)	1006
12-19 years	03-04	*	< LOD	< LOD	.500 (<LOD-.500)	.600 (.500-.600)	2060
	05-06	*	< LOD	< LOD	.430 (.410-.460)	.540 (.480-.590)	1984
	07-08	*	< LOD	< LOD	.370 (<LOD-.400)	.480 (.410-.530)	1069
	09-10	*	< LOD	< LOD	< LOD	.420 (.350-.500)	1184
20 years and older	03-04	*	< LOD	< LOD	.600 (.500-.600)	.700 (.700-.800)	4453
	05-06	*	< LOD	< LOD	.570 (.530-.610)	.690 (.650-.750)	4507
	07-08	*	< LOD	.380 (.360-.390)	.550 (.530-.570)	.700 (.660-.730)	5357
	09-10	*	< LOD	< LOD	.420 (.390-.450)	.540 (.490-.600)	5754
Gender Males	03-04	*	< LOD	< LOD	.500 (.500-.600)	.600 (.600-.700)	4015
	05-06	*	< LOD	< LOD	.480 (.450-.520)	.600 (.550-.640)	4076
	07-08	*	< LOD	< LOD	.500 (.470-.520)	.600 (.570-.650)	4093
	09-10	*	< LOD	< LOD	.370 (<LOD-.420)	.500 (.440-.560)	4336
Females	03-04	*	< LOD	< LOD	.600 (.500-.600)	.700 (.700-.800)	4132
	05-06	*	< LOD	< LOD	.580 (.550-.640)	.700 (.670-.780)	4295
	07-08	*	< LOD	.380 (.360-.390)	.550 (.520-.570)	.700 (.670-.740)	4069
	09-10	*	< LOD	< LOD	.410 (.380-.440)	.530 (.490-.600)	4397
Race/ethnicity Mexican Americans	03-04	*	< LOD	< LOD	.500 (.500-.600)	.700 (.600-.800)	2007
	05-06	*	< LOD	< LOD	.530 (.470-.580)	.670 (.560-.830)	2224
	07-08	*	< LOD	< LOD	.430 (.400-.480)	.560 (.520-.610)	1685
	09-10	*	< LOD	< LOD	< LOD	.470 (.390-.530)	1947
Non-Hispanic blacks	03-04	*	< LOD	< LOD	.600 (.500-.600)	.700 (.600-.800)	2240
	05-06	*	< LOD	< LOD	.530 (.470-.600)	.670 (.600-.760)	2183
	07-08	*	< LOD	< LOD	.490 (.450-.530)	.610 (.560-.650)	1729
	09-10	*	< LOD	< LOD	.370 (.350-.390)	.480 (.410-.530)	1580
Non-Hispanic whites	03-04	*	< LOD	< LOD	.600 (.500-.600)	.700 (.600-.700)	3406
	05-06	*	< LOD	< LOD	.540 (.500-.580)	.650 (.610-.710)	3298
	07-08	*	< LOD	.360 (<LOD-.390)	.530 (.500-.550)	.660 (.620-.700)	3421
	09-10	*	< LOD	< LOD	.410 (.370-.450)	.520 (.480-.590)	3739

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.42, 0.4, 0.35, and 0.35 respectively.

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

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

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Urinary Mercury

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	.447 (.406-.492)	.420 (.360-.480)	1.00 (.870-1.14)	2.08 (1.78-2.42)	3.19 (2.76-3.55)	2538
	05-06	.468 (.426-.514)	.460 (.410-.510)	1.03 (.900-1.12)	2.11 (1.88-2.36)	2.94 (2.58-3.26)	2578
	07-08	.443 (.408-.482)	.440 (.400-.470)	.880 (.760-1.00)	1.74 (1.62-1.96)	2.66 (2.29-3.08)	2634
	09-10	*	.400 (.360-.450)	.850 (.770-.910)	1.53 (1.30-1.81)	2.42 (2.07-2.72)	2865
Age group							
6-11 years	03-04	.254 (.213-.304)	.200 (.160-.250)	.440 (.330-.580)	1.16 (.610-1.61)	1.96 (1.13-2.97)	287
	05-06	.333 (.267-.416)	.320 (.250-.390)	.650 (.470-.840)	1.32 (.930-1.88)	2.18 (1.28-3.40)	355
	07-08	.301 (.260-.347)	.290 (.230-.340)	.520 (.430-.620)	1.03 (.770-1.23)	1.87 (1.03-3.48)	398
	09-10	*	.260 (.220-.320)	.510 (.430-.620)	1.03 (.730-1.31)	1.58 (1.18-1.88)	379
12-19 years	03-04	.358 (.313-.408)	.330 (.290-.370)	.700 (.530-.840)	1.60 (1.14-2.52)	2.93 (1.88-3.66)	722
	05-06	.372 (.286-.486)	.350 (.270-.470)	.740 (.580-.920)	1.61 (.970-2.81)	2.59 (1.40-4.45)	703
	07-08	.364 (.326-.406)	.380 (.320-.450)	.590 (.550-.650)	1.24 (.830-1.71)	1.82 (1.41-2.29)	375
	09-10	*	.290 (.230-.360)	.530 (.470-.630)	1.09 (.890-1.31)	1.73 (1.28-2.31)	455
20 years and older	03-04	.495 (.442-.555)	.480 (.410-.570)	1.12 (.930-1.29)	2.20 (1.85-2.65)	3.33 (2.76-3.88)	1529
	05-06	.505 (.468-.545)	.510 (.460-.560)	1.11 (1.04-1.16)	2.23 (1.97-2.50)	3.11 (2.64-3.37)	1520
	07-08	.477 (.435-.523)	.470 (.430-.520)	.970 (.850-1.10)	1.89 (1.69-2.20)	2.82 (2.33-3.56)	1861
	09-10	*	.450 (.390-.510)	.890 (.810-1.00)	1.66 (1.40-2.01)	2.53 (2.21-2.84)	2031
Gender							
Males	03-04	.433 (.405-.463)	.400 (.350-.460)	.940 (.840-1.05)	1.88 (1.63-2.18)	2.68 (2.34-3.05)	1266
	05-06	.464 (.411-.523)	.450 (.400-.520)	.980 (.860-1.11)	2.03 (1.57-2.48)	3.00 (2.48-3.37)	1270
	07-08	.457 (.417-.501)	.460 (.400-.520)	.880 (.780-1.01)	1.68 (1.53-1.77)	2.40 (2.11-2.76)	1326
	09-10	*	.410 (.340-.480)	.860 (.750-.950)	1.46 (1.29-1.66)	2.21 (1.93-2.53)	1404
Females	03-04	.460 (.396-.534)	.430 (.330-.530)	1.07 (.870-1.28)	2.26 (1.77-2.90)	3.54 (2.76-4.31)	1272
	05-06	.472 (.424-.525)	.470 (.390-.550)	1.07 (.900-1.19)	2.14 (1.84-2.50)	2.89 (2.60-3.38)	1308
	07-08	.431 (.388-.478)	.430 (.380-.460)	.870 (.710-1.05)	1.88 (1.55-2.38)	2.92 (2.27-4.17)	1308
	09-10	*	.390 (.360-.450)	.840 (.730-.940)	1.61 (1.29-2.03)	2.61 (2.16-3.12)	1461
Race/ethnicity							
Mexican Americans	03-04	.416 (.340-.509)	.360 (.280-.430)	.960 (.700-1.23)	2.19 (1.39-3.24)	3.16 (1.99-6.30)	619
	05-06	.451 (.369-.551)	.420 (.310-.560)	1.01 (.780-1.25)	2.22 (1.48-2.64)	3.00 (2.27-4.01)	651
	07-08	.409 (.349-.480)	.370 (.330-.450)	.780 (.700-.950)	1.82 (1.26-1.97)	2.55 (1.87-3.08)	514
	09-10	*	.350 (.280-.430)	.670 (.520-.890)	1.53 (1.06-1.84)	2.29 (1.81-2.76)	615
Non-Hispanic blacks	03-04	.476 (.413-.549)	.430 (.360-.530)	.890 (.770-1.00)	1.96 (1.60-2.31)	3.09 (2.03-4.89)	713
	05-06	.453 (.384-.533)	.450 (.380-.550)	.890 (.710-1.13)	1.78 (1.34-2.29)	2.57 (2.21-3.15)	691
	07-08	.478 (.411-.556)	.460 (.380-.540)	.910 (.770-1.06)	1.85 (1.42-2.41)	2.76 (1.97-4.19)	589
	09-10	*	.410 (.340-.490)	.840 (.650-1.08)	1.66 (1.34-1.95)	2.64 (1.88-3.30)	546
Non-Hispanic whites	03-04	.441 (.382-.509)	.420 (.330-.520)	1.01 (.840-1.23)	2.08 (1.67-2.46)	3.24 (2.67-3.60)	1066
	05-06	.459 (.409-.513)	.440 (.400-.510)	1.00 (.860-1.12)	2.07 (1.77-2.40)	2.81 (2.47-3.37)	1044
	07-08	.431 (.378-.493)	.430 (.380-.480)	.880 (.700-1.07)	1.71 (1.50-2.18)	2.70 (2.18-3.59)	1100
	09-10	*	.390 (.330-.470)	.850 (.750-.950)	1.52 (1.26-2.01)	2.42 (1.93-2.85)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.14, 0.11, 0.08, and 0.08 respectively.
 * Not calculated: proportion of results below limit of detection was too high to provide a valid result.

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Urinary Mercury (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	.443 (.404-.486)	.447 (.392-.498)	.909 (.785-1.00)	1.65 (1.40-1.86)	2.35 (1.88-2.85)	2537
	05-06	.460 (.414-.511)	.450 (.410-.510)	.870 (.790-1.00)	1.63 (1.44-1.75)	2.26 (2.12-2.50)	2578
	07-08	.462 (.425-.502)	.450 (.400-.490)	.820 (.750-.960)	1.57 (1.38-1.73)	2.32 (2.00-2.89)	2634
	09-10	*	.409 (.367-.459)	.793 (.691-.893)	1.43 (1.24-1.67)	2.09 (1.79-2.39)	2865
Age group							
6-11 years	03-04	.297 (.246-.358)	.276 (.208-.347)	.485 (.391-.630)	1.25 (.667-1.79)	1.79 (1.11-2.61)	286
	05-06	.411 (.323-.524)	.390 (.290-.500)	.710 (.510-.960)	1.30 (.990-2.12)	2.55 (1.38-3.50)	355
	07-08	.393 (.351-.440)	.350 (.300-.440)	.630 (.540-.770)	1.15 (.860-1.50)	1.68 (1.18-2.99)	398
	09-10	*	.357 (.306-.406)	.632 (.500-.750)	1.04 (.863-1.26)	1.62 (1.19-1.98)	379
12-19 years	03-04	.255 (.225-.289)	.217 (.196-.275)	.464 (.376-.535)	1.06 (.714-1.39)	1.67 (1.13-2.03)	722
	05-06	.286 (.230-.356)	.260 (.200-.320)	.500 (.380-.660)	1.09 (.660-1.70)	1.76 (1.11-2.67)	703
	07-08	.284 (.251-.320)	.280 (.230-.300)	.500 (.400-.550)	.890 (.620-1.08)	1.18 (.980-1.36)	375
	09-10	*	.226 (.202-.287)	.481 (.429-.553)	.917 (.736-1.18)	1.41 (1.12-1.62)	455
20 years and older	03-04	.508 (.455-.566)	.525 (.447-.616)	1.00 (.875-1.09)	1.76 (1.46-2.11)	2.54 (2.04-3.00)	1529
	05-06	.503 (.461-.549)	.510 (.470-.550)	.940 (.850-1.07)	1.69 (1.50-1.86)	2.31 (2.12-2.54)	1520
	07-08	.507 (.463-.555)	.500 (.450-.550)	.940 (.810-1.02)	1.69 (1.51-2.01)	2.56 (2.09-3.17)	1861
	09-10	*	.454 (.395-.517)	.861 (.731-.988)	1.51 (1.29-1.85)	2.15 (1.88-2.57)	2031
Gender							
Males	03-04	.365 (.333-.400)	.362 (.309-.417)	.696 (.620-.784)	1.31 (1.18-1.44)	1.87 (1.51-2.30)	1266
	05-06	.380 (.336-.431)	.390 (.330-.440)	.740 (.600-.890)	1.27 (1.09-1.47)	1.73 (1.62-1.85)	1270
	07-08	.408 (.374-.445)	.390 (.350-.450)	.730 (.650-.810)	1.22 (1.11-1.36)	1.69 (1.54-2.11)	1326
	09-10	*	.337 (.298-.391)	.675 (.585-.802)	1.19 (1.06-1.29)	1.50 (1.33-1.78)	1404
Females	03-04	.532 (.472-.599)	.545 (.455-.652)	1.06 (.969-1.21)	1.88 (1.64-2.30)	2.77 (2.12-3.56)	1271
	05-06	.552 (.494-.617)	.540 (.490-.620)	1.09 (.850-1.27)	1.96 (1.72-2.14)	2.78 (2.35-3.17)	1308
	07-08	.520 (.469-.576)	.490 (.460-.540)	.960 (.820-1.11)	1.92 (1.58-2.24)	2.83 (2.24-3.50)	1308
	09-10	*	.475 (.423-.552)	.890 (.771-1.07)	1.81 (1.43-2.09)	2.57 (2.09-2.94)	1461
Race/ethnicity							
Mexican Americans	03-04	.384 (.307-.480)	.365 (.280-.455)	.768 (.619-.990)	1.62 (1.23-2.16)	2.32 (1.78-4.01)	618
	05-06	.425 (.337-.536)	.400 (.310-.490)	.840 (.560-1.29)	1.82 (1.30-2.47)	2.63 (2.22-3.20)	651
	07-08	.409 (.350-.479)	.380 (.310-.480)	.790 (.690-.850)	1.55 (1.08-1.98)	2.03 (1.55-2.70)	514
	09-10	*	.333 (.272-.400)	.660 (.494-.861)	1.29 (1.02-1.54)	1.95 (1.52-2.89)	615
Non-Hispanic blacks	03-04	.343 (.301-.391)	.306 (.265-.368)	.587 (.522-.687)	1.28 (.964-1.63)	2.13 (1.41-2.87)	713
	05-06	.328 (.285-.378)	.320 (.270-.370)	.610 (.470-.780)	1.15 (.930-1.40)	1.64 (1.29-1.96)	691
	07-08	.350 (.303-.404)	.330 (.280-.380)	.590 (.490-.690)	1.10 (.840-1.46)	1.85 (1.13-2.77)	589
	09-10	*	.317 (.259-.393)	.582 (.500-.659)	1.05 (.900-1.30)	1.55 (1.18-1.96)	546
Non-Hispanic whites	03-04	.463 (.400-.537)	.476 (.385-.588)	.970 (.800-1.07)	1.67 (1.32-2.11)	2.40 (1.88-2.90)	1066
	05-06	.475 (.426-.531)	.490 (.440-.540)	.890 (.820-1.02)	1.61 (1.42-1.75)	2.23 (1.98-2.50)	1044
	07-08	.481 (.423-.546)	.480 (.390-.540)	.890 (.750-1.03)	1.58 (1.34-2.02)	2.49 (1.89-3.18)	1100
	09-10	*	.434 (.370-.500)	.833 (.689-1.04)	1.50 (1.26-1.87)	2.12 (1.80-2.64)	1225

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Molybdenum

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	45.9 (40.1-52.6)	50.7 (44.6-58.4)	84.9 (78.7-92.3)	135 (125-146)	180 (154-216)	2257
	01-02	45.0 (42.1-48.0)	52.4 (48.9-55.5)	83.4 (79.1-88.7)	124 (117-130)	165 (145-176)	2690
	03-04	39.7 (37.7-41.7)	44.5 (41.6-46.7)	78.5 (74.9-82.3)	111 (105-118)	138 (133-146)	2558
	05-06	45.0 (42.4-47.8)	51.0 (47.2-54.7)	81.5 (77.4-85.8)	127 (117-132)	158 (144-174)	2576
	07-08	45.2 (43.1-47.3)	49.7 (47.4-52.0)	86.2 (82.3-89.3)	136 (128-142)	163 (154-171)	2627
	09-10	42.7 (40.8-44.7)	45.2 (43.6-47.3)	79.9 (75.9-83.0)	121 (112-130)	160 (147-180)	2848
Age group							
6-11 years	99-00	78.2 (61.0-100)	84.8 (67.7-105)	126 (106-147)	178 (147-259)	267 (159-840)	310
	01-02	63.3 (53.4-75.0)	69.2 (63.0-77.6)	109 (94.5-124)	169 (138-197)	197 (161-291)	368
	03-04	62.2 (56.7-68.3)	71.3 (55.7-84.1)	108 (92.7-122)	138 (127-152)	181 (138-235)	290
	05-06	65.6 (56.6-76.0)	73.5 (62.8-85.5)	108 (98.6-115)	154 (130-176)	181 (154-205)	355
	07-08	69.3 (60.8-79.0)	72.8 (62.1-83.9)	123 (99.9-148)	169 (154-217)	235 (169-282)	394
	09-10	65.0 (57.8-73.2)	69.7 (61.1-84.2)	123 (103-138)	180 (146-205)	218 (180-263)	378
12-19 years	99-00	54.3 (47.6-62.0)	60.6 (52.2-70.3)	93.3 (79.9-109)	146 (112-171)	188 (146-216)	648
	01-02	60.6 (55.5-66.2)	65.7 (58.7-73.1)	97.1 (91.8-108)	145 (129-159)	179 (155-227)	762
	03-04	52.5 (49.0-56.3)	59.6 (55.5-65.1)	87.3 (84.5-91.4)	118 (105-125)	143 (130-156)	725
	05-06	59.1 (53.7-65.1)	63.8 (57.9-69.4)	96.6 (86.3-103)	136 (127-147)	173 (148-202)	701
	07-08	64.1 (58.6-70.2)	68.6 (63.7-80.2)	107 (97.2-118)	149 (125-167)	174 (151-196)	376
	09-10	52.4 (47.5-57.7)	58.5 (51.4-65.6)	96.2 (85.0-104)	148 (120-170)	178 (151-201)	451
20 years and older	99-00	41.7 (36.7-47.4)	46.6 (40.5-52.5)	76.7 (73.4-82.2)	126 (114-134)	168 (143-206)	1299
	01-02	41.1 (38.3-44.1)	47.6 (43.7-51.2)	79.1 (71.9-83.6)	114 (103-124)	150 (130-166)	1560
	03-04	35.9 (34.0-38.0)	40.3 (37.6-42.1)	71.5 (67.3-75.2)	105 (98.6-111)	133 (119-144)	1543
	05-06	41.3 (38.7-44.0)	46.0 (41.7-49.6)	75.7 (72.1-80.3)	116 (107-127)	153 (135-171)	1520
	07-08	40.8 (38.7-43.0)	44.5 (42.2-47.8)	77.7 (74.1-81.2)	123 (114-135)	152 (145-164)	1857
	09-10	39.6 (37.5-41.8)	42.0 (39.8-43.9)	73.5 (69.0-76.8)	107 (100-113)	144 (130-163)	2019
Gender							
Males	99-00	52.7 (45.7-60.7)	57.5 (48.5-68.4)	93.2 (83.8-106)	150 (128-187)	215 (161-278)	1121
	01-02	51.0 (46.6-55.7)	56.9 (52.0-62.6)	88.5 (81.6-96.5)	130 (120-141)	169 (145-194)	1335
	03-04	45.5 (43.3-47.8)	51.0 (48.1-55.4)	85.8 (82.8-90.7)	119 (112-130)	148 (136-163)	1281
	05-06	50.9 (48.2-53.9)	56.0 (51.0-60.3)	85.7 (80.3-92.8)	130 (122-136)	161 (145-177)	1271
	07-08	50.6 (48.1-53.2)	56.7 (52.4-60.6)	93.6 (88.7-98.7)	148 (137-150)	171 (159-178)	1327
	09-10	46.2 (43.5-49.1)	50.2 (46.4-52.7)	81.8 (77.0-85.9)	127 (113-144)	169 (147-197)	1398
Females	99-00	40.4 (34.8-46.8)	45.6 (40.4-52.0)	77.3 (71.0-85.7)	119 (105-138)	154 (132-180)	1136
	01-02	39.9 (37.2-42.9)	45.8 (42.8-49.3)	78.4 (72.6-82.9)	115 (104-128)	158 (130-177)	1355
	03-04	34.9 (32.2-37.7)	37.9 (33.5-41.6)	67.3 (64.6-72.2)	101 (97.3-108)	127 (114-139)	1277
	05-06	40.0 (36.4-43.8)	45.6 (40.0-51.0)	75.6 (71.2-82.0)	118 (107-128)	154 (136-179)	1305
	07-08	40.5 (38.1-43.0)	43.5 (39.0-48.0)	77.0 (72.0-84.5)	123 (114-134)	152 (142-165)	1300
	09-10	39.6 (36.9-42.4)	41.4 (39.0-43.8)	76.8 (70.7-82.0)	114 (106-127)	151 (135-170)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.8, 0.8, 1.5, 0.92, 0.92, and 0.92 respectively.

[Biomonitoring Summary](#)

Urinary Molybdenum

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	47.0 (42.1-52.4)	53.2 (49.2-59.0)	80.6 (73.7-91.7)	121 (103-139)	152 (120-217)	780
	01-02	49.3 (46.5-52.3)	55.7 (50.4-61.0)	86.4 (80.8-94.1)	133 (113-155)	177 (142-207)	683
	03-04	47.0 (43.1-51.1)	54.4 (48.2-59.9)	82.9 (73.2-91.0)	121 (106-143)	152 (141-169)	618
	05-06	55.1 (51.7-58.7)	58.4 (54.1-63.6)	98.3 (91.5-105)	140 (134-150)	177 (153-200)	652
	07-08	53.3 (47.6-59.6)	57.3 (49.6-64.3)	90.4 (82.5-97.2)	140 (125-156)	176 (154-191)	515
	09-10	49.4 (45.9-53.2)	51.1 (46.4-55.4)	81.4 (76.2-85.9)	134 (115-149)	180 (148-231)	613
Non-Hispanic blacks	99-00	57.7 (51.0-65.2)	62.2 (55.0-71.5)	97.8 (85.0-110)	153 (126-188)	206 (150-274)	546
	01-02	53.2 (49.9-56.7)	60.3 (55.1-63.8)	90.0 (81.0-101)	132 (121-147)	166 (147-170)	667
	03-04	46.0 (41.7-50.8)	46.2 (40.9-55.2)	82.3 (73.3-91.3)	117 (109-129)	156 (135-175)	723
	05-06	48.1 (44.7-51.8)	52.0 (48.3-55.7)	80.0 (71.6-89.4)	125 (112-133)	160 (139-189)	692
	07-08	51.9 (45.6-59.1)	56.9 (47.5-65.8)	90.3 (83.0-102)	137 (118-158)	168 (147-180)	589
	09-10	45.8 (41.4-50.8)	52.1 (47.9-55.6)	85.6 (77.7-94.0)	132 (107-166)	184 (152-216)	544
Non-Hispanic whites	99-00	44.5 (37.0-53.4)	48.5 (41.1-59.8)	85.0 (76.7-96.5)	135 (119-154)	187 (146-223)	760
	01-02	42.2 (38.5-46.2)	48.9 (44.2-53.2)	80.7 (71.9-85.8)	117 (108-129)	152 (134-180)	1132
	03-04	37.1 (34.7-39.6)	41.3 (38.1-44.5)	75.2 (69.2-79.6)	107 (99.3-115)	130 (119-142)	1074
	05-06	42.8 (39.7-46.1)	48.6 (42.3-53.4)	79.0 (73.5-84.0)	123 (108-132)	156 (136-178)	1041
	07-08	41.7 (39.2-44.5)	46.5 (42.9-49.8)	81.2 (76.6-86.6)	131 (119-142)	153 (149-164)	1095
	09-10	40.6 (38.1-43.1)	42.6 (39.6-45.3)	75.9 (70.6-81.0)	114 (104-123)	148 (134-166)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.8, 0.8, 1.5, 0.92, 0.92, and 0.92 respectively.

[Biomonitoring Summary](#)

Urinary Molybdenum (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	43.2 (40.0-46.6)	41.6 (38.5-45.2)	63.5 (59.3-68.8)	108 (97.3-115)	144 (125-171)	2257
	01-02	42.5 (39.9-45.2)	42.2 (40.1-45.2)	62.0 (58.4-66.4)	98.8 (90.1-109)	130 (120-149)	2689
	03-04	39.4 (37.6-41.3)	39.2 (37.9-40.7)	58.3 (55.6-61.5)	89.0 (80.5-99.0)	120 (107-135)	2558
	05-06	44.3 (42.4-46.3)	43.9 (41.8-45.7)	65.9 (61.8-68.6)	97.3 (92.5-103)	132 (125-143)	2576
	07-08	47.1 (45.8-48.4)	46.3 (44.8-47.7)	72.4 (68.7-74.3)	104 (96.7-111)	137 (127-152)	2627
	09-10	45.5 (43.2-47.8)	44.4 (41.9-47.4)	67.2 (64.7-69.4)	105 (95.4-121)	143 (129-157)	2848
Age group							
6-11 years	99-00	85.9 (73.7-100)	79.3 (71.6-88.4)	122 (107-133)	173 (130-243)	214 (154-1040)	310
	01-02	77.2 (73.1-81.5)	77.6 (71.8-84.5)	109 (99.4-120)	159 (129-170)	185 (165-219)	368
	03-04	72.5 (65.2-80.7)	73.5 (65.1-79.9)	101 (84.9-117)	132 (107-158)	160 (129-257)	290
	05-06	81.0 (71.9-91.3)	78.6 (72.1-89.0)	112 (93.7-134)	161 (133-199)	201 (160-261)	355
	07-08	90.4 (81.8-99.8)	88.2 (79.2-101)	133 (113-147)	206 (159-259)	274 (224-354)	394
	09-10	88.6 (81.9-95.9)	89.0 (79.2-95.4)	131 (123-148)	174 (154-191)	195 (178-216)	378
12-19 years	99-00	41.9 (39.3-44.6)	40.5 (37.7-44.4)	57.3 (51.5-62.5)	85.4 (67.4-107)	112 (78.4-185)	648
	01-02	43.4 (40.8-46.1)	44.1 (40.8-47.2)	60.8 (57.6-63.7)	85.5 (79.7-93.8)	106 (94.8-118)	762
	03-04	37.5 (35.4-39.8)	38.9 (36.9-41.8)	53.2 (50.3-56.1)	71.9 (64.6-76.9)	81.0 (74.3-102)	725
	05-06	45.5 (42.5-48.7)	45.7 (41.3-49.2)	64.6 (58.5-71.2)	91.4 (75.3-102)	109 (95.0-131)	701
	07-08	50.1 (47.2-53.2)	50.1 (44.2-53.4)	71.6 (64.0-79.6)	95.8 (85.1-107)	129 (99.5-138)	376
	09-10	49.0 (45.3-53.0)	50.7 (44.6-56.2)	67.6 (63.0-73.1)	93.6 (85.8-101)	126 (96.4-134)	451
20 years and older	99-00	39.6 (36.9-42.6)	38.5 (36.1-41.0)	56.4 (53.5-60.7)	92.5 (83.1-100)	122 (116-147)	1299
	01-02	39.3 (36.8-42.0)	39.6 (36.4-42.1)	57.2 (52.9-61.0)	86.7 (75.2-96.8)	123 (109-139)	1559
	03-04	36.9 (35.0-38.9)	37.0 (35.7-38.4)	53.5 (50.0-56.9)	79.8 (75.9-87.5)	118 (101-134)	1543
	05-06	41.2 (39.3-43.1)	40.5 (38.8-42.7)	59.1 (55.6-62.8)	87.9 (79.7-96.9)	119 (103-132)	1520
	07-08	43.5 (42.1-44.9)	42.9 (41.3-44.7)	64.9 (61.7-69.9)	94.7 (90.8-97.1)	122 (110-132)	1857
	09-10	41.9 (40.0-43.9)	41.2 (39.4-43.0)	61.9 (59.0-64.0)	90.4 (84.3-98.5)	127 (115-141)	2019
Gender							
Males	99-00	40.8 (37.5-44.3)	38.5 (37.2-40.4)	62.4 (55.9-68.4)	101 (83.9-118)	131 (112-179)	1121
	01-02	40.3 (37.1-43.8)	40.2 (36.3-43.3)	60.5 (54.8-66.3)	91.3 (83.4-106)	123 (107-155)	1334
	03-04	38.3 (36.1-40.7)	37.8 (36.1-39.3)	56.3 (53.3-59.3)	85.7 (77.2-96.7)	118 (100-139)	1281
	05-06	41.8 (39.5-44.2)	41.7 (39.2-44.1)	62.1 (58.1-67.4)	94.6 (84.2-101)	126 (112-132)	1271
	07-08	45.3 (43.8-46.8)	44.6 (42.9-46.7)	72.3 (65.4-74.8)	105 (96.0-118)	135 (126-152)	1327
	09-10	42.1 (39.6-44.9)	41.3 (38.7-44.2)	63.4 (59.4-67.4)	101 (88.3-121)	139 (123-151)	1398
Females	99-00	45.5 (41.5-50.0)	44.1 (39.5-48.8)	64.4 (59.5-70.5)	112 (95.2-121)	152 (122-181)	1136
	01-02	44.6 (42.2-47.1)	45.1 (42.2-46.9)	63.6 (59.5-69.4)	107 (92.5-119)	136 (117-169)	1355
	03-04	40.5 (38.1-43.0)	41.1 (38.7-43.7)	61.4 (56.8-65.1)	90.1 (82.2-103)	122 (115-142)	1277
	05-06	46.9 (44.7-49.2)	46.5 (43.9-48.8)	67.2 (63.3-71.7)	103 (93.6-110)	157 (126-173)	1305
	07-08	48.9 (47.2-50.7)	48.3 (45.7-51.0)	72.6 (69.2-74.4)	103 (93.6-116)	139 (113-177)	1300
	09-10	48.9 (46.4-51.5)	48.8 (45.8-51.5)	70.1 (67.2-73.9)	109 (97.1-125)	148 (137-162)	1450

[Biomonitoring Summary](#)

Urinary Molybdenum (creatinine corrected)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	42.9 (40.6-45.4)	43.2 (40.9-45.6)	61.6 (57.2-65.5)	89.5 (80.0-103)	115 (93.7-137)	780
	01-02	48.1 (44.3-52.2)	48.4 (44.8-52.3)	71.7 (66.4-76.0)	103 (90.0-120)	129 (109-155)	682
	03-04	43.5 (40.5-46.8)	43.5 (41.0-46.2)	62.8 (56.8-67.2)	85.9 (79.5-97.0)	112 (97.0-133)	618
	05-06	51.8 (49.9-53.8)	52.1 (49.7-54.7)	73.5 (69.5-77.4)	106 (99.5-111)	133 (112-151)	652
	07-08	53.3 (50.2-56.5)	51.9 (47.1-55.3)	77.9 (70.6-82.1)	113 (103-129)	151 (132-185)	515
	09-10	51.8 (48.9-54.9)	51.4 (48.3-54.8)	74.0 (68.7-78.8)	109 (92.7-125)	148 (125-173)	613
Non-Hispanic blacks	99-00	37.2 (33.4-41.6)	37.1 (33.0-41.2)	55.9 (49.6-63.3)	88.2 (69.1-112)	119 (88.3-141)	546
	01-02	36.5 (34.1-39.0)	37.5 (35.1-38.9)	57.1 (49.7-62.4)	78.3 (71.5-92.0)	109 (81.1-127)	667
	03-04	33.1 (30.5-35.9)	31.7 (30.1-34.7)	47.2 (43.7-52.1)	72.9 (64.6-78.4)	90.5 (78.4-118)	723
	05-06	34.9 (33.1-36.8)	35.4 (32.7-38.1)	53.5 (49.7-55.8)	81.1 (75.4-89.4)	102 (89.4-119)	692
	07-08	38.0 (34.8-41.4)	38.7 (34.2-43.0)	57.0 (52.7-60.2)	82.0 (73.2-92.4)	105 (92.0-118)	589
	09-10	36.3 (32.9-40.1)	37.2 (35.1-39.5)	54.7 (50.3-60.4)	85.2 (68.6-110)	121 (97.1-155)	544
Non-Hispanic whites	99-00	44.5 (40.2-49.2)	42.1 (38.8-47.3)	65.3 (58.9-71.3)	116 (101-126)	172 (131-195)	760
	01-02	42.5 (39.3-46.0)	41.9 (39.3-45.6)	61.2 (57.1-67.2)	104 (88.7-120)	138 (120-163)	1132
	03-04	39.1 (37.2-41.1)	39.3 (37.7-40.8)	58.1 (54.6-61.4)	87.4 (78.9-96.7)	118 (106-134)	1074
	05-06	44.5 (42.4-46.6)	43.9 (41.7-45.7)	65.0 (59.9-68.5)	97.3 (90.7-105)	132 (119-152)	1041
	07-08	46.7 (45.0-48.6)	46.1 (43.6-48.4)	72.4 (65.8-75.1)	103 (95.7-113)	135 (120-152)	1095
	09-10	45.3 (42.4-48.5)	44.2 (41.5-48.4)	66.6 (63.1-69.3)	101 (88.4-124)	141 (121-159)	1225

[Biomonitoring Summary](#)

Urinary Platinum

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	2465
	01-02	*	< LOD	< LOD	< LOD	< LOD	2690
	03-04	*	< LOD	< LOD	< LOD	< LOD	2558
	05-06	*	< LOD	< LOD	.009 (<LOD-.012)	.014 (.009-.025)	2576
	07-08	*	< LOD	< LOD	< LOD	< LOD	2627
	09-10	*	< LOD	< LOD	.009 (<LOD-.015)	.016 (.009-.049)	2847
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	< LOD	340
	01-02	*	< LOD	< LOD	< LOD	< LOD	368
	03-04	*	< LOD	< LOD	< LOD	< LOD	290
	05-06	*	< LOD	< LOD	.010 (<LOD-.011)	.014 (.010-.020)	355
	07-08	*	< LOD	< LOD	< LOD	.009 (<LOD-.011)	394
	09-10	*	< LOD	< LOD	.010 (<LOD-.014)	.015 (.009-.036)	378
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	719
	01-02	*	< LOD	< LOD	< LOD	< LOD	762
	03-04	*	< LOD	< LOD	< LOD	< LOD	725
	05-06	*	< LOD	< LOD	< LOD	.012 (.009-.019)	701
	07-08	*	< LOD	< LOD	< LOD	.009 (<LOD-.017)	376
	09-10	*	< LOD	< LOD	.010 (<LOD-.019)	.018 (<LOD-.078)	451
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1406
	01-02	*	< LOD	< LOD	< LOD	< LOD	1560
	03-04	*	< LOD	< LOD	< LOD	< LOD	1543
	05-06	*	< LOD	< LOD	.009 (<LOD-.014)	.014 (.009-.032)	1520
	07-08	*	< LOD	< LOD	< LOD	< LOD	1857
	09-10	*	< LOD	< LOD	.009 (<LOD-.016)	.017 (.009-.049)	2018
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	1227
	01-02	*	< LOD	< LOD	< LOD	< LOD	1335
	03-04	*	< LOD	< LOD	< LOD	< LOD	1281
	05-06	*	< LOD	< LOD	.009 (<LOD-.012)	.012 (.009-.020)	1271
	07-08	*	< LOD	< LOD	< LOD	< LOD	1327
	09-10	*	< LOD	< LOD	.009 (<LOD-.015)	.016 (<LOD-.047)	1397
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	1238
	01-02	*	< LOD	< LOD	< LOD	< LOD	1355
	03-04	*	< LOD	< LOD	< LOD	< LOD	1277
	05-06	*	< LOD	< LOD	.010 (<LOD-.014)	.015 (.010-.033)	1305
	07-08	*	< LOD	< LOD	< LOD	.009 (<LOD-.009)	1300
	09-10	*	< LOD	< LOD	.010 (<LOD-.015)	.017 (.009-.051)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.04, 0.04, 0.07, 0.009, 0.009, and 0.009 respectively.

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

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

[Biomonitoring Summary](#)

Urinary Platinum

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

Race/ethnicity	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	884
	01-02	*	< LOD	< LOD	< LOD	< LOD	683
	03-04	*	< LOD	< LOD	< LOD	< LOD	618
	05-06	*	< LOD	< LOD	.010 (<LOD-.014)	.014 (.009-.023)	652
	07-08	*	< LOD	< LOD	< LOD	.009 (<LOD-.010)	515
	09-10	*	< LOD	< LOD	< LOD	.010 (.009-.012)	613
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	568
	01-02	*	< LOD	< LOD	< LOD	< LOD	667
	03-04	*	< LOD	< LOD	< LOD	< LOD	723
	05-06	*	< LOD	< LOD	< LOD	.011 (.009-.016)	692
	07-08	*	< LOD	< LOD	< LOD	.009 (<LOD-.013)	589
	09-10	*	< LOD	< LOD	.012 (<LOD-.032)	.024 (.009-.103)	544
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	822
	01-02	*	< LOD	< LOD	< LOD	< LOD	1132
	03-04	*	< LOD	< LOD	< LOD	< LOD	1074
	05-06	*	< LOD	< LOD	.009 (<LOD-.012)	.013 (.009-.026)	1041
	07-08	*	< LOD	< LOD	< LOD	.009 (<LOD-.009)	1095
	09-10	*	< LOD	< LOD	.009 (<LOD-.019)	.018 (<LOD-.073)	1224

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.04, 0.04, 0.07, 0.009, 0.009, and 0.009 respectively.

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

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

[Biomonitoring Summary](#)

Urinary Platinum (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	< LOD	2465
	01-02	*	< LOD	< LOD	< LOD	< LOD	2689
	03-04	*	< LOD	< LOD	< LOD	< LOD	2558
	05-06	*	< LOD	< LOD	.021 (<LOD-.023)	.029 (.026-.035)	2576
	07-08	*	< LOD	< LOD	< LOD	< LOD	2627
	09-10	*	< LOD	< LOD	.023 (<LOD-.027)	.033 (.026-.046)	2847
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	< LOD	340
	01-02	*	< LOD	< LOD	< LOD	< LOD	368
	03-04	*	< LOD	< LOD	< LOD	< LOD	290
	05-06	*	< LOD	< LOD	.020 (<LOD-.027)	.030 (.021-.050)	355
	07-08	*	< LOD	< LOD	< LOD	.026 (<LOD-.032)	394
	09-10	*	< LOD	< LOD	.026 (<LOD-.030)	.043 (.027-.050)	378
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	719
	01-02	*	< LOD	< LOD	< LOD	< LOD	762
	03-04	*	< LOD	< LOD	< LOD	< LOD	725
	05-06	*	< LOD	< LOD	< LOD	.017 (.012-.026)	701
	07-08	*	< LOD	< LOD	< LOD	.017 (<LOD-.025)	376
	09-10	*	< LOD	< LOD	.021 (<LOD-.029)	.032 (<LOD-.050)	451
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1406
	01-02	*	< LOD	< LOD	< LOD	< LOD	1559
	03-04	*	< LOD	< LOD	< LOD	< LOD	1543
	05-06	*	< LOD	< LOD	.022 (<LOD-.025)	.030 (.026-.035)	1520
	07-08	*	< LOD	< LOD	< LOD	< LOD	1857
	09-10	*	< LOD	< LOD	.023 (<LOD-.030)	.035 (.024-.050)	2018
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	1227
	01-02	*	< LOD	< LOD	< LOD	< LOD	1334
	03-04	*	< LOD	< LOD	< LOD	< LOD	1281
	05-06	*	< LOD	< LOD	.014 (<LOD-.016)	.021 (.016-.025)	1271
	07-08	*	< LOD	< LOD	< LOD	< LOD	1327
	09-10	*	< LOD	< LOD	.019 (<LOD-.025)	.027 (<LOD-.036)	1397
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	1238
	01-02	*	< LOD	< LOD	< LOD	< LOD	1355
	03-04	*	< LOD	< LOD	< LOD	< LOD	1277
	05-06	*	< LOD	< LOD	.026 (<LOD-.030)	.033 (.029-.050)	1305
	07-08	*	< LOD	< LOD	< LOD	.033 (<LOD-.043)	1300
	09-10	*	< LOD	< LOD	.027 (<LOD-.032)	.038 (.030-.054)	1450

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

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

[Biomonitoring Summary](#)

Urinary Platinum (creatinine corrected)

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

Race/ethnicity	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	884
	01-02	*	< LOD	< LOD	< LOD	< LOD	682
	03-04	*	< LOD	< LOD	< LOD	< LOD	618
	05-06	*	< LOD	< LOD	.016 (<LOD-.019)	.023 (.017-.032)	652
	07-08	*	< LOD	< LOD	< LOD	.025 (<LOD-.033)	515
	09-10	*	< LOD	< LOD	< LOD	.025 (.021-.029)	613
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	568
	01-02	*	< LOD	< LOD	< LOD	< LOD	667
	03-04	*	< LOD	< LOD	< LOD	< LOD	723
	05-06	*	< LOD	< LOD	< LOD	.018 (.014-.022)	692
	07-08	*	< LOD	< LOD	< LOD	.017 (<LOD-.021)	589
	09-10	*	< LOD	< LOD	.017 (<LOD-.024)	.027 (.019-.050)	544
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	822
	01-02	*	< LOD	< LOD	< LOD	< LOD	1132
	03-04	*	< LOD	< LOD	< LOD	< LOD	1074
	05-06	*	< LOD	< LOD	.023 (<LOD-.025)	.030 (.027-.035)	1041
	07-08	*	< LOD	< LOD	< LOD	.030 (<LOD-.038)	1095
	09-10	*	< LOD	< LOD	.025 (<LOD-.032)	.036 (<LOD-.058)	1224

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

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

[Biomonitoring Summary](#)

Urinary Thallium

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.176 (.162-.192)	.200 (.180-.220)	.290 (.270-.330)	.400 (.370-.420)	.450 (.430-.480)	2413
	01-02	.165 (.154-.177)	.190 (.180-.200)	.280 (.260-.290)	.370 (.350-.390)	.440 (.410-.470)	2653
	03-04	.155 (.145-.165)	.170 (.160-.180)	.270 (.250-.290)	.370 (.340-.400)	.440 (.410-.490)	2558
	05-06	.158 (.151-.165)	.180 (.170-.190)	.270 (.260-.280)	.360 (.350-.390)	.430 (.410-.460)	2576
	07-08	.146 (.139-.153)	.160 (.150-.170)	.250 (.230-.260)	.330 (.320-.360)	.400 (.390-.420)	2627
	09-10	.144 (.137-.152)	.160 (.150-.170)	.240 (.230-.250)	.340 (.310-.360)	.410 (.380-.440)	2848
Age group							
6-11 years	99-00	.201 (.167-.243)	.210 (.150-.280)	.310 (.250-.350)	.410 (.330-.450)	.450 (.350-.590)	336
	01-02	.172 (.147-.202)	.200 (.160-.220)	.290 (.230-.330)	.350 (.340-.370)	.390 (.360-.430)	362
	03-04	.191 (.170-.215)	.190 (.170-.230)	.300 (.250-.370)	.430 (.360-.500)	.510 (.430-.690)	290
	05-06	.174 (.158-.192)	.190 (.170-.210)	.280 (.250-.300)	.380 (.320-.430)	.430 (.400-.480)	355
	07-08	.166 (.150-.185)	.170 (.150-.200)	.250 (.230-.270)	.350 (.310-.410)	.420 (.360-.470)	394
	09-10	.161 (.147-.176)	.170 (.150-.200)	.280 (.230-.310)	.360 (.330-.410)	.440 (.400-.460)	378
12-19 years	99-00	.202 (.181-.225)	.220 (.200-.240)	.300 (.270-.340)	.410 (.390-.430)	.470 (.430-.510)	697
	01-02	.200 (.182-.220)	.220 (.190-.250)	.310 (.290-.320)	.370 (.350-.420)	.470 (.400-.500)	746
	03-04	.201 (.185-.218)	.220 (.210-.240)	.310 (.290-.320)	.410 (.360-.470)	.500 (.420-.560)	725
	05-06	.182 (.165-.200)	.210 (.190-.230)	.290 (.270-.310)	.370 (.350-.400)	.430 (.390-.480)	701
	07-08	.172 (.155-.190)	.180 (.160-.210)	.270 (.230-.300)	.330 (.310-.350)	.390 (.340-.420)	376
	09-10	.150 (.137-.163)	.160 (.150-.180)	.250 (.240-.270)	.340 (.290-.380)	.400 (.350-.430)	451
20 years and older	99-00	.170 (.157-.183)	.190 (.180-.210)	.290 (.260-.320)	.400 (.370-.420)	.450 (.420-.480)	1380
	01-02	.159 (.147-.173)	.190 (.170-.200)	.270 (.250-.290)	.380 (.350-.400)	.440 (.410-.490)	1545
	03-04	.145 (.134-.156)	.160 (.150-.170)	.250 (.240-.270)	.360 (.330-.390)	.420 (.390-.460)	1543
	05-06	.152 (.144-.161)	.170 (.160-.180)	.260 (.240-.270)	.360 (.340-.390)	.440 (.400-.470)	1520
	07-08	.140 (.133-.148)	.150 (.140-.160)	.240 (.230-.250)	.330 (.310-.360)	.400 (.380-.440)	1857
	09-10	.142 (.133-.150)	.160 (.150-.170)	.240 (.220-.250)	.330 (.310-.360)	.410 (.370-.440)	2019
Gender							
Males	99-00	.197 (.179-.217)	.220 (.200-.240)	.320 (.280-.350)	.400 (.370-.440)	.450 (.420-.520)	1200
	01-02	.184 (.173-.196)	.210 (.200-.230)	.290 (.280-.300)	.380 (.360-.400)	.430 (.400-.470)	1313
	03-04	.167 (.156-.178)	.190 (.180-.200)	.280 (.260-.300)	.370 (.340-.400)	.430 (.400-.480)	1281
	05-06	.171 (.163-.179)	.190 (.180-.200)	.270 (.260-.280)	.370 (.360-.390)	.430 (.410-.470)	1271
	07-08	.154 (.148-.161)	.170 (.160-.180)	.250 (.240-.270)	.340 (.320-.360)	.390 (.380-.440)	1327
	09-10	.152 (.140-.164)	.170 (.150-.180)	.250 (.240-.270)	.330 (.310-.360)	.410 (.360-.440)	1398
Females	99-00	.159 (.145-.175)	.180 (.150-.200)	.270 (.250-.300)	.390 (.350-.420)	.460 (.410-.490)	1213
	01-02	.149 (.137-.163)	.160 (.150-.180)	.260 (.230-.290)	.370 (.330-.400)	.440 (.400-.500)	1340
	03-04	.144 (.133-.156)	.160 (.140-.170)	.250 (.230-.280)	.370 (.330-.410)	.450 (.410-.510)	1277
	05-06	.146 (.138-.155)	.160 (.150-.180)	.260 (.240-.270)	.360 (.350-.380)	.440 (.400-.460)	1305
	07-08	.139 (.129-.148)	.150 (.130-.160)	.240 (.220-.260)	.330 (.300-.390)	.410 (.380-.430)	1300
	09-10	.137 (.129-.146)	.150 (.140-.160)	.230 (.210-.250)	.340 (.310-.360)	.410 (.380-.450)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.02, 0.02, 0.02, 0.015, 0.015, and 0.015 respectively.

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Urinary Thallium

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	.172 (.150-.196)	.200 (.160-.230)	.270 (.250-.300)	.370 (.320-.420)	.450 (.370-.520)	861
	01-02	.160 (.148-.173)	.180 (.160-.200)	.260 (.240-.270)	.340 (.310-.360)	.400 (.350-.440)	675
	03-04	.171 (.160-.183)	.200 (.170-.220)	.280 (.260-.310)	.360 (.340-.420)	.450 (.390-.480)	618
	05-06	.158 (.149-.167)	.180 (.170-.190)	.250 (.240-.270)	.330 (.300-.360)	.400 (.360-.440)	652
	07-08	.151 (.140-.164)	.170 (.150-.180)	.250 (.220-.270)	.330 (.310-.360)	.380 (.350-.390)	515
	09-10	.147 (.139-.155)	.160 (.150-.180)	.240 (.210-.260)	.310 (.290-.320)	.390 (.320-.430)	613
Non-Hispanic blacks	99-00	.217 (.197-.239)	.230 (.220-.260)	.350 (.300-.390)	.450 (.400-.520)	.550 (.460-.630)	561
	01-02	.202 (.187-.218)	.220 (.200-.230)	.300 (.270-.340)	.410 (.380-.440)	.520 (.440-.590)	657
	03-04	.185 (.167-.206)	.190 (.170-.220)	.290 (.250-.330)	.410 (.330-.490)	.490 (.410-.640)	723
	05-06	.188 (.169-.210)	.210 (.180-.230)	.300 (.270-.320)	.390 (.360-.440)	.500 (.430-.530)	692
	07-08	.171 (.160-.182)	.180 (.170-.190)	.270 (.250-.290)	.350 (.330-.390)	.430 (.390-.460)	589
	09-10	.162 (.148-.177)	.180 (.160-.200)	.270 (.250-.280)	.350 (.330-.400)	.450 (.390-.510)	544
Non-Hispanic whites	99-00	.170 (.153-.188)	.200 (.170-.220)	.290 (.260-.330)	.400 (.360-.420)	.450 (.420-.480)	801
	01-02	.159 (.147-.172)	.180 (.170-.200)	.270 (.250-.290)	.360 (.330-.390)	.430 (.390-.460)	1114
	03-04	.146 (.135-.158)	.160 (.150-.170)	.260 (.240-.280)	.360 (.330-.380)	.410 (.380-.460)	1074
	05-06	.150 (.140-.160)	.170 (.160-.180)	.260 (.240-.270)	.350 (.320-.380)	.420 (.390-.450)	1041
	07-08	.138 (.130-.147)	.150 (.130-.160)	.240 (.220-.260)	.320 (.300-.360)	.390 (.350-.440)	1095
	09-10	.139 (.130-.149)	.150 (.140-.170)	.240 (.210-.250)	.330 (.300-.360)	.400 (.360-.430)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.02, 0.02, 0.02, 0.015, 0.015, and 0.015 respectively.

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Urinary Thallium (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.166 (.159-.173)	.168 (.162-.176)	.224 (.217-.233)	.297 (.273-.319)	.366 (.338-.387)	2413
	01-02	.156 (.151-.162)	.156 (.148-.164)	.215 (.208-.222)	.287 (.278-.300)	.349 (.337-.365)	2652
	03-04	.154 (.149-.158)	.153 (.146-.160)	.214 (.203-.222)	.286 (.274-.304)	.350 (.328-.369)	2558
	05-06	.155 (.149-.162)	.150 (.140-.160)	.210 (.200-.220)	.300 (.290-.320)	.370 (.350-.390)	2576
	07-08	.152 (.147-.158)	.150 (.140-.160)	.210 (.200-.220)	.290 (.280-.310)	.370 (.350-.380)	2627
	09-10	.153 (.145-.162)	.150 (.140-.160)	.220 (.200-.230)	.300 (.280-.320)	.370 (.350-.400)	2848
Age group							
6-11 years	99-00	.221 (.197-.248)	.222 (.196-.236)	.297 (.229-.356)	.375 (.318-.469)	.424 (.356-.600)	336
	01-02	.211 (.198-.226)	.207 (.198-.221)	.286 (.260-.321)	.370 (.333-.402)	.412 (.389-.456)	362
	03-04	.223 (.208-.238)	.216 (.198-.229)	.306 (.280-.346)	.412 (.346-.458)	.458 (.400-.532)	290
	05-06	.215 (.200-.231)	.210 (.190-.250)	.310 (.270-.320)	.360 (.320-.410)	.430 (.360-.510)	355
	07-08	.217 (.201-.234)	.220 (.210-.240)	.310 (.270-.340)	.410 (.370-.440)	.470 (.410-.540)	394
	09-10	.219 (.199-.241)	.220 (.200-.260)	.300 (.280-.340)	.400 (.350-.440)	.500 (.390-.600)	378
12-19 years	99-00	.153 (.146-.160)	.154 (.146-.162)	.205 (.191-.219)	.258 (.231-.278)	.321 (.265-.364)	697
	01-02	.143 (.137-.150)	.145 (.135-.152)	.196 (.184-.207)	.272 (.250-.289)	.312 (.299-.333)	746
	03-04	.143 (.135-.152)	.146 (.131-.155)	.194 (.179-.208)	.254 (.234-.280)	.304 (.271-.327)	725
	05-06	.140 (.133-.147)	.140 (.130-.150)	.190 (.170-.200)	.240 (.220-.270)	.290 (.250-.310)	701
	07-08	.134 (.124-.145)	.140 (.120-.150)	.190 (.180-.220)	.260 (.220-.300)	.300 (.250-.370)	376
	09-10	.140 (.127-.155)	.140 (.120-.160)	.190 (.170-.220)	.260 (.220-.310)	.310 (.260-.370)	451
20 years and older	99-00	.162 (.153-.171)	.167 (.155-.176)	.218 (.207-.230)	.286 (.271-.300)	.364 (.325-.389)	1380
	01-02	.153 (.147-.159)	.153 (.144-.161)	.210 (.200-.217)	.278 (.263-.293)	.343 (.313-.362)	1544
	03-04	.148 (.144-.153)	.149 (.141-.156)	.206 (.192-.215)	.273 (.258-.289)	.333 (.306-.353)	1543
	05-06	.152 (.145-.159)	.150 (.140-.160)	.210 (.200-.210)	.290 (.270-.310)	.370 (.350-.400)	1520
	07-08	.149 (.143-.156)	.150 (.140-.160)	.210 (.200-.220)	.280 (.270-.300)	.350 (.330-.380)	1857
	09-10	.150 (.142-.157)	.150 (.140-.160)	.210 (.200-.220)	.290 (.270-.320)	.370 (.330-.400)	2019
Gender							
Males	99-00	.154 (.147-.161)	.156 (.149-.164)	.202 (.192-.214)	.269 (.254-.297)	.338 (.300-.364)	1200
	01-02	.146 (.140-.153)	.148 (.142-.157)	.192 (.184-.204)	.260 (.246-.278)	.307 (.291-.342)	1312
	03-04	.140 (.135-.146)	.142 (.134-.149)	.188 (.180-.198)	.264 (.235-.286)	.317 (.287-.350)	1281
	05-06	.140 (.134-.147)	.140 (.130-.140)	.190 (.180-.200)	.270 (.240-.300)	.320 (.300-.340)	1271
	07-08	.138 (.131-.145)	.130 (.130-.140)	.190 (.180-.210)	.270 (.250-.290)	.330 (.300-.360)	1327
	09-10	.138 (.129-.148)	.130 (.130-.150)	.190 (.170-.210)	.270 (.240-.300)	.330 (.290-.360)	1398
Females	99-00	.178 (.167-.189)	.182 (.169-.197)	.244 (.226-.259)	.317 (.281-.366)	.380 (.333-.462)	1213
	01-02	.167 (.158-.176)	.167 (.153-.180)	.233 (.217-.250)	.313 (.282-.348)	.378 (.348-.402)	1340
	03-04	.167 (.162-.173)	.166 (.157-.177)	.235 (.222-.243)	.313 (.286-.333)	.368 (.340-.412)	1277
	05-06	.171 (.162-.181)	.170 (.160-.180)	.230 (.220-.250)	.330 (.300-.360)	.430 (.370-.490)	1305
	07-08	.167 (.163-.173)	.170 (.160-.180)	.230 (.230-.240)	.320 (.300-.340)	.390 (.360-.430)	1300
	09-10	.170 (.161-.178)	.170 (.160-.180)	.230 (.220-.250)	.340 (.310-.370)	.420 (.370-.470)	1450

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Urinary Thallium (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
Race/ethnicity			50th	75th	90th	95th	
Mexican Americans	99-00	.158 (.147-.170)	.160 (.148-.176)	.213 (.200-.237)	.282 (.266-.304)	.343 (.306-.389)	861
	01-02	.156 (.145-.169)	.155 (.145-.167)	.204 (.191-.221)	.286 (.250-.317)	.361 (.301-.424)	674
	03-04	.159 (.148-.170)	.157 (.143-.172)	.211 (.187-.241)	.293 (.273-.324)	.369 (.326-.422)	618
	05-06	.149 (.139-.158)	.150 (.140-.160)	.200 (.180-.210)	.270 (.240-.290)	.320 (.280-.370)	652
	07-08	.151 (.143-.160)	.160 (.130-.170)	.200 (.190-.220)	.270 (.250-.280)	.320 (.290-.370)	515
	09-10	.154 (.141-.167)	.150 (.140-.170)	.210 (.180-.230)	.280 (.250-.330)	.360 (.310-.430)	613
Non-Hispanic blacks	99-00	.142 (.133-.152)	.140 (.129-.151)	.200 (.184-.214)	.278 (.244-.307)	.383 (.286-.462)	561
	01-02	.138 (.128-.150)	.136 (.125-.146)	.194 (.170-.212)	.256 (.238-.278)	.328 (.271-.387)	657
	03-04	.133 (.122-.145)	.128 (.119-.143)	.185 (.171-.200)	.255 (.237-.269)	.323 (.267-.377)	723
	05-06	.137 (.128-.145)	.130 (.130-.140)	.190 (.180-.200)	.240 (.220-.290)	.320 (.270-.370)	692
	07-08	.125 (.118-.132)	.130 (.120-.130)	.170 (.160-.180)	.230 (.210-.260)	.280 (.250-.330)	589
	09-10	.128 (.120-.137)	.120 (.110-.130)	.180 (.160-.210)	.250 (.230-.280)	.310 (.270-.350)	544
Non-Hispanic whites	99-00	.169 (.160-.179)	.173 (.167-.181)	.227 (.215-.240)	.300 (.272-.329)	.364 (.333-.377)	801
	01-02	.161 (.155-.167)	.161 (.153-.171)	.222 (.214-.231)	.292 (.278-.304)	.348 (.330-.383)	1114
	03-04	.154 (.148-.160)	.153 (.143-.162)	.214 (.200-.223)	.283 (.271-.304)	.333 (.313-.363)	1074
	05-06	.156 (.148-.164)	.150 (.140-.160)	.210 (.200-.230)	.300 (.280-.320)	.360 (.330-.400)	1041
	07-08	.154 (.146-.164)	.160 (.140-.170)	.220 (.210-.230)	.300 (.280-.320)	.370 (.340-.390)	1095
	09-10	.155 (.145-.166)	.150 (.140-.170)	.220 (.200-.240)	.310 (.280-.330)	.380 (.340-.410)	1225

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Urinary Tungsten

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.093 (.087-.100)	.090 (.080-.090)	.180 (.160-.190)	.320 (.280-.370)	.500 (.430-.550)	2338
	01-02	.082 (.073-.092)	.070 (.060-.090)	.160 (.140-.180)	.300 (.260-.350)	.460 (.370-.560)	2652
	03-04	.071 (.064-.078)	.070 (.060-.080)	.130 (.120-.140)	.270 (.230-.300)	.400 (.330-.480)	2558
	05-06	.085 (.079-.092)	.090 (.080-.090)	.170 (.150-.180)	.310 (.280-.340)	.470 (.400-.520)	2576
	07-08	.099 (.093-.105)	.100 (.090-.110)	.190 (.180-.200)	.360 (.320-.380)	.500 (.440-.570)	2627
	09-10	.081 (.075-.087)	.080 (.070-.090)	.160 (.150-.170)	.310 (.270-.330)	.460 (.370-.540)	2847
Age group							
6-11 years	99-00	.158 (.123-.204)	.160 (.120-.220)	.270 (.220-.350)	.510 (.380-.560)	.620 (.510-.950)	320
	01-02	.137 (.110-.170)	.140 (.110-.170)	.260 (.200-.350)	.460 (.360-.690)	.770 (.510-1.53)	363
	03-04	.130 (.111-.151)	.140 (.120-.150)	.240 (.190-.290)	.410 (.290-.500)	.500 (.370-.630)	290
	05-06	.142 (.121-.166)	.140 (.120-.170)	.230 (.210-.290)	.430 (.330-.610)	.640 (.440-.850)	355
	07-08	.160 (.138-.186)	.150 (.130-.170)	.310 (.240-.390)	.510 (.450-.580)	.810 (.560-1.15)	394
	09-10	.151 (.126-.180)	.150 (.110-.200)	.310 (.230-.400)	.560 (.400-.770)	.770 (.560-1.04)	378
12-19 years	99-00	.113 (.097-.132)	.110 (.090-.130)	.210 (.180-.250)	.360 (.310-.440)	.530 (.380-.800)	679
	01-02	.113 (.095-.135)	.110 (.090-.130)	.210 (.180-.260)	.400 (.310-.520)	.570 (.430-.790)	744
	03-04	.105 (.090-.122)	.100 (.090-.120)	.190 (.160-.230)	.350 (.290-.460)	.530 (.350-1.00)	725
	05-06	.131 (.108-.158)	.130 (.100-.160)	.250 (.200-.310)	.430 (.360-.530)	.620 (.410-1.04)	701
	07-08	.150 (.136-.167)	.160 (.140-.180)	.250 (.220-.290)	.470 (.350-.660)	.660 (.430-1.05)	376
	09-10	.101 (.089-.115)	.100 (.080-.120)	.210 (.190-.240)	.360 (.300-.460)	.540 (.440-.650)	451
20 years and older	99-00	.084 (.078-.091)	.080 (.070-.090)	.160 (.130-.180)	.280 (.260-.320)	.450 (.360-.520)	1339
	01-02	.073 (.065-.082)	.060 (.050-.070)	.140 (.110-.160)	.260 (.210-.310)	.380 (.310-.490)	1545
	03-04	.062 (.056-.068)	.060 (.050-.070)	.110 (.100-.120)	.210 (.180-.250)	.360 (.270-.430)	1543
	05-06	.075 (.070-.081)	.080 (.070-.080)	.140 (.130-.160)	.250 (.220-.310)	.410 (.340-.470)	1520
	07-08	.088 (.081-.095)	.090 (.080-.100)	.170 (.150-.190)	.310 (.280-.340)	.450 (.390-.500)	1857
	09-10	.073 (.068-.079)	.080 (.070-.080)	.150 (.130-.160)	.260 (.230-.300)	.370 (.330-.460)	2018
Gender							
Males	99-00	.107 (.096-.120)	.100 (.090-.120)	.210 (.190-.230)	.390 (.310-.470)	.530 (.470-.650)	1160
	01-02	.088 (.074-.105)	.080 (.060-.100)	.170 (.140-.220)	.330 (.260-.390)	.490 (.380-.580)	1307
	03-04	.081 (.071-.093)	.080 (.070-.090)	.140 (.130-.170)	.300 (.250-.340)	.430 (.340-.560)	1281
	05-06	.095 (.090-.101)	.090 (.080-.100)	.180 (.160-.190)	.340 (.310-.380)	.480 (.420-.610)	1271
	07-08	.109 (.102-.116)	.110 (.100-.130)	.210 (.190-.240)	.380 (.350-.450)	.550 (.450-.660)	1327
	09-10	.090 (.082-.098)	.090 (.080-.100)	.170 (.150-.190)	.320 (.290-.350)	.500 (.410-.550)	1398
Females	99-00	.082 (.077-.087)	.070 (.060-.080)	.150 (.130-.160)	.270 (.240-.300)	.400 (.320-.470)	1178
	01-02	.076 (.069-.084)	.060 (.060-.080)	.150 (.120-.170)	.280 (.230-.330)	.430 (.340-.560)	1345
	03-04	.062 (.056-.069)	.060 (.050-.070)	.110 (.100-.120)	.220 (.190-.250)	.370 (.270-.460)	1277
	05-06	.077 (.069-.085)	.080 (.070-.090)	.160 (.150-.170)	.280 (.250-.320)	.440 (.350-.510)	1305
	07-08	.090 (.083-.098)	.090 (.080-.100)	.170 (.160-.180)	.300 (.270-.350)	.460 (.420-.550)	1300
	09-10	.074 (.067-.081)	.070 (.070-.080)	.150 (.130-.170)	.280 (.240-.330)	.400 (.320-.600)	1449

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.04, 0.04, 0.04, 0.021, 0.021, and 0.021 respectively.

[Biomonitoring Summary](#)

Urinary Tungsten

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
Race/ethnicity			50th	75th	90th	95th	
Mexican Americans	99-00	.113 (.095-.133)	.110 (.090-.130)	.200 (.160-.250)	.400 (.300-.520)	.550 (.420-.830)	790
	01-02	.101 (.093-.109)	.100 (.090-.110)	.190 (.170-.210)	.370 (.310-.430)	.570 (.450-.670)	680
	03-04	.086 (.073-.100)	.080 (.070-.100)	.170 (.120-.220)	.360 (.230-.620)	.640 (.410-.800)	618
	05-06	.102 (.088-.118)	.100 (.080-.110)	.200 (.170-.220)	.450 (.310-.650)	.730 (.510-1.04)	652
	07-08	.106 (.084-.135)	.110 (.080-.150)	.210 (.170-.270)	.400 (.250-.670)	.580 (.400-1.12)	515
	09-10	.099 (.089-.109)	.090 (.090-.100)	.200 (.170-.220)	.380 (.340-.470)	.540 (.480-.580)	613
Non-Hispanic blacks	99-00	.113 (.101-.126)	.100 (.090-.130)	.210 (.180-.250)	.370 (.290-.460)	.560 (.420-.810)	562
	01-02	.096 (.080-.116)	.090 (.070-.120)	.160 (.130-.250)	.310 (.270-.400)	.460 (.400-.590)	649
	03-04	.092 (.082-.104)	.090 (.080-.110)	.160 (.150-.180)	.300 (.250-.330)	.470 (.340-.550)	723
	05-06	.101 (.088-.116)	.110 (.090-.120)	.190 (.160-.220)	.320 (.280-.370)	.450 (.340-.650)	692
	07-08	.120 (.099-.146)	.120 (.090-.160)	.240 (.200-.290)	.390 (.340-.440)	.540 (.460-.690)	589
	09-10	.093 (.086-.100)	.100 (.090-.110)	.180 (.160-.200)	.290 (.270-.340)	.400 (.320-.590)	543
Non-Hispanic whites	99-00	.092 (.084-.100)	.080 (.070-.100)	.180 (.160-.200)	.320 (.270-.380)	.470 (.380-.550)	802
	01-02	.076 (.066-.088)	.060 (.050-.080)	.150 (.120-.180)	.290 (.230-.360)	.430 (.330-.620)	1117
	03-04	.065 (.058-.073)	.060 (.060-.070)	.120 (.100-.130)	.230 (.190-.290)	.380 (.320-.410)	1074
	05-06	.082 (.075-.089)	.080 (.080-.090)	.160 (.140-.180)	.300 (.250-.340)	.430 (.380-.480)	1041
	07-08	.093 (.087-.101)	.100 (.090-.110)	.180 (.160-.190)	.330 (.290-.370)	.470 (.410-.570)	1095
	09-10	.077 (.070-.083)	.080 (.070-.090)	.150 (.140-.170)	.280 (.250-.310)	.400 (.330-.540)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.04, 0.04, 0.04, 0.021, 0.021, and 0.021 respectively.

[Biomonitoring Summary](#)

Urinary Tungsten (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.087 (.080-.095)	.080 (.075-.086)	.146 (.136-.158)	.270 (.206-.333)	.383 (.302-.459)	2338
	01-02	.078 (.069-.087)	.074 (.064-.084)	.138 (.122-.154)	.255 (.216-.300)	.359 (.315-.436)	2651
	03-04	.070 (.063-.078)	.065 (.059-.074)	.117 (.107-.133)	.215 (.179-.253)	.333 (.255-.439)	2558
	05-06	.084 (.080-.089)	.080 (.080-.080)	.140 (.130-.150)	.250 (.210-.290)	.350 (.290-.440)	2576
	07-08	.103 (.096-.111)	.100 (.090-.110)	.170 (.160-.190)	.320 (.290-.360)	.470 (.410-.540)	2627
	09-10	.086 (.080-.093)	.080 (.070-.090)	.150 (.130-.160)	.270 (.230-.310)	.400 (.340-.470)	2847
Age group							
6-11 years	99-00	.174 (.150-.201)	.169 (.136-.198)	.293 (.216-.333)	.439 (.331-.667)	.667 (.452-.880)	320
	01-02	.168 (.144-.197)	.158 (.139-.190)	.275 (.231-.326)	.412 (.333-.554)	.634 (.436-1.28)	363
	03-04	.151 (.131-.174)	.144 (.119-.167)	.250 (.205-.283)	.333 (.278-.484)	.484 (.333-.739)	290
	05-06	.175 (.152-.202)	.160 (.140-.180)	.270 (.220-.320)	.560 (.330-.790)	.790 (.470-1.18)	355
	07-08	.209 (.185-.235)	.200 (.180-.240)	.340 (.290-.370)	.540 (.450-.660)	.780 (.620-.910)	394
	09-10	.205 (.177-.239)	.200 (.160-.230)	.330 (.290-.440)	.620 (.450-.850)	.930 (.690-1.08)	378
12-19 years	99-00	.084 (.078-.091)	.079 (.074-.084)	.138 (.124-.158)	.231 (.180-.287)	.339 (.237-.465)	679
	01-02	.081 (.071-.092)	.081 (.072-.091)	.148 (.122-.167)	.250 (.208-.301)	.359 (.272-.431)	744
	03-04	.075 (.065-.086)	.071 (.061-.082)	.122 (.098-.148)	.197 (.167-.308)	.379 (.197-.582)	725
	05-06	.101 (.086-.117)	.100 (.080-.110)	.170 (.140-.200)	.300 (.200-.370)	.370 (.300-.770)	701
	07-08	.118 (.104-.132)	.120 (.110-.130)	.180 (.160-.210)	.340 (.230-.550)	.530 (.310-.810)	376
	09-10	.094 (.085-.106)	.090 (.080-.110)	.150 (.120-.180)	.270 (.210-.290)	.370 (.280-.500)	451
20 years and older	99-00	.080 (.072-.089)	.075 (.067-.082)	.130 (.116-.146)	.218 (.179-.301)	.347 (.245-.426)	1339
	01-02	.070 (.063-.079)	.067 (.058-.075)	.119 (.099-.139)	.216 (.176-.267)	.333 (.253-.431)	1544
	03-04	.063 (.057-.071)	.059 (.053-.065)	.105 (.094-.117)	.181 (.155-.215)	.279 (.217-.370)	1543
	05-06	.075 (.071-.079)	.070 (.070-.080)	.120 (.110-.130)	.210 (.200-.220)	.290 (.240-.360)	1520
	07-08	.093 (.087-.101)	.090 (.080-.100)	.160 (.140-.170)	.280 (.250-.310)	.420 (.350-.490)	1857
	09-10	.078 (.072-.084)	.070 (.070-.080)	.130 (.120-.140)	.220 (.190-.260)	.340 (.270-.400)	2018
Gender							
Males	99-00	.083 (.074-.094)	.073 (.063-.086)	.146 (.126-.165)	.279 (.198-.386)	.439 (.329-.605)	1160
	01-02	.071 (.060-.083)	.065 (.056-.077)	.125 (.098-.153)	.255 (.203-.306)	.364 (.300-.431)	1306
	03-04	.068 (.059-.079)	.062 (.054-.071)	.111 (.098-.133)	.216 (.170-.284)	.341 (.240-.500)	1281
	05-06	.078 (.073-.083)	.070 (.070-.080)	.130 (.120-.150)	.240 (.200-.300)	.360 (.300-.440)	1271
	07-08	.097 (.090-.106)	.090 (.090-.110)	.170 (.150-.180)	.310 (.280-.360)	.440 (.410-.480)	1327
	09-10	.082 (.074-.089)	.070 (.070-.080)	.140 (.120-.150)	.250 (.220-.310)	.440 (.320-.500)	1398
Females	99-00	.091 (.085-.098)	.084 (.080-.091)	.145 (.136-.158)	.265 (.200-.301)	.339 (.300-.381)	1178
	01-02	.085 (.077-.094)	.083 (.075-.091)	.143 (.130-.161)	.258 (.216-.317)	.353 (.317-.538)	1345
	03-04	.072 (.065-.079)	.069 (.063-.078)	.121 (.108-.138)	.211 (.176-.237)	.333 (.261-.439)	1277
	05-06	.090 (.085-.096)	.080 (.080-.090)	.150 (.140-.160)	.250 (.210-.290)	.350 (.260-.530)	1305
	07-08	.109 (.100-.118)	.100 (.090-.120)	.180 (.160-.210)	.330 (.290-.360)	.520 (.400-.590)	1300
	09-10	.091 (.083-.100)	.090 (.080-.090)	.150 (.130-.170)	.270 (.210-.340)	.380 (.330-.450)	1449

[Biomonitoring Summary](#)

Urinary Tungsten (creatinine corrected)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	.106 (.093-.120)	.100 (.086-.116)	.184 (.152-.214)	.329 (.267-.392)	.497 (.354-.727)	790
	01-02	.098 (.090-.108)	.089 (.081-.100)	.164 (.143-.187)	.294 (.258-.375)	.555 (.410-.797)	679
	03-04	.079 (.065-.096)	.073 (.054-.093)	.136 (.103-.197)	.300 (.233-.426)	.482 (.344-.823)	618
	05-06	.096 (.083-.111)	.090 (.080-.090)	.160 (.150-.180)	.330 (.250-.420)	.670 (.360-.890)	652
	07-08	.106 (.083-.137)	.110 (.080-.140)	.200 (.160-.270)	.400 (.260-.710)	.610 (.310-1.12)	515
	09-10	.103 (.096-.111)	.100 (.090-.110)	.180 (.160-.200)	.330 (.290-.390)	.480 (.390-.540)	613
Non-Hispanic blacks	99-00	.073 (.064-.083)	.071 (.061-.081)	.124 (.109-.154)	.201 (.188-.222)	.360 (.217-.465)	562
	01-02	.066 (.056-.077)	.060 (.049-.079)	.109 (.090-.125)	.199 (.153-.285)	.340 (.250-.414)	649
	03-04	.066 (.059-.074)	.067 (.055-.075)	.105 (.095-.120)	.186 (.150-.224)	.317 (.214-.358)	723
	05-06	.073 (.065-.082)	.070 (.060-.080)	.120 (.110-.140)	.210 (.190-.260)	.320 (.260-.390)	692
	07-08	.088 (.076-.102)	.090 (.070-.100)	.150 (.140-.160)	.240 (.220-.300)	.380 (.270-.630)	589
	09-10	.074 (.067-.080)	.070 (.060-.080)	.120 (.110-.140)	.210 (.180-.250)	.310 (.220-.410)	543
Non-Hispanic whites	99-00	.091 (.083-.100)	.082 (.077-.088)	.150 (.136-.169)	.279 (.200-.354)	.385 (.302-.462)	802
	01-02	.078 (.068-.088)	.073 (.061-.085)	.139 (.121-.157)	.253 (.209-.308)	.353 (.286-.453)	1117
	03-04	.069 (.060-.078)	.063 (.057-.071)	.116 (.104-.133)	.199 (.167-.237)	.299 (.222-.439)	1074
	05-06	.085 (.080-.090)	.080 (.080-.090)	.140 (.130-.160)	.240 (.210-.280)	.340 (.280-.420)	1041
	07-08	.104 (.096-.114)	.100 (.090-.110)	.180 (.160-.200)	.310 (.280-.360)	.460 (.390-.530)	1095
	09-10	.086 (.078-.094)	.080 (.070-.090)	.140 (.130-.160)	.250 (.200-.310)	.370 (.330-.400)	1225

[Biomonitoring Summary](#)

Urinary Uranium

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.008 (.007-.009)	.007 (.006-.008)	.013 (.010-.017)	.027 (.021-.038)	.046 (.037-.056)	2464
	01-02	.009 (.007-.010)	.008 (.007-.009)	.014 (.012-.018)	.030 (.023-.039)	.046 (.034-.062)	2690
	03-04	.008 (.007-.008)	.007 (.006-.007)	.011 (.010-.013)	.021 (.017-.026)	.031 (.026-.037)	2557
	05-06	.006 (.005-.006)	.005 (.005-.006)	.010 (.009-.012)	.019 (.016-.022)	.033 (.023-.041)	2576
	07-08	.007 (.006-.008)	.007 (.005-.008)	.013 (.011-.015)	.024 (.018-.033)	.039 (.026-.057)	2627
	09-10	*	< LOD	< LOD	.022 (.019-.030)	.036 (.029-.044)	2848
Age group							
6-11 years	99-00	.009 (.007-.011)	.007 (.006-.009)	.013 (.009-.022)	.032 (.019-.048)	.048 (.033-.066)	340
	01-02	.008 (.007-.010)	.008 (.006-.010)	.014 (.010-.020)	.026 (.020-.036)	.040 (.025-.049)	368
	03-04	.008 (.007-.009)	.007 (.006-.009)	.012 (.009-.016)	.020 (.016-.026)	.028 (.020-.039)	289
	05-06	.006 (.005-.007)	.005 (.004-.007)	.010 (.008-.011)	.015 (.012-.031)	.031 (.013-.051)	355
	07-08	.007 (.006-.008)	.006 (.005-.008)	.012 (.009-.016)	.021 (.016-.027)	.030 (.022-.039)	394
	09-10	*	< LOD	< LOD	.018 (<LOD-.034)	.033 (<LOD-.052)	378
12-19 years	99-00	.009 (.008-.011)	.009 (.008-.010)	.015 (.012-.018)	.026 (.020-.043)	.044 (.028-.072)	719
	01-02	.010 (.008-.012)	.010 (.008-.012)	.017 (.013-.023)	.030 (.022-.042)	.042 (.027-.088)	762
	03-04	.010 (.009-.011)	.009 (.008-.010)	.015 (.012-.018)	.028 (.023-.036)	.038 (.036-.053)	725
	05-06	.007 (.006-.008)	.007 (.006-.008)	.013 (.011-.015)	.023 (.018-.032)	.034 (.027-.045)	701
	07-08	.009 (.007-.011)	.008 (.007-.011)	.016 (.014-.020)	.029 (.022-.056)	.056 (.027-.156)	376
	09-10	*	< LOD	< LOD	.023 (.020-.038)	.040 (.024-.059)	451
20 years and older	99-00	.008 (.006-.009)	.007 (.005-.008)	.013 (.010-.017)	.027 (.021-.040)	.046 (.036-.056)	1405
	01-02	.009 (.007-.010)	.008 (.007-.009)	.014 (.012-.017)	.031 (.022-.040)	.046 (.034-.065)	1560
	03-04	*	.006 (.005-.007)	.011 (.009-.012)	.019 (.016-.026)	.029 (.024-.038)	1543
	05-06	.006 (.005-.006)	.005 (.005-.006)	.010 (.008-.012)	.019 (.015-.022)	.032 (.022-.041)	1520
	07-08	.007 (.005-.008)	.006 (.005-.008)	.013 (.010-.015)	.024 (.017-.035)	.039 (.026-.052)	1857
	09-10	*	< LOD	< LOD	.023 (.019-.030)	.036 (.029-.044)	2019
Gender							
Males	99-00	.009 (.008-.011)	.008 (.007-.010)	.015 (.012-.021)	.036 (.024-.046)	.053 (.040-.067)	1227
	01-02	.009 (.008-.011)	.009 (.007-.010)	.015 (.013-.021)	.033 (.024-.045)	.047 (.035-.065)	1335
	03-04	.008 (.007-.009)	.007 (.006-.008)	.013 (.011-.016)	.023 (.019-.027)	.031 (.027-.035)	1280
	05-06	.006 (.006-.007)	.006 (.005-.006)	.011 (.009-.012)	.019 (.015-.022)	.030 (.021-.043)	1271
	07-08	.007 (.006-.009)	.007 (.006-.009)	.014 (.013-.016)	.026 (.021-.037)	.046 (.030-.056)	1327
	09-10	*	< LOD	< LOD	.024 (.020-.034)	.040 (.032-.046)	1398
Females	99-00	.007 (.006-.008)	.006 (.005-.007)	.012 (.009-.015)	.023 (.016-.033)	.036 (.026-.050)	1237
	01-02	.008 (.007-.010)	.008 (.006-.009)	.014 (.011-.017)	.027 (.019-.037)	.041 (.029-.063)	1355
	03-04	*	.006 (.005-.007)	.010 (.009-.011)	.018 (.013-.027)	.031 (.022-.039)	1277
	05-06	.005 (.005-.006)	.005 (.004-.006)	.010 (.008-.011)	.019 (.016-.023)	.034 (.025-.040)	1305
	07-08	.006 (.005-.008)	.006 (.005-.007)	.011 (.009-.015)	.024 (.016-.033)	.035 (.022-.067)	1300
	09-10	*	< LOD	< LOD	.022 (.017-.029)	.033 (.023-.045)	1450

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.004, 0.004, 0.005, 0.002, 0.002, and 0.017 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](#)

Urinary Uranium

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	.017 (.012-.023)	.016 (.011-.021)	.033 (.020-.054)	.060 (.040-.127)	.114 (.054-.279)	883
	01-02	.013 (.010-.016)	.012 (.009-.016)	.022 (.017-.030)	.040 (.031-.054)	.055 (.046-.069)	683
	03-04	.014 (.011-.017)	.013 (.009-.018)	.024 (.017-.034)	.041 (.028-.073)	.064 (.039-.158)	618
	05-06	.008 (.007-.009)	.009 (.007-.010)	.014 (.013-.017)	.025 (.021-.033)	.042 (.028-.051)	652
	07-08	.009 (.008-.011)	.009 (.008-.010)	.017 (.014-.022)	.032 (.026-.039)	.047 (.032-.073)	515
	09-10	*	< LOD	.018 (<LOD-.021)	.034 (.027-.040)	.046 (.039-.055)	613
Non-Hispanic blacks	99-00	.009 (.007-.011)	.008 (.006-.010)	.014 (.010-.020)	.028 (.018-.049)	.052 (.030-.067)	568
	01-02	.008 (.007-.009)	.008 (.007-.009)	.012 (.011-.015)	.021 (.017-.027)	.030 (.023-.037)	667
	03-04	.008 (.008-.009)	.007 (.007-.008)	.012 (.011-.013)	.021 (.017-.027)	.031 (.023-.045)	722
	05-06	.006 (.005-.007)	.006 (.005-.007)	.010 (.009-.011)	.016 (.014-.020)	.023 (.018-.031)	692
	07-08	.007 (.006-.009)	.007 (.006-.008)	.013 (.010-.016)	.024 (.016-.038)	.038 (.025-.055)	589
	09-10	*	< LOD	< LOD	.027 (.017-.044)	.044 (.027-.074)	544
Non-Hispanic whites	99-00	.007 (.006-.009)	.007 (.006-.007)	.012 (.009-.016)	.023 (.017-.037)	.043 (.027-.051)	822
	01-02	.008 (.007-.009)	.007 (.006-.009)	.013 (.011-.016)	.026 (.019-.035)	.037 (.029-.050)	1132
	03-04	*	.006 (.005-.007)	.010 (.009-.012)	.018 (.015-.023)	.027 (.020-.036)	1074
	05-06	.005 (.005-.006)	.005 (.004-.006)	.010 (.008-.012)	.018 (.014-.022)	.033 (.021-.043)	1041
	07-08	.006 (.005-.008)	.006 (.005-.008)	.013 (.009-.016)	.023 (.015-.039)	.038 (.022-.086)	1095
	09-10	*	< LOD	< LOD	.021 (.017-.027)	.032 (.023-.041)	1225

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, 07-08, and 09-10 are 0.004, 0.004, 0.005, 0.002, 0.002, and 0.017 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](#)

Urinary Uranium (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.007 (.006-.009)	.007 (.006-.009)	.013 (.010-.016)	.024 (.019-.030)	.034 (.027-.053)	2464
	01-02	.008 (.007-.010)	.007 (.006-.009)	.014 (.011-.018)	.026 (.020-.034)	.040 (.028-.058)	2689
	03-04	.008 (.007-.008)	.007 (.006-.008)	.012 (.010-.014)	.021 (.017-.025)	.029 (.023-.039)	2557
	05-06	.006 (.005-.006)	.005 (.005-.006)	.009 (.008-.010)	.017 (.014-.020)	.026 (.020-.039)	2576
	07-08	.007 (.006-.009)	.006 (.005-.008)	.012 (.009-.016)	.024 (.016-.038)	.038 (.025-.065)	2627
	09-10	*	< LOD	< LOD	.020 (.017-.024)	.029 (.024-.035)	2848
Age group							
6-11 years	99-00	.009 (.007-.012)	.008 (.006-.011)	.015 (.010-.024)	.030 (.016-.044)	.037 (.030-.077)	340
	01-02	.010 (.008-.011)	.010 (.008-.012)	.015 (.013-.019)	.027 (.018-.032)	.033 (.027-.048)	368
	03-04	.009 (.008-.010)	.008 (.007-.010)	.013 (.011-.017)	.024 (.016-.039)	.033 (.022-.050)	289
	05-06	.007 (.006-.008)	.006 (.005-.008)	.010 (.008-.014)	.018 (.013-.035)	.034 (.018-.048)	355
	07-08	.009 (.007-.011)	.008 (.007-.010)	.014 (.010-.022)	.026 (.016-.053)	.042 (.023-.065)	394
	09-10	*	< LOD	< LOD	.020 (<LOD-.030)	.029 (<LOD-.033)	378
12-19 years	99-00	.007 (.006-.008)	.006 (.005-.008)	.010 (.009-.014)	.020 (.014-.030)	.030 (.019-.074)	719
	01-02	.007 (.006-.008)	.007 (.006-.008)	.012 (.009-.016)	.020 (.015-.026)	.026 (.020-.042)	762
	03-04	.007 (.006-.008)	.006 (.005-.007)	.010 (.008-.013)	.019 (.015-.027)	.034 (.022-.041)	725
	05-06	.006 (.005-.007)	.005 (.005-.006)	.009 (.007-.012)	.017 (.013-.022)	.023 (.019-.026)	701
	07-08	.007 (.006-.009)	.006 (.005-.008)	.012 (.009-.016)	.025 (.013-.050)	.033 (.022-.077)	376
	09-10	*	< LOD	< LOD	.017 (.014-.021)	.025 (.017-.038)	451
20 years and older	99-00	.007 (.006-.009)	.007 (.006-.009)	.013 (.010-.016)	.024 (.019-.029)	.034 (.025-.051)	1405
	01-02	.008 (.007-.010)	.007 (.006-.009)	.014 (.011-.019)	.027 (.020-.039)	.043 (.030-.063)	1559
	03-04	*	.007 (.006-.008)	.012 (.010-.014)	.020 (.017-.024)	.028 (.022-.038)	1543
	05-06	.006 (.005-.006)	.005 (.005-.006)	.009 (.008-.010)	.016 (.014-.019)	.026 (.020-.039)	1520
	07-08	.007 (.006-.008)	.006 (.005-.008)	.012 (.009-.016)	.024 (.016-.036)	.037 (.025-.065)	1857
	09-10	*	< LOD	< LOD	.020 (.017-.025)	.029 (.024-.036)	2019
Gender							
Males	99-00	.007 (.006-.009)	.006 (.005-.008)	.011 (.009-.015)	.021 (.017-.028)	.035 (.024-.056)	1227
	01-02	.007 (.006-.008)	.007 (.006-.008)	.012 (.010-.015)	.022 (.018-.028)	.033 (.025-.047)	1334
	03-04	.007 (.006-.008)	.006 (.006-.007)	.010 (.009-.012)	.019 (.015-.024)	.026 (.019-.039)	1280
	05-06	.005 (.005-.005)	.005 (.004-.005)	.008 (.007-.009)	.014 (.013-.016)	.021 (.016-.031)	1271
	07-08	.007 (.005-.008)	.006 (.005-.007)	.012 (.009-.015)	.022 (.016-.031)	.032 (.024-.056)	1327
	09-10	*	< LOD	< LOD	.019 (.015-.023)	.028 (.022-.033)	1398
Females	99-00	.008 (.007-.010)	.007 (.006-.010)	.013 (.010-.017)	.025 (.019-.033)	.034 (.027-.054)	1237
	01-02	.009 (.008-.011)	.009 (.007-.011)	.016 (.012-.021)	.029 (.021-.042)	.045 (.031-.067)	1355
	03-04	*	.008 (.007-.009)	.013 (.011-.016)	.022 (.018-.028)	.031 (.025-.041)	1277
	05-06	.006 (.006-.007)	.006 (.005-.006)	.010 (.009-.011)	.019 (.015-.024)	.035 (.022-.041)	1305
	07-08	.008 (.006-.009)	.007 (.006-.008)	.013 (.010-.018)	.026 (.016-.043)	.042 (.024-.083)	1300
	09-10	*	< LOD	< LOD	.021 (.017-.027)	.031 (.024-.041)	1450

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

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

[Biomonitoring Summary](#)

Urinary Uranium (creatinine corrected)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	.015 (.011-.022)	.015 (.011-.020)	.029 (.016-.058)	.059 (.027-.146)	.100 (.042-.270)	883
	01-02	.012 (.010-.016)	.012 (.009-.016)	.021 (.015-.028)	.033 (.024-.053)	.050 (.034-.080)	682
	03-04	.013 (.010-.016)	.013 (.009-.017)	.022 (.016-.029)	.035 (.026-.051)	.051 (.034-.061)	618
	05-06	.008 (.007-.009)	.007 (.006-.008)	.013 (.010-.015)	.022 (.016-.031)	.035 (.025-.060)	652
	07-08	.009 (.008-.012)	.009 (.007-.011)	.017 (.014-.021)	.031 (.021-.048)	.042 (.027-.097)	515
	09-10	*	< LOD	.016 (<LOD-.018)	.026 (.022-.030)	.036 (.030-.044)	613
Non-Hispanic blacks	99-00	.006 (.004-.007)	.005 (.004-.006)	.008 (.006-.013)	.017 (.011-.029)	.028 (.018-.048)	568
	01-02	.005 (.005-.006)	.005 (.005-.006)	.008 (.007-.010)	.013 (.011-.014)	.017 (.014-.029)	667
	03-04	.006 (.005-.006)	.005 (.005-.006)	.009 (.008-.009)	.013 (.012-.015)	.018 (.014-.024)	722
	05-06	.004 (.004-.005)	.004 (.003-.005)	.006 (.006-.007)	.011 (.009-.015)	.017 (.012-.021)	692
	07-08	.005 (.005-.006)	.005 (.004-.006)	.009 (.007-.011)	.014 (.011-.017)	.018 (.014-.041)	589
	09-10	*	< LOD	< LOD	.018 (.013-.021)	.023 (.018-.044)	544
Non-Hispanic whites	99-00	.007 (.006-.009)	.007 (.006-.009)	.012 (.010-.015)	.021 (.017-.027)	.030 (.024-.050)	822
	01-02	.008 (.007-.009)	.007 (.006-.009)	.013 (.011-.016)	.025 (.018-.032)	.034 (.025-.051)	1132
	03-04	*	.007 (.006-.008)	.011 (.010-.013)	.019 (.015-.024)	.027 (.020-.040)	1074
	05-06	.006 (.005-.006)	.005 (.005-.006)	.009 (.008-.010)	.016 (.013-.020)	.024 (.019-.039)	1041
	07-08	.007 (.006-.009)	.006 (.005-.008)	.012 (.009-.019)	.025 (.015-.043)	.039 (.024-.081)	1095
	09-10	*	< LOD	< LOD	.018 (.015-.024)	.028 (.021-.035)	1225

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

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

[Biomonitoring Summary](#)

Urinary Butyl paraben

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

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

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

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Butyl paraben (creatinine corrected)

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

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

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Ethyl paraben

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

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

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

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Ethyl paraben (creatinine corrected)

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

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

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Methyl paraben

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

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Methyl paraben (creatinine corrected)

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary *n*-Propyl paraben

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

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary *n*-Propyl paraben (creatinine corrected)

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

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Nitrate

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	05-06	42.7 (39.6-46.1)	47.8 (44.4-51.2)	74.6 (69.8-79.4)	108 (101-114)	133 (125-144)	7697
	07-08	46.3 (44.6-48.1)	50.3 (48.4-52.0)	76.0 (72.7-79.1)	110 (104-116)	138 (132-146)	7629
Age group							
6-11 years	05-06	51.2 (47.4-55.4)	54.7 (51.9-58.2)	79.2 (72.8-87.2)	113 (101-128)	141 (120-158)	1054
	07-08	55.2 (51.7-58.9)	60.2 (56.1-64.3)	84.5 (80.1-92.5)	117 (107-135)	149 (132-189)	1143
12-19 years	05-06	52.5 (48.5-56.8)	57.5 (52.3-62.6)	84.2 (79.9-88.4)	119 (111-124)	144 (129-153)	2106
	07-08	55.5 (51.5-59.7)	56.8 (51.9-61.5)	84.1 (76.2-94.5)	119 (107-133)	144 (133-162)	1135
20 years and older	05-06	40.5 (37.4-43.9)	45.0 (41.3-48.3)	71.7 (67.1-77.4)	105 (98.0-113)	129 (122-142)	4537
	07-08	44.2 (42.5-45.9)	48.1 (46.0-49.7)	73.2 (70.1-76.5)	107 (101-113)	135 (128-146)	5351
Gender							
Males	05-06	48.4 (44.6-52.6)	52.7 (48.3-57.8)	79.4 (72.8-86.5)	110 (103-121)	136 (123-152)	3765
	07-08	51.9 (49.9-54.1)	56.1 (53.8-58.0)	79.5 (75.7-83.5)	112 (105-119)	137 (131-149)	3839
Females	05-06	37.9 (35.1-40.8)	42.0 (38.2-46.0)	69.2 (65.5-73.4)	104 (96.6-110)	130 (124-140)	3932
	07-08	41.4 (39.3-43.7)	43.9 (41.5-46.3)	71.3 (67.5-74.8)	108 (99.8-115)	138 (132-149)	3790
Race/ethnicity							
Mexican Americans	05-06	47.8 (44.7-51.2)	52.4 (49.9-56.2)	77.9 (75.1-83.1)	113 (104-120)	148 (133-156)	1972
	07-08	48.7 (45.0-52.6)	51.9 (47.4-56.7)	75.6 (69.7-81.3)	111 (100-122)	148 (127-164)	1505
Non-Hispanic blacks	05-06	45.9 (42.1-50.0)	50.4 (46.6-54.9)	75.0 (68.8-80.8)	101 (95.3-110)	127 (114-148)	2078
	07-08	47.5 (45.0-50.3)	50.3 (48.6-52.5)	74.7 (71.9-77.3)	105 (97.1-116)	134 (125-150)	1707
Non-Hispanic whites	05-06	41.2 (37.6-45.2)	46.2 (41.3-50.6)	73.3 (67.3-80.1)	107 (98.2-115)	129 (122-142)	3056
	07-08	45.0 (42.7-47.5)	49.2 (46.1-52.6)	75.5 (70.5-80.0)	108 (101-116)	134 (128-140)	3190

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 and 07-08 are 0.7 and 0.7 respectively.

Urinary Nitrate (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	05-06	42.6 (40.2-45.1)	42.4 (40.1-44.7)	59.7 (55.8-64.1)	85.5 (81.3-91.3)	113 (106-118)	7697
	07-08	47.7 (45.9-49.7)	46.0 (44.0-48.3)	66.5 (62.4-70.5)	98.0 (92.3-102)	127 (119-135)	7628
Age group							
6-11 years	05-06	60.8 (57.4-64.5)	57.3 (53.6-60.6)	76.5 (70.9-82.1)	109 (95.0-123)	134 (121-164)	1054
	07-08	70.2 (65.7-74.9)	65.9 (62.4-69.5)	89.0 (83.2-96.5)	128 (112-152)	173 (140-216)	1143
12-19 years	05-06	39.8 (37.8-41.9)	38.1 (36.3-40.3)	51.8 (47.7-56.0)	70.6 (63.1-78.8)	88.9 (79.4-103)	2106
	07-08	43.4 (41.3-45.5)	40.5 (38.6-43.5)	56.0 (52.7-59.2)	76.6 (69.0-86.2)	98.0 (85.4-121)	1134
20 years and older	05-06	41.4 (38.9-43.9)	41.0 (38.8-43.7)	58.6 (54.8-63.1)	85.3 (80.2-91.0)	111 (105-116)	4537
	07-08	46.5 (44.6-48.4)	44.7 (42.5-47.0)	65.0 (60.7-69.2)	96.1 (90.0-102)	125 (117-132)	5351
Gender							
Males	05-06	40.1 (37.5-42.9)	39.5 (36.7-42.8)	55.3 (51.6-59.5)	77.2 (70.7-83.0)	95.9 (89.6-102)	3765
	07-08	44.6 (42.8-46.6)	42.8 (40.7-45.1)	60.6 (58.1-64.4)	85.6 (81.1-91.3)	111 (101-121)	3839
Females	05-06	45.1 (42.8-47.6)	45.0 (42.4-47.4)	64.4 (60.0-69.6)	96.8 (87.8-105)	128 (117-134)	3932
	07-08	51.0 (48.9-53.2)	50.0 (47.5-52.7)	72.3 (67.8-76.8)	107 (101-116)	146 (129-163)	3789
Race/ethnicity							
Mexican Americans	05-06	44.6 (42.6-46.7)	44.0 (42.2-45.3)	60.4 (58.1-62.9)	89.9 (82.0-95.4)	120 (111-128)	1972
	07-08	48.7 (45.1-52.7)	47.0 (43.5-50.5)	64.8 (59.7-69.9)	93.5 (88.9-101)	128 (108-156)	1505
Non-Hispanic blacks	05-06	32.9 (30.9-35.0)	31.9 (29.8-34.1)	45.4 (41.5-49.6)	64.0 (60.1-68.0)	81.2 (75.3-89.6)	2078
	07-08	35.9 (34.2-37.7)	34.8 (33.3-36.6)	49.0 (44.8-53.6)	69.1 (63.5-77.4)	87.8 (78.1-97.4)	1706
Non-Hispanic whites	05-06	43.7 (40.8-46.8)	43.9 (40.8-46.8)	61.4 (56.5-66.2)	85.5 (80.6-91.9)	110 (102-116)	3056
	07-08	49.0 (46.7-51.4)	47.4 (44.9-50.5)	68.2 (63.3-73.1)	98.3 (91.2-105)	126 (118-135)	3190

Urinary Perchlorate

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	3.72 (3.46-4.01)	3.70 (3.40-3.90)	6.20 (5.60-6.90)	10.0 (8.90-12.0)	14.0 (12.0-18.0)	1618
	03-04	3.39 (3.08-3.73)	3.50 (3.00-4.00)	5.80 (5.20-6.70)	10.0 (8.80-12.0)	14.0 (13.0-16.0)	2522
	05-06	3.47 (3.20-3.76)	3.62 (3.35-3.98)	6.10 (5.67-6.52)	9.76 (9.19-10.5)	13.4 (12.4-14.6)	7697
	07-08	3.88 (3.60-4.18)	3.96 (3.59-4.30)	7.10 (6.50-7.74)	12.0 (11.2-13.0)	17.3 (16.1-18.8)	7629
Age group							
6-11 years	01-02	5.19 (4.44-6.05)	5.50 (4.60-6.70)	8.50 (7.20-10.0)	13.0 (9.80-20.0)	20.0 (13.0-24.0)	374
	03-04	4.54 (3.85-5.36)	4.80 (4.20-5.50)	8.30 (6.00-10.0)	14.0 (9.20-17.0)	17.0 (12.0-30.0)	314
	05-06	4.64 (4.15-5.18)	4.81 (4.26-5.38)	7.67 (6.71-8.60)	11.6 (10.0-12.7)	14.1 (12.4-16.3)	1054
	07-08	4.88 (4.31-5.53)	4.86 (4.22-5.93)	9.11 (7.84-10.3)	14.4 (12.1-16.9)	18.9 (16.1-23.2)	1143
12-19 years	01-02	4.00 (3.62-4.42)	4.60 (4.00-5.00)	7.10 (6.60-7.70)	10.0 (9.70-12.0)	14.0 (12.0-18.0)	828
	03-04	3.81 (3.35-4.33)	4.00 (3.40-4.60)	6.70 (5.80-7.40)	10.0 (8.20-13.0)	14.0 (10.0-19.0)	721
	05-06	4.14 (3.77-4.53)	4.25 (3.94-4.65)	7.00 (6.41-7.69)	10.9 (9.71-12.4)	15.6 (12.4-17.9)	2106
	07-08	4.50 (4.06-4.97)	4.73 (4.39-5.05)	7.93 (6.89-8.89)	13.0 (11.1-15.4)	17.7 (15.8-20.2)	1135
20 years and older	01-02	3.53 (3.24-3.84)	3.70 (3.40-3.90)	6.20 (5.60-6.90)	10.0 (8.90-12.0)	14.0 (12.0-18.0)	1618
	03-04	3.21 (2.89-3.56)	3.40 (2.80-3.80)	5.50 (4.90-6.40)	9.50 (8.30-10.0)	13.0 (12.0-15.0)	1487
	05-06	3.27 (3.01-3.55)	3.42 (3.14-3.72)	5.75 (5.33-6.21)	9.38 (8.73-9.86)	13.1 (12.2-14.5)	4537
	07-08	3.70 (3.43-3.99)	3.69 (3.42-4.09)	6.75 (6.09-7.38)	11.6 (10.8-12.7)	16.8 (15.4-18.7)	5351
Gender							
Males	01-02	4.41 (4.13-4.70)	4.60 (4.40-4.80)	7.40 (6.70-8.30)	12.0 (10.0-13.0)	15.0 (12.0-20.0)	1335
	03-04	3.95 (3.56-4.37)	4.10 (3.60-4.60)	6.70 (5.90-7.90)	12.0 (9.70-13.0)	15.0 (14.0-18.0)	1229
	05-06	3.93 (3.64-4.25)	4.07 (3.77-4.38)	6.50 (6.11-6.92)	10.4 (9.65-11.6)	14.7 (13.2-16.3)	3765
	07-08	4.40 (4.13-4.70)	4.42 (4.12-4.78)	7.90 (7.16-8.46)	13.3 (12.0-14.4)	18.6 (17.0-19.7)	3839
Females	01-02	3.17 (2.89-3.48)	3.30 (2.80-3.60)	5.70 (5.20-6.30)	9.70 (8.60-12.0)	14.0 (12.0-18.0)	1485
	03-04	2.93 (2.62-3.28)	3.00 (2.60-3.40)	5.10 (4.60-5.80)	8.60 (7.20-10.0)	12.0 (9.20-16.0)	1293
	05-06	3.08 (2.80-3.38)	3.24 (2.96-3.51)	5.55 (5.14-6.07)	9.20 (8.22-10.3)	12.4 (11.3-14.2)	3932
	07-08	3.42 (3.11-3.76)	3.44 (3.10-3.79)	6.41 (5.95-7.01)	10.8 (10.0-12.0)	16.0 (14.1-17.9)	3790
Race/ethnicity							
Mexican Americans	01-02	4.23 (3.65-4.90)	4.60 (3.90-5.20)	7.40 (6.10-8.80)	13.0 (9.90-14.0)	15.0 (13.0-19.0)	708
	03-04	3.96 (3.63-4.32)	4.20 (3.70-4.60)	6.50 (5.60-7.90)	12.0 (9.50-13.0)	16.0 (13.0-18.0)	617
	05-06	4.02 (3.77-4.28)	4.16 (3.84-4.46)	6.93 (6.62-7.26)	11.3 (10.4-12.0)	15.7 (14.6-16.8)	1972
	07-08	4.20 (3.95-4.46)	4.38 (4.08-4.65)	7.32 (6.73-7.95)	12.1 (10.9-14.0)	16.7 (15.0-17.7)	1505
Non-Hispanic blacks	01-02	3.69 (3.22-4.23)	3.90 (3.30-4.30)	6.20 (5.30-7.30)	9.70 (8.20-13.0)	16.0 (12.0-21.0)	681
	03-04	3.38 (3.05-3.74)	3.40 (3.00-3.70)	5.70 (4.80-6.60)	9.00 (7.90-12.0)	14.0 (9.80-18.0)	652
	05-06	3.48 (3.19-3.80)	3.54 (3.24-3.94)	5.95 (5.33-6.65)	9.99 (9.02-11.0)	14.4 (12.8-15.7)	2078
	07-08	3.82 (3.37-4.33)	3.82 (3.37-4.48)	6.96 (6.18-7.97)	12.0 (10.6-13.8)	17.2 (14.3-20.6)	1707
Non-Hispanic whites	01-02	3.70 (3.35-4.08)	3.90 (3.60-4.30)	6.60 (6.00-7.40)	10.0 (9.20-12.0)	15.0 (12.0-19.0)	1228
	03-04	3.43 (3.04-3.86)	3.50 (2.90-4.20)	5.90 (5.10-7.10)	9.90 (8.50-12.0)	14.0 (12.0-16.0)	1092
	05-06	3.42 (3.08-3.80)	3.59 (3.23-4.04)	6.05 (5.52-6.55)	9.62 (8.90-10.5)	13.2 (11.9-14.8)	3056
	07-08	3.84 (3.52-4.18)	3.93 (3.48-4.36)	7.07 (6.37-7.77)	11.7 (10.8-12.7)	16.8 (15.3-18.4)	3190

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

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Perchlorate (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	3.74 (3.51-3.99)	3.70 (3.40-3.90)	6.20 (5.60-6.90)	10.0 (8.90-12.0)	14.0 (12.0-18.0)	1618
	03-04	3.31 (3.04-3.59)	3.18 (2.90-3.45)	5.19 (4.80-5.55)	8.86 (7.69-10.0)	12.4 (11.2-14.5)	2519
	05-06	3.46 (3.27-3.66)	3.37 (3.17-3.59)	5.42 (5.08-5.86)	8.56 (8.19-9.17)	11.6 (10.4-13.4)	7697
	07-08	4.00 (3.69-4.33)	3.89 (3.59-4.26)	6.59 (6.10-7.13)	10.9 (10.1-11.8)	15.7 (14.6-16.8)	7628
Age group							
6-11 years	01-02	6.01 (5.49-6.57)	5.50 (4.60-6.70)	8.50 (7.20-10.0)	13.0 (9.80-20.0)	20.0 (13.0-24.0)	374
	03-04	5.52 (4.86-6.28)	5.34 (4.92-5.78)	7.64 (6.67-10.5)	13.5 (9.66-21.3)	21.3 (12.0-46.9)	314
	05-06	5.51 (5.06-6.00)	5.66 (5.08-6.22)	8.39 (7.61-9.25)	12.3 (10.3-13.6)	15.4 (14.3-17.0)	1054
	07-08	6.21 (5.52-6.99)	6.34 (5.56-7.10)	9.78 (8.63-11.3)	14.7 (13.3-16.0)	20.6 (16.4-25.0)	1143
12-19 years	01-02	3.10 (2.77-3.46)	4.60 (4.00-5.00)	7.10 (6.60-7.70)	10.0 (9.70-12.0)	14.0 (12.0-18.0)	828
	03-04	2.85 (2.59-3.14)	2.83 (2.62-3.17)	4.39 (3.88-4.67)	6.63 (5.56-7.82)	8.62 (7.24-11.4)	719
	05-06	3.14 (2.89-3.41)	3.17 (2.87-3.40)	4.86 (4.32-5.41)	7.30 (6.40-8.43)	9.54 (8.46-11.0)	2106
	07-08	3.52 (3.27-3.78)	3.43 (3.07-3.80)	5.62 (5.13-6.11)	8.84 (7.70-9.73)	12.6 (10.4-15.8)	1134
20 years and older	01-02	3.64 (3.37-3.93)	3.70 (3.40-3.90)	6.20 (5.60-6.90)	10.0 (8.90-12.0)	14.0 (12.0-18.0)	1618
	03-04	3.18 (2.90-3.49)	3.02 (2.74-3.33)	4.94 (4.53-5.35)	8.64 (7.18-10.0)	11.7 (10.3-15.2)	1486
	05-06	3.34 (3.15-3.53)	3.24 (3.08-3.45)	5.12 (4.82-5.45)	8.24 (7.67-8.64)	11.4 (10.0-13.0)	4537
	07-08	3.88 (3.57-4.22)	3.77 (3.49-4.14)	6.35 (5.85-6.91)	10.5 (9.64-11.5)	15.4 (13.6-16.9)	5351
Gender							
Males	01-02	3.57 (3.36-3.79)	4.60 (4.40-4.80)	7.40 (6.70-8.30)	12.0 (10.0-13.0)	15.0 (12.0-20.0)	1335
	03-04	3.23 (2.96-3.52)	3.09 (2.83-3.33)	5.00 (4.60-5.55)	8.00 (6.86-10.2)	12.5 (10.2-15.3)	1228
	05-06	3.25 (3.08-3.44)	3.16 (2.99-3.36)	4.98 (4.71-5.37)	8.07 (7.60-8.58)	11.0 (10.0-12.9)	3765
	07-08	3.78 (3.47-4.12)	3.64 (3.28-4.03)	6.29 (5.72-6.85)	10.3 (9.28-11.3)	14.4 (13.1-15.5)	3839
Females	01-02	3.92 (3.57-4.30)	3.30 (2.80-3.60)	5.70 (5.20-6.30)	9.70 (8.60-12.0)	14.0 (12.0-18.0)	1485
	03-04	3.38 (3.02-3.78)	3.28 (2.90-3.61)	5.24 (4.73-6.00)	9.40 (7.24-11.4)	12.4 (10.7-15.2)	1291
	05-06	3.67 (3.43-3.93)	3.58 (3.31-3.91)	5.86 (5.39-6.19)	9.21 (8.35-9.77)	12.1 (10.5-14.5)	3932
	07-08	4.22 (3.90-4.56)	4.16 (3.81-4.55)	6.89 (6.40-7.54)	11.5 (10.4-12.6)	16.6 (14.5-18.6)	3789
Race/ethnicity							
Mexican Americans	01-02	3.96 (3.39-4.63)	4.60 (3.90-5.20)	7.40 (6.10-8.80)	13.0 (9.90-14.0)	15.0 (13.0-19.0)	708
	03-04	3.59 (3.32-3.88)	3.45 (3.10-3.68)	5.69 (4.82-6.45)	9.77 (8.00-11.2)	13.5 (11.2-20.0)	616
	05-06	3.75 (3.56-3.95)	3.60 (3.42-3.81)	5.97 (5.53-6.48)	9.83 (9.19-10.4)	12.7 (11.3-14.5)	1972
	07-08	4.20 (3.96-4.46)	4.17 (3.81-4.58)	6.95 (6.33-7.73)	11.8 (10.4-12.3)	15.7 (14.4-17.6)	1505
Non-Hispanic blacks	01-02	2.66 (2.35-3.01)	3.90 (3.30-4.30)	6.20 (5.30-7.30)	9.70 (8.20-13.0)	16.0 (12.0-21.0)	681
	03-04	2.33 (2.11-2.57)	2.24 (2.02-2.47)	3.60 (3.22-4.13)	6.54 (4.91-8.47)	9.02 (6.84-11.8)	651
	05-06	2.50 (2.32-2.69)	2.40 (2.24-2.61)	3.97 (3.69-4.26)	6.71 (6.30-7.13)	9.41 (8.53-10.4)	2078
	07-08	2.89 (2.60-3.21)	2.76 (2.47-3.17)	4.92 (4.36-5.54)	8.63 (7.43-9.78)	11.8 (10.6-13.6)	1706
Non-Hispanic whites	01-02	3.95 (3.64-4.29)	3.90 (3.60-4.30)	6.60 (6.00-7.40)	10.0 (9.20-12.0)	15.0 (12.0-19.0)	1228
	03-04	3.53 (3.16-3.94)	3.35 (3.01-3.68)	5.29 (4.81-5.96)	9.23 (7.61-11.0)	12.8 (11.0-16.5)	1091
	05-06	3.63 (3.36-3.91)	3.51 (3.20-3.85)	5.60 (5.10-6.10)	8.58 (7.98-9.42)	11.8 (10.0-14.3)	3056
	07-08	4.17 (3.83-4.54)	4.06 (3.71-4.52)	6.63 (6.18-7.23)	10.8 (9.86-11.8)	15.5 (14.0-16.8)	3190

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Urinary Thiocyanate

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	05-06	1.23 (1.12-1.35)	1.18 (1.08-1.31)	2.55 (2.31-2.83)	6.11 (5.10-6.85)	9.04 (8.14-9.93)	7697
	07-08	1.35 (1.26-1.45)	1.32 (1.23-1.42)	2.77 (2.47-3.13)	6.36 (5.39-7.33)	9.54 (8.58-11.1)	7629
Age group							
6-11 years	05-06	.980 (.892-1.08)	1.03 (.916-1.15)	1.72 (1.55-1.92)	2.65 (2.31-3.09)	3.45 (2.96-4.21)	1054
	07-08	1.10 (.989-1.22)	1.12 (1.02-1.24)	1.88 (1.68-2.07)	2.92 (2.48-3.52)	4.08 (3.35-5.30)	1143
12-19 years	05-06	1.24 (1.11-1.39)	1.29 (1.15-1.47)	2.27 (1.99-2.62)	3.84 (3.18-4.65)	6.07 (4.76-6.95)	2106
	07-08	1.29 (1.15-1.46)	1.35 (1.14-1.53)	2.39 (2.06-2.69)	3.93 (3.36-4.57)	6.14 (4.55-7.27)	1135
20 years and older	05-06	1.26 (1.14-1.40)	1.19 (1.08-1.34)	2.82 (2.50-3.15)	6.87 (6.06-7.58)	9.79 (8.78-10.7)	4537
	07-08	1.39 (1.29-1.50)	1.34 (1.25-1.46)	3.11 (2.68-3.57)	7.21 (6.05-8.31)	10.8 (8.99-12.0)	5351
Gender							
Males	05-06	1.49 (1.36-1.64)	1.44 (1.27-1.62)	3.10 (2.82-3.56)	6.90 (6.13-7.64)	9.93 (8.99-10.7)	3765
	07-08	1.61 (1.50-1.72)	1.60 (1.50-1.71)	3.32 (2.96-3.77)	7.27 (6.01-8.22)	10.9 (9.04-12.3)	3839
Females	05-06	1.02 (.920-1.13)	.995 (.886-1.13)	2.07 (1.86-2.25)	4.61 (3.81-5.98)	8.04 (7.26-8.78)	3932
	07-08	1.14 (1.04-1.24)	1.09 (.991-1.19)	2.31 (2.06-2.62)	5.51 (4.58-6.52)	8.59 (7.36-9.85)	3790
Race/ethnicity							
Mexican Americans	05-06	.823 (.744-.912)	.844 (.763-.937)	1.51 (1.36-1.71)	2.70 (2.26-3.22)	4.48 (3.49-5.40)	1972
	07-08	.993 (.926-1.06)	1.04 (.987-1.11)	1.88 (1.75-2.02)	3.30 (2.98-3.52)	4.56 (3.92-5.43)	1505
Non-Hispanic blacks	05-06	1.50 (1.32-1.72)	1.51 (1.36-1.68)	3.13 (2.56-3.81)	6.94 (5.66-8.09)	10.3 (8.01-12.4)	2078
	07-08	1.73 (1.61-1.86)	1.73 (1.61-1.86)	3.78 (3.53-4.23)	8.29 (7.25-9.07)	12.8 (11.2-14.5)	1707
Non-Hispanic whites	05-06	1.30 (1.18-1.44)	1.25 (1.12-1.40)	2.74 (2.46-3.01)	6.53 (5.57-7.31)	9.43 (8.58-10.4)	3056
	07-08	1.42 (1.29-1.56)	1.41 (1.28-1.53)	2.98 (2.52-3.44)	6.67 (5.24-8.14)	9.71 (8.32-11.9)	3190

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 and 07-08 are 0.02 and 0.02 respectively.

Urinary Thiocyanate (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	05-06	1.23 (1.13-1.33)	1.15 (1.05-1.27)	2.44 (2.18-2.68)	5.67 (5.16-6.28)	8.23 (7.71-8.98)	7697
	07-08	1.39 (1.28-1.51)	1.33 (1.22-1.43)	2.72 (2.42-3.04)	6.11 (5.25-7.30)	9.59 (8.03-11.5)	7628
Age group							
6-11 years	05-06	1.16 (1.06-1.28)	1.18 (1.06-1.34)	2.03 (1.81-2.32)	3.15 (2.83-3.43)	4.25 (3.49-4.58)	1054
	07-08	1.40 (1.27-1.54)	1.42 (1.24-1.59)	2.28 (2.02-2.53)	3.74 (3.29-4.26)	5.23 (4.39-6.65)	1143
12-19 years	05-06	.941 (.867-1.02)	.937 (.855-1.03)	1.69 (1.51-1.86)	2.95 (2.43-3.64)	4.15 (3.64-5.00)	2106
	07-08	1.01 (.910-1.12)	1.04 (.906-1.17)	1.75 (1.60-1.92)	2.94 (2.49-3.54)	4.69 (3.64-5.44)	1134
20 years and older	05-06	1.29 (1.17-1.42)	1.20 (1.08-1.33)	2.68 (2.37-3.10)	6.43 (5.88-7.07)	8.99 (8.23-10.2)	4537
	07-08	1.46 (1.34-1.59)	1.37 (1.27-1.47)	3.00 (2.69-3.45)	7.02 (5.82-8.26)	10.5 (8.63-12.9)	5351
Gender							
Males	05-06	1.24 (1.12-1.37)	1.18 (1.05-1.32)	2.61 (2.26-3.01)	5.67 (5.00-6.43)	8.17 (7.15-9.13)	3765
	07-08	1.38 (1.28-1.50)	1.32 (1.23-1.42)	2.77 (2.42-3.08)	6.13 (5.47-6.97)	9.27 (7.82-11.1)	3839
Females	05-06	1.22 (1.12-1.33)	1.13 (1.04-1.24)	2.27 (2.00-2.54)	5.62 (4.91-6.37)	8.40 (7.20-10.5)	3932
	07-08	1.40 (1.27-1.55)	1.34 (1.19-1.45)	2.69 (2.40-3.03)	6.07 (4.89-7.80)	9.88 (7.93-12.1)	3789
Race/ethnicity							
Mexican Americans	05-06	.768 (.685-.861)	.773 (.684-.881)	1.37 (1.20-1.59)	2.44 (2.19-2.85)	3.66 (3.28-4.27)	1972
	07-08	.995 (.923-1.07)	1.03 (.918-1.14)	1.88 (1.71-2.05)	3.27 (2.77-3.76)	4.59 (3.86-5.59)	1505
Non-Hispanic blacks	05-06	1.08 (.972-1.20)	1.05 (.972-1.16)	2.15 (1.84-2.57)	4.77 (3.93-5.61)	6.91 (5.84-7.80)	2078
	07-08	1.31 (1.21-1.41)	1.25 (1.18-1.36)	2.81 (2.55-3.24)	6.19 (5.29-6.77)	8.74 (7.44-9.59)	1706
Non-Hispanic whites	05-06	1.38 (1.25-1.52)	1.30 (1.14-1.44)	2.78 (2.48-3.12)	6.31 (5.67-7.08)	9.00 (8.13-10.5)	3056
	07-08	1.55 (1.40-1.70)	1.45 (1.32-1.58)	2.96 (2.56-3.53)	7.03 (5.71-8.56)	10.9 (8.70-13.1)	3190

Serum Perfluorobutane sulfonic acid (PFBuS)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	2094
	05-06	*	< LOD	< LOD	< LOD	.100 (<LOD-.200)	2120
	07-08	*	< LOD	< LOD	< LOD	< LOD	2100
	09-10	*	< LOD	< LOD	< LOD	< LOD	2233
Age group 12-19 years	03-04	*	< LOD	< LOD	< LOD	< LOD	640
	05-06	*	< LOD	< LOD	< LOD	.100 (<LOD-.100)	640
	07-08	*	< LOD	< LOD	< LOD	< LOD	357
	09-10	*	< LOD	< LOD	< LOD	< LOD	364
20 years and older	03-04	*	< LOD	< LOD	< LOD	< LOD	1454
	05-06	*	< LOD	< LOD	< LOD	.100 (<LOD-.200)	1480
	07-08	*	< LOD	< LOD	< LOD	< LOD	1743
	09-10	*	< LOD	< LOD	< LOD	< LOD	1869
Gender Males	03-04	*	< LOD	< LOD	< LOD	< LOD	1053
	05-06	*	< LOD	< LOD	< LOD	.100 (<LOD-.200)	1048
	07-08	*	< LOD	< LOD	< LOD	< LOD	1059
	09-10	*	< LOD	< LOD	< LOD	< LOD	1075
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	1041
	05-06	*	< LOD	< LOD	< LOD	.100 (<LOD-.200)	1072
	07-08	*	< LOD	< LOD	< LOD	< LOD	1041
	09-10	*	< LOD	< LOD	< LOD	< LOD	1158
Race/ethnicity Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	485
	05-06	*	< LOD	< LOD	< LOD	.100 (<LOD-.200)	499
	07-08	*	< LOD	< LOD	< LOD	< LOD	391
	09-10	*	< LOD	< LOD	< LOD	< LOD	461
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	538
	05-06	*	< LOD	< LOD	< LOD	.100 (<LOD-.100)	544
	07-08	*	< LOD	< LOD	< LOD	< LOD	419
	09-10	*	< LOD	< LOD	< LOD	< LOD	391
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	962
	05-06	*	< LOD	< LOD	< LOD	.100 (<LOD-.400)	935
	07-08	*	< LOD	< LOD	< LOD	< LOD	931
	09-10	*	< LOD	< LOD	< LOD	< LOD	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, 07-08 and 09-10 are 0.4, 0.1, 0.1, and 0.1 respectively.

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

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

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Serum Perfluorodecanoic acid (PFDeA)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	*	.200 (.200-.200)	.200 (.200-.300)	.400 (.300-.700)	.600 (.400-1.10)	1562
	03-04	*	< LOD	.300 (<LOD-.500)	.600 (.400-1.10)	.900 (.500-1.80)	2094
	05-06	.355 (.297-.423)	.300 (.300-.400)	.500 (.400-.700)	.900 (.600-1.60)	1.50 (.900-2.60)	2120
	07-08	.286 (.264-.309)	.300 (.300-.300)	.400 (.400-.500)	.700 (.600-.700)	.900 (.800-1.00)	2100
	09-10	.279 (.258-.303)	.300 (.300-.300)	.400 (.400-.500)	.700 (.600-.800)	.900 (.800-1.10)	2233
Age group 12-19 years	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.300 (.200-.400)	.400 (.300-.600)	543
	03-04	*	< LOD	< LOD	.500 (<LOD-1.00)	.800 (.300-1.20)	640
	05-06	.295 (.258-.338)	.300 (.200-.300)	.500 (.400-.500)	.600 (.500-.800)	.800 (.600-1.60)	640
	07-08	.231 (.214-.248)	.200 (.200-.300)	.300 (.300-.400)	.500 (.400-.500)	.600 (.500-.700)	357
	09-10	.220 (.198-.245)	.200 (.200-.200)	.300 (.300-.300)	.400 (.400-.600)	.600 (.400-.800)	364
20 years and older	99-00	*	.200 (.200-.200)	.300 (.200-.300)	.400 (.300-.800)	.600 (.400-1.50)	1019
	03-04	*	< LOD	.400 (<LOD-.500)	.700 (.400-1.00)	.900 (.500-1.80)	1454
	05-06	.364 (.303-.438)	.300 (.300-.400)	.500 (.400-.700)	1.00 (.600-1.70)	1.50 (.900-2.60)	1480
	07-08	.295 (.271-.321)	.300 (.300-.300)	.400 (.400-.500)	.700 (.600-.800)	.900 (.800-1.10)	1743
	09-10	.289 (.265-.314)	.300 (.300-.300)	.400 (.400-.500)	.700 (.600-.800)	.900 (.800-1.20)	1869
Gender Males	99-00	*	.200 (.200-.200)	.300 (.200-.300)	.400 (.300-.700)	.500 (.300-1.90)	743
	03-04	*	< LOD	.400 (<LOD-.500)	.800 (.400-1.40)	1.10 (.600-2.10)	1053
	05-06	.381 (.318-.456)	.400 (.300-.400)	.600 (.400-.800)	1.00 (.600-2.20)	1.70 (1.00-2.60)	1048
	07-08	.306 (.283-.331)	.300 (.300-.300)	.400 (.400-.500)	.700 (.600-.800)	.900 (.800-1.20)	1059
	09-10	.289 (.264-.318)	.300 (.300-.300)	.400 (.400-.500)	.600 (.500-.800)	.800 (.600-1.20)	1075
Females	99-00	*	.200 (.200-.200)	.200 (.200-.300)	.400 (.300-.800)	.600 (.400-1.40)	819
	03-04	*	< LOD	.300 (<LOD-.400)	.500 (.400-.800)	.800 (.500-1.20)	1041
	05-06	.331 (.277-.396)	.300 (.300-.400)	.500 (.400-.600)	.900 (.600-1.40)	1.30 (.800-2.30)	1072
	07-08	.267 (.245-.292)	.300 (.200-.300)	.400 (.400-.500)	.600 (.500-.800)	.800 (.700-1.10)	1041
	09-10	.270 (.248-.295)	.300 (.200-.300)	.400 (.400-.500)	.700 (.600-.800)	1.00 (.800-1.10)	1158
Race/ethnicity Mexican Americans	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.300 (.200-.300)	.300 (.200-1.50)	584
	03-04	*	< LOD	< LOD	.500 (.400-.500)	.600 (.500-.800)	485
	05-06	.283 (.245-.327)	.300 (.200-.300)	.400 (.300-.500)	.600 (.500-1.00)	1.00 (.500-2.40)	499
	07-08	.253 (.222-.289)	.200 (.200-.300)	.400 (.300-.500)	.600 (.400-.700)	.600 (.500-1.40)	391
	09-10	.242 (.215-.272)	.200 (.200-.300)	.400 (.300-.400)	.500 (.500-.600)	.700 (.600-.800)	461
Non-Hispanic blacks	99-00	*	.200 (.200-.200)	.400 (.200-.700)	.800 (.500-1.20)	1.10 (.600-2.30)	303
	03-04	*	< LOD	.400 (<LOD-.700)	.800 (.400-1.50)	1.00 (.500-3.10)	538
	05-06	.405 (.309-.531)	.400 (.300-.500)	.600 (.400-.900)	1.20 (.600-2.90)	2.30 (1.10-3.70)	544
	07-08	.331 (.298-.368)	.300 (.300-.400)	.500 (.400-.600)	.800 (.600-.900)	1.00 (.800-1.50)	419
	09-10	.336 (.298-.379)	.300 (.300-.300)	.500 (.400-.600)	.800 (.600-1.00)	1.10 (.800-2.60)	391
Non-Hispanic whites	99-00	*	.200 (.200-.200)	.300 (.200-.300)	.400 (.300-.600)	.500 (.400-.800)	519
	03-04	*	< LOD	.300 (<LOD-.500)	.600 (.400-1.00)	.900 (.500-1.80)	962
	05-06	.350 (.294-.417)	.300 (.300-.400)	.500 (.400-.700)	.900 (.600-1.50)	1.40 (.800-2.30)	935
	07-08	.276 (.254-.301)	.300 (.200-.300)	.400 (.400-.500)	.600 (.500-.700)	.900 (.700-.900)	931
	09-10	.270 (.240-.304)	.300 (.200-.300)	.400 (.300-.500)	.600 (.500-.800)	.800 (.600-1.10)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 0.3, 0.2, 0.2, and 0.1 respectively.

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

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

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Serum Perfluorododecanoic acid (PFDoA)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	1562
	03-04	*	< LOD	< LOD	< LOD	< LOD	2094
	05-06	*	< LOD	< LOD	< LOD	< LOD	2120
	07-08	*	< LOD	< LOD	< LOD	< LOD	2100
	09-10	*	< LOD	< LOD	< LOD	< LOD	2233
Age group 12-19 years	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	543
	03-04	*	< LOD	< LOD	< LOD	< LOD	640
	05-06	*	< LOD	< LOD	< LOD	< LOD	640
	07-08	*	< LOD	< LOD	< LOD	< LOD	357
	09-10	*	< LOD	< LOD	< LOD	< LOD	364
20 years and older	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	1019
	03-04	*	< LOD	< LOD	< LOD	< LOD	1454
	05-06	*	< LOD	< LOD	< LOD	< LOD	1480
	07-08	*	< LOD	< LOD	< LOD	< LOD	1743
	09-10	*	< LOD	< LOD	< LOD	.100 (<LOD-.100)	1869
Gender Males	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	743
	03-04	*	< LOD	< LOD	< LOD	< LOD	1053
Females	05-06	*	< LOD	< LOD	< LOD	< LOD	1048
	07-08	*	< LOD	< LOD	< LOD	< LOD	1059
	09-10	*	< LOD	< LOD	< LOD	< LOD	1075
	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	819
	03-04	*	< LOD	< LOD	< LOD	< LOD	1041
Race/ethnicity Mexican Americans	05-06	*	< LOD	< LOD	< LOD	< LOD	1072
	07-08	*	< LOD	< LOD	< LOD	< LOD	1041
	09-10	*	< LOD	< LOD	< LOD	.100 (<LOD-.100)	1158
	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	584
	03-04	*	< LOD	< LOD	< LOD	< LOD	485
Non-Hispanic blacks	05-06	*	< LOD	< LOD	< LOD	< LOD	499
	07-08	*	< LOD	< LOD	< LOD	< LOD	391
	09-10	*	< LOD	< LOD	< LOD	< LOD	461
	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	303
	03-04	*	< LOD	< LOD	< LOD	< LOD	538
Non-Hispanic whites	05-06	*	< LOD	< LOD	< LOD	< LOD	544
	07-08	*	< LOD	< LOD	< LOD	< LOD	419
	09-10	*	< LOD	< LOD	< LOD	.100 (<LOD-.400)	391
	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	519
	03-04	*	< LOD	< LOD	< LOD	< LOD	962
05-06	*	< LOD	< LOD	< LOD	< LOD	935	
07-08	*	< LOD	< LOD	< LOD	< LOD	931	
09-10	*	< LOD	< LOD	< LOD	< LOD	1031	

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 1.0, 0.2, 0.2, and 0.1 respectively.

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

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

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Serum Perfluoroheptanoic acid (PFHpA)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	.400 (.400-.400)	.400 (.400-.400)	.500 (.400-.600)	.700 (.500-1.00)	1562
	03-04	*	< LOD	< LOD	< LOD	.400 (<LOD-.500)	2094
	05-06	*	< LOD	< LOD	< LOD	.700 (<LOD-1.70)	2120
	07-08	*	< LOD	< LOD	< LOD	.500 (.400-.600)	2100
	09-10	*	< LOD	< LOD	.200 (.100-.200)	.200 (.200-.300)	2233
Age group 12-19 years	99-00	*	.400 (.400-.400)	.400 (.400-.500)	.800 (.600-1.10)	1.20 (.800-1.80)	543
	03-04	*	< LOD	< LOD	.400 (<LOD-.600)	.600 (.500-.900)	640
	05-06	*	< LOD	< LOD	.700 (<LOD-1.10)	1.10 (.600-2.70)	640
	07-08	*	< LOD	< LOD	.500 (<LOD-.600)	.600 (.500-.700)	357
	09-10	*	< LOD	.100 (.100-.200)	.200 (.200-.400)	.400 (.200-.500)	364
20 years and older	99-00	*	.400 (.400-.400)	.400 (.400-.400)	.400 (.400-.500)	.600 (.400-.900)	1019
	03-04	*	< LOD	< LOD	< LOD	< LOD	1454
	05-06	*	< LOD	< LOD	< LOD	.600 (<LOD-2.10)	1480
	07-08	*	< LOD	< LOD	< LOD	.500 (<LOD-.500)	1743
	09-10	*	< LOD	< LOD	.100 (.100-.200)	.200 (.200-.200)	1869
Gender Males	99-00	*	.400 (.400-.400)	.400 (.400-.400)	.500 (.400-.600)	.700 (.500-1.00)	743
	03-04	*	< LOD	< LOD	< LOD	.300 (<LOD-.400)	1053
Females	05-06	*	< LOD	< LOD	.400 (<LOD-1.00)	.800 (<LOD-2.10)	1048
	07-08	*	< LOD	< LOD	< LOD	.600 (.400-.700)	1059
	09-10	*	< LOD	< LOD	.200 (.100-.200)	.200 (.200-.300)	1075
	99-00	*	.400 (.400-.400)	.400 (.400-.400)	.500 (.400-.700)	.700 (.400-1.20)	819
	03-04	*	< LOD	< LOD	< LOD	.400 (.300-.600)	1041
Race/ethnicity Mexican Americans	05-06	*	< LOD	< LOD	< LOD	.600 (<LOD-1.30)	1072
	07-08	*	< LOD	< LOD	< LOD	.500 (.400-.500)	1041
	09-10	*	< LOD	< LOD	.200 (.100-.200)	.200 (.200-.300)	1158
	99-00	*	.400 (.400-.400)	.400 (.400-.400)	.500 (.400-.900)	.900 (.500-1.30)	584
	03-04	*	< LOD	< LOD	< LOD	.500 (<LOD-.900)	485
Non-Hispanic blacks	05-06	*	< LOD	< LOD	< LOD	.500 (<LOD-1.50)	499
	07-08	*	< LOD	< LOD	< LOD	.500 (<LOD-.500)	391
	09-10	*	< LOD	< LOD	.200 (.100-.200)	.200 (.200-.300)	461
	99-00	*	.400 (.400-.400)	.400 (.400-.400)	.400 (.400-.500)	.600 (.400-1.20)	303
	03-04	*	< LOD	< LOD	< LOD	< LOD	538
Non-Hispanic whites	05-06	*	< LOD	< LOD	< LOD	.500 (<LOD-1.80)	544
	07-08	*	< LOD	< LOD	< LOD	.600 (.400-.700)	419
	09-10	*	< LOD	< LOD	.100 (.100-.200)	.200 (.200-.200)	391
	99-00	*	.400 (.400-.400)	.400 (.400-.400)	.400 (.400-.600)	.600 (.500-.900)	519
	03-04	*	< LOD	< LOD	< LOD	.300 (<LOD-.500)	962
Non-Hispanic whites	05-06	*	< LOD	< LOD	< LOD	.800 (<LOD-2.10)	935
	07-08	*	< LOD	< LOD	< LOD	.500 (.400-.700)	931
	09-10	*	< LOD	< LOD	.200 (.100-.200)	.200 (.200-.300)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.4, 0.3, 0.4, 0.4, and 0.1 respectively.

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

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

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Serum Perfluorohexane sulfonic acid (PFHxS)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	2.13 (1.91-2.38)	2.10 (1.80-2.30)	3.40 (3.10-4.00)	5.80 (5.20-6.90)	8.70 (7.00-10.0)	1562
	03-04	1.93 (1.73-2.16)	1.90 (1.70-2.10)	3.30 (2.80-3.90)	5.90 (4.80-7.20)	8.30 (7.10-9.70)	2094
	05-06	1.67 (1.42-1.98)	1.80 (1.50-2.10)	3.20 (2.60-4.00)	5.40 (4.40-7.10)	8.30 (5.80-11.9)	2120
	07-08	1.95 (1.76-2.17)	2.00 (1.80-2.10)	3.50 (3.10-4.00)	5.90 (4.90-8.30)	9.80 (6.10-15.2)	2100
	09-10	1.66 (1.51-1.82)	1.70 (1.50-1.90)	3.00 (2.60-3.30)	4.80 (4.40-5.30)	6.90 (5.90-7.60)	2233
Age group 12-19 years	99-00	2.69 (2.14-3.39)	2.50 (2.00-3.70)	5.00 (3.60-6.50)	8.00 (5.80-12.9)	12.9 (6.90-16.4)	543
	03-04	2.44 (2.05-2.90)	2.40 (1.80-3.20)	4.90 (4.00-6.30)	9.50 (6.80-12.5)	13.3 (9.90-19.6)	640
	05-06	2.09 (1.74-2.52)	2.40 (2.00-2.90)	4.30 (3.70-5.40)	9.50 (6.40-13.1)	14.1 (9.80-17.8)	640
	07-08	2.40 (2.09-2.75)	2.30 (1.80-2.70)	4.30 (3.70-5.70)	9.90 (6.50-12.5)	15.9 (11.1-21.5)	357
	09-10	2.03 (1.77-2.33)	1.90 (1.60-2.10)	3.80 (3.20-4.20)	8.10 (6.30-9.70)	12.3 (8.60-19.0)	364
20 years and older	99-00	2.05 (1.85-2.28)	2.00 (1.80-2.30)	3.30 (3.00-3.70)	5.40 (4.90-5.90)	8.20 (6.70-9.50)	1019
	03-04	1.86 (1.67-2.08)	1.80 (1.60-2.10)	3.00 (2.60-3.60)	5.50 (4.50-6.70)	7.60 (6.30-9.40)	1454
	05-06	1.62 (1.37-1.92)	1.70 (1.50-2.10)	3.10 (2.50-3.80)	5.20 (4.20-6.50)	7.20 (5.10-11.6)	1480
	07-08	1.90 (1.69-2.13)	1.90 (1.70-2.10)	3.30 (2.90-3.90)	5.80 (4.50-8.00)	9.00 (5.60-15.0)	1743
	09-10	1.61 (1.45-1.79)	1.70 (1.50-1.90)	2.90 (2.50-3.30)	4.50 (4.00-5.20)	6.00 (5.40-7.10)	1869
Gender Males	99-00	2.61 (2.27-3.01)	2.60 (2.20-3.00)	4.10 (3.50-4.70)	6.60 (5.30-9.40)	10.5 (6.90-15.0)	743
	03-04	2.17 (1.87-2.51)	2.10 (1.80-2.40)	3.40 (2.80-4.50)	6.10 (4.60-8.10)	8.50 (6.50-10.5)	1053
	05-06	2.08 (1.76-2.45)	2.20 (1.80-2.70)	3.70 (3.20-4.60)	6.40 (4.80-9.30)	9.50 (6.70-13.7)	1048
	07-08	2.63 (2.36-2.94)	2.60 (2.40-2.80)	4.20 (3.80-4.90)	7.30 (5.50-11.0)	11.4 (7.10-18.1)	1059
	09-10	2.21 (1.99-2.46)	2.20 (1.90-2.50)	3.40 (3.00-4.00)	5.50 (5.00-6.40)	7.80 (6.50-9.90)	1075
Females	99-00	1.79 (1.56-2.06)	1.70 (1.50-2.10)	2.80 (2.30-3.50)	5.10 (4.10-6.70)	8.00 (5.70-9.00)	819
	03-04	1.72 (1.56-1.91)	1.60 (1.40-1.80)	2.90 (2.50-3.50)	5.80 (4.60-7.10)	8.20 (6.70-10.0)	1041
	05-06	1.37 (1.15-1.63)	1.50 (1.20-1.70)	2.80 (2.20-3.30)	4.60 (3.90-5.80)	6.60 (5.60-9.30)	1072
	07-08	1.46 (1.30-1.64)	1.40 (1.30-1.50)	2.60 (2.20-3.10)	4.70 (3.80-6.10)	7.50 (5.00-12.5)	1041
	09-10	1.26 (1.14-1.40)	1.30 (1.20-1.40)	2.20 (2.00-2.60)	4.00 (3.50-4.50)	5.40 (4.70-6.50)	1158
Race/ethnicity Mexican Americans	99-00	1.47 (1.13-1.92)	1.50 (1.00-2.00)	2.80 (1.80-3.80)	4.50 (3.30-6.90)	6.70 (4.60-9.50)	584
	03-04	1.42 (1.17-1.72)	1.50 (1.20-1.70)	2.30 (1.90-2.90)	4.30 (3.10-5.10)	5.50 (4.00-8.90)	485
	05-06	1.25 (.884-1.76)	1.60 (1.20-2.10)	2.80 (2.50-3.40)	4.30 (3.60-5.20)	6.00 (4.60-7.20)	499
	07-08	1.65 (1.46-1.86)	1.70 (1.40-1.90)	3.00 (2.70-3.40)	5.00 (3.70-6.10)	6.70 (5.20-10.7)	391
	09-10	1.01 (.835-1.22)	1.10 (.800-1.30)	1.80 (1.50-2.20)	3.10 (2.50-3.70)	4.00 (3.20-5.30)	461
Non-Hispanic blacks	99-00	2.14 (1.58-2.89)	2.10 (1.40-3.00)	3.40 (2.70-5.00)	6.70 (3.90-10.7)	10.7 (6.80-14.3)	303
	03-04	1.92 (1.62-2.26)	1.90 (1.60-2.20)	3.50 (2.80-4.60)	6.00 (5.00-7.10)	8.30 (6.30-12.0)	538
	05-06	1.53 (1.13-2.07)	1.70 (1.40-2.20)	3.30 (2.50-4.10)	5.40 (3.90-7.50)	7.50 (5.30-11.0)	544
	07-08	1.98 (1.55-2.52)	2.10 (1.80-2.50)	3.90 (2.80-5.40)	7.90 (4.20-12.5)	11.1 (5.90-17.2)	419
	09-10	1.44 (1.26-1.64)	1.40 (1.20-1.70)	2.60 (2.10-3.00)	4.40 (3.80-5.20)	6.50 (4.60-8.20)	391
Non-Hispanic whites	99-00	2.30 (2.07-2.56)	2.30 (1.90-2.60)	3.60 (3.20-4.20)	5.90 (5.30-7.00)	8.40 (7.00-9.70)	519
	03-04	2.01 (1.77-2.27)	1.90 (1.70-2.20)	3.30 (2.80-4.10)	6.10 (4.70-7.80)	8.20 (6.90-10.1)	962
	05-06	1.79 (1.48-2.17)	1.80 (1.50-2.20)	3.30 (2.70-4.30)	5.60 (4.60-8.20)	9.40 (6.10-13.1)	935
	07-08	2.13 (1.89-2.41)	2.10 (1.80-2.40)	3.70 (3.20-4.20)	6.40 (5.30-9.00)	10.5 (6.50-15.6)	931
	09-10	1.93 (1.77-2.10)	2.00 (1.80-2.20)	3.30 (2.90-3.70)	5.30 (4.80-5.60)	7.30 (6.20-8.80)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.1, 0.3, 0.1, 0.1, and 0.1 respectively.

[Biomonitoring Summary](#) [Factsheet](#)

Serum Perfluorononanoic acid (PFNA)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.557 (.463-.671)	.600 (.500-.700)	.900 (.700-1.00)	1.30 (1.00-1.90)	1.80 (1.30-2.40)	1562
	03-04	.966 (.816-1.14)	1.00 (.900-1.10)	1.50 (1.20-1.80)	2.30 (1.60-4.30)	3.20 (1.80-7.70)	2094
	05-06	1.09 (.909-1.29)	1.10 (.900-1.20)	1.70 (1.30-2.10)	2.60 (1.80-4.20)	3.60 (2.50-5.70)	2120
	07-08	1.48 (1.37-1.61)	1.50 (1.40-1.60)	2.10 (1.90-2.30)	3.20 (2.80-3.50)	4.00 (3.60-4.60)	2100
	09-10	1.54 (1.36-1.75)	1.50 (1.30-1.60)	2.20 (1.80-2.60)	3.30 (2.40-5.20)	4.60 (2.80-8.80)	2233
Age group 12-19 years	99-00	.476 (.410-.553)	.500 (.400-.600)	.700 (.600-.800)	.900 (.800-1.10)	1.20 (.900-1.40)	543
	03-04	.852 (.697-1.04)	.800 (.700-1.00)	1.20 (1.00-1.60)	1.90 (1.20-3.70)	2.80 (1.30-6.30)	640
	05-06	.929 (.782-1.10)	.900 (.800-1.10)	1.40 (1.10-1.80)	2.00 (1.60-2.70)	2.70 (2.10-3.40)	640
	07-08	1.42 (1.27-1.59)	1.40 (1.20-1.60)	1.90 (1.60-2.40)	2.50 (2.00-3.30)	3.10 (2.60-4.00)	357
	09-10	1.34 (1.16-1.55)	1.30 (1.10-1.50)	1.80 (1.60-2.20)	2.70 (1.80-3.60)	3.20 (2.30-5.90)	364
20 years and older	99-00	.573 (.472-.695)	.600 (.500-.700)	.900 (.700-1.20)	1.40 (1.00-1.90)	1.90 (1.40-2.40)	1019
	03-04	.984 (.835-1.16)	1.00 (.900-1.10)	1.50 (1.20-1.80)	2.40 (1.60-4.40)	3.40 (1.80-8.40)	1454
	05-06	1.11 (.929-1.33)	1.10 (1.00-1.20)	1.70 (1.30-2.20)	2.60 (1.80-4.40)	3.90 (2.50-5.80)	1480
	07-08	1.49 (1.38-1.62)	1.50 (1.40-1.60)	2.10 (2.00-2.30)	3.20 (2.90-3.60)	4.10 (3.70-4.60)	1743
	09-10	1.57 (1.37-1.80)	1.50 (1.40-1.70)	2.20 (1.90-2.70)	3.30 (2.40-5.70)	4.80 (2.90-10.2)	1869
Gender Males	99-00	.608 (.515-.717)	.600 (.500-.700)	.900 (.800-1.10)	1.30 (1.10-1.80)	1.70 (1.30-2.40)	743
	03-04	1.09 (.912-1.30)	1.10 (.900-1.20)	1.60 (1.40-1.90)	2.40 (1.70-5.00)	4.00 (1.80-8.70)	1053
	05-06	1.19 (.993-1.43)	1.20 (1.00-1.30)	1.80 (1.40-2.50)	2.90 (1.80-4.60)	3.90 (2.50-6.70)	1048
	07-08	1.66 (1.54-1.79)	1.60 (1.50-1.70)	2.30 (2.10-2.50)	3.50 (3.10-3.80)	4.30 (3.80-5.10)	1059
	09-10	1.67 (1.43-1.94)	1.60 (1.40-1.80)	2.20 (1.90-2.80)	3.40 (2.30-5.90)	5.00 (2.70-14.7)	1075
Females	99-00	.517 (.419-.638)	.500 (.400-.600)	.800 (.600-1.00)	1.30 (.900-2.00)	1.80 (1.30-2.60)	819
	03-04	.861 (.721-1.03)	.900 (.800-1.00)	1.30 (1.00-1.70)	2.20 (1.40-3.40)	3.00 (1.70-6.10)	1041
	05-06	.992 (.833-1.18)	.900 (.800-1.10)	1.50 (1.20-1.90)	2.40 (1.70-3.50)	3.10 (2.10-5.70)	1072
	07-08	1.33 (1.20-1.47)	1.30 (1.20-1.50)	1.90 (1.80-2.10)	2.70 (2.40-3.10)	3.40 (3.10-4.30)	1041
	09-10	1.43 (1.28-1.60)	1.40 (1.20-1.50)	2.10 (1.70-2.50)	3.20 (2.40-4.60)	4.30 (2.80-7.50)	1158
Race/ethnicity Mexican Americans	99-00	.349 (.303-.403)	.400 (.300-.400)	.500 (.400-.700)	.700 (.600-.900)	.900 (.700-1.30)	584
	03-04	.689 (.586-.809)	.700 (.600-.900)	1.10 (.900-1.40)	1.60 (1.30-2.00)	2.00 (1.60-2.80)	485
	05-06	.821 (.710-.951)	.800 (.700-.900)	1.20 (1.10-1.40)	1.60 (1.30-2.30)	2.30 (1.50-3.20)	499
	07-08	1.34 (1.18-1.52)	1.40 (1.20-1.60)	1.90 (1.70-2.20)	2.60 (2.20-3.30)	3.30 (2.60-4.00)	391
	09-10	1.21 (1.11-1.33)	1.20 (1.10-1.30)	1.70 (1.60-1.90)	2.50 (2.20-2.90)	3.00 (2.70-3.70)	461
Non-Hispanic blacks	99-00	.765 (.607-.965)	.700 (.600-1.00)	1.30 (.800-1.80)	1.90 (1.50-2.50)	2.50 (1.90-2.90)	303
	03-04	1.14 (.834-1.54)	1.10 (.900-1.40)	1.70 (1.20-2.90)	3.20 (1.50-6.50)	4.70 (2.10-9.30)	538
	05-06	1.17 (.916-1.50)	1.20 (.900-1.40)	1.60 (1.30-2.50)	2.60 (1.70-5.60)	4.40 (2.40-8.20)	544
	07-08	1.65 (1.50-1.80)	1.70 (1.50-1.80)	2.30 (2.10-2.60)	3.40 (2.80-4.10)	4.10 (3.40-5.70)	419
	09-10	1.73 (1.57-1.90)	1.70 (1.50-1.90)	2.40 (2.20-2.80)	3.40 (2.90-4.10)	4.10 (3.20-5.90)	391
Non-Hispanic whites	99-00	.571 (.471-.691)	.600 (.500-.700)	.900 (.700-1.10)	1.30 (1.00-1.90)	1.70 (1.30-2.30)	519
	03-04	.963 (.826-1.12)	.900 (.900-1.10)	1.50 (1.20-1.70)	2.30 (1.60-3.60)	3.00 (1.80-6.20)	962
	05-06	1.10 (.914-1.31)	1.10 (.900-1.20)	1.70 (1.30-2.10)	2.60 (1.80-4.20)	3.50 (2.40-5.70)	935
	07-08	1.48 (1.35-1.64)	1.50 (1.40-1.60)	2.10 (1.80-2.30)	3.10 (2.60-3.70)	3.90 (3.40-4.70)	931
	09-10	1.56 (1.32-1.84)	1.50 (1.30-1.70)	2.20 (1.80-2.70)	3.20 (2.20-6.20)	4.70 (2.50-13.2)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.1, 0.1, 0.1, 0.1, and 0.1 respectively.

[Biomonitoring Summary](#) [Factsheet](#)

Serum Perfluorooctanoic acid (PFOA)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	5.21 (4.72-5.74)	5.20 (4.80-5.90)	6.90 (6.30-7.80)	9.40 (8.20-11.1)	11.9 (10.9-13.5)	1562
	03-04	3.95 (3.65-4.27)	4.10 (3.80-4.40)	5.80 (5.30-6.40)	7.80 (6.70-9.60)	9.80 (7.40-14.1)	2094
	05-06	3.92 (3.48-4.42)	4.20 (3.80-4.50)	6.20 (5.40-7.20)	9.00 (7.40-11.2)	11.3 (8.80-14.5)	2120
	07-08	4.12 (4.01-4.24)	4.30 (4.20-4.50)	5.90 (5.70-6.20)	7.90 (7.50-8.30)	9.60 (8.90-10.1)	2100
	09-10	3.07 (2.81-3.36)	3.20 (2.90-3.50)	4.60 (4.10-5.10)	6.00 (5.30-7.20)	7.50 (6.20-9.70)	2233
Age group 12-19 years	99-00	5.46 (4.98-5.99)	5.60 (4.90-6.10)	6.90 (6.20-7.70)	9.40 (7.70-11.0)	11.6 (10.2-12.5)	543
	03-04	3.89 (3.47-4.35)	4.00 (3.50-4.50)	5.40 (4.60-6.10)	7.00 (5.60-9.20)	8.60 (5.90-12.6)	640
	05-06	3.59 (3.26-3.96)	3.80 (3.30-4.20)	5.40 (4.60-5.90)	6.90 (6.30-7.90)	8.40 (7.30-10.1)	640
	07-08	3.91 (3.71-4.12)	4.00 (3.70-4.40)	5.00 (4.70-5.50)	6.10 (5.70-6.70)	7.30 (6.20-8.00)	357
	09-10	2.74 (2.46-3.05)	2.90 (2.60-3.10)	3.80 (3.30-4.20)	4.80 (4.10-5.30)	5.00 (4.40-7.20)	364
20 years and older	99-00	5.16 (4.66-5.72)	5.20 (4.70-5.70)	7.00 (6.30-7.80)	9.40 (8.20-11.1)	12.0 (10.8-14.0)	1019
	03-04	3.96 (3.67-4.27)	4.10 (3.90-4.40)	5.90 (5.40-6.50)	7.80 (6.80-9.60)	9.90 (7.60-14.2)	1454
	05-06	3.97 (3.51-4.49)	4.20 (3.80-4.60)	6.40 (5.40-7.50)	9.30 (7.40-11.9)	11.6 (9.00-14.8)	1480
	07-08	4.15 (4.02-4.30)	4.30 (4.20-4.60)	6.10 (5.80-6.50)	8.10 (7.70-8.70)	9.80 (9.00-10.4)	1743
	09-10	3.12 (2.84-3.43)	3.30 (3.00-3.60)	4.70 (4.20-5.30)	6.40 (5.40-7.50)	7.70 (6.30-10.2)	1869
Gender Males	99-00	5.71 (5.17-6.31)	6.00 (5.40-6.50)	7.70 (6.80-8.70)	10.6 (9.00-11.8)	12.1 (11.2-13.1)	743
	03-04	4.47 (4.07-4.91)	4.60 (4.30-5.00)	6.30 (5.70-7.20)	8.40 (6.80-12.5)	10.7 (7.40-17.5)	1053
	05-06	4.69 (4.23-5.20)	4.90 (4.40-5.40)	7.20 (6.10-8.00)	9.90 (8.00-12.2)	12.2 (9.60-15.2)	1048
	07-08	4.80 (4.55-5.06)	4.90 (4.60-5.20)	6.70 (6.30-7.10)	8.70 (8.10-9.30)	10.1 (9.50-11.1)	1059
	09-10	3.53 (3.22-3.87)	3.70 (3.40-4.00)	4.90 (4.50-5.40)	6.80 (5.40-8.00)	7.90 (6.40-10.2)	1075
Females	99-00	4.80 (4.32-5.34)	4.70 (4.40-5.20)	6.30 (5.60-7.10)	8.30 (7.50-9.90)	11.3 (9.20-14.4)	819
	03-04	3.50 (3.21-3.82)	3.60 (3.30-3.90)	5.20 (4.70-5.80)	7.10 (6.30-8.20)	8.60 (7.40-10.6)	1041
	05-06	3.31 (2.89-3.79)	3.50 (3.10-4.00)	5.20 (4.40-6.00)	7.90 (6.10-9.70)	10.1 (7.50-14.2)	1072
	07-08	3.55 (3.38-3.73)	3.70 (3.50-3.90)	5.20 (4.80-5.60)	7.00 (6.50-7.50)	8.30 (7.20-9.90)	1041
	09-10	2.69 (2.45-2.96)	2.70 (2.50-3.00)	4.10 (3.60-4.70)	5.60 (5.10-6.50)	6.90 (5.80-8.40)	1158
Race/ethnicity Mexican Americans	99-00	3.89 (3.58-4.22)	4.20 (3.80-4.60)	5.80 (5.20-6.30)	7.70 (6.40-8.00)	8.20 (7.70-8.90)	584
	03-04	3.11 (2.84-3.40)	3.30 (3.10-3.70)	4.50 (4.20-5.20)	6.70 (5.70-7.30)	7.60 (6.70-10.5)	485
	05-06	2.62 (2.33-2.95)	2.80 (2.50-3.30)	4.30 (3.80-4.70)	5.80 (5.30-6.70)	7.40 (5.90-8.10)	499
	07-08	3.54 (3.35-3.75)	3.80 (3.50-4.00)	5.20 (4.90-5.60)	6.60 (6.20-7.10)	7.60 (6.80-9.00)	391
	09-10	2.26 (2.00-2.54)	2.40 (2.10-2.60)	3.60 (3.10-3.80)	4.60 (4.00-5.30)	5.40 (4.50-6.60)	461
Non-Hispanic blacks	99-00	4.78 (4.10-5.57)	4.80 (3.80-5.90)	6.40 (5.90-7.50)	9.00 (7.40-11.5)	11.5 (9.20-14.0)	303
	03-04	3.37 (2.99-3.79)	3.70 (3.20-4.20)	5.20 (4.40-6.30)	7.70 (5.30-11.6)	9.60 (6.50-13.9)	538
	05-06	3.27 (2.61-4.08)	3.70 (3.00-4.20)	5.50 (4.40-6.80)	8.10 (6.00-11.3)	10.4 (7.80-12.3)	544
	07-08	3.86 (3.57-4.16)	4.00 (3.50-4.30)	5.90 (5.20-6.50)	7.80 (7.10-8.70)	9.20 (8.50-10.1)	419
	09-10	2.74 (2.47-3.04)	2.80 (2.60-3.00)	4.00 (3.70-4.40)	5.50 (5.00-6.20)	6.70 (5.60-9.40)	391
Non-Hispanic whites	99-00	5.61 (5.06-6.23)	5.60 (4.90-6.20)	7.30 (6.50-8.20)	10.3 (8.40-12.1)	13.0 (11.0-14.9)	519
	03-04	4.18 (3.85-4.53)	4.30 (3.90-4.70)	6.00 (5.50-6.70)	7.90 (7.20-9.20)	9.90 (7.60-13.3)	962
	05-06	4.27 (3.80-4.81)	4.40 (4.00-5.00)	6.60 (5.60-7.80)	9.60 (7.40-12.2)	11.6 (8.80-14.8)	935
	07-08	4.38 (4.20-4.56)	4.60 (4.30-4.70)	6.10 (5.80-6.60)	8.20 (7.80-8.80)	9.90 (9.30-10.6)	931
	09-10	3.36 (3.06-3.69)	3.50 (3.20-3.90)	4.80 (4.40-5.40)	6.60 (5.40-7.80)	7.80 (6.20-10.5)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.1, 0.1, 0.1, 0.1, and 0.1 respectively.

[Biomonitoring Summary](#) [Factsheet](#)

Serum Perfluorooctane sulfonic acid (PFOS)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	30.4 (27.1-33.9)	30.2 (27.8-33.9)	43.7 (37.5-47.3)	57.0 (50.2-71.7)	75.7 (58.1-97.5)	1562
	03-04	20.7 (19.2-22.3)	21.2 (19.8-22.4)	30.0 (27.5-33.0)	41.3 (35.6-50.0)	54.6 (44.0-66.5)	2094
	05-06	17.1 (16.0-18.2)	17.5 (16.8-18.6)	27.2 (24.9-29.6)	39.4 (34.9-43.1)	47.5 (42.7-56.8)	2120
	07-08	13.2 (12.2-14.2)	13.6 (12.8-14.7)	21.0 (18.9-23.3)	32.6 (29.4-36.3)	40.5 (35.4-47.4)	2100
	09-10	9.32 (8.13-10.7)	9.70 (8.50-10.8)	14.8 (12.9-17.3)	23.7 (18.3-30.2)	32.0 (22.6-48.5)	2233
Age group 12-19 years	99-00	29.1 (26.2-32.4)	29.5 (26.9-34.2)	39.0 (35.9-45.0)	52.7 (46.0-56.2)	57.4 (52.7-66.5)	543
	03-04	19.3 (17.5-21.4)	19.9 (17.8-22.0)	27.1 (23.7-30.2)	36.5 (28.6-45.6)	42.6 (35.1-52.1)	640
	05-06	15.0 (14.3-15.7)	14.9 (13.6-16.6)	22.7 (19.7-24.9)	30.6 (27.8-34.1)	38.5 (33.0-44.6)	640
	07-08	11.3 (10.3-12.3)	11.3 (10.3-13.0)	15.9 (15.1-17.7)	21.7 (17.7-28.2)	28.0 (22.0-32.2)	357
	09-10	6.84 (5.81-8.06)	6.90 (6.00-8.40)	10.7 (8.90-12.5)	14.4 (12.4-18.1)	18.1 (13.5-26.0)	364
20 years and older	99-00	30.6 (27.1-34.4)	30.3 (27.9-33.9)	44.4 (37.9-48.0)	58.0 (50.1-75.7)	78.0 (59.9-107)	1019
	03-04	20.9 (19.3-22.5)	21.4 (19.8-22.8)	30.4 (28.1-33.0)	42.7 (35.7-53.3)	57.8 (45.7-69.4)	1454
	05-06	17.4 (16.2-18.7)	18.0 (17.1-19.4)	27.8 (25.3-30.8)	40.2 (35.6-44.5)	49.6 (42.8-60.7)	1480
	07-08	13.5 (12.4-14.6)	14.0 (13.0-15.5)	21.7 (19.5-24.6)	33.9 (29.9-39.0)	42.8 (37.3-50.3)	1743
	09-10	9.72 (8.45-11.2)	10.1 (8.90-11.2)	15.7 (13.4-18.4)	25.3 (19.3-32.9)	34.1 (23.4-52.7)	1869
Gender Males	99-00	33.4 (29.6-37.6)	34.9 (31.1-37.9)	46.3 (41.2-51.6)	58.4 (50.2-78.3)	78.3 (58.0-108)	743
	03-04	23.2 (21.1-25.6)	23.9 (22.4-25.5)	32.2 (28.8-35.9)	45.3 (35.5-62.7)	62.7 (43.8-81.8)	1053
	05-06	20.5 (19.4-21.8)	21.3 (20.0-22.5)	31.4 (27.9-33.7)	43.3 (38.7-49.7)	54.3 (43.5-80.7)	1048
	07-08	16.3 (15.0-17.7)	17.0 (15.7-17.8)	23.9 (21.6-26.9)	36.4 (33.5-41.1)	45.3 (40.4-53.1)	1059
	09-10	11.5 (9.93-13.3)	11.8 (10.6-12.9)	16.8 (14.3-20.4)	25.7 (19.4-39.7)	37.4 (22.5-72.3)	1075
Females	99-00	28.0 (24.6-31.8)	27.8 (24.5-30.2)	39.0 (32.7-46.0)	55.4 (46.3-70.2)	75.7 (56.1-98.4)	819
	03-04	18.4 (17.0-20.0)	18.2 (16.9-19.8)	27.4 (23.8-30.2)	39.8 (34.4-42.6)	46.6 (42.3-61.5)	1041
	05-06	14.4 (13.3-15.4)	14.6 (13.5-15.9)	23.3 (21.1-25.3)	34.2 (30.6-37.7)	42.8 (38.0-46.5)	1072
	07-08	10.7 (9.70-11.7)	10.7 (9.80-11.7)	17.2 (15.4-19.1)	28.7 (21.7-32.5)	33.6 (29.9-41.6)	1041
	09-10	7.65 (6.73-8.71)	7.80 (6.70-9.00)	12.0 (10.8-14.4)	21.1 (16.4-26.9)	28.8 (22.3-34.1)	1158
Race/ethnicity Mexican Americans	99-00	22.7 (19.8-25.9)	23.7 (20.8-27.2)	33.0 (27.9-39.7)	41.9 (36.7-54.5)	53.6 (41.3-72.0)	584
	03-04	14.7 (13.0-16.6)	15.9 (13.4-17.9)	21.2 (18.7-23.5)	28.1 (24.1-35.0)	35.5 (28.9-38.5)	485
	05-06	11.2 (10.3-12.2)	11.6 (9.90-13.3)	17.2 (15.4-19.3)	24.9 (22.0-30.3)	31.9 (26.4-40.6)	499
	07-08	10.6 (9.47-11.9)	10.8 (9.70-12.2)	17.1 (14.9-19.2)	26.3 (20.7-30.4)	31.5 (25.7-36.1)	391
	09-10	6.23 (5.28-7.36)	6.10 (5.10-8.10)	11.2 (8.50-14.1)	16.8 (14.9-18.8)	20.4 (17.5-22.7)	461
Non-Hispanic blacks	99-00	32.9 (26.0-41.6)	32.0 (23.9-45.8)	50.6 (37.4-62.2)	69.3 (60.9-75.9)	81.5 (68.0-129)	303
	03-04	21.6 (19.1-24.4)	22.1 (19.6-24.9)	32.3 (28.1-36.2)	43.8 (37.2-57.3)	57.7 (43.8-78.4)	538
	05-06	18.4 (15.6-21.8)	19.0 (16.7-22.3)	27.6 (24.3-35.5)	45.9 (34.4-58.1)	57.9 (45.0-84.4)	544
	07-08	15.0 (12.6-17.8)	15.2 (12.9-17.7)	25.8 (21.0-33.3)	42.7 (31.5-57.3)	57.3 (43.4-79.2)	419
	09-10	9.11 (7.93-10.5)	9.50 (8.20-11.2)	16.0 (13.4-17.4)	23.0 (20.5-26.1)	28.7 (25.7-39.7)	391
Non-Hispanic whites	99-00	32.3 (29.5-35.3)	32.8 (29.5-36.0)	45.1 (40.4-47.4)	56.3 (51.7-70.0)	78.0 (58.0-98.4)	519
	03-04	21.4 (19.9-23.1)	22.0 (20.5-23.0)	30.2 (27.7-33.3)	41.7 (35.7-49.6)	56.3 (44.0-70.0)	962
	05-06	18.1 (17.1-19.1)	18.6 (17.3-19.8)	28.3 (26.1-30.8)	39.7 (35.6-43.3)	46.6 (42.7-54.3)	935
	07-08	13.7 (12.7-14.8)	14.3 (13.2-15.5)	21.1 (18.7-23.7)	32.9 (29.7-36.0)	40.4 (36.1-44.9)	931
	09-10	10.2 (8.69-11.9)	10.4 (9.20-11.5)	15.6 (13.0-18.7)	24.7 (17.5-35.1)	33.1 (20.7-56.7)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 0.4, 0.2, 0.2, and 0.2 respectively.

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Serum Perfluorooctane sulfonamide (PFOSA)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.361 (.303-.431)	.400 (.300-.400)	.700 (.500-.800)	1.00 (.900-1.40)	1.40 (1.00-2.00)	1562
	03-04	*	< LOD	< LOD	.300 (.200-.300)	.300 (.300-.400)	2094
	05-06	*	< LOD	.100 (<LOD-.200)	.200 (.200-.300)	.300 (.200-.500)	2120
	07-08	*	< LOD	< LOD	< LOD	< LOD	2100
	09-10	*	< LOD	< LOD	< LOD	< LOD	2233
Age group 12-19 years	99-00	.432 (.372-.501)	.400 (.400-.500)	.700 (.700-.900)	1.10 (.900-1.40)	1.60 (1.10-2.90)	543
	03-04	*	< LOD	< LOD	.300 (.200-.300)	.300 (.200-.500)	640
	05-06	*	< LOD	< LOD	.200 (.100-.300)	.300 (.200-.500)	640
	07-08	*	< LOD	< LOD	< LOD	< LOD	357
	09-10	*	< LOD	< LOD	< LOD	< LOD	364
20 years and older	99-00	.351 (.291-.422)	.300 (.300-.400)	.600 (.500-.800)	1.00 (.800-1.40)	1.40 (1.00-2.00)	1019
	03-04	*	< LOD	< LOD	.300 (.200-.300)	.300 (.300-.400)	1454
	05-06	*	< LOD	.100 (<LOD-.200)	.200 (.200-.300)	.300 (.200-.500)	1480
	07-08	*	< LOD	< LOD	< LOD	< LOD	1743
	09-10	*	< LOD	< LOD	< LOD	< LOD	1869
Gender Males	99-00	.359 (.301-.428)	.400 (.300-.400)	.600 (.500-.700)	.900 (.700-1.30)	1.30 (.900-1.90)	743
	03-04	*	< LOD	< LOD	.300 (.200-.300)	.300 (.200-.500)	1053
	05-06	*	< LOD	.100 (.100-.200)	.200 (.200-.300)	.300 (.200-.600)	1048
	07-08	*	< LOD	< LOD	< LOD	< LOD	1059
	09-10	*	< LOD	< LOD	< LOD	< LOD	1075
Females	99-00	.364 (.302-.438)	.300 (.300-.500)	.700 (.500-.900)	1.10 (.900-1.40)	1.50 (1.20-2.00)	819
	03-04	*	< LOD	< LOD	.300 (.200-.300)	.300 (.300-.500)	1041
	05-06	*	< LOD	.100 (<LOD-.100)	.200 (.200-.300)	.300 (.200-.400)	1072
	07-08	*	< LOD	< LOD	< LOD	< LOD	1041
	09-10	*	< LOD	< LOD	< LOD	< LOD	1158
Race/ethnicity Mexican Americans	99-00	.294 (.255-.340)	.300 (.200-.400)	.500 (.400-.600)	.800 (.700-1.00)	1.10 (.800-1.60)	584
	03-04	*	< LOD	< LOD	< LOD	.200 (<LOD-.300)	485
	05-06	*	< LOD	< LOD	.200 (<LOD-.300)	.200 (<LOD-.500)	499
	07-08	*	< LOD	< LOD	< LOD	< LOD	391
	09-10	*	< LOD	< LOD	< LOD	< LOD	461
Non-Hispanic blacks	99-00	.352 (.292-.425)	.300 (.300-.400)	.600 (.500-.800)	1.00 (.700-1.70)	1.70 (.900-2.60)	303
	03-04	*	< LOD	< LOD	.300 (.200-.300)	.300 (.200-.500)	538
	05-06	*	< LOD	< LOD	.200 (.100-.200)	.200 (.200-.400)	544
	07-08	*	< LOD	< LOD	< LOD	< LOD	419
	09-10	*	< LOD	< LOD	< LOD	< LOD	391
Non-Hispanic whites	99-00	.390 (.315-.483)	.400 (.300-.500)	.700 (.600-.900)	1.10 (.900-1.40)	1.50 (1.10-2.00)	519
	03-04	*	< LOD	< LOD	.300 (.200-.300)	.300 (.300-.500)	962
	05-06	*	< LOD	.100 (.100-.200)	.200 (.200-.300)	.300 (.200-.500)	935
	07-08	*	< LOD	< LOD	< LOD	< LOD	931
	09-10	*	< LOD	< LOD	< LOD	< LOD	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.05, 0.2, 0.1, 0.1, and 0.1 respectively.

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

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

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Serum 2-(N-Ethyl-perfluorooctane sulfonamido) acetic acid (Et-PFOA-AcOH)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.654 (.611-.701)	.600 (.500-.700)	1.10 (1.00-1.20)	1.60 (1.50-1.80)	2.30 (1.90-2.70)	1562
	03-04	*	< LOD	< LOD	< LOD	< LOD	2094
	05-06	*	< LOD	< LOD	< LOD	.300 (<LOD-.300)	2120
	07-08	*	< LOD	< LOD	< LOD	< LOD	2100
	09-10	*	< LOD	< LOD	< LOD	.100 (<LOD-.100)	2233
Age group 12-19 years	99-00	.827 (.765-.894)	.800 (.700-.800)	1.20 (1.10-1.30)	1.70 (1.50-2.00)	2.40 (1.90-3.30)	543
	03-04	*	< LOD	< LOD	< LOD	< LOD	640
	05-06	*	< LOD	< LOD	< LOD	.200 (<LOD-.400)	640
	07-08	*	< LOD	< LOD	< LOD	< LOD	357
	09-10	*	< LOD	< LOD	< LOD	< LOD	364
20 years and older	99-00	.628 (.586-.674)	.600 (.500-.700)	1.00 (.900-1.10)	1.60 (1.50-1.80)	2.30 (1.80-2.70)	1019
	03-04	*	< LOD	< LOD	< LOD	< LOD	1454
	05-06	*	< LOD	< LOD	< LOD	.300 (<LOD-.300)	1480
	07-08	*	< LOD	< LOD	< LOD	< LOD	1743
	09-10	*	< LOD	< LOD	< LOD	.100 (<LOD-.100)	1869
Gender Males	99-00	.632 (.586-.681)	.600 (.500-.700)	1.00 (.900-1.10)	1.50 (1.30-1.80)	1.90 (1.60-2.90)	743
	03-04	*	< LOD	< LOD	< LOD	< LOD	1053
	05-06	*	< LOD	< LOD	< LOD	.300 (.200-.300)	1048
	07-08	*	< LOD	< LOD	< LOD	< LOD	1059
	09-10	*	< LOD	< LOD	< LOD	.100 (<LOD-.100)	1075
Females	99-00	.675 (.616-.740)	.700 (.500-.700)	1.10 (1.00-1.20)	1.70 (1.50-2.20)	2.50 (2.00-2.80)	819
	03-04	*	< LOD	< LOD	< LOD	< LOD	1041
	05-06	*	< LOD	< LOD	< LOD	.300 (<LOD-.300)	1072
	07-08	*	< LOD	< LOD	< LOD	< LOD	1041
	09-10	*	< LOD	< LOD	< LOD	.100 (<LOD-.100)	1158
Race/ethnicity Mexican Americans	99-00	.591 (.498-.702)	.600 (.400-.700)	1.00 (.800-1.20)	1.70 (1.30-2.00)	2.50 (1.90-3.00)	584
	03-04	*	< LOD	< LOD	< LOD	< LOD	485
	05-06	*	< LOD	< LOD	< LOD	< LOD	499
	07-08	*	< LOD	< LOD	< LOD	< LOD	391
	09-10	*	< LOD	< LOD	< LOD	< LOD	461
Non-Hispanic blacks	99-00	.570 (.495-.655)	.500 (.500-.600)	.900 (.700-1.00)	1.50 (1.20-1.90)	2.20 (1.40-3.20)	303
	03-04	*	< LOD	< LOD	< LOD	.400 (<LOD-.500)	538
	05-06	*	< LOD	< LOD	< LOD	< LOD	544
	07-08	*	< LOD	< LOD	< LOD	< LOD	419
	09-10	*	< LOD	< LOD	< LOD	< LOD	391
Non-Hispanic whites	99-00	.673 (.625-.725)	.700 (.600-.700)	1.10 (1.00-1.20)	1.70 (1.50-1.90)	2.40 (1.90-2.80)	519
	03-04	*	< LOD	< LOD	< LOD	< LOD	962
	05-06	*	< LOD	< LOD	< LOD	.300 (.200-.400)	935
	07-08	*	< LOD	< LOD	< LOD	< LOD	931
	09-10	*	< LOD	< LOD	< LOD	.100 (<LOD-.200)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 0.4, 0.2, 0.2, and 0.1 respectively.

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

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

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Serum 2-(N-Methyl-perfluorooctane sulfonamido) acetic acid (Me-PFOSA-AcOH)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	.852 (.746-.974)	.870 (.780-.960)	1.40 (1.13-1.66)	2.18 (1.83-2.62)	2.79 (2.44-3.23)	1562
	03-04	*	< LOD	.610 (<LOD-.610)	.870 (.780-.960)	1.13 (.960-1.31)	2094
	05-06	.410 (.372-.451)	.440 (.350-.440)	.700 (.610-.780)	1.22 (1.13-1.22)	1.57 (1.48-1.74)	2120
	07-08	.301 (.276-.329)	.260 (.260-.350)	.520 (.440-.610)	.960 (.780-1.05)	1.31 (1.22-1.40)	2100
	09-10	.189 (.176-.204)	.170 (.170-.170)	.350 (.350-.440)	.700 (.610-.700)	.960 (.870-1.05)	2233
Age group 12-19 years	99-00	1.17 (1.03-1.34)	1.22 (1.05-1.31)	1.83 (1.31-2.18)	2.70 (2.18-3.05)	3.23 (2.79-4.10)	543
	03-04	*	< LOD	.610 (<LOD-.700)	.960 (.780-1.13)	1.31 (1.05-1.57)	640
	05-06	.432 (.380-.490)	.440 (.350-.520)	.780 (.610-.870)	1.13 (.960-1.31)	1.48 (1.13-1.66)	640
	07-08	.338 (.302-.379)	.350 (.260-.440)	.610 (.520-.610)	.960 (.780-1.48)	1.57 (.960-2.01)	357
	09-10	.225 (.193-.263)	.260 (.170-.260)	.440 (.350-.520)	.700 (.520-.870)	.870 (.610-1.66)	364
20 years and older	99-00	.806 (.701-.927)	.780 (.700-.960)	1.31 (1.13-1.57)	2.09 (1.74-2.44)	2.70 (2.27-3.14)	1019
	03-04	*	< LOD	.610 (<LOD-.610)	.870 (.780-.960)	1.05 (.960-1.40)	1454
	05-06	.406 (.369-.448)	.440 (.350-.440)	.700 (.610-.780)	1.22 (1.13-1.31)	1.66 (1.48-1.74)	1480
	07-08	.296 (.269-.326)	.260 (.260-.350)	.520 (.440-.610)	.960 (.780-1.05)	1.22 (1.13-1.40)	1743
	09-10	.185 (.170-.200)	.170 (.170-.170)	.350 (.260-.350)	.700 (.610-.780)	.960 (.870-1.05)	1869
Gender Males	99-00	.891 (.764-1.04)	.870 (.780-1.05)	1.40 (1.13-1.74)	2.27 (2.01-2.79)	2.79 (2.44-3.66)	743
	03-04	*	< LOD	.610 (<LOD-.610)	.960 (.780-1.05)	1.13 (.960-1.48)	1053
	05-06	.435 (.400-.472)	.440 (.350-.440)	.780 (.700-.870)	1.22 (1.13-1.31)	1.66 (1.40-1.74)	1048
	07-08	.305 (.279-.333)	.260 (.260-.350)	.520 (.440-.610)	.870 (.780-.960)	1.31 (1.13-1.40)	1059
	09-10	.192 (.179-.205)	.170 (.170-.170)	.350 (.350-.440)	.700 (.610-.780)	.960 (.780-1.13)	1075
Females	99-00	.820 (.724-.928)	.780 (.700-.960)	1.31 (1.13-1.66)	2.01 (1.74-2.35)	2.62 (2.27-3.23)	819
	03-04	*	< LOD	< LOD	.870 (.780-.960)	.960 (.870-1.57)	1041
	05-06	.387 (.342-.438)	.350 (.350-.440)	.700 (.610-.780)	1.13 (1.05-1.31)	1.57 (1.40-1.83)	1072
	07-08	.298 (.266-.334)	.260 (.260-.350)	.520 (.440-.610)	.960 (.780-1.13)	1.31 (1.13-1.66)	1041
	09-10	.187 (.170-.206)	.170 (.170-.170)	.350 (.260-.350)	.610 (.520-.780)	.960 (.780-1.05)	1158
Race/ethnicity Mexican Americans	99-00	.675 (.552-.825)	.700 (.520-.780)	1.13 (.870-1.31)	1.83 (1.40-2.35)	2.35 (1.74-3.92)	584
	03-04	*	< LOD	< LOD	.610 (<LOD-.780)	.780 (<LOD-1.13)	485
	05-06	.292 (.245-.348)	.260 (.260-.350)	.440 (.350-.700)	.780 (.610-1.05)	1.05 (.870-1.22)	499
	07-08	*	< LOD	.350 (.260-.440)	.520 (.440-.780)	.780 (.520-1.13)	391
	09-10	.133 (.113-.157)	.090 (.090-.170)	.260 (.170-.350)	.520 (.440-.610)	.700 (.520-.960)	461
Non-Hispanic blacks	99-00	.991 (.857-1.15)	1.05 (.780-1.22)	1.57 (1.31-1.83)	2.35 (1.92-2.79)	3.14 (2.27-4.27)	303
	03-04	*	< LOD	.700 (<LOD-.780)	.960 (.780-1.22)	1.31 (.960-1.57)	538
	05-06	.418 (.361-.486)	.440 (.350-.520)	.700 (.610-.870)	1.22 (1.05-1.48)	1.66 (1.48-2.01)	544
	07-08	.329 (.302-.357)	.350 (.260-.350)	.520 (.520-.700)	1.05 (.780-1.22)	1.40 (1.22-1.66)	419
	09-10	.184 (.158-.215)	.170 (.170-.170)	.350 (.260-.440)	.610 (.440-.780)	.870 (.610-1.13)	391
Non-Hispanic whites	99-00	.889 (.766-1.03)	.870 (.780-1.05)	1.40 (1.22-1.74)	2.18 (1.92-2.70)	2.79 (2.44-3.66)	519
	03-04	*	< LOD	.610 (<LOD-.700)	.870 (.780-.960)	1.13 (.960-1.40)	962
	05-06	.428 (.380-.483)	.440 (.350-.520)	.780 (.700-.870)	1.22 (1.13-1.31)	1.66 (1.40-1.83)	935
	07-08	.332 (.296-.372)	.350 (.260-.350)	.610 (.520-.700)	.960 (.780-1.22)	1.31 (1.13-1.57)	931
	09-10	.206 (.191-.222)	.170 (.170-.260)	.350 (.350-.440)	.700 (.610-.780)	.960 (.870-1.13)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 0.5, 0.2, 0.2, and 0.1 respectively.

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

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

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.872 for survey periods 1999-2000 and 2003-2010 compared with results previously released.

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Serum Perfluoroundecanoic acid (PFUA)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.300 (.200-.400)	.400 (.300-.700)	1562
	03-04	*	< LOD	< LOD	< LOD	.600 (<LOD-1.30)	2094
	05-06	*	< LOD	.300 (.200-.400)	.500 (.400-.800)	.700 (.600-1.20)	2120
	07-08	*	< LOD	.200 (<LOD-.300)	.400 (.300-.500)	.600 (.500-.800)	2100
	09-10	.172 (.151-.196)	.200 (.100-.200)	.300 (.200-.400)	.600 (.400-.800)	.900 (.600-1.10)	2233
Age group 12-19 years	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.300)	543
	03-04	*	< LOD	< LOD	< LOD	.300 (<LOD-1.10)	640
	05-06	*	< LOD	< LOD	.300 (.200-.500)	.500 (.300-.900)	640
	07-08	*	< LOD	< LOD	.200 (<LOD-.200)	.300 (.200-.300)	357
	09-10	*	.100 (<LOD-.100)	.200 (.100-.200)	.300 (.200-.600)	.400 (.200-.900)	364
20 years and older	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.300 (.200-.500)	.500 (.300-.700)	1019
	03-04	*	< LOD	< LOD	.300 (<LOD-.600)	.600 (<LOD-1.40)	1454
	05-06	*	< LOD	.300 (.200-.400)	.500 (.400-.800)	.800 (.600-1.10)	1480
	07-08	*	< LOD	.200 (.200-.300)	.400 (.300-.600)	.600 (.500-.900)	1743
	09-10	.182 (.160-.207)	.200 (.200-.200)	.300 (.300-.400)	.600 (.400-.800)	.900 (.700-1.20)	1869
Gender Males	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.300 (.200-.500)	.500 (.300-.600)	743
	03-04	*	< LOD	< LOD	.400 (<LOD-1.00)	.700 (<LOD-2.30)	1053
	05-06	*	< LOD	.300 (.200-.400)	.600 (.400-.700)	.800 (.600-1.10)	1048
	07-08	*	< LOD	.200 (<LOD-.300)	.400 (.300-.500)	.700 (.500-1.00)	1059
	09-10	.170 (.147-.196)	.200 (.100-.200)	.300 (.200-.400)	.500 (.400-.900)	.800 (.500-1.20)	1075
Females	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.300 (.200-.400)	.400 (.200-.800)	819
	03-04	*	< LOD	< LOD	< LOD	.400 (<LOD-.700)	1041
	05-06	*	< LOD	.300 (<LOD-.400)	.500 (.400-.700)	.700 (.500-1.10)	1072
	07-08	*	< LOD	.200 (<LOD-.200)	.400 (.300-.500)	.600 (.400-.700)	1041
	09-10	.175 (.153-.199)	.200 (.100-.200)	.300 (.200-.400)	.600 (.400-.800)	.900 (.700-1.20)	1158
Race/ethnicity Mexican Americans	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.200)	584
	03-04	*	< LOD	< LOD	< LOD	< LOD	485
	05-06	*	< LOD	< LOD	.300 (<LOD-.700)	.500 (.300-1.00)	499
	07-08	*	< LOD	< LOD	.300 (<LOD-.400)	.300 (<LOD-1.40)	391
	09-10	*	.100 (.100-.100)	.200 (.200-.200)	.300 (.300-.400)	.400 (.300-.600)	461
Non-Hispanic blacks	99-00	*	.200 (.200-.200)	.300 (.200-.500)	.600 (.300-1.00)	.900 (.600-1.80)	303
	03-04	*	< LOD	< LOD	.600 (<LOD-1.40)	.900 (.300-2.90)	538
	05-06	*	< LOD	.300 (<LOD-.500)	.600 (.400-1.50)	1.20 (.600-2.70)	544
	07-08	*	< LOD	.300 (.200-.400)	.500 (.400-.700)	.800 (.600-1.20)	419
	09-10	.237 (.199-.283)	.200 (.200-.200)	.400 (.300-.500)	.800 (.500-1.10)	1.30 (.800-1.80)	391
Non-Hispanic whites	99-00	*	.200 (.200-.200)	.200 (.200-.200)	.200 (.200-.300)	.300 (.200-.800)	519
	03-04	*	< LOD	< LOD	< LOD	.500 (<LOD-.900)	962
	05-06	*	< LOD	.300 (.200-.400)	.500 (.400-.700)	.600 (.400-1.50)	935
	07-08	*	< LOD	.200 (<LOD-.200)	.300 (.300-.500)	.500 (.400-.600)	931
	09-10	.162 (.136-.193)	.200 (.100-.200)	.300 (.200-.400)	.500 (.300-.800)	.800 (.500-1.00)	1031

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 03-04, 05-06, 07-08, and 09-10 are 0.2, 0.3, 0.2, 0.2, and 0.1 respectively.

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

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

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Urinary Mono-benzyl phthalate (MBzP)

Metabolite of Benzylbutyl phthalate (BzBP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	11.0 (9.88-12.3)	12.2 (11.0-13.6)	25.5 (23.5-28.6)	48.3 (39.8-59.3)	74.4 (68.1-83.4)	2541
	01-02	10.8 (10.0-11.7)	11.4 (10.7-12.5)	27.4 (24.8-29.7)	58.2 (51.3-63.5)	87.6 (73.7-102)	2782
	03-04	9.89 (9.12-10.7)	10.3 (9.22-11.8)	23.3 (21.7-25.2)	47.9 (41.3-54.4)	72.6 (61.4-90.2)	2605
	05-06	8.32 (7.28-9.51)	8.93 (7.78-10.4)	20.7 (18.2-23.7)	44.6 (37.6-52.8)	67.1 (57.4-77.7)	2548
	07-08	7.24 (6.47-8.09)	8.42 (7.20-9.50)	18.3 (16.6-20.4)	37.3 (31.3-43.3)	58.8 (48.7-69.1)	2604
Age group							
6-11 years	99-00	28.4 (23.7-34.0)	29.0 (24.3-35.0)	59.0 (40.2-70.6)	92.8 (70.6-154)	154 (77.8-287)	328
	01-02	24.1 (21.0-27.6)	26.6 (19.2-31.2)	49.3 (44.4-66.8)	120 (83.7-137)	169 (132-237)	393
	03-04	24.4 (20.3-29.2)	25.2 (21.7-28.7)	45.9 (36.3-66.5)	105 (79.1-154)	184 (105-263)	342
	05-06	21.3 (19.2-23.7)	23.5 (19.4-26.6)	46.1 (37.1-56.9)	78.6 (64.3-104)	116 (88.4-137)	356
	07-08	15.4 (12.3-19.3)	17.6 (13.8-20.8)	33.8 (27.0-47.5)	69.9 (51.3-104)	131 (69.9-221)	389
12-19 years	99-00	18.4 (15.7-21.6)	20.4 (16.1-25.1)	36.9 (31.5-42.1)	63.7 (48.4-82.6)	90.2 (67.5-122)	752
	01-02	16.7 (14.3-19.6)	17.9 (15.3-22.3)	40.0 (34.1-45.3)	81.1 (66.1-95.5)	122 (96.3-143)	742
	03-04	15.9 (14.0-18.1)	17.9 (16.1-19.6)	35.9 (28.7-46.5)	64.7 (51.2-86.3)	110 (71.9-136)	729
	05-06	14.2 (11.9-16.9)	14.8 (11.5-18.3)	31.8 (24.2-41.0)	62.6 (44.0-85.0)	94.2 (67.7-134)	702
	07-08	11.6 (9.56-14.2)	14.6 (11.5-16.6)	27.2 (22.0-31.5)	46.7 (35.4-58.3)	63.9 (54.7-102)	401
20 years and older	99-00	8.96 (7.83-10.3)	9.94 (8.71-11.2)	21.0 (18.1-23.8)	37.4 (31.6-45.0)	62.1 (39.4-85.5)	1461
	01-02	9.16 (8.40-9.98)	10.0 (9.22-10.7)	22.9 (20.5-24.1)	47.1 (38.7-54.9)	71.8 (59.6-87.1)	1647
	03-04	8.22 (7.42-9.11)	8.71 (7.78-9.72)	19.4 (17.0-21.2)	39.0 (33.9-44.3)	57.2 (47.9-68.3)	1534
	05-06	6.87 (6.00-7.86)	7.34 (6.41-8.71)	17.1 (14.5-19.7)	34.0 (28.3-43.4)	56.9 (45.9-66.7)	1490
	07-08	6.18 (5.40-7.08)	7.13 (6.12-8.06)	15.5 (13.4-17.6)	30.5 (25.2-37.7)	49.5 (40.3-63.9)	1814
Gender							
Males	99-00	11.6 (10.1-13.4)	12.7 (10.9-14.4)	25.5 (22.7-29.0)	50.0 (43.1-62.8)	77.8 (69.3-93.4)	1215
	01-02	11.2 (9.78-12.9)	11.5 (10.5-13.3)	26.6 (23.8-31.0)	56.4 (45.7-70.1)	87.5 (63.5-132)	1371
	03-04	10.5 (9.50-11.6)	10.9 (9.50-12.6)	23.3 (21.2-25.6)	47.2 (38.6-57.3)	72.6 (56.6-94.8)	1250
	05-06	9.47 (8.20-10.9)	10.2 (8.78-12.2)	23.3 (19.3-25.9)	51.6 (39.8-61.6)	71.0 (61.6-83.2)	1270
	07-08	7.80 (6.96-8.74)	8.64 (7.49-10.0)	17.6 (15.8-20.4)	33.8 (28.4-41.3)	49.3 (41.5-62.1)	1294
Females	99-00	10.5 (9.17-12.0)	11.6 (10.2-13.8)	25.8 (22.2-29.8)	45.9 (38.7-59.3)	73.9 (60.6-83.4)	1326
	01-02	10.5 (9.40-11.7)	11.1 (9.94-12.9)	27.4 (23.3-31.5)	58.6 (49.2-66.0)	88.0 (73.2-103)	1411
	03-04	9.33 (8.53-10.2)	9.58 (8.71-11.2)	24.0 (21.2-26.1)	48.3 (42.3-52.1)	72.5 (60.8-86.3)	1355
	05-06	7.34 (6.30-8.55)	7.70 (6.55-9.36)	18.4 (15.6-22.2)	39.5 (33.0-46.3)	62.1 (48.0-73.7)	1278
	07-08	6.73 (5.77-7.85)	7.99 (6.41-9.36)	18.8 (15.4-22.5)	40.1 (32.2-50.9)	64.4 (51.1-78.8)	1310

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.576, 0.216, 0.072, 0.216, and 0.216 respectively.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.72 for survey periods 1999-2008 compared with results previously released.

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Urinary Mono-benzyl phthalate (MBzP)

Metabolite of Benzylbutyl phthalate (BzBP)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	10.0 (8.69-11.6)	11.3 (9.65-12.2)	23.8 (19.8-26.0)	48.6 (40.0-60.5)	71.1 (58.0-108)	814
	01-02	9.49 (7.75-11.6)	10.7 (7.78-13.3)	21.2 (18.9-27.4)	50.7 (38.2-61.5)	68.2 (50.6-116)	677
	03-04	10.7 (9.52-12.0)	11.2 (9.72-13.2)	23.3 (19.9-25.5)	51.4 (35.0-66.5)	71.9 (62.3-104)	652
	05-06	8.95 (7.12-11.3)	10.2 (8.57-11.9)	20.1 (14.3-31.0)	43.1 (33.9-49.8)	59.8 (43.6-77.3)	637
	07-08	7.87 (6.39-9.68)	9.43 (6.91-11.5)	18.7 (14.1-25.3)	38.0 (30.2-47.5)	60.4 (40.5-73.9)	531
Non-Hispanic	99-00	16.6 (14.9-18.4)	16.6 (14.8-18.4)	35.5 (31.7-40.0)	68.2 (57.6-93.4)	99.1 (76.6-174)	603
	01-02	17.1 (15.1-19.4)	17.4 (14.3-20.2)	36.4 (29.9-45.3)	72.6 (62.2-91.3)	103 (91.2-129)	703
	03-04	13.6 (11.8-15.7)	14.4 (11.1-17.7)	31.5 (28.0-35.3)	58.2 (50.4-76.0)	86.2 (71.8-124)	699
	05-06	11.9 (9.03-15.7)	12.7 (10.1-17.1)	26.1 (21.0-35.0)	60.6 (47.2-74.6)	83.2 (74.6-102)	678
	07-08	9.37 (8.28-10.6)	9.72 (8.35-11.7)	21.4 (18.4-24.8)	46.9 (34.3-61.6)	71.3 (63.7-89.6)	597
Non-Hispanic	99-00	10.3 (9.12-11.6)	11.6 (10.3-13.4)	24.5 (22.0-27.6)	42.3 (36.9-53.4)	73.9 (53.4-83.4)	912
	01-02	10.1 (9.12-11.1)	10.5 (9.65-11.2)	25.6 (23.2-28.4)	55.2 (47.6-65.0)	87.5 (67.1-112)	1216
	03-04	9.25 (8.30-10.3)	9.50 (8.42-11.5)	22.0 (20.0-25.3)	45.9 (38.6-52.1)	65.9 (54.9-87.9)	1088
	05-06	7.67 (6.61-8.90)	8.06 (6.98-10.1)	19.8 (17.1-23.5)	43.4 (32.4-52.5)	65.8 (52.5-76.8)	1038
	07-08	7.10 (6.33-7.97)	8.14 (7.06-9.29)	17.9 (16.5-20.3)	37.7 (31.0-44.2)	57.0 (46.0-68.6)	1077

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.576, 0.216, 0.072, 0.216, and 0.216 respectively.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.72 for survey periods 1999-2008 compared with results previously released.

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Urinary Mono-benzyl phthalate (MBzP) (creatinine corrected)

Metabolite of Benzylbutyl phthalate (BzBP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	10.0 (9.33-10.8)	9.60 (9.22-10.3)	18.1 (16.8-19.6)	36.1 (29.9-42.3)	55.7 (50.1-62.1)	2541
	01-02	10.2 (9.50-10.9)	9.71 (9.12-10.4)	19.1 (17.8-20.9)	39.5 (35.3-42.1)	65.1 (53.6-73.2)	2782
	03-04	9.29 (8.76-9.86)	9.04 (8.07-9.82)	17.7 (16.0-19.0)	33.1 (29.5-37.1)	50.4 (44.9-57.5)	2605
	05-06	8.11 (7.28-9.04)	8.24 (7.37-8.98)	15.3 (13.9-17.4)	30.2 (26.4-35.1)	47.4 (42.7-53.3)	2548
	07-08	7.29 (6.71-7.93)	7.20 (6.57-8.17)	14.3 (13.1-15.4)	28.3 (24.4-31.8)	42.6 (36.3-49.1)	2604
Age group							
6-11 years	99-00	28.8 (24.2-34.3)	27.8 (21.7-36.9)	52.9 (40.8-71.4)	75.1 (64.4-102)	102 (71.8-124)	328
	01-02	27.4 (24.8-30.3)	26.9 (24.3-30.4)	48.9 (40.2-57.9)	96.7 (83.3-127)	140 (86.9-219)	393
	03-04	25.8 (21.9-30.3)	23.2 (20.1-29.1)	43.7 (36.1-57.2)	97.8 (61.6-154)	165 (71.8-286)	342
	05-06	23.5 (21.1-26.2)	25.5 (20.5-29.5)	47.1 (35.8-57.8)	77.6 (62.8-94.3)	104 (85.8-130)	356
	07-08	19.0 (16.0-22.5)	20.7 (15.6-27.0)	35.4 (32.3-40.0)	67.2 (51.9-91.5)	118 (74.3-159)	389
12-19 years	99-00	12.4 (11.1-14.0)	12.3 (10.5-14.6)	20.4 (17.5-25.1)	35.8 (27.9-49.9)	50.4 (35.7-59.0)	752
	01-02	12.9 (11.3-14.8)	13.0 (11.3-15.0)	24.4 (21.1-27.8)	48.7 (40.2-61.9)	72.0 (58.1-88.6)	742
	03-04	11.9 (11.1-12.8)	12.2 (11.1-13.1)	21.6 (18.0-25.6)	37.5 (29.3-44.5)	56.0 (39.5-82.6)	729
	05-06	10.6 (9.14-12.2)	10.5 (8.33-13.0)	18.5 (15.9-23.7)	35.8 (28.1-46.0)	48.8 (41.3-65.3)	702
	07-08	9.06 (7.76-10.6)	9.39 (8.12-11.1)	16.7 (13.8-21.0)	32.1 (22.0-45.9)	48.4 (32.3-55.6)	401
20 years and older	99-00	8.47 (7.73-9.27)	8.68 (8.01-9.26)	14.5 (13.2-16.8)	24.9 (22.0-29.4)	41.1 (29.7-53.2)	1461
	01-02	8.66 (8.08-9.28)	8.47 (8.00-9.00)	15.6 (14.3-17.1)	30.5 (25.8-34.7)	46.8 (39.0-56.4)	1647
	03-04	7.90 (7.39-8.45)	7.58 (6.98-8.37)	14.2 (13.1-15.4)	26.3 (25.0-28.2)	40.2 (33.7-44.9)	1534
	05-06	6.89 (6.20-7.66)	7.10 (6.60-7.71)	13.1 (12.1-14.2)	22.4 (19.9-25.5)	34.6 (28.9-43.1)	1490
	07-08	6.35 (5.74-7.03)	6.41 (5.65-7.15)	12.3 (11.1-13.6)	21.8 (19.1-25.7)	32.6 (28.7-40.5)	1814
Gender							
Males	99-00	9.14 (8.51-9.82)	8.96 (8.32-9.39)	17.1 (15.5-18.8)	32.0 (25.5-41.0)	52.9 (34.9-71.8)	1215
	01-02	9.13 (8.18-10.2)	8.55 (7.85-9.53)	17.4 (15.1-19.0)	35.3 (31.5-40.4)	57.8 (43.8-74.7)	1371
	03-04	8.25 (7.60-8.95)	7.99 (7.01-9.03)	15.2 (14.0-17.0)	28.4 (24.6-35.8)	45.3 (37.4-59.8)	1250
	05-06	7.61 (6.65-8.70)	7.57 (6.65-8.91)	14.3 (13.0-16.6)	30.0 (25.5-34.5)	43.7 (36.2-48.2)	1270
	07-08	6.57 (5.91-7.31)	6.66 (5.68-7.46)	12.8 (11.3-14.8)	24.4 (21.2-29.5)	36.3 (30.6-45.5)	1294
Females	99-00	11.0 (9.96-12.1)	10.6 (9.60-11.5)	18.6 (17.3-21.1)	40.6 (33.7-43.6)	57.9 (43.3-84.2)	1326
	01-02	11.3 (10.2-12.4)	10.8 (9.97-11.9)	21.2 (18.6-24.5)	42.1 (35.9-50.0)	69.0 (50.0-83.4)	1411
	03-04	10.4 (9.65-11.2)	9.97 (9.20-10.9)	20.1 (17.8-22.6)	37.4 (31.2-43.4)	52.9 (45.8-65.0)	1355
	05-06	8.63 (7.84-9.51)	8.67 (8.12-9.26)	15.9 (14.8-18.3)	32.0 (26.3-41.4)	52.3 (45.2-62.8)	1278
	07-08	8.07 (7.29-8.93)	8.37 (7.20-9.16)	15.5 (13.9-18.0)	31.5 (27.5-34.2)	48.3 (40.2-54.9)	1310

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.72 for survey periods 1999-2008 compared with results previously released.

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Urinary Mono-benzyl phthalate (MBzP) (creatinine corrected)

Metabolite of Benzylbutyl phthalate (BzBP)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	9.10 (8.20-10.1)	8.60 (7.87-9.53)	17.4 (15.5-19.1)	33.5 (30.2-38.7)	49.1 (40.6-67.5)	814
	01-02	8.95 (7.69-10.4)	8.55 (7.16-10.7)	17.1 (14.1-20.9)	33.6 (26.3-44.4)	51.5 (36.8-86.5)	677
	03-04	9.66 (8.41-11.1)	9.00 (8.25-9.66)	17.3 (15.1-20.0)	38.2 (27.6-46.7)	56.0 (41.1-89.8)	652
	05-06	8.05 (6.69-9.69)	8.38 (7.48-8.91)	16.0 (12.6-20.2)	31.0 (22.4-40.6)	45.7 (31.3-54.2)	637
	07-08	7.68 (6.13-9.62)	8.06 (6.42-10.3)	15.5 (12.5-19.2)	29.1 (21.9-36.9)	42.9 (33.5-51.8)	531
Non-Hispanic blacks	99-00	10.7 (9.75-11.7)	9.83 (8.76-10.9)	19.4 (16.2-22.9)	40.5 (28.4-54.7)	62.5 (46.4-71.9)	603
	01-02	12.0 (10.5-13.7)	11.3 (9.84-13.9)	24.1 (19.1-27.4)	43.3 (38.7-50.0)	77.7 (54.4-83.4)	703
	03-04	9.65 (8.46-11.0)	9.81 (8.32-11.2)	17.4 (15.8-20.7)	36.0 (29.6-41.6)	53.8 (42.5-65.2)	699
	05-06	8.38 (6.44-10.9)	8.24 (6.72-10.6)	16.1 (12.8-21.5)	34.1 (25.8-43.9)	52.3 (39.9-62.9)	678
	07-08	7.28 (6.51-8.14)	7.07 (5.97-8.28)	14.7 (12.2-16.0)	25.8 (22.6-31.5)	42.3 (32.6-50.3)	597
Non-Hispanic whites	99-00	10.0 (9.16-11.0)	9.66 (9.25-10.7)	18.2 (16.6-19.8)	38.3 (27.9-46.7)	56.1 (48.5-65.0)	912
	01-02	9.97 (9.24-10.8)	9.33 (8.69-10.3)	18.5 (17.1-20.1)	38.2 (33.5-42.1)	64.2 (49.7-78.5)	1216
	03-04	9.14 (8.48-9.84)	8.97 (7.77-9.93)	17.6 (15.6-19.2)	30.2 (28.1-35.2)	47.2 (41.4-57.3)	1088
	05-06	8.08 (7.17-9.10)	8.35 (7.31-9.49)	15.2 (13.7-17.4)	29.9 (25.1-36.5)	47.4 (40.0-57.1)	1038
	07-08	7.42 (6.90-7.97)	7.38 (6.65-8.23)	14.0 (12.9-15.4)	28.3 (24.2-32.3)	44.5 (36.3-52.4)	1077

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.72 for survey periods 1999-2008 compared with results previously released.

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Mono-isobutyl phthalate (MiBP)

Metabolite of Di-isobutyl phthalate (DiBP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	2.71 (2.49-2.94)	2.70 (2.40-3.00)	5.70 (5.30-6.10)	12.0 (11.4-12.7)	17.9 (16.3-19.8)	2782
	03-04	3.80 (3.40-4.25)	4.20 (3.70-4.80)	8.40 (7.40-9.50)	15.0 (13.1-17.3)	21.3 (18.6-26.0)	2605
	05-06	5.20 (4.64-5.83)	5.80 (5.40-6.60)	11.9 (10.6-13.3)	21.3 (18.7-23.7)	31.6 (27.1-37.2)	2548
	07-08	7.15 (6.59-7.77)	8.00 (7.50-8.60)	15.3 (13.9-16.9)	27.2 (24.6-30.4)	39.1 (35.4-43.8)	2604
Age group							
6-11 years	01-02	4.22 (3.28-5.43)	4.40 (3.20-6.20)	10.7 (7.30-13.4)	18.6 (14.2-22.0)	23.4 (20.4-27.8)	393
	03-04	6.56 (5.24-8.22)	7.00 (5.10-9.10)	12.8 (9.40-17.7)	24.3 (19.6-34.5)	40.6 (29.3-48.5)	342
	05-06	8.53 (7.67-9.48)	9.00 (8.20-10.3)	15.8 (13.7-19.2)	33.2 (27.5-38.4)	49.1 (33.2-54.4)	356
	07-08	10.7 (8.94-12.8)	11.4 (8.90-13.2)	21.1 (16.6-27.2)	35.9 (30.2-44.7)	55.4 (36.4-75.5)	389
12-19 years	01-02	3.48 (2.90-4.17)	3.80 (2.90-4.40)	7.40 (6.00-9.00)	14.5 (11.7-18.6)	22.3 (16.2-33.4)	742
	03-04	4.55 (3.73-5.55)	5.60 (4.50-6.30)	10.1 (8.00-11.4)	17.1 (13.3-20.9)	22.7 (18.5-29.1)	729
	05-06	7.46 (6.53-8.51)	7.90 (6.90-9.80)	16.2 (13.6-19.3)	29.2 (23.6-31.3)	34.1 (30.1-49.9)	702
	07-08	10.2 (8.53-12.3)	10.5 (8.40-12.9)	22.3 (17.0-26.9)	41.6 (32.9-48.1)	56.2 (44.6-82.7)	401
20 years and older	01-02	2.46 (2.30-2.63)	2.40 (2.20-2.70)	5.10 (4.80-5.50)	10.6 (9.40-12.0)	16.3 (13.6-18.5)	1647
	03-04	3.46 (3.11-3.84)	3.90 (3.40-4.30)	7.50 (6.70-8.50)	13.3 (11.5-16.5)	19.9 (16.0-25.0)	1534
	05-06	4.65 (4.07-5.30)	5.40 (4.70-6.00)	10.6 (9.50-12.0)	18.7 (16.0-21.9)	29.0 (22.1-34.4)	1490
	07-08	6.47 (5.91-7.09)	7.50 (6.70-8.00)	14.1 (12.5-16.1)	24.5 (21.3-27.7)	34.2 (27.9-39.5)	1814
Gender							
Males	01-02	2.73 (2.50-2.97)	2.80 (2.40-3.20)	5.60 (5.00-6.10)	11.6 (10.1-12.6)	16.6 (13.6-20.1)	1371
	03-04	4.07 (3.56-4.66)	4.30 (3.80-5.10)	9.20 (7.50-10.2)	16.0 (13.3-18.5)	22.7 (17.3-30.3)	1250
	05-06	5.65 (5.08-6.29)	6.20 (5.60-6.90)	11.9 (10.7-13.3)	22.1 (18.7-26.5)	32.3 (25.5-39.8)	1270
	07-08	7.52 (6.84-8.26)	8.30 (7.70-9.40)	15.2 (13.6-17.2)	25.0 (21.7-28.4)	38.3 (27.3-44.2)	1294
Females	01-02	2.68 (2.44-2.96)	2.60 (2.30-3.00)	5.80 (5.30-6.50)	12.6 (11.0-14.7)	18.7 (16.3-24.0)	1411
	03-04	3.56 (3.19-3.97)	4.10 (3.50-4.50)	8.00 (7.10-9.10)	14.2 (12.5-16.6)	20.5 (17.9-23.0)	1355
	05-06	4.80 (4.15-5.55)	5.50 (4.70-6.60)	11.9 (10.1-13.6)	19.6 (17.0-24.1)	29.8 (24.6-35.9)	1278
	07-08	6.82 (6.21-7.49)	7.40 (6.50-8.30)	15.5 (14.5-16.9)	29.1 (27.0-32.9)	39.8 (36.2-46.7)	1310
Race/ethnicity							
Mexican Americans	01-02	3.26 (2.72-3.91)	3.40 (2.70-4.30)	7.20 (6.20-9.30)	12.2 (11.2-14.7)	18.4 (14.1-25.6)	677
	03-04	4.81 (3.85-6.02)	5.10 (4.00-6.70)	10.2 (8.20-12.6)	18.3 (13.5-24.5)	26.0 (19.0-38.5)	652
	05-06	6.88 (5.58-8.48)	7.30 (6.00-8.90)	14.5 (11.5-17.5)	26.3 (20.7-34.1)	40.4 (33.8-46.8)	637
	07-08	9.30 (8.12-10.6)	10.2 (9.40-11.1)	17.4 (15.9-18.8)	31.9 (24.0-39.2)	47.6 (34.2-58.2)	531
Non-Hispanic blacks	01-02	4.90 (4.46-5.37)	5.30 (4.60-6.00)	10.7 (9.20-12.0)	18.3 (16.1-20.1)	25.5 (20.7-31.3)	703
	03-04	6.67 (5.97-7.46)	6.90 (6.30-7.50)	12.6 (10.9-14.7)	25.7 (17.7-31.0)	33.5 (27.3-43.9)	699
	05-06	8.37 (7.06-9.91)	8.70 (7.50-10.2)	16.1 (13.8-19.7)	30.1 (22.1-37.2)	41.4 (30.1-67.7)	678
	07-08	10.7 (9.08-12.5)	12.5 (10.5-14.8)	23.1 (21.7-25.0)	38.9 (32.4-43.5)	47.6 (44.5-57.0)	597
Non-Hispanic whites	01-02	2.33 (2.10-2.59)	2.30 (1.90-2.60)	4.90 (4.40-5.30)	9.60 (8.30-11.6)	15.6 (13.0-18.6)	1216
	03-04	3.17 (2.82-3.56)	3.50 (3.00-4.00)	6.80 (5.90-7.90)	12.5 (10.6-14.5)	17.6 (14.7-20.8)	1088
	05-06	4.41 (3.86-5.04)	5.00 (4.20-5.70)	10.3 (9.10-11.5)	18.7 (16.3-21.1)	28.8 (22.1-32.2)	1038
	07-08	6.32 (5.78-6.93)	7.20 (6.40-7.90)	13.6 (12.4-14.9)	24.3 (20.1-27.3)	33.8 (27.0-39.5)	1077

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, and 07-08 are 1.0, 0.3, 0.3, and 0.3 respectively.

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Mono-isobutyl phthalate (MiBP) (creatinine corrected)

Metabolite of Di-isobutyl phthalate (DiBP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	2.54 (2.36-2.73)	2.46 (2.26-2.68)	4.54 (4.20-4.86)	8.02 (7.78-8.66)	12.0 (10.8-13.5)	2782
	03-04	3.57 (3.18-4.00)	3.57 (3.15-4.08)	6.21 (5.36-7.17)	10.9 (9.47-12.7)	15.4 (12.8-18.6)	2605
	05-06	5.07 (4.68-5.50)	5.07 (4.74-5.45)	8.81 (8.08-9.55)	15.2 (13.4-16.5)	21.3 (18.3-24.3)	2548
	07-08	7.21 (6.76-7.70)	7.25 (6.77-7.81)	12.1 (11.2-13.3)	19.5 (17.2-21.5)	27.8 (24.9-31.3)	2604
Age group							
6-11 years	01-02	4.81 (3.89-5.94)	5.18 (4.13-6.32)	9.20 (7.03-11.7)	15.2 (11.1-24.3)	24.3 (13.9-40.3)	393
	03-04	6.94 (5.79-8.31)	7.03 (5.29-8.95)	11.8 (9.56-15.1)	18.6 (15.1-25.1)	28.7 (21.8-36.9)	342
	05-06	9.39 (8.56-10.3)	9.46 (8.50-10.3)	15.3 (13.0-18.1)	25.2 (21.6-30.1)	37.9 (28.0-65.5)	356
	07-08	13.2 (11.1-15.5)	12.9 (10.5-15.7)	21.9 (17.8-26.0)	35.5 (28.3-43.5)	52.6 (41.4-58.3)	389
12-19 years	01-02	2.68 (2.29-3.15)	2.83 (2.39-3.33)	4.79 (4.04-5.51)	7.62 (6.18-10.2)	12.8 (8.76-15.6)	742
	03-04	3.41 (2.86-4.05)	3.69 (2.99-4.31)	5.75 (4.69-7.04)	9.32 (7.17-12.0)	13.5 (9.52-20.1)	729
	05-06	5.56 (5.05-6.11)	5.82 (5.20-6.53)	9.05 (8.06-10.4)	14.3 (13.4-16.5)	20.3 (17.7-26.8)	702
	07-08	7.95 (6.96-9.09)	8.30 (6.89-9.76)	13.7 (11.3-15.7)	21.3 (16.3-28.4)	28.7 (20.5-62.6)	401
20 years and older	01-02	2.33 (2.20-2.46)	2.26 (2.08-2.43)	3.89 (3.65-4.25)	7.31 (7.00-7.78)	10.6 (9.46-11.3)	1647
	03-04	3.32 (3.00-3.68)	3.33 (3.00-3.81)	5.59 (4.93-6.51)	9.84 (8.65-11.2)	13.5 (11.4-16.0)	1534
	05-06	4.66 (4.23-5.13)	4.62 (4.36-5.03)	8.00 (7.23-8.78)	13.5 (11.6-15.7)	18.2 (16.1-23.0)	1490
	07-08	6.65 (6.21-7.12)	6.73 (6.29-7.20)	11.1 (10.2-12.1)	17.1 (15.6-18.6)	23.8 (21.0-26.7)	1814
Gender							
Males	01-02	2.22 (2.09-2.35)	2.18 (1.97-2.37)	3.76 (3.58-4.11)	7.38 (6.64-7.95)	11.1 (10.1-12.5)	1371
	03-04	3.20 (2.80-3.66)	3.19 (2.74-3.56)	5.84 (4.79-6.56)	10.0 (8.27-12.2)	13.9 (11.5-19.1)	1250
	05-06	4.54 (4.19-4.92)	4.45 (4.21-4.81)	7.95 (6.95-8.73)	13.4 (11.6-15.8)	18.5 (16.7-19.8)	1270
	07-08	6.33 (5.91-6.79)	6.36 (5.93-6.77)	10.4 (9.43-11.3)	16.4 (15.0-19.7)	24.1 (21.1-27.7)	1294
Females	01-02	2.88 (2.61-3.18)	2.85 (2.52-3.18)	5.14 (4.67-5.89)	8.66 (8.02-10.1)	13.7 (11.1-15.0)	1411
	03-04	3.96 (3.56-4.42)	4.00 (3.57-4.45)	6.73 (5.64-7.80)	11.6 (10.2-13.0)	15.7 (13.0-18.7)	1355
	05-06	5.64 (5.04-6.32)	5.86 (5.39-6.39)	9.61 (8.85-10.6)	15.8 (14.3-18.1)	24.3 (18.7-32.5)	1278
	07-08	8.18 (7.46-8.96)	8.70 (7.78-9.47)	13.9 (12.2-15.2)	21.3 (18.3-25.3)	31.6 (26.4-34.7)	1310
Race/ethnicity							
Mexican Americans	01-02	3.07 (2.58-3.66)	2.98 (2.53-3.82)	5.82 (4.91-6.99)	10.6 (8.28-13.3)	16.0 (12.6-19.4)	677
	03-04	4.34 (3.47-5.43)	4.47 (3.53-5.24)	7.75 (6.33-9.69)	13.1 (11.9-16.8)	23.3 (17.9-26.1)	652
	05-06	6.19 (5.24-7.31)	6.17 (5.59-7.02)	10.9 (9.61-12.3)	18.6 (17.1-21.5)	28.3 (23.7-36.2)	637
	07-08	9.07 (7.87-10.5)	8.94 (8.07-10.3)	14.6 (12.4-18.0)	25.9 (21.1-32.4)	36.1 (28.0-42.3)	531
Non-Hispanic blacks	01-02	3.44 (3.20-3.69)	3.52 (2.95-3.81)	6.11 (5.03-7.04)	10.6 (8.94-12.4)	15.6 (12.6-19.7)	703
	03-04	4.74 (4.07-5.51)	4.65 (4.10-5.30)	7.81 (6.38-10.0)	15.2 (10.8-18.4)	19.9 (15.7-28.7)	699
	05-06	5.88 (5.12-6.76)	5.86 (5.03-7.03)	9.74 (8.21-11.3)	14.9 (12.0-19.9)	21.4 (14.9-29.7)	678
	07-08	8.28 (7.20-9.52)	8.96 (8.33-9.71)	14.4 (12.9-15.7)	21.6 (20.3-24.3)	29.6 (24.3-37.7)	597
Non-Hispanic whites	01-02	2.31 (2.11-2.52)	2.20 (2.01-2.43)	3.80 (3.53-4.39)	7.30 (6.72-7.78)	10.7 (9.62-12.6)	1216
	03-04	3.13 (2.76-3.54)	3.17 (2.76-3.72)	5.28 (4.55-6.21)	8.92 (7.64-10.3)	11.8 (10.2-15.1)	1088
	05-06	4.64 (4.25-5.07)	4.58 (4.35-4.91)	8.28 (7.45-9.01)	13.7 (12.2-15.6)	18.8 (16.9-22.2)	1038
	07-08	6.60 (6.14-7.10)	6.70 (6.26-7.08)	10.9 (10.0-12.1)	17.0 (15.2-20.5)	24.9 (20.5-29.1)	1077

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Mono-n-butyl phthalate (MnBP)

Metabolite of Dibutyl phthalate (DBP) and Benzylbutyl phthalate (BzBP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00*	24.6 (22.1-27.4)	26.0 (23.6-29.2)	51.6 (44.5-60.3)	98.6 (90.2-114)	150 (121-169)	2541
	01-02	18.9 (17.4-20.6)	20.4 (19.2-21.8)	40.4 (36.5-44.2)	73.6 (65.3-85.6)	108 (94.1-122)	2782
	03-04	21.1 (19.8-22.5)	23.2 (21.2-24.8)	42.7 (38.5-47.2)	80.7 (70.2-93.9)	122 (104-137)	2605
	05-06	19.6 (18.2-21.3)	20.6 (18.6-23.0)	40.4 (36.4-44.9)	71.5 (66.5-79.5)	107 (96.3-124)	2548
	07-08	18.9 (17.2-20.7)	20.0 (18.1-21.9)	39.1 (34.5-43.4)	72.4 (64.5-77.7)	110 (94.5-120)	2604
Age group							
6-11 years	99-00*	41.4 (35.6-48.0)	40.0 (36.2-49.2)	75.5 (59.1-92.8)	124 (98.4-159)	166 (127-279)	328
	01-02	31.1 (26.6-36.5)	32.4 (25.6-37.1)	62.1 (51.3-76.9)	107 (84.3-136)	159 (110-290)	393
	03-04	36.3 (30.7-42.9)	36.7 (28.5-47.5)	71.3 (56.9-87.2)	137 (107-162)	191 (150-243)	342
	05-06	30.5 (27.5-33.8)	32.3 (27.8-35.0)	57.4 (46.8-65.4)	93.4 (75.6-130)	136 (108-181)	356
	07-08	26.9 (22.5-32.1)	28.7 (21.3-38.0)	53.6 (45.6-63.6)	85.6 (71.4-102)	119 (91.6-150)	389
12-19 years	99-00*	36.0 (30.8-42.1)	36.3 (30.6-44.9)	68.6 (55.9-79.7)	119 (90.2-159)	165 (121-227)	752
	01-02	25.1 (21.6-29.2)	26.7 (22.0-32.7)	52.6 (48.4-60.4)	92.4 (72.7-121)	148 (106-185)	742
	03-04	26.7 (24.1-29.5)	28.2 (25.2-33.1)	52.0 (45.3-60.9)	97.5 (74.7-116)	134 (110-158)	729
	05-06	27.5 (24.3-31.3)	29.0 (23.7-36.6)	57.2 (48.7-64.9)	88.6 (75.1-105)	125 (96.2-154)	702
	07-08	26.2 (22.5-30.6)	27.3 (22.1-32.8)	51.7 (46.2-63.8)	111 (77.7-132)	149 (103-188)	401
20 years and older	99-00*	21.6 (19.0-24.5)	23.1 (19.7-26.1)	46.3 (36.9-53.6)	95.0 (78.7-111)	143 (117-161)	1461
	01-02	17.0 (15.4-18.8)	19.1 (17.1-20.4)	35.1 (31.6-40.2)	64.8 (57.3-79.7)	95.4 (84.6-113)	1647
	03-04	19.0 (17.7-20.5)	20.7 (18.9-22.9)	38.4 (35.7-42.7)	74.7 (64.1-82.6)	108 (90.7-127)	1534
	05-06	17.7 (16.0-19.6)	18.4 (16.6-20.6)	36.7 (32.5-41.4)	65.1 (55.4-74.3)	101 (84.3-121)	1490
	07-08	17.2 (15.6-19.1)	18.6 (16.7-20.3)	34.5 (31.5-39.1)	63.8 (56.4-72.5)	98.3 (83.0-115)	1814
Gender							
Males	99-00*	22.0 (20.1-24.1)	23.2 (20.4-26.3)	43.1 (36.6-49.5)	84.4 (71.3-96.2)	116 (97.8-132)	1215
	01-02	17.7 (16.0-19.6)	19.3 (17.3-21.0)	34.5 (30.3-40.6)	62.1 (54.1-75.5)	95.2 (75.5-117)	1371
	03-04	20.0 (18.1-22.0)	21.1 (19.0-24.0)	39.4 (35.5-43.4)	65.5 (59.0-73.0)	95.9 (79.8-111)	1250
	05-06	19.8 (18.4-21.4)	20.7 (19.0-23.0)	38.5 (34.6-42.0)	63.8 (56.8-72.0)	96.2 (79.0-113)	1270
	07-08	18.4 (16.8-20.3)	19.0 (17.3-21.3)	36.0 (32.5-40.4)	60.9 (52.8-68.8)	88.3 (72.6-110)	1294
Females	99-00*	27.3 (23.6-31.5)	30.0 (25.9-33.3)	59.7 (51.6-69.6)	120 (98.3-145)	167 (143-223)	1326
	01-02	20.2 (18.2-22.4)	21.7 (19.7-24.3)	46.7 (43.1-51.1)	85.0 (72.7-92.5)	121 (106-136)	1411
	03-04	22.2 (21.2-23.3)	24.4 (23.4-25.8)	47.3 (42.7-53.0)	95.9 (79.9-114)	137 (122-156)	1355
	05-06	19.5 (17.2-22.0)	20.4 (17.1-24.7)	42.3 (36.7-52.0)	83.2 (71.0-90.2)	124 (101-137)	1278
	07-08	19.3 (17.2-21.7)	20.8 (18.1-23.2)	42.5 (35.6-50.6)	83.7 (68.6-109)	132 (109-151)	1310

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.9, 1.1, 0.4, 0.6, and 0.6 respectively.

*In the 1999-2000 survey period, concentrations of mono-isobutyl phthalate and mono-n-butyl phthalate were measured together and expressed as a combined value, referred to as monobutyl phthalate (MBP).

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Urinary Mono-n-butyl phthalate (MnBP)

Metabolite of Dibutyl phthalate (DBP) and Benzylbutyl phthalate (BzBP)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00*	23.4 (21.8-25.1)	26.3 (23.9-28.1)	48.1 (41.2-56.7)	92.2 (78.9-101)	117 (104-131)	814
	01-02	20.1 (16.6-24.5)	23.1 (18.0-26.5)	42.1 (34.0-51.5)	77.1 (62.9-92.5)	112 (84.6-143)	677
	03-04	24.1 (19.8-29.5)	26.9 (20.2-32.0)	47.4 (38.0-58.5)	85.6 (61.7-117)	127 (99.8-165)	652
	05-06	22.4 (18.6-27.0)	23.5 (19.0-29.0)	45.4 (37.1-55.4)	90.2 (71.1-119)	132 (106-174)	637
	07-08	22.2 (18.5-26.7)	22.4 (17.8-27.1)	43.8 (36.2-50.4)	76.4 (59.8-106)	145 (85.6-223)	531
Non-Hispanic blacks	99-00*	37.0 (31.9-42.9)	38.7 (33.4-44.5)	78.2 (58.7-91.8)	118 (108-143)	167 (143-197)	603
	01-02	29.6 (26.6-33.1)	31.5 (28.7-34.1)	58.3 (51.2-63.4)	93.2 (79.5-121)	138 (110-184)	703
	03-04	30.1 (28.4-31.9)	31.5 (29.7-34.1)	64.1 (58.3-67.1)	106 (94.8-119)	144 (115-168)	699
	05-06	27.1 (23.1-31.8)	28.5 (25.0-31.2)	53.1 (39.9-65.8)	105 (77.3-135)	143 (118-183)	678
	07-08	25.0 (21.9-28.4)	25.8 (22.0-30.4)	52.4 (43.9-59.5)	91.2 (75.6-106)	114 (96.8-148)	597
Non-Hispanic whites	99-00*	21.8 (19.3-24.6)	23.2 (19.5-27.5)	46.3 (37.5-53.3)	90.2 (74.7-106)	142 (111-161)	912
	01-02	17.6 (16.0-19.3)	19.2 (17.0-21.0)	36.6 (32.4-42.6)	69.2 (59.2-87.6)	107 (89.8-123)	1216
	03-04	18.9 (17.6-20.3)	20.7 (18.9-22.8)	38.4 (35.5-42.7)	71.3 (60.1-80.0)	101 (90.7-124)	1088
	05-06	17.8 (16.2-19.5)	18.6 (16.9-20.7)	37.8 (33.1-42.1)	65.4 (55.4-73.9)	95.9 (79.5-113)	1038
	07-08	17.8 (16.2-19.5)	18.9 (17.2-20.9)	36.7 (32.3-41.4)	68.0 (58.9-77.2)	110 (86.5-120)	1077

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.9, 1.1, 0.4, 0.6, and 0.6 respectively.

*In the 1999-2000 survey period, concentrations of mono-isobutyl phthalate and mono-n-butyl phthalate were measured together and expressed as a combined value, referred to as monobutyl phthalate (MBP).

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Urinary Mono-n-butyl phthalate (MnBP) (creatinine corrected)

Metabolite of Dibutyl phthalate (DBP) and Benzylbutyl phthalate (BzBP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00*	22.4 (20.6-24.4)	21.9 (19.8-24.3)	38.9 (35.0-41.8)	68.3 (60.3-78.3)	97.7 (81.4-131)	2541
	01-02	17.8 (16.7-19.0)	17.4 (16.3-18.4)	30.3 (28.1-32.3)	52.4 (47.4-61.0)	81.3 (71.0-92.5)	2782
	03-04	19.8 (18.5-21.2)	19.3 (17.7-20.8)	33.9 (30.9-38.5)	59.0 (52.9-68.1)	91.6 (74.1-115)	2605
	05-06	19.2 (18.0-20.4)	18.3 (16.8-19.8)	30.8 (29.0-33.0)	50.8 (47.8-56.6)	77.8 (67.2-94.8)	2548
	07-08	19.0 (17.7-20.5)	18.8 (17.2-20.0)	31.4 (28.7-34.1)	52.0 (46.4-59.5)	77.1 (64.2-88.6)	2604
Age group							
6-11 years	99-00*	41.9 (37.4-47.1)	39.1 (34.3-49.0)	65.9 (56.7-80.0)	108 (71.2-179)	159 (102-263)	328
	01-02	35.4 (31.7-39.6)	35.1 (29.3-38.9)	55.4 (50.1-62.3)	84.0 (69.0-113)	147 (93.8-235)	393
	03-04	38.4 (33.8-43.6)	39.0 (34.7-42.6)	59.3 (52.9-68.1)	104 (83.6-119)	137 (108-198)	342
	05-06	33.6 (30.8-36.6)	33.9 (30.6-37.4)	50.6 (45.0-58.3)	78.5 (66.8-111)	128 (73.4-172)	356
	07-08	33.1 (27.6-39.7)	34.2 (27.5-41.3)	51.9 (42.6-63.8)	81.8 (61.3-101)	109 (83.1-159)	389
12-19 years	99-00*	24.3 (21.2-27.8)	23.7 (20.6-27.4)	37.6 (31.6-43.8)	63.3 (52.4-76.4)	88.1 (61.5-142)	752
	01-02	19.4 (17.3-21.7)	20.3 (17.5-22.3)	34.9 (30.5-37.9)	53.4 (45.2-73.9)	89.7 (60.3-106)	742
	03-04	20.0 (18.7-21.3)	19.8 (18.2-21.7)	30.7 (27.9-34.8)	52.7 (43.4-65.4)	74.4 (56.0-90.9)	729
	05-06	20.5 (19.0-22.2)	21.2 (18.8-22.9)	31.9 (29.6-33.8)	49.3 (42.1-56.4)	70.2 (52.0-108)	702
	07-08	20.4 (18.4-22.6)	21.9 (18.7-25.7)	33.8 (30.0-38.5)	50.7 (42.4-64.0)	72.4 (50.7-84.5)	401
20 years and older	99-00*	20.4 (18.6-22.4)	19.5 (18.1-21.4)	34.9 (30.3-40.0)	62.4 (53.4-72.1)	91.0 (70.4-135)	1461
	01-02	16.1 (15.0-17.3)	15.5 (14.2-16.5)	26.3 (24.2-28.6)	44.2 (38.7-51.1)	71.6 (61.2-85.6)	1647
	03-04	18.3 (17.0-19.6)	17.7 (16.6-19.2)	31.0 (27.4-34.0)	53.3 (46.5-64.2)	83.8 (65.3-114)	1534
	05-06	17.8 (16.4-19.2)	16.8 (15.6-18.4)	28.1 (25.3-30.9)	46.1 (41.5-53.0)	74.3 (55.4-94.8)	1490
	07-08	17.7 (16.3-19.2)	17.2 (15.7-18.8)	28.2 (25.8-30.5)	46.7 (42.0-53.3)	71.8 (57.8-89.5)	1814
Gender							
Males	99-00*	17.3 (16.1-18.6)	17.0 (15.5-18.8)	28.6 (25.8-32.1)	49.3 (42.6-53.5)	64.7 (57.3-71.5)	1215
	01-02	14.4 (13.5-15.4)	13.7 (12.9-14.9)	22.9 (20.8-24.6)	39.9 (35.6-44.0)	60.0 (50.5-76.2)	1371
	03-04	15.7 (14.5-16.9)	14.8 (13.6-16.0)	25.4 (23.6-28.1)	41.4 (37.0-47.5)	59.4 (50.3-81.5)	1250
	05-06	15.9 (15.1-16.8)	15.4 (14.2-16.4)	24.9 (23.1-27.0)	38.6 (35.7-42.3)	51.2 (46.1-63.5)	1270
	07-08	15.5 (14.4-16.8)	14.7 (13.4-16.3)	24.9 (22.6-27.6)	40.8 (35.2-44.9)	55.2 (46.1-65.2)	1294
Females	99-00*	28.6 (25.3-32.3)	28.8 (25.5-30.5)	50.6 (41.9-56.3)	84.3 (69.2-106)	134 (93.6-155)	1326
	01-02	21.7 (19.6-23.9)	21.6 (19.7-23.6)	35.8 (33.0-38.7)	64.9 (58.9-70.2)	91.5 (81.4-103)	1411
	03-04	24.8 (22.9-26.8)	24.1 (21.6-26.8)	42.9 (39.2-48.9)	74.9 (64.2-86.6)	117 (83.6-139)	1355
	05-06	22.9 (20.9-25.1)	21.5 (19.4-24.6)	37.1 (33.3-41.9)	67.2 (56.8-74.4)	99.6 (77.8-128)	1278
	07-08	23.1 (21.0-25.5)	22.8 (20.9-25.2)	38.0 (32.7-43.1)	62.7 (52.1-78.5)	89.8 (76.2-126)	1310

*In the 1999-2000 survey period, concentrations of mono-isobutyl phthalate and mono-n-butyl phthalate were measured together and expressed as a combined value, referred to as monobutyl phthalate (MBP).

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Urinary Mono-n-butyl phthalate (MnBP) (creatinine corrected)

Metabolite of Dibutyl phthalate (DBP) and Benzylbutyl phthalate (BzBP)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00*	21.2 (19.3-23.3)	20.0 (18.2-22.9)	40.1 (32.6-44.3)	63.6 (57.5-70.1)	82.9 (73.9-100)	814
	01-02	19.0 (16.2-22.2)	19.2 (16.3-21.9)	33.7 (28.3-39.6)	61.0 (43.9-84.0)	86.7 (60.6-128)	677
	03-04	21.8 (17.7-26.8)	20.4 (17.4-24.0)	37.6 (29.6-50.1)	75.3 (55.6-92.0)	96.3 (76.4-164)	652
	05-06	20.1 (17.8-22.8)	19.1 (16.4-23.0)	34.3 (29.2-42.6)	64.8 (54.6-75.9)	98.1 (70.2-154)	637
	07-08	21.7 (17.7-26.5)	20.9 (16.4-27.1)	36.9 (29.1-46.7)	59.5 (47.1-88.9)	102 (63.4-161)	531
Non-Hispanic blacks	99-00*	23.9 (21.3-26.8)	25.0 (20.7-28.1)	42.2 (35.9-49.6)	70.0 (61.1-83.9)	96.2 (83.9-105)	603
	01-02	20.8 (18.8-23.1)	20.2 (19.2-22.8)	34.5 (30.9-36.8)	62.8 (50.6-74.6)	85.6 (72.1-99.0)	703
	03-04	21.4 (19.5-23.4)	22.0 (19.6-24.8)	35.4 (31.6-42.7)	65.7 (54.0-75.3)	94.0 (71.1-128)	699
	05-06	19.1 (16.4-22.1)	18.5 (16.2-20.7)	30.1 (24.9-39.5)	54.6 (42.0-81.3)	84.7 (51.3-125)	678
	07-08	19.4 (17.3-21.7)	19.2 (16.8-22.0)	30.5 (27.0-36.5)	50.7 (42.8-60.4)	78.3 (59.3-125)	597
Non-Hispanic whites	99-00*	21.3 (19.1-23.8)	20.5 (18.6-23.2)	36.4 (31.5-41.0)	67.1 (56.7-78.4)	97.7 (73.5-142)	912
	01-02	17.4 (16.2-18.6)	16.5 (15.3-17.8)	29.0 (26.6-32.2)	51.1 (46.0-60.0)	81.4 (68.1-99.0)	1216
	03-04	18.6 (17.3-20.1)	17.9 (16.7-19.8)	31.6 (27.7-37.8)	53.3 (48.2-61.5)	81.5 (64.2-108)	1088
	05-06	18.7 (17.5-19.9)	17.9 (16.3-19.5)	29.7 (27.5-32.0)	48.7 (42.2-55.4)	74.3 (58.3-94.5)	1038
	07-08	18.5 (17.3-19.9)	18.1 (16.6-19.6)	30.4 (27.3-33.3)	50.9 (43.6-61.0)	75.8 (62.6-88.0)	1077

*In the 1999-2000 survey period, concentrations of mono-isobutyl phthalate and mono-n-butyl phthalate were measured together and expressed as a combined value, referred to as monobutyl phthalate (MBP).

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Urinary Mono-cyclohexyl phthalate (MCHP)

Metabolite of Dicyclohexyl phthalate (DCHP)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	2.21 (<LOD-3.42)	2541
	01-02	*	< LOD	< LOD	.804 (.603-1.01)	1.01 (.804-1.21)	2782
	03-04	*	< LOD	< LOD	< LOD	.603 (.402-.804)	2605
	05-06	*	< LOD	< LOD	< LOD	< LOD	2548
	07-08	*	< LOD	< LOD	< LOD	< LOD	2604
Age group							
6-11 years	99-00	*	< LOD	< LOD	2.01 (<LOD-2.21)	3.42 (2.01-7.64)	328
	01-02	*	< LOD	< LOD	.804 (.603-1.01)	1.21 (1.01-1.41)	393
	03-04	*	< LOD	< LOD	.603 (<LOD-.804)	1.01 (.603-1.01)	342
	05-06	*	< LOD	< LOD	< LOD	< LOD	356
	07-08	*	< LOD	< LOD	< LOD	< LOD	389
12-19 years	99-00	*	< LOD	< LOD	2.01 (<LOD-3.02)	3.42 (2.01-5.03)	752
	01-02	*	< LOD	< LOD	.804 (.603-1.01)	1.01 (.804-1.21)	742
	03-04	*	< LOD	< LOD	.402 (<LOD-.603)	.804 (.603-1.21)	729
	05-06	*	< LOD	< LOD	< LOD	< LOD	702
	07-08	*	< LOD	< LOD	< LOD	< LOD	401
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1461
	01-02	*	< LOD	< LOD	.804 (<LOD-1.01)	1.01 (.804-1.21)	1647
	03-04	*	< LOD	< LOD	< LOD	.603 (.402-.603)	1534
	05-06	*	< LOD	< LOD	< LOD	< LOD	1490
	07-08	*	< LOD	< LOD	< LOD	< LOD	1814
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	2.21 (<LOD-4.02)	1215
	01-02	*	< LOD	< LOD	.804 (.603-1.01)	1.01 (.804-1.21)	1371
	03-04	*	< LOD	< LOD	< LOD	.603 (.603-.804)	1250
	05-06	*	< LOD	< LOD	< LOD	< LOD	1270
	07-08	*	< LOD	< LOD	< LOD	< LOD	1294
Females	99-00	*	< LOD	< LOD	< LOD	2.21 (<LOD-3.82)	1326
	01-02	*	< LOD	< LOD	.804 (<LOD-.804)	1.01 (.804-1.01)	1411
	03-04	*	< LOD	< LOD	< LOD	.603 (.402-1.01)	1355
	05-06	*	< LOD	< LOD	< LOD	< LOD	1278
	07-08	*	< LOD	< LOD	< LOD	< LOD	1310

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 1.81, 0.603, 0.402, 0.603, and 0.603 respectively.

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

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

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 2.01 for survey periods 1999-2008 compared with results previously released

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Urinary Mono-cyclohexyl phthalate (MCHP)

Metabolite of Dicyclohexyl phthalate (DCHP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
Race/ethnicity			50th	75th	90th	95th	
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	814
	01-02	*	< LOD	< LOD	.804 (<LOD-1.01)	1.01 (.603-1.41)	677
	03-04	*	< LOD	< LOD	< LOD	.603 (.402-1.01)	652
	05-06	*	< LOD	< LOD	< LOD	< LOD	637
	07-08	*	< LOD	< LOD	< LOD	< LOD	531
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	2.21 (1.81-2.41)	603
	01-02	*	< LOD	< LOD	.804 (.603-1.01)	1.01 (.804-1.41)	703
	03-04	*	< LOD	< LOD	.603 (.402-.603)	.804 (.603-1.01)	699
	05-06	*	< LOD	< LOD	< LOD	< LOD	678
	07-08	*	< LOD	< LOD	< LOD	< LOD	597
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	2.01 (<LOD-3.42)	912
	01-02	*	< LOD	< LOD	.804 (<LOD-.804)	1.01 (.804-1.21)	1216
	03-04	*	< LOD	< LOD	< LOD	.603 (.402-.804)	1088
	05-06	*	< LOD	< LOD	< LOD	< LOD	1038
	07-08	*	< LOD	< LOD	< LOD	< LOD	1077

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 1.81, 0.603, 0.402, 0.603, and 0.603 respectively.

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

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

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 2.01 for survey periods 1999-2008 compared with results previously released

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Urinary Mono-cyclohexyl phthalate (MCHP) (creatinine corrected)

Metabolite of Dicyclohexyl phthalate (DCHP)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	6.03 (<LOD-6.69)	2541
	01-02	*	< LOD	< LOD	1.23 (1.07-1.39)	1.83 (1.55-2.01)	2782
	03-04	*	< LOD	< LOD	< LOD	.905 (.804-1.01)	2605
	05-06	*	< LOD	< LOD	< LOD	< LOD	2548
	07-08	*	< LOD	< LOD	< LOD	< LOD	2604
Age group							
6-11 years	99-00	*	< LOD	< LOD	3.10 (<LOD-4.70)	5.67 (3.10-12.9)	328
	01-02	*	< LOD	< LOD	1.39 (1.03-1.49)	1.89 (1.39-2.35)	393
	03-04	*	< LOD	< LOD	.744 (<LOD-1.07)	1.07 (.704-1.67)	342
	05-06	*	< LOD	< LOD	< LOD	< LOD	356
	07-08	*	< LOD	< LOD	< LOD	< LOD	389
12-19 years	99-00	*	< LOD	< LOD	2.45 (<LOD-3.10)	3.36 (2.73-3.66)	752
	01-02	*	< LOD	< LOD	.945 (.764-1.33)	1.55 (1.07-2.37)	742
	03-04	*	< LOD	< LOD	.442 (<LOD-.543)	.764 (.482-1.25)	729
	05-06	*	< LOD	< LOD	< LOD	< LOD	702
	07-08	*	< LOD	< LOD	< LOD	< LOD	401
20 years and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1461
	01-02	*	< LOD	< LOD	1.27 (<LOD-1.39)	1.83 (1.55-2.11)	1647
	03-04	*	< LOD	< LOD	< LOD	.905 (.804-1.01)	1534
	05-06	*	< LOD	< LOD	< LOD	< LOD	1490
	07-08	*	< LOD	< LOD	< LOD	< LOD	1814
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	4.30 (<LOD-6.35)	1215
	01-02	*	< LOD	< LOD	1.03 (.844-1.33)	1.77 (1.35-2.13)	1371
	03-04	*	< LOD	< LOD	< LOD	.663 (.583-1.01)	1250
	05-06	*	< LOD	< LOD	< LOD	< LOD	1270
	07-08	*	< LOD	< LOD	< LOD	< LOD	1294
Females	99-00	*	< LOD	< LOD	< LOD	6.69 (<LOD-7.10)	1326
	01-02	*	< LOD	< LOD	1.35 (<LOD-1.55)	1.83 (1.61-2.21)	1411
	03-04	*	< LOD	< LOD	< LOD	1.01 (.844-1.19)	1355
	05-06	*	< LOD	< LOD	< LOD	< LOD	1278
	07-08	*	< LOD	< LOD	< LOD	< LOD	1310

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

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

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 2.01 for survey periods 1999-2008 compared with results previously released

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Urinary Mono-cyclohexyl phthalate (MCHP) (creatinine corrected)

Metabolite of Dicyclohexyl phthalate (DCHP)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Race/ethnicity Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	814
	01-02	*	< LOD	< LOD	1.19 (<LOD-1.39)	1.91 (1.59-2.23)	677
	03-04	*	< LOD	< LOD	< LOD	.784 (.623-1.13)	652
	05-06	*	< LOD	< LOD	< LOD	< LOD	637
	07-08	*	< LOD	< LOD	< LOD	< LOD	531
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	2.87 (2.25-3.50)	603
	01-02	*	< LOD	< LOD	.824 (.724-.985)	1.19 (1.01-1.43)	703
	03-04	*	< LOD	< LOD	.503 (.342-.623)	.663 (.523-.945)	699
	05-06	*	< LOD	< LOD	< LOD	< LOD	678
	07-08	*	< LOD	< LOD	< LOD	< LOD	597
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	6.35 (<LOD-7.10)	912
	01-02	*	< LOD	< LOD	1.27 (<LOD-1.49)	1.83 (1.55-2.13)	1216
	03-04	*	< LOD	< LOD	< LOD	.965 (.844-1.07)	1088
	05-06	*	< LOD	< LOD	< LOD	< LOD	1038
	07-08	*	< LOD	< LOD	< LOD	< LOD	1077

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

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

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 2.01 for survey periods 1999-2008 compared with results previously released

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Urinary Mono-ethyl phthalate (MEP)

Metabolite of Diethyl phthalate (DEP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	118 (103-135)	108 (90.0-132)	300 (244-355)	830 (664-977)	1870 (1420-2490)	2536
	01-02	117 (105-131)	112 (93.0-128)	307 (274-348)	813 (688-947)	1650 (1230-2130)	2782
	03-04	127 (112-145)	115 (99.9-137)	332 (302-366)	909 (769-1150)	1780 (1420-2180)	2605
	05-06	108 (95.5-123)	102 (83.4-121)	284 (257-323)	750 (707-825)	1410 (1140-1830)	2548
	07-08	90.4 (80.3-102)	81.1 (70.8-93.5)	239 (205-272)	605 (493-713)	1180 (821-1760)	2604
Age group							
6-11 years	99-00	60.3 (49.4-73.6)	49.8 (41.0-61.8)	130 (85.2-164)	249 (192-481)	499 (250-703)	328
	01-02	56.2 (47.0-67.2)	47.5 (40.9-61.1)	121 (93.7-143)	297 (208-420)	533 (377-717)	393
	03-04	62.9 (54.3-72.9)	53.9 (46.4-67.9)	130 (112-159)	344 (195-377)	546 (358-949)	342
	05-06	55.7 (45.7-67.9)	47.9 (38.3-61.6)	111 (73.9-147)	289 (173-368)	522 (326-719)	356
	07-08	49.0 (42.4-56.6)	45.2 (38.5-53.3)	108 (80.5-135)	193 (155-227)	296 (214-359)	389
12-19 years	99-00	139 (105-183)	127 (92.8-169)	372 (276-540)	994 (694-1420)	2150 (1020-2920)	752
	01-02	130 (105-161)	121 (97.9-150)	316 (256-429)	835 (649-974)	1360 (969-2020)	742
	03-04	148 (123-178)	146 (109-194)	367 (285-459)	828 (642-1030)	1520 (900-2180)	729
	05-06	126 (108-146)	114 (96.4-134)	315 (256-390)	765 (636-1060)	1360 (1030-1680)	702
	07-08	98.6 (79.1-123)	97.4 (68.3-130)	214 (173-330)	477 (356-705)	821 (511-1270)	401
20 years and older	99-00	125 (108-145)	119 (92.6-146)	318 (257-389)	882 (666-1100)	2300 (1470-3060)	1456
	01-02	126 (113-141)	120 (101-140)	329 (291-374)	888 (702-1100)	1800 (1420-2420)	1647
	03-04	135 (116-157)	124 (104-145)	351 (311-415)	1050 (807-1370)	1970 (1480-2510)	1534
	05-06	114 (99.0-132)	111 (87.1-131)	299 (268-346)	782 (724-901)	1480 (1140-2080)	1490
	07-08	95.3 (85.4-106)	84.7 (75.6-97.8)	264 (235-299)	673 (539-823)	1470 (913-1920)	1814
Gender							
Males	99-00	118 (98.5-142)	102 (78.3-130)	345 (246-429)	948 (672-1500)	2310 (1400-3010)	1214
	01-02	120 (103-139)	113 (91.8-131)	331 (276-398)	957 (703-1390)	2040 (1390-2900)	1371
	03-04	130 (114-148)	113 (97.8-133)	354 (296-432)	1000 (801-1370)	1920 (1460-2300)	1250
	05-06	107 (92.1-124)	95.9 (75.8-120)	279 (227-340)	757 (651-855)	1470 (923-1930)	1270
	07-08	92.8 (80.1-107)	81.0 (70.4-93.3)	245 (194-298)	659 (481-867)	1450 (851-1900)	1294
Females	99-00	118 (102-136)	115 (91.3-139)	280 (231-335)	652 (581-813)	1470 (903-2560)	1322
	01-02	115 (101-131)	110 (91.5-128)	282 (255-329)	692 (580-867)	1230 (982-1650)	1411
	03-04	125 (106-148)	120 (90.9-145)	316 (258-372)	830 (639-1080)	1710 (1190-2260)	1355
	05-06	110 (92.8-130)	109 (86.8-130)	291 (252-346)	734 (671-871)	1310 (1140-1900)	1278
	07-08	88.2 (77.8-99.9)	82.4 (67.6-101)	233 (202-264)	553 (462-703)	1050 (713-1680)	1310

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.792, 0.594, 0.264, 0.528, and 0.462 respectively.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.66 for survey periods 1999-2008 compared with results previously released.

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Urinary Mono-ethyl phthalate (MEP)

Metabolite of Diethyl phthalate (DEP)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	119 (103-138)	115 (96.5-138)	291 (257-357)	842 (561-996)	1130 (966-1410)	813
	01-02	149 (129-173)	145 (125-174)	349 (293-435)	984 (690-1390)	1730 (1010-2940)	677
	03-04	176 (158-196)	164 (140-202)	394 (345-454)	1080 (873-1440)	2010 (1470-2840)	652
	05-06	163 (130-203)	161 (124-186)	384 (310-466)	1030 (682-1830)	1930 (1170-3330)	637
	07-08	122 (105-141)	111 (82.0-144)	314 (270-372)	850 (604-971)	1180 (971-1520)	531
Non-Hispanic blacks	99-00	213 (182-249)	202 (169-231)	521 (419-626)	1250 (932-1500)	2380 (1410-3060)	603
	01-02	233 (214-253)	235 (191-269)	563 (468-718)	1430 (1070-1630)	2340 (1860-3350)	703
	03-04	236 (205-272)	202 (167-273)	626 (507-760)	1650 (1220-1970)	2880 (1840-3900)	699
	05-06	219 (189-254)	199 (163-253)	522 (440-700)	1450 (1070-1900)	2610 (1900-3600)	678
	07-08	168 (145-195)	165 (132-202)	415 (343-493)	994 (711-1260)	1920 (1090-3370)	597
Non-Hispanic whites	99-00	101 (87.6-116)	88.4 (71.0-104)	242 (189-318)	651 (527-882)	1630 (1050-2560)	908
	01-02	104 (92.8-117)	96.8 (78.8-117)	273 (241-297)	672 (598-813)	1530 (1030-1800)	1216
	03-04	110 (95.4-128)	97.8 (82.4-115)	276 (242-315)	801 (630-975)	1480 (1050-2170)	1088
	05-06	91.3 (80.3-104)	84.2 (69.4-111)	232 (196-278)	600 (500-715)	1140 (757-1550)	1038
	07-08	78.9 (70.4-88.5)	68.9 (59.8-80.1)	199 (175-233)	506 (429-650)	880 (670-1500)	1077

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 0.792, 0.594, 0.264, 0.528, and 0.462 respectively.

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.66 for survey periods 1999-2008 compared with results previously released.

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Urinary Mono-ethyl phthalate (MEP) (creatinine corrected)

Metabolite of Diethyl phthalate (DEP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	107 (98.0-118)	93.0 (85.4-104)	237 (203-278)	598 (497-781)	1290 (1100-1530)	2536
	01-02	110 (99.3-122)	97.4 (87.9-107)	256 (218-287)	640 (532-778)	1220 (959-1450)	2782
	03-04	120 (107-133)	101 (90.1-117)	298 (254-332)	733 (587-853)	1350 (1080-1680)	2605
	05-06	106 (95.3-117)	92.3 (80.9-104)	242 (211-286)	625 (528-711)	1140 (942-1310)	2548
	07-08	91.1 (82.6-101)	75.3 (68.6-83.5)	204 (185-231)	547 (433-680)	987 (821-1190)	2604
Age group							
6-11 years	99-00	61.1 (51.4-72.7)	52.5 (43.3-72.4)	109 (83.6-137)	225 (145-365)	412 (264-517)	328
	01-02	64.0 (54.4-75.2)	53.6 (43.7-69.4)	117 (88.8-148)	338 (191-529)	556 (338-874)	393
	03-04	66.6 (57.5-77.1)	57.4 (43.9-74.7)	119 (95.6-134)	310 (205-394)	474 (310-877)	342
	05-06	61.3 (49.6-75.8)	50.1 (42.7-61.0)	107 (76.2-145)	279 (167-441)	512 (366-1210)	356
	07-08	60.4 (53.9-67.7)	52.8 (42.4-64.2)	108 (96.3-134)	205 (166-237)	278 (228-386)	389
12-19 years	99-00	93.7 (78.6-112)	80.7 (61.4-103)	240 (181-326)	580 (446-834)	1160 (661-1320)	752
	01-02	100 (83.0-121)	92.4 (73.1-119)	218 (164-270)	533 (389-729)	878 (573-1220)	742
	03-04	111 (93.1-132)	99.1 (81.2-121)	240 (193-320)	522 (389-714)	969 (651-1470)	729
	05-06	93.6 (80.5-109)	85.3 (69.0-104)	201 (174-238)	500 (389-635)	813 (590-1110)	702
	07-08	76.7 (61.8-95.1)	72.8 (53.3-91.3)	161 (108-218)	334 (213-491)	547 (334-866)	401
20 years and older	99-00	118 (107-131)	102 (89.5-117)	257 (222-298)	669 (530-965)	1430 (1180-2210)	1456
	01-02	119 (108-132)	105 (96.3-120)	277 (240-321)	702 (583-871)	1400 (1010-1840)	1647
	03-04	130 (115-147)	117 (96.8-133)	338 (279-417)	815 (652-1060)	1510 (1170-2110)	1534
	05-06	115 (103-128)	100 (87.6-117)	278 (233-309)	700 (574-803)	1220 (972-1530)	1490
	07-08	97.9 (89.6-107)	78.7 (73.2-87.7)	236 (208-266)	624 (518-759)	1100 (875-1380)	1814
Gender							
Males	99-00	92.8 (82.0-105)	79.0 (70.8-88.2)	214 (165-274)	661 (457-978)	1290 (965-1920)	1214
	01-02	97.6 (85.8-111)	83.2 (72.6-96.8)	232 (186-280)	729 (554-974)	1400 (980-2000)	1371
	03-04	102 (91.9-113)	83.7 (71.0-99.0)	258 (225-307)	704 (562-896)	1320 (1060-1590)	1250
	05-06	85.7 (75.4-97.4)	73.0 (61.0-90.2)	204 (172-231)	504 (368-673)	898 (607-1240)	1270
	07-08	78.1 (68.5-89.1)	65.5 (57.0-73.8)	181 (162-216)	490 (390-625)	936 (662-1190)	1294
Females	99-00	123 (109-139)	104 (93.7-118)	249 (203-326)	543 (460-770)	1270 (770-2250)	1322
	01-02	123 (110-139)	113 (97.4-124)	269 (235-312)	568 (470-725)	944 (784-1330)	1411
	03-04	139 (119-163)	120 (97.8-143)	335 (250-418)	741 (587-923)	1490 (951-2200)	1355
	05-06	129 (116-144)	106 (97.4-121)	293 (247-333)	759 (629-920)	1370 (1150-1730)	1278
	07-08	106 (95.5-117)	88.5 (77.6-98.6)	227 (188-278)	610 (491-727)	1040 (759-1520)	1310

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.66 for survey periods 1999-2008 compared with results previously released.

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Urinary Mono-ethyl phthalate (MEP) (creatinine corrected)

Metabolite of Diethyl phthalate (DEP)

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

Race/ethnicity	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Mexican Americans	99-00	108 (93.9-125)	102 (89.8-115)	252 (207-312)	538 (444-643)	875 (643-1270)	813
	01-02	141 (120-165)	131 (108-160)	304 (261-378)	714 (568-1090)	1280 (928-1740)	677
	03-04	159 (141-179)	154 (133-178)	352 (275-439)	815 (631-1060)	1500 (1190-2070)	652
	05-06	146 (123-173)	125 (107-157)	324 (235-425)	767 (600-1020)	1410 (926-2510)	637
	07-08	119 (100-140)	105 (81.9-142)	260 (224-306)	616 (502-750)	1230 (628-2160)	531
Non-Hispanic blacks	99-00	137 (121-156)	130 (109-151)	292 (257-333)	682 (503-1120)	1270 (810-1710)	603
	01-02	163 (149-179)	150 (122-178)	367 (316-408)	818 (634-979)	1380 (1020-1850)	703
	03-04	167 (148-189)	140 (124-162)	409 (314-522)	1010 (793-1300)	1710 (1420-2310)	699
	05-06	154 (131-181)	134 (113-160)	360 (311-412)	919 (590-1290)	1700 (1070-2030)	678
	07-08	131 (115-148)	121 (105-132)	280 (224-334)	614 (489-843)	1100 (836-1780)	597
Non-Hispanic whites	99-00	98.3 (88.9-109)	84.5 (72.9-93.7)	206 (158-255)	565 (432-916)	1290 (975-1810)	908
	01-02	103 (93.5-114)	89.6 (82.1-98.9)	223 (190-265)	607 (470-765)	1050 (874-1440)	1216
	03-04	109 (95.3-125)	88.9 (79.2-105)	254 (223-320)	652 (548-876)	1270 (922-1830)	1088
	05-06	96.1 (86.5-107)	84.5 (71.2-97.6)	211 (189-242)	532 (450-686)	993 (828-1240)	1038
	07-08	82.4 (74.7-90.9)	66.4 (58.5-73.8)	185 (158-219)	523 (397-640)	871 (708-1040)	1077

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 0.66 for survey periods 1999-2008 compared with results previously released.

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Urinary Mono-2-ethylhexyl phthalate (MEHP)

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	3.43 (3.19-3.69)	3.20 (3.00-3.60)	7.60 (6.80-8.40)	14.9 (13.5-17.4)	23.8 (19.2-28.6)	2541
	01-02	4.27 (3.80-4.79)	4.20 (3.70-4.90)	9.80 (8.40-11.6)	23.0 (19.1-27.9)	39.2 (31.8-50.0)	2782
	03-04	2.34 (2.10-2.62)	1.90 (1.70-2.40)	5.30 (4.50-6.60)	15.1 (11.4-20.6)	31.0 (21.4-42.0)	2605
	05-06	3.04 (2.78-3.32)	2.50 (2.10-2.80)	6.30 (5.70-7.10)	17.7 (14.0-22.5)	39.7 (28.6-52.1)	2548
	07-08	2.64 (2.29-3.05)	2.20 (1.80-2.50)	5.40 (4.30-6.90)	14.1 (11.2-20.2)	27.6 (19.8-39.8)	2604
Age group							
6-11 years	99-00	5.12 (4.42-5.92)	4.90 (3.70-6.40)	11.1 (8.30-13.6)	19.0 (13.8-36.1)	35.3 (15.6-130)	328
	01-02	4.41 (3.90-5.00)	4.40 (4.10-5.30)	9.30 (7.90-11.7)	19.7 (14.6-25.9)	31.4 (21.8-47.9)	393
	03-04	2.84 (2.10-3.84)	2.70 (1.80-4.10)	6.40 (4.40-9.60)	13.9 (7.80-27.6)	27.6 (11.3-64.7)	342
	05-06	3.10 (2.78-3.47)	3.00 (2.60-3.30)	6.20 (5.10-7.10)	14.1 (9.40-19.3)	19.7 (14.7-36.6)	356
	07-08	2.39 (2.05-2.80)	2.20 (1.70-2.90)	4.50 (3.70-6.20)	8.70 (6.40-13.9)	15.1 (10.6-24.1)	389
12-19 years	99-00	3.75 (3.24-4.35)	3.70 (2.90-4.60)	8.10 (6.40-9.40)	15.3 (11.4-20.5)	22.8 (19.1-29.2)	752
	01-02	4.57 (3.96-5.27)	4.50 (3.70-5.10)	11.0 (9.50-14.4)	23.0 (17.7-32.7)	42.5 (25.9-57.5)	742
	03-04	2.77 (2.25-3.41)	2.50 (2.00-3.00)	6.40 (4.50-8.60)	18.6 (10.2-35.6)	40.6 (20.7-58.4)	729
	05-06	3.72 (3.04-4.56)	3.20 (2.40-4.10)	8.80 (6.20-13.3)	22.6 (13.8-43.4)	48.7 (23.1-62.9)	702
	07-08	2.99 (2.39-3.75)	2.30 (1.80-2.70)	6.00 (4.40-9.90)	21.1 (11.8-32.8)	37.6 (24.8-74.1)	401
20 years and older	99-00	3.21 (2.94-3.51)	3.00 (2.70-3.40)	7.30 (6.40-8.00)	14.5 (12.1-17.0)	22.7 (17.5-27.0)	1461
	01-02	4.20 (3.63-4.86)	4.10 (3.50-5.00)	9.50 (8.10-11.9)	23.5 (18.0-29.8)	39.5 (30.3-57.1)	1647
	03-04	2.23 (2.03-2.44)	1.70 (1.50-2.00)	5.10 (4.50-6.00)	15.1 (10.9-19.7)	29.5 (20.4-40.0)	1534
	05-06	2.94 (2.68-3.21)	2.30 (1.90-2.70)	6.20 (5.60-6.70)	17.7 (13.6-24.5)	41.5 (28.6-54.1)	1490
	07-08	2.62 (2.27-3.02)	2.10 (1.80-2.50)	5.40 (4.20-7.10)	14.4 (11.2-20.2)	27.3 (19.2-40.6)	1814
Gender							
Males	99-00	3.68 (3.31-4.10)	3.40 (2.90-3.90)	8.00 (7.40-8.80)	16.0 (14.0-19.0)	25.3 (19.5-36.7)	1215
	01-02	4.31 (3.84-4.83)	4.30 (3.70-5.10)	9.70 (8.30-11.2)	23.0 (16.9-29.8)	37.9 (29.9-48.4)	1371
	03-04	2.56 (2.26-2.90)	2.20 (1.70-2.60)	6.00 (4.60-7.70)	17.2 (11.3-26.3)	33.3 (24.9-55.5)	1250
	05-06	3.40 (3.01-3.85)	2.80 (2.40-3.30)	7.00 (5.70-9.00)	22.6 (15.0-35.8)	49.8 (35.2-67.4)	1270
	07-08	2.77 (2.35-3.27)	2.30 (1.90-2.80)	5.50 (4.20-7.60)	14.4 (11.2-20.5)	28.9 (19.2-40.0)	1294
Females	99-00	3.21 (2.91-3.54)	3.10 (2.80-3.50)	7.10 (5.90-8.50)	13.6 (12.1-17.2)	21.9 (15.6-28.5)	1326
	01-02	4.23 (3.67-4.86)	4.10 (3.50-5.00)	9.80 (8.40-12.2)	23.0 (19.5-28.4)	43.5 (31.4-53.7)	1411
	03-04	2.15 (1.92-2.42)	1.80 (1.50-2.10)	4.90 (4.10-5.70)	13.2 (10.0-18.1)	27.8 (17.5-40.7)	1355
	05-06	2.72 (2.49-2.98)	2.10 (1.90-2.40)	6.00 (5.20-6.80)	13.9 (11.7-17.5)	30.8 (21.9-36.2)	1278
	07-08	2.52 (2.18-2.92)	2.00 (1.70-2.40)	5.10 (4.20-6.30)	14.1 (9.50-21.4)	26.4 (19.2-42.1)	1310
Race/ethnicity							
Mexican Americans	99-00	3.49 (3.16-3.85)	3.50 (3.10-3.90)	7.00 (5.70-8.60)	13.3 (10.7-18.7)	23.9 (17.4-27.3)	814
	01-02	4.32 (3.75-4.98)	4.70 (3.80-5.70)	10.1 (8.50-11.4)	19.6 (16.6-23.0)	28.5 (24.2-39.9)	677
	03-04	2.35 (1.87-2.96)	2.20 (1.50-3.00)	5.10 (4.30-6.60)	11.2 (7.50-16.5)	18.5 (11.6-38.2)	652
	05-06	2.99 (2.50-3.57)	2.30 (1.70-3.30)	5.70 (4.70-7.60)	18.4 (12.1-30.6)	36.4 (26.2-63.8)	637
	07-08	2.89 (2.38-3.50)	2.60 (2.00-3.10)	5.30 (4.40-8.20)	16.9 (10.3-27.3)	30.2 (22.9-34.3)	531
Non-Hispanic blacks	99-00	4.82 (3.92-5.93)	5.20 (4.10-5.80)	9.50 (7.60-11.4)	19.5 (12.9-26.5)	29.5 (18.6-60.3)	603
	01-02	6.60 (5.57-7.82)	6.70 (5.40-8.10)	15.4 (13.0-18.7)	32.9 (26.5-41.4)	52.6 (41.0-84.0)	703
	03-04	3.61 (3.07-4.23)	3.50 (3.00-4.00)	8.50 (7.10-11.4)	22.9 (16.5-28.6)	35.2 (29.3-49.1)	699
	05-06	4.09 (3.51-4.75)	3.70 (3.10-4.10)	9.10 (6.90-11.9)	22.5 (17.4-40.7)	59.3 (34.5-86.7)	678
	07-08	3.30 (2.98-3.64)	3.20 (2.70-3.60)	7.20 (6.30-8.90)	15.3 (13.3-20.2)	25.5 (19.2-38.1)	597
Non-Hispanic whites	99-00	3.16 (2.89-3.46)	2.80 (2.50-3.10)	7.40 (6.30-8.40)	14.5 (12.2-17.4)	22.4 (16.9-28.5)	912
	01-02	3.85 (3.37-4.40)	3.70 (3.10-4.40)	8.70 (7.80-9.90)	20.9 (17.3-25.9)	37.9 (29.9-49.5)	1216
	03-04	2.14 (1.92-2.39)	1.70 (1.40-1.90)	4.80 (4.00-5.80)	13.6 (9.50-20.0)	31.0 (18.1-48.9)	1088
	05-06	2.83 (2.59-3.10)	2.20 (1.80-2.60)	5.90 (5.30-6.90)	17.0 (13.3-21.6)	36.3 (26.6-51.0)	1038
	07-08	2.44 (2.07-2.88)	2.00 (1.70-2.30)	4.90 (3.70-6.20)	13.1 (8.70-20.1)	25.0 (15.8-42.1)	1077

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 1.2, 1.0, 0.9, 1.2, and 1.1 respectively.

Urinary Mono-2-ethylhexyl phthalate (MEHP) (creatinine corrected)

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	3.12 (2.95-3.31)	3.08 (2.82-3.27)	5.88 (5.38-6.25)	10.8 (9.62-12.5)	18.9 (15.0-21.8)	2541
	01-02	4.00 (3.58-4.48)	3.90 (3.44-4.47)	7.94 (7.22-9.02)	18.0 (15.3-21.5)	32.8 (25.2-42.9)	2782
	03-04	2.20 (2.01-2.41)	1.89 (1.68-2.19)	4.31 (3.84-4.74)	10.8 (8.72-13.8)	25.4 (16.7-34.7)	2605
	05-06	2.96 (2.72-3.23)	2.61 (2.37-2.86)	5.69 (5.00-6.47)	13.7 (11.4-17.8)	30.1 (21.2-35.2)	2548
	07-08	2.66 (2.37-2.99)	2.36 (2.11-2.67)	5.15 (4.35-6.00)	11.8 (8.89-15.6)	21.9 (14.6-33.4)	2604
Age group							
6-11 years	99-00	5.19 (4.55-5.93)	5.37 (4.52-5.95)	9.11 (8.06-11.4)	21.6 (11.5-41.9)	41.9 (13.5-86.2)	328
	01-02	5.03 (4.47-5.65)	5.38 (4.51-6.21)	9.90 (7.87-11.5)	21.1 (13.8-28.8)	31.4 (24.3-40.7)	393
	03-04	3.00 (2.30-3.93)	2.80 (1.93-4.09)	5.86 (4.69-7.70)	14.3 (8.54-24.4)	28.7 (14.1-45.3)	342
	05-06	3.42 (3.08-3.79)	3.26 (2.63-3.92)	6.18 (5.40-6.85)	11.3 (8.96-17.4)	20.7 (11.3-31.8)	356
	07-08	2.95 (2.49-3.49)	2.80 (2.17-3.33)	5.42 (3.95-6.51)	10.6 (7.47-14.0)	15.6 (10.6-23.7)	389
12-19 years	99-00	2.53 (2.14-2.99)	2.35 (2.05-2.76)	5.83 (4.38-6.29)	9.66 (7.41-11.5)	12.1 (10.5-17.3)	752
	01-02	3.53 (3.09-4.03)	3.67 (2.89-4.48)	7.47 (6.51-8.67)	15.2 (11.7-21.9)	25.2 (17.7-32.8)	742
	03-04	2.07 (1.74-2.48)	1.88 (1.60-2.23)	4.25 (3.19-5.62)	11.6 (6.83-23.2)	24.8 (11.6-37.9)	729
	05-06	2.77 (2.27-3.38)	2.43 (2.03-2.87)	5.24 (4.06-7.75)	15.2 (9.86-23.2)	27.1 (16.0-43.7)	702
	07-08	2.33 (1.90-2.86)	2.00 (1.67-2.57)	4.33 (3.55-6.23)	12.6 (8.31-16.3)	21.9 (12.0-45.7)	401
20 years and older	99-00	3.03 (2.83-3.25)	2.98 (2.73-3.23)	5.55 (4.90-6.06)	10.0 (8.60-12.9)	17.5 (13.8-22.1)	1461
	01-02	3.97 (3.49-4.52)	3.82 (3.26-4.38)	7.79 (7.00-9.00)	18.3 (15.3-21.8)	34.5 (23.1-47.9)	1647
	03-04	2.14 (1.98-2.31)	1.84 (1.63-2.08)	4.14 (3.78-4.40)	10.5 (8.38-12.9)	25.6 (15.9-36.3)	1534
	05-06	2.94 (2.69-3.23)	2.60 (2.36-2.83)	5.67 (4.77-6.52)	13.8 (11.3-18.1)	33.1 (21.9-47.4)	1490
	07-08	2.69 (2.39-3.02)	2.36 (2.14-2.66)	5.20 (4.38-6.04)	11.8 (8.94-16.6)	22.1 (13.5-37.1)	1814
Gender							
Males	99-00	2.89 (2.60-3.22)	2.76 (2.52-2.96)	5.58 (4.71-6.08)	10.3 (9.35-12.4)	21.6 (14.1-27.7)	1215
	01-02	3.50 (3.08-3.99)	3.33 (2.83-3.90)	7.00 (6.49-7.77)	16.2 (12.8-20.9)	31.6 (20.5-49.4)	1371
	03-04	2.01 (1.82-2.21)	1.71 (1.46-1.89)	4.14 (3.49-4.81)	10.4 (7.68-16.2)	23.3 (15.1-41.1)	1250
	05-06	2.73 (2.43-3.07)	2.30 (2.12-2.61)	5.08 (4.29-6.14)	14.3 (11.2-20.5)	31.0 (21.5-50.9)	1270
	07-08	2.33 (2.03-2.68)	2.00 (1.71-2.34)	4.36 (3.71-5.41)	11.6 (8.33-14.2)	20.2 (14.6-26.3)	1294
Females	99-00	3.36 (3.11-3.63)	3.33 (2.91-3.80)	6.15 (5.55-6.77)	11.1 (9.11-14.0)	17.3 (12.4-24.6)	1326
	01-02	4.54 (4.02-5.13)	4.47 (3.85-5.14)	9.28 (7.94-10.3)	20.3 (16.6-24.4)	34.7 (27.1-42.0)	1411
	03-04	2.40 (2.15-2.69)	2.16 (1.84-2.40)	4.40 (3.97-4.89)	10.9 (8.27-16.0)	27.0 (17.5-34.6)	1355
	05-06	3.20 (2.89-3.55)	2.89 (2.58-3.17)	6.07 (5.00-7.00)	13.3 (10.4-16.3)	28.2 (18.2-37.4)	1278
	07-08	3.02 (2.70-3.38)	2.76 (2.36-3.02)	5.57 (4.90-6.50)	12.1 (8.64-18.2)	24.7 (14.8-44.4)	1310
Race/ethnicity							
Mexican Americans	99-00	3.16 (2.72-3.68)	3.15 (2.52-3.81)	5.88 (4.86-7.24)	11.6 (9.63-13.1)	15.7 (12.6-23.1)	814
	01-02	4.07 (3.60-4.61)	4.18 (3.82-4.90)	7.80 (6.64-9.49)	16.4 (13.6-18.9)	24.9 (19.8-28.7)	677
	03-04	2.12 (1.74-2.59)	1.94 (1.50-2.42)	4.06 (3.29-4.93)	9.38 (5.72-15.4)	16.8 (9.86-38.6)	652
	05-06	2.69 (2.36-3.07)	2.41 (2.04-2.73)	4.82 (4.09-6.05)	14.3 (10.0-16.9)	27.2 (16.3-40.1)	637
	07-08	2.82 (2.38-3.34)	2.45 (2.08-2.89)	5.00 (4.14-6.86)	12.3 (9.58-20.7)	29.0 (17.0-50.3)	531
Non-Hispanic blacks	99-00	3.11 (2.59-3.73)	3.13 (2.50-3.61)	5.84 (4.43-7.32)	10.2 (8.05-15.6)	18.4 (11.6-35.2)	603
	01-02	4.63 (3.96-5.42)	4.59 (3.97-5.02)	9.93 (7.95-12.4)	21.2 (16.0-33.2)	39.9 (27.7-48.1)	703
	03-04	2.56 (2.24-2.92)	2.28 (2.02-2.78)	5.17 (4.48-6.83)	13.2 (10.5-16.2)	27.5 (18.4-36.0)	699
	05-06	2.87 (2.45-3.38)	2.41 (2.09-2.78)	5.72 (4.40-7.29)	15.0 (12.0-20.6)	54.4 (18.4-84.0)	678
	07-08	2.56 (2.26-2.90)	2.40 (2.17-2.73)	4.77 (4.07-5.76)	11.4 (8.75-15.4)	18.0 (16.1-26.3)	597
Non-Hispanic whites	99-00	3.09 (2.84-3.36)	3.08 (2.73-3.47)	5.87 (5.11-6.67)	10.6 (8.95-13.5)	20.0 (14.0-24.6)	912
	01-02	3.81 (3.34-4.35)	3.67 (3.11-4.33)	7.78 (6.74-9.35)	17.0 (14.1-21.8)	32.8 (21.5-46.9)	1216
	03-04	2.12 (1.91-2.35)	1.82 (1.60-2.13)	4.11 (3.49-4.42)	10.7 (7.42-15.1)	27.0 (15.1-37.4)	1088
	05-06	2.98 (2.77-3.21)	2.66 (2.43-2.93)	5.73 (5.00-6.47)	13.4 (11.3-17.8)	27.7 (19.5-37.4)	1038
	07-08	2.55 (2.20-2.94)	2.26 (1.97-2.67)	4.90 (3.99-5.92)	11.0 (7.80-14.8)	20.5 (11.9-30.2)	1077

Urinary Mono-(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP)

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	20.0 (17.8-22.5)	20.1 (17.8-22.4)	43.6 (38.0-49.7)	92.3 (77.0-108)	192 (131-256)	2782
	03-04	21.7 (19.3-24.4)	21.2 (18.7-24.1)	49.1 (40.5-56.9)	121 (91.3-164)	266 (165-383)	2605
	05-06	25.5 (23.0-28.2)	23.8 (21.5-26.8)	55.1 (50.2-61.0)	153 (132-180)	306 (240-421)	2548
	07-08	22.1 (18.7-26.0)	20.7 (17.6-23.7)	48.2 (39.8-61.8)	123 (83.7-181)	238 (171-336)	2604
Age group							
6-11 years	01-02	33.6 (29.7-37.9)	32.9 (26.9-39.1)	66.9 (49.7-74.0)	127 (103-148)	216 (137-280)	393
	03-04	36.9 (28.4-47.9)	36.5 (26.5-47.0)	77.4 (49.1-103)	164 (79.9-350)	318 (164-400)	342
	05-06	34.9 (30.8-39.6)	35.7 (31.3-40.7)	68.9 (56.5-76.0)	140 (101-169)	206 (133-401)	356
	07-08	28.6 (23.4-34.8)	27.0 (20.1-36.4)	56.1 (45.4-67.8)	113 (76.5-218)	242 (109-351)	389
12-19 years	01-02	24.9 (21.3-29.1)	25.3 (22.9-31.3)	50.6 (40.7-64.5)	107 (78.5-148)	216 (117-330)	742
	03-04	28.3 (23.0-34.8)	29.8 (25.9-33.9)	56.9 (45.4-73.7)	157 (84.1-299)	317 (176-553)	729
	05-06	34.8 (28.0-43.3)	32.5 (27.1-42.2)	79.5 (66.9-103)	213 (131-384)	424 (232-836)	702
	07-08	29.8 (22.5-39.3)	26.6 (20.0-35.4)	66.7 (43.7-96.6)	224 (101-417)	417 (209-615)	401
20 years and older	01-02	18.1 (15.7-20.9)	17.8 (14.7-20.7)	39.8 (32.7-48.0)	86.2 (65.7-107)	175 (110-279)	1647
	03-04	19.5 (17.7-21.5)	18.4 (16.6-21.0)	41.9 (36.9-51.2)	107 (88.2-136)	225 (148-384)	1534
	05-06	23.4 (21.1-25.9)	21.4 (19.5-23.7)	48.6 (43.7-55.1)	148 (121-172)	306 (238-421)	1490
	07-08	20.5 (17.4-24.1)	19.6 (17.1-22.2)	46.3 (37.2-59.9)	110 (75.0-169)	214 (157-303)	1814
Gender							
Males	01-02	22.0 (19.5-24.7)	21.2 (19.4-24.2)	48.0 (41.4-54.4)	94.2 (80.8-110)	212 (130-256)	1371
	03-04	24.1 (20.9-27.9)	22.9 (19.2-27.9)	51.0 (40.5-59.8)	133 (94.8-220)	317 (162-470)	1250
	05-06	29.6 (26.0-33.8)	27.2 (22.9-31.0)	63.1 (54.3-71.9)	180 (143-263)	494 (285-626)	1270
	07-08	23.2 (19.4-27.8)	20.8 (18.1-24.5)	46.0 (39.2-57.3)	132 (85.4-190)	277 (162-349)	1294
Females	01-02	18.3 (15.7-21.4)	18.2 (14.9-22.1)	39.8 (34.3-46.0)	86.0 (69.4-115)	170 (119-273)	1411
	03-04	19.7 (17.4-22.2)	19.4 (16.7-22.8)	46.4 (37.5-54.4)	103 (84.1-148)	214 (140-318)	1355
	05-06	22.0 (19.2-25.2)	21.4 (19.5-23.4)	47.1 (42.6-54.3)	135 (113-156)	232 (186-300)	1278
	07-08	21.0 (17.8-24.8)	19.9 (16.8-23.3)	51.0 (39.9-64.6)	121 (76.9-183)	223 (171-336)	1310
Race/ethnicity							
Mexican Americans	01-02	18.5 (16.2-21.1)	19.1 (16.3-21.6)	36.3 (31.6-44.0)	79.9 (66.4-93.9)	123 (100-161)	677
	03-04	18.9 (15.4-23.4)	19.8 (17.6-22.3)	37.5 (30.0-45.6)	72.2 (52.4-115)	116 (71.6-327)	652
	05-06	23.0 (18.0-29.3)	19.9 (15.7-23.9)	47.8 (34.8-65.3)	136 (84.6-223)	244 (157-520)	637
	07-08	22.7 (18.5-27.7)	19.8 (17.5-23.8)	43.6 (33.5-66.6)	104 (82.8-157)	238 (158-282)	531
Non-Hispanic blacks	01-02	29.8 (26.1-34.1)	30.9 (27.2-34.3)	61.9 (52.6-69.4)	126 (108-157)	276 (157-339)	703
	03-04	30.8 (26.8-35.5)	29.1 (25.3-32.3)	65.6 (53.7-76.3)	154 (113-178)	275 (174-401)	699
	05-06	34.8 (30.3-39.9)	30.2 (27.6-33.2)	73.8 (61.0-96.7)	206 (156-275)	395 (274-547)	678
	07-08	25.7 (23.1-28.6)	25.8 (22.4-28.9)	55.9 (47.1-64.7)	121 (99.1-150)	184 (137-255)	597
Non-Hispanic whites	01-02	19.1 (16.7-21.9)	19.2 (16.9-21.4)	41.7 (35.3-50.7)	91.1 (75.6-110)	212 (130-275)	1216
	03-04	20.8 (18.6-23.3)	19.7 (17.2-22.5)	47.5 (39.4-56.1)	120 (91.3-165)	270 (155-403)	1088
	05-06	24.3 (21.9-26.9)	23.0 (21.1-26.0)	54.6 (48.4-61.0)	148 (121-172)	302 (221-421)	1038
	07-08	21.3 (17.6-25.8)	20.2 (16.5-24.1)	46.7 (36.1-65.2)	123 (75.1-203)	277 (161-373)	1077

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, and 07-08 are 1.0, 0.3, 0.7, and 0.7 respectively.

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Mono-(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP) (creatinine corrected)

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

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

	Survey years	Geometric	Selected percentiles				Sample size
		mean (95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	18.8 (17.0-20.7)	16.6 (14.9-18.5)	32.2 (27.8-37.1)	71.1 (58.7-88.3)	143 (101-200)	2782
	03-04	20.4 (18.7-22.3)	17.7 (16.3-19.6)	35.8 (30.5-43.3)	93.5 (74.0-128)	182 (134-262)	2605
	05-06	24.8 (22.4-27.5)	21.4 (19.1-23.4)	46.1 (40.0-52.1)	117 (97.8-148)	235 (197-272)	2548
	07-08	22.2 (19.4-25.5)	19.3 (17.4-22.1)	40.5 (34.1-50.3)	99.3 (69.7-134)	179 (135-252)	2604
Age group							
6-11 years	01-02	38.2 (34.3-42.6)	34.3 (29.9-38.9)	60.6 (51.9-76.4)	107 (96.3-147)	211 (122-313)	393
	03-04	39.0 (31.1-48.9)	36.6 (25.3-49.3)	65.6 (49.8-91.3)	129 (77.1-253)	211 (123-708)	342
	05-06	38.5 (34.2-43.3)	37.0 (32.9-40.3)	65.5 (55.4-71.9)	115 (85.1-165)	213 (119-333)	356
	07-08	35.2 (29.1-42.5)	31.4 (25.6-37.8)	53.5 (44.8-72.3)	139 (79.9-230)	258 (141-303)	389
12-19 years	01-02	19.2 (17.0-21.8)	17.8 (15.6-20.0)	34.9 (29.2-42.7)	73.4 (58.4-80.7)	102 (86.6-160)	742
	03-04	21.2 (18.1-24.7)	18.6 (16.9-21.7)	38.7 (29.7-53.4)	103 (62.7-209)	212 (100-358)	729
	05-06	26.0 (21.2-31.7)	23.7 (18.8-28.4)	49.4 (37.4-74.0)	131 (79.0-228)	278 (132-375)	702
	07-08	23.2 (18.1-29.6)	20.0 (14.6-23.9)	46.1 (31.5-66.3)	148 (66.6-234)	234 (146-373)	401
20 years and older	01-02	17.1 (15.2-19.3)	15.0 (13.3-16.7)	27.7 (23.2-34.0)	63.7 (48.3-86.9)	137 (84.4-203)	1647
	03-04	18.8 (17.5-20.2)	16.3 (15.4-17.5)	31.6 (28.1-35.3)	83.8 (67.2-106)	171 (129-246)	1534
	05-06	23.4 (21.1-26.0)	19.4 (17.6-21.8)	42.5 (37.6-49.2)	115 (93.1-153)	235 (184-298)	1490
	07-08	21.0 (18.5-24.0)	18.5 (16.3-20.2)	38.1 (30.9-49.2)	94.3 (62.6-126)	164 (120-235)	1814
Gender							
Males	01-02	17.9 (16.2-19.7)	15.4 (13.8-17.9)	32.2 (27.8-36.8)	73.4 (55.3-91.8)	137 (97.7-224)	1371
	03-04	18.9 (17.1-20.9)	17.1 (15.2-18.6)	32.7 (26.6-41.6)	93.4 (68.8-123)	193 (108-291)	1250
	05-06	23.8 (21.0-26.9)	20.2 (17.5-23.3)	44.8 (38.5-54.1)	129 (92.5-166)	251 (202-352)	1270
	07-08	19.6 (16.8-22.7)	16.8 (14.6-20.0)	34.8 (28.7-41.8)	90.3 (65.2-119)	164 (111-258)	1294
Females	01-02	19.7 (17.3-22.4)	17.6 (15.4-19.5)	32.1 (26.8-38.6)	70.5 (57.8-93.7)	156 (93.7-201)	1411
	03-04	21.9 (19.7-24.5)	18.7 (16.8-20.9)	39.3 (33.8-46.9)	94.3 (72.8-136)	171 (146-261)	1355
	05-06	25.9 (23.2-28.8)	22.5 (19.6-25.5)	47.3 (40.5-52.3)	108 (88.8-131)	202 (157-278)	1278
	07-08	25.2 (22.1-28.6)	22.1 (19.6-24.4)	47.4 (38.5-56.1)	112 (84.6-150)	190 (162-268)	1310
Race/ethnicity							
Mexican Americans	01-02	17.4 (15.9-19.1)	15.7 (14.4-17.5)	30.6 (26.0-34.7)	65.9 (50.6-83.9)	103 (75.5-128)	677
	03-04	17.1 (14.3-20.4)	15.4 (13.2-17.7)	29.3 (23.8-36.8)	57.3 (45.7-97.6)	105 (70.1-195)	652
	05-06	20.7 (17.2-25.0)	17.5 (15.3-21.3)	37.3 (30.9-45.7)	99.9 (67.6-159)	181 (110-357)	637
	07-08	22.1 (17.7-27.7)	18.8 (15.2-23.4)	38.6 (28.3-54.9)	91.4 (61.0-170)	197 (141-282)	531
Non-Hispanic blacks	01-02	20.9 (18.8-23.3)	19.7 (17.5-21.8)	38.3 (32.1-46.0)	93.5 (69.2-123)	164 (130-183)	703
	03-04	21.9 (20.1-23.8)	19.5 (17.3-22.6)	40.1 (35.8-45.3)	102 (75.5-122)	164 (133-269)	699
	05-06	24.5 (21.2-28.2)	18.9 (17.1-22.8)	46.1 (37.9-59.7)	128 (100-158)	308 (158-399)	678
	07-08	20.0 (18.1-22.0)	18.3 (16.5-19.2)	36.9 (27.9-46.7)	85.5 (65.8-103)	136 (107-227)	597
Non-Hispanic whites	01-02	18.9 (17.0-21.0)	16.3 (14.8-18.4)	32.1 (27.3-37.3)	70.8 (56.9-93.7)	177 (98.0-242)	1216
	03-04	20.5 (18.5-22.8)	17.8 (16.2-19.7)	35.3 (29.7-44.9)	96.2 (75.8-136)	211 (136-283)	1088
	05-06	25.6 (23.1-28.2)	22.4 (19.6-24.5)	47.6 (40.7-54.1)	119 (98.2-148)	231 (181-297)	1038
	07-08	22.2 (18.7-26.3)	19.5 (16.7-23.0)	40.4 (32.1-54.8)	99.1 (68.1-145)	179 (129-258)	1077

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Mono-(2-ethyl-5-oxohexyl) phthalate (MEOHP)

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	13.5 (12.0-15.0)	14.0 (12.5-15.1)	29.6 (25.2-34.0)	59.9 (50.4-70.9)	120 (87.2-156)	2782
	03-04	14.5 (13.0-16.1)	14.4 (12.4-16.7)	31.4 (27.4-36.6)	76.7 (59.4-102)	157 (106-232)	2605
	05-06	16.2 (14.6-18.0)	15.1 (13.5-17.1)	35.5 (32.1-40.3)	94.8 (78.5-112)	183 (147-250)	2548
	07-08	12.2 (10.3-14.3)	11.3 (10.0-13.3)	27.1 (21.8-33.8)	64.2 (47.3-93.6)	130 (93.6-177)	2604
Age group							
6-11 years	01-02	23.3 (20.9-26.1)	22.9 (18.5-28.1)	46.5 (38.1-52.0)	81.6 (64.7-109)	142 (93.9-178)	393
	03-04	25.1 (19.6-32.3)	25.8 (19.3-31.4)	51.1 (32.1-76.5)	97.9 (58.8-197)	197 (97.6-261)	342
	05-06	23.0 (20.3-26.1)	24.5 (19.9-27.6)	44.3 (38.1-52.3)	83.8 (63.6-115)	126 (77.3-253)	356
	07-08	16.9 (13.9-20.6)	16.6 (12.4-22.6)	34.5 (26.2-40.9)	64.4 (46.9-129)	137 (63.8-179)	389
12-19 years	01-02	17.5 (15.1-20.3)	18.6 (16.2-20.7)	35.0 (27.7-42.1)	70.7 (52.2-104)	118 (74.0-174)	742
	03-04	19.5 (16.0-23.7)	20.3 (18.4-23.5)	37.8 (32.6-44.6)	110 (54.6-168)	212 (103-326)	729
	05-06	23.0 (18.7-28.4)	22.1 (18.0-26.2)	50.7 (42.7-62.2)	134 (82.3-240)	263 (134-511)	702
	07-08	16.9 (12.8-22.3)	15.9 (11.9-19.3)	38.2 (24.0-55.5)	121 (58.1-258)	258 (120-354)	401
20 years and older	01-02	12.0 (10.5-13.9)	12.3 (10.4-14.1)	26.0 (21.6-32.1)	52.3 (41.8-68.3)	116 (74.9-160)	1647
	03-04	12.9 (11.8-14.1)	12.4 (10.9-14.5)	27.0 (25.0-30.9)	68.9 (55.0-86.5)	139 (92.7-216)	1534
	05-06	14.7 (13.2-16.4)	13.4 (12.2-15.1)	31.9 (28.2-36.2)	91.6 (74.6-104)	182 (138-247)	1490
	07-08	11.1 (9.48-13.1)	10.7 (9.30-12.3)	25.5 (20.2-31.4)	59.8 (42.3-88.9)	108 (80.0-155)	1814
Gender							
Males	01-02	14.5 (13.0-16.2)	14.6 (13.1-16.2)	31.6 (25.6-34.7)	60.4 (52.3-71.4)	129 (84.4-167)	1371
	03-04	15.6 (13.6-17.9)	14.7 (12.7-18.1)	31.8 (27.2-39.5)	83.8 (59.4-134)	185 (96.2-277)	1250
	05-06	18.3 (16.0-20.9)	16.3 (14.7-19.7)	39.3 (33.4-48.1)	104 (80.7-140)	258 (180-337)	1270
	07-08	12.5 (10.5-15.0)	11.3 (9.80-13.4)	26.1 (21.8-32.2)	61.8 (46.8-98.1)	139 (83.7-189)	1294
Females	01-02	12.5 (10.8-14.6)	13.1 (11.2-15.0)	28.1 (23.7-33.5)	57.5 (45.8-72.7)	115 (81.8-147)	1411
	03-04	13.4 (11.9-15.1)	13.7 (11.4-16.4)	29.5 (26.1-36.6)	68.6 (53.7-88.1)	143 (88.2-210)	1355
	05-06	14.4 (12.6-16.5)	13.8 (12.5-15.7)	32.5 (29.3-36.4)	81.7 (68.6-104)	159 (114-182)	1278
	07-08	11.8 (10.0-14.0)	11.7 (9.80-13.5)	27.9 (21.3-37.5)	64.2 (43.9-93.6)	122 (92.0-191)	1310
Race/ethnicity							
Mexican Americans	01-02	13.1 (11.6-14.9)	13.4 (11.6-15.0)	25.5 (21.6-30.8)	56.6 (40.6-70.3)	77.3 (70.5-101)	677
	03-04	12.8 (10.5-15.5)	13.6 (11.4-15.6)	25.3 (20.4-29.9)	46.6 (32.3-70.8)	76.0 (51.6-153)	652
	05-06	14.8 (11.7-18.8)	12.8 (10.5-16.1)	30.9 (22.6-42.9)	79.1 (51.7-131)	152 (92.9-276)	637
	07-08	12.6 (10.5-15.1)	11.4 (10.4-12.9)	25.1 (18.7-37.2)	53.4 (43.2-91.7)	118 (88.4-147)	531
Non-Hispanic blacks	01-02	19.6 (17.1-22.5)	20.1 (17.9-22.4)	39.0 (34.8-44.2)	80.5 (71.4-97.4)	153 (102-228)	703
	03-04	20.2 (17.7-23.0)	20.1 (17.0-22.5)	40.0 (33.9-46.9)	92.6 (68.8-130)	173 (104-247)	699
	05-06	21.8 (18.9-25.2)	18.8 (16.8-21.0)	46.0 (38.0-59.1)	130 (104-168)	243 (159-304)	678
	07-08	14.2 (12.7-15.9)	14.0 (12.7-16.3)	30.5 (25.8-35.9)	64.2 (52.1-76.1)	110 (71.9-136)	597
Non-Hispanic whites	01-02	12.8 (11.2-14.6)	13.2 (11.6-14.6)	28.5 (23.6-34.0)	58.6 (48.8-70.9)	126 (83.7-172)	1216
	03-04	13.8 (12.4-15.4)	13.4 (11.3-16.3)	31.0 (27.0-36.3)	77.6 (59.4-102)	161 (98.7-241)	1088
	05-06	15.5 (13.9-17.3)	15.0 (13.3-16.5)	35.3 (30.1-40.8)	92.6 (74.6-111)	182 (134-247)	1038
	07-08	11.7 (9.66-14.2)	11.0 (9.20-13.6)	26.9 (20.2-35.1)	64.2 (43.4-108)	137 (90.0-197)	1077

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, and 07-08 are 1.1, 0.5, 0.7, and 0.6 respectively.

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Mono-(2-ethyl-5-oxohexyl) phthalate (MEOHP) (creatinine corrected)

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	12.6 (11.5-13.9)	11.2 (10.2-12.3)	21.3 (18.3-23.8)	45.2 (37.1-58.1)	87.0 (68.0-124)	2782
	03-04	13.6 (12.4-14.8)	12.1 (11.0-12.9)	24.3 (20.9-27.8)	63.0 (47.8-75.8)	118 (94.1-153)	2605
	05-06	15.8 (14.2-17.5)	13.5 (12.4-14.7)	28.9 (26.0-33.8)	77.7 (62.4-91.1)	144 (118-172)	2548
	07-08	12.3 (10.7-14.0)	11.0 (9.72-12.2)	22.3 (18.4-27.9)	52.9 (37.9-74.6)	107 (74.8-136)	2604
Age group							
6-11 years	01-02	26.6 (24.0-29.4)	22.8 (20.3-25.0)	43.3 (33.6-47.1)	74.7 (69.0-91.9)	131 (83.0-183)	393
	03-04	26.6 (21.4-33.0)	25.3 (17.8-32.4)	43.6 (34.2-63.2)	77.1 (63.0-118)	121 (76.3-435)	342
	05-06	25.4 (22.5-28.6)	24.4 (21.4-26.4)	42.7 (36.0-46.9)	70.4 (52.8-117)	136 (77.2-195)	356
	07-08	20.8 (17.1-25.4)	18.5 (15.6-21.5)	35.0 (26.4-46.0)	84.1 (47.2-137)	145 (84.8-187)	389
12-19 years	01-02	13.5 (12.0-15.2)	12.0 (10.8-14.3)	23.4 (20.0-28.5)	48.4 (39.2-54.9)	70.5 (55.0-97.2)	742
	03-04	14.6 (12.6-16.9)	12.7 (11.6-14.4)	25.5 (20.7-33.8)	67.9 (42.3-143)	153 (61.8-209)	729
	05-06	17.2 (14.1-20.9)	15.3 (12.5-18.6)	32.5 (25.7-41.3)	84.2 (49.1-147)	163 (93.1-250)	702
	07-08	13.2 (10.3-16.7)	11.1 (9.08-13.5)	25.9 (18.9-35.6)	86.3 (39.4-128)	132 (84.3-203)	401
20 years and older	01-02	11.4 (10.2-12.8)	10.1 (8.89-11.4)	17.5 (15.2-21.8)	38.4 (30.5-52.5)	84.3 (53.3-128)	1647
	03-04	12.4 (11.5-13.3)	11.0 (10.0-12.0)	20.9 (18.6-22.8)	53.9 (40.7-70.2)	109 (88.6-130)	1534
	05-06	14.8 (13.3-16.4)	12.4 (11.2-13.5)	26.7 (23.8-31.3)	76.3 (61.0-89.9)	144 (106-170)	1490
	07-08	11.4 (10.0-13.0)	10.0 (9.15-11.2)	20.8 (16.7-25.6)	47.3 (33.2-65.3)	87.4 (62.7-136)	1814
Gender							
Males	01-02	11.8 (10.7-13.0)	10.2 (8.93-11.7)	21.2 (18.5-23.3)	46.1 (35.3-58.7)	84.2 (69.6-104)	1371
	03-04	12.3 (11.1-13.5)	11.1 (10.0-12.0)	21.6 (17.6-26.9)	59.1 (45.4-72.0)	120 (72.0-162)	1250
	05-06	14.7 (12.9-16.7)	12.6 (10.9-14.3)	27.1 (23.3-35.6)	79.5 (59.6-96.9)	147 (120-190)	1270
	07-08	10.5 (9.08-12.2)	9.25 (8.08-10.6)	18.9 (15.9-23.1)	46.7 (32.6-62.4)	86.4 (56.5-144)	1294
Females	01-02	13.5 (11.9-15.2)	12.0 (10.8-13.7)	21.5 (18.0-25.6)	44.8 (36.8-61.6)	92.3 (61.0-139)	1411
	03-04	14.9 (13.4-16.7)	12.7 (11.4-14.2)	26.6 (21.8-30.6)	65.6 (48.0-90.1)	118 (97.0-157)	1355
	05-06	16.9 (15.1-19.0)	14.7 (13.2-16.5)	30.3 (26.6-34.7)	76.4 (57.6-97.2)	137 (106-170)	1278
	07-08	14.2 (12.5-16.0)	12.5 (11.5-13.8)	25.9 (21.2-31.0)	61.1 (40.9-84.1)	114 (84.3-142)	1310
Race/ethnicity							
Mexican Americans	01-02	12.4 (11.4-13.5)	11.0 (10.5-12.3)	20.9 (18.5-24.4)	44.6 (33.4-56.2)	65.9 (53.1-83.1)	677
	03-04	11.5 (9.81-13.6)	10.7 (9.04-12.3)	18.8 (15.6-24.6)	39.1 (31.8-53.9)	63.0 (47.2-121)	652
	05-06	13.3 (11.1-16.1)	11.4 (9.58-13.6)	24.0 (19.4-30.4)	61.2 (45.6-85.9)	102 (69.9-200)	637
	07-08	12.3 (10.0-15.0)	10.6 (8.57-14.1)	21.7 (16.1-28.7)	53.1 (32.7-85.2)	113 (79.7-149)	531
Non-Hispanic blacks	01-02	13.8 (12.3-15.4)	13.1 (12.0-14.2)	23.9 (20.0-29.3)	58.3 (45.3-79.7)	101 (81.3-124)	703
	03-04	14.3 (13.1-15.6)	13.3 (11.3-15.5)	24.8 (21.7-27.7)	61.2 (46.8-76.6)	105 (79.7-152)	699
	05-06	15.3 (13.2-17.8)	11.6 (9.87-14.6)	29.1 (24.7-38.5)	77.1 (61.9-113)	172 (99.8-251)	678
	07-08	11.0 (9.94-12.2)	9.90 (9.16-11.1)	20.6 (16.6-23.5)	42.2 (33.8-58.6)	75.8 (57.2-124)	597
Non-Hispanic whites	01-02	12.7 (11.4-14.0)	11.1 (9.90-12.3)	20.8 (18.0-23.9)	45.7 (35.9-64.9)	96.0 (68.5-161)	1216
	03-04	13.7 (12.2-15.3)	12.0 (10.5-12.9)	24.9 (20.7-28.6)	69.5 (51.4-95.3)	124 (90.3-182)	1088
	05-06	16.3 (14.8-18.0)	14.0 (12.9-15.7)	30.8 (27.3-34.8)	79.3 (66.0-93.8)	139 (117-163)	1038
	07-08	12.2 (10.3-14.5)	11.0 (9.38-13.1)	22.3 (17.4-30.4)	51.4 (35.7-77.7)	107 (74.6-139)	1077

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Urinary Mono-(2-ethyl-5-carboxypentyl) phthalate (MECPP)

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	34.7 (31.0-38.9)	33.0 (29.1-37.4)	71.8 (61.7-84.8)	168 (133-240)	339 (235-506)	2605
	05-06	38.6 (34.7-42.9)	35.6 (31.1-40.3)	79.7 (70.9-92.9)	211 (180-246)	386 (311-484)	2548
	07-08	33.3 (28.7-38.6)	31.2 (27.1-36.0)	69.5 (55.8-86.3)	153 (120-216)	308 (220-397)	2604
Age group							
6-11 years	03-04	58.2 (44.7-75.6)	51.6 (39.2-67.6)	112 (71.4-182)	314 (124-524)	391 (238-781)	342
	05-06	57.4 (50.2-65.7)	53.5 (42.7-67.2)	94.7 (83.2-108)	200 (154-247)	297 (196-548)	356
	07-08	46.6 (39.2-55.3)	44.1 (34.9-54.7)	92.7 (64.7-112)	156 (117-278)	357 (176-441)	389
12-19 years	03-04	44.6 (36.8-54.0)	42.7 (38.4-47.6)	86.5 (67.3-108)	220 (120-397)	448 (235-808)	729
	05-06	52.9 (43.0-65.2)	46.7 (39.4-61.6)	114 (85.6-173)	314 (195-515)	560 (324-1180)	702
	07-08	44.3 (35.2-55.9)	38.9 (28.9-49.3)	97.3 (64.3-127)	247 (140-456)	476 (231-977)	401
20 years and older	03-04	31.3 (28.6-34.4)	29.2 (26.2-33.0)	63.5 (56.5-73.9)	157 (130-187)	312 (199-457)	1534
	05-06	35.1 (31.5-39.0)	31.3 (28.1-35.7)	72.7 (65.4-82.4)	193 (163-237)	377 (285-460)	1490
	07-08	30.7 (26.4-35.8)	29.2 (24.3-34.4)	63.2 (51.6-80.0)	145 (109-206)	286 (182-378)	1814
Gender							
Males	03-04	37.9 (33.1-43.5)	34.7 (30.0-39.5)	73.7 (60.8-91.9)	187 (133-300)	388 (222-660)	1250
	05-06	43.6 (38.1-49.8)	39.7 (31.9-46.2)	87.0 (76.8-103)	260 (188-308)	460 (347-670)	1270
	07-08	34.4 (29.3-40.5)	31.5 (27.3-35.7)	65.1 (52.1-87.4)	161 (120-217)	321 (213-422)	1294
Females	03-04	31.9 (28.1-36.2)	31.3 (27.5-35.8)	69.3 (58.9-81.9)	154 (128-199)	312 (182-441)	1355
	05-06	34.3 (30.4-38.6)	31.7 (28.0-36.6)	71.0 (63.0-85.3)	192 (156-217)	309 (251-386)	1278
	07-08	32.3 (27.8-37.5)	31.0 (26.4-38.3)	73.0 (56.9-90.2)	147 (112-220)	297 (185-420)	1310
Race/ethnicity							
Mexican Americans	03-04	31.9 (27.1-37.6)	31.5 (26.8-37.4)	57.4 (45.9-71.8)	116 (86.0-162)	175 (133-355)	652
	05-06	39.4 (30.3-51.2)	34.2 (24.1-47.1)	74.6 (54.0-111)	220 (124-338)	394 (222-673)	637
	07-08	36.7 (30.6-44.0)	31.3 (27.0-35.7)	71.9 (54.9-91.7)	162 (123-241)	321 (209-477)	531
Non-Hispanic blacks	03-04	42.6 (37.0-49.2)	38.3 (33.8-46.9)	82.5 (68.7-103)	191 (146-246)	339 (244-468)	699
	05-06	46.6 (41.3-52.5)	40.3 (35.6-46.1)	96.3 (76.6-132)	256 (208-347)	455 (328-528)	678
	07-08	35.0 (31.1-39.4)	35.6 (30.7-38.8)	71.6 (59.1-84.5)	151 (113-192)	235 (184-338)	597
Non-Hispanic whites	03-04	33.8 (30.1-37.9)	32.1 (27.6-37.5)	72.4 (62.0-87.7)	167 (133-240)	354 (220-560)	1088
	05-06	37.0 (33.4-41.0)	35.4 (30.4-40.9)	79.7 (70.0-93.3)	203 (174-237)	380 (284-484)	1038
	07-08	32.0 (26.7-38.3)	30.4 (24.5-38.0)	67.6 (52.5-90.9)	145 (105-244)	316 (197-476)	1077

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04, 05-06, and 07-08 are 0.3, 0.6, and 0.5 respectively.

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Urinary Mono-(2-ethyl-5-carboxypentyl) phthalate (MECPP) (creatinine corrected)

Metabolite of Di-2-ethylhexyl phthalate (DEHP)

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

	Survey years	Geometric	Selected percentiles				Sample size
		mean (95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	32.6 (29.6-36.0)	27.0 (24.3-30.6)	54.6 (48.0-63.5)	139 (109-186)	251 (192-356)	2605
	05-06	37.6 (33.7-42.0)	32.2 (29.5-37.0)	67.5 (58.2-80.8)	168 (139-209)	290 (261-328)	2548
	07-08	33.6 (29.7-38.0)	29.1 (25.8-32.2)	58.7 (49.6-68.8)	138 (109-164)	233 (178-319)	2604
Age group							
6-11 years	03-04	61.5 (49.0-77.2)	52.2 (41.6-73.8)	104 (74.2-140)	210 (111-500)	372 (192-988)	342
	05-06	63.2 (55.6-71.9)	54.2 (48.1-63.6)	92.8 (82.6-111)	160 (124-247)	312 (172-480)	356
	07-08	57.4 (49.2-66.9)	49.6 (42.7-61.5)	94.2 (79.5-122)	185 (138-294)	376 (188-404)	389
12-19 years	03-04	33.4 (28.7-38.7)	27.1 (23.9-32.0)	55.0 (43.8-83.8)	168 (92.5-289)	294 (159-387)	729
	05-06	39.5 (32.5-47.8)	33.9 (27.9-41.0)	72.7 (56.9-96.7)	197 (106-327)	385 (216-531)	702
	07-08	34.5 (28.1-42.3)	28.0 (23.2-35.0)	65.9 (47.5-85.9)	159 (90.1-233)	246 (159-489)	401
20 years and older	03-04	30.1 (27.7-32.7)	25.1 (22.9-27.6)	49.1 (44.1-55.2)	126 (101-154)	237 (191-315)	1534
	05-06	35.2 (31.2-39.6)	29.8 (26.1-33.3)	60.8 (54.2-74.0)	167 (131-206)	279 (247-322)	1490
	07-08	31.5 (27.8-35.8)	27.8 (24.1-30.8)	53.1 (45.0-65.4)	128 (101-155)	214 (162-319)	1814
Gender							
Males	03-04	29.8 (26.8-33.1)	23.5 (21.4-27.1)	50.7 (42.2-61.7)	132 (98.0-191)	248 (159-422)	1250
	05-06	35.0 (30.7-39.9)	29.0 (25.7-32.1)	69.3 (54.2-82.9)	172 (141-210)	301 (249-376)	1270
	07-08	29.0 (25.3-33.2)	25.1 (21.7-28.8)	47.6 (40.8-57.4)	120 (91.7-157)	210 (157-331)	1294
Females	03-04	35.5 (31.6-40.0)	30.6 (26.4-35.5)	58.3 (48.8-71.8)	144 (108-192)	251 (192-349)	1355
	05-06	40.3 (36.2-44.9)	36.7 (31.6-40.0)	66.1 (58.2-83.7)	168 (127-206)	279 (240-341)	1278
	07-08	38.7 (34.5-43.3)	32.8 (30.0-36.4)	67.8 (58.5-80.0)	147 (117-176)	266 (176-379)	1310
Race/ethnicity							
Mexican Americans	03-04	28.8 (25.4-32.6)	24.7 (22.4-26.3)	46.7 (39.0-56.3)	94.7 (73.2-137)	152 (118-238)	652
	05-06	35.5 (28.7-43.7)	29.8 (25.5-34.9)	61.5 (48.4-86.2)	165 (105-201)	278 (181-501)	637
	07-08	35.8 (29.1-44.0)	30.6 (23.2-38.6)	64.1 (47.2-84.8)	151 (92.3-240)	286 (198-402)	531
Non-Hispanic blacks	03-04	30.3 (27.7-33.2)	27.0 (23.2-30.7)	51.1 (41.6-64.0)	135 (100-161)	212 (173-252)	699
	05-06	32.7 (28.9-37.1)	27.1 (22.4-31.5)	62.4 (53.1-76.0)	166 (119-260)	370 (231-429)	678
	07-08	27.2 (24.3-30.5)	23.5 (21.9-26.1)	49.1 (37.7-58.6)	103 (85.9-132)	178 (140-259)	597
Non-Hispanic whites	03-04	33.4 (29.5-37.7)	27.0 (23.5-31.6)	56.8 (48.6-69.4)	145 (109-198)	294 (193-385)	1088
	05-06	39.0 (34.9-43.4)	34.3 (30.3-39.1)	69.5 (59.5-83.7)	182 (143-214)	284 (237-324)	1038
	07-08	33.4 (28.4-39.3)	29.2 (25.1-34.6)	57.7 (46.6-72.4)	138 (101-166)	233 (164-338)	1077

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Urinary Mono-(carboxynonyl) phthalate (MCNP)

Metabolite of Di-isodecyl phthalate (DiDP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	05-06	2.73 (2.50-2.98)	2.70 (2.40-3.00)	5.30 (4.80-5.90)	10.2 (8.80-11.9)	17.5 (14.0-21.4)	2548
	07-08	2.42 (2.17-2.71)	2.40 (2.20-2.70)	4.70 (4.20-5.30)	9.20 (8.00-10.6)	16.1 (12.3-21.0)	2604
Age group							
6-11 years	05-06	4.54 (3.94-5.24)	4.70 (4.00-5.60)	8.10 (6.80-9.60)	14.6 (10.8-19.1)	22.8 (16.7-35.3)	356
	07-08	3.15 (2.65-3.74)	3.40 (2.90-3.80)	5.40 (4.60-6.80)	9.10 (7.40-12.3)	14.9 (9.10-24.8)	389
12-19 years	05-06	3.18 (2.74-3.68)	3.30 (2.90-3.80)	6.00 (4.70-7.20)	10.3 (7.60-13.7)	16.5 (11.5-21.5)	702
	07-08	2.86 (2.59-3.16)	2.70 (2.40-2.90)	5.10 (4.30-5.70)	10.3 (8.90-13.0)	16.8 (10.7-32.4)	401
20 years and older	05-06	2.51 (2.27-2.78)	2.40 (2.20-2.70)	4.90 (4.40-5.40)	9.50 (7.90-11.9)	17.0 (13.1-21.5)	1490
	07-08	2.29 (2.04-2.58)	2.30 (2.00-2.50)	4.50 (4.00-5.10)	9.10 (7.60-10.7)	16.1 (12.2-21.4)	1814
Gender							
Males	05-06	3.16 (2.82-3.54)	3.00 (2.70-3.50)	5.90 (5.10-6.90)	11.0 (8.80-14.0)	19.5 (14.0-28.0)	1270
	07-08	2.75 (2.50-3.03)	2.60 (2.40-2.90)	5.10 (4.50-5.70)	9.50 (8.00-12.2)	19.4 (12.4-29.1)	1294
Females	05-06	2.37 (2.13-2.65)	2.30 (2.00-2.70)	4.80 (4.30-5.30)	9.30 (7.60-11.5)	14.7 (13.1-18.2)	1278
	07-08	2.14 (1.84-2.49)	2.20 (1.80-2.60)	4.40 (3.80-4.90)	9.00 (7.30-10.3)	14.1 (10.8-18.5)	1310
Race/ethnicity							
Mexican Americans	05-06	2.72 (2.40-3.08)	2.70 (2.40-3.20)	4.90 (4.30-5.70)	9.00 (7.00-12.4)	14.4 (9.00-26.8)	637
	07-08	2.37 (2.15-2.62)	2.30 (2.10-2.60)	4.30 (3.70-5.10)	8.40 (6.50-10.5)	12.3 (8.40-16.2)	531
Non-Hispanic blacks	05-06	3.18 (2.75-3.67)	3.20 (2.70-3.80)	5.90 (4.90-7.30)	13.0 (9.50-14.6)	19.2 (14.6-30.5)	678
	07-08	2.89 (2.64-3.17)	2.90 (2.50-3.10)	5.60 (4.80-6.20)	11.9 (9.10-15.4)	21.7 (17.9-28.9)	597
Non-Hispanic whites	05-06	2.67 (2.39-2.98)	2.60 (2.30-2.90)	5.30 (4.70-6.10)	10.1 (8.20-12.6)	17.6 (12.6-24.3)	1038
	07-08	2.42 (2.09-2.81)	2.40 (2.10-2.70)	4.70 (4.10-5.60)	9.10 (7.60-11.6)	14.9 (10.5-29.1)	1077

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 and 07-08 are 0.6 and 0.5 respectively.

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Urinary Mono-(carboxynonyl) phthalate (MCNP) (creatinine corrected)

Metabolite of Di-isodecyl phthalate (DiDP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	05-06	2.66 (2.43-2.91)	2.48 (2.29-2.71)	4.48 (4.05-4.85)	8.67 (7.17-9.71)	13.2 (10.8-17.5)	2548
	07-08	2.44 (2.25-2.65)	2.21 (2.00-2.36)	4.00 (3.68-4.44)	8.31 (6.96-9.04)	12.8 (11.2-15.1)	2604
Age group							
6-11 years	05-06	5.00 (4.45-5.63)	5.06 (4.18-5.76)	7.48 (6.70-8.84)	16.1 (12.5-18.9)	23.5 (16.1-31.7)	356
	07-08	3.88 (3.34-4.50)	3.82 (3.17-4.18)	6.07 (5.14-7.00)	11.2 (9.01-13.6)	18.2 (12.6-27.0)	389
12-19 years	05-06	2.37 (2.04-2.75)	2.18 (1.91-2.52)	3.64 (2.94-4.55)	6.26 (5.15-8.70)	10.7 (7.57-14.1)	702
	07-08	2.23 (2.07-2.40)	1.96 (1.83-2.08)	3.68 (3.08-3.83)	6.39 (4.88-9.01)	10.0 (7.26-13.5)	401
20 years and older	05-06	2.52 (2.29-2.78)	2.37 (2.14-2.57)	4.05 (3.77-4.51)	7.90 (6.46-9.40)	12.0 (9.71-16.7)	1490
	07-08	2.36 (2.15-2.58)	2.14 (1.91-2.32)	3.88 (3.44-4.29)	8.21 (6.67-9.00)	12.3 (11.0-15.3)	1814
Gender							
Males	05-06	2.53 (2.28-2.82)	2.36 (2.14-2.56)	4.38 (3.74-5.04)	7.41 (6.47-8.88)	13.0 (9.40-19.6)	1270
	07-08	2.32 (2.11-2.55)	2.12 (1.90-2.32)	3.88 (3.50-4.29)	7.13 (5.78-9.15)	11.4 (9.68-15.5)	1294
Females	05-06	2.79 (2.47-3.15)	2.65 (2.34-2.95)	4.51 (4.03-5.15)	9.41 (6.82-11.6)	13.5 (10.7-19.7)	1278
	07-08	2.57 (2.33-2.83)	2.27 (2.03-2.57)	4.13 (3.78-4.82)	8.71 (7.41-9.50)	13.5 (12.0-16.0)	1310
Race/ethnicity							
Mexican Americans	05-06	2.45 (2.13-2.81)	2.32 (2.14-2.60)	4.04 (3.64-4.58)	6.96 (5.73-8.14)	11.0 (7.89-19.1)	637
	07-08	2.32 (2.10-2.56)	2.10 (1.90-2.34)	4.12 (3.54-4.68)	6.89 (5.73-7.67)	9.75 (7.69-11.7)	531
Non-Hispanic blacks	05-06	2.24 (1.96-2.55)	1.97 (1.78-2.37)	3.60 (3.25-4.24)	7.82 (6.38-10.4)	12.1 (10.1-17.4)	678
	07-08	2.25 (2.05-2.47)	2.00 (1.88-2.17)	3.88 (3.50-4.27)	8.18 (6.25-10.4)	14.9 (9.31-20.4)	597
Non-Hispanic whites	05-06	2.81 (2.51-3.14)	2.57 (2.33-2.85)	4.62 (4.10-5.19)	9.26 (7.00-10.8)	13.5 (10.3-23.5)	1038
	07-08	2.53 (2.23-2.86)	2.26 (1.98-2.57)	4.11 (3.66-4.70)	8.51 (6.59-10.2)	13.3 (10.7-17.6)	1077

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Urinary Mono-isononyl phthalate (MiNP)

Metabolite of Di-isononyl phthalate (DiNP)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	5.39 (<LOD-21.3)	2541
	01-02	*	< LOD	< LOD	< LOD	< LOD	2782
	03-04	*	< LOD	< LOD	< LOD	1.54 (<LOD-2.00)	2605
	05-06	*	< LOD	< LOD	1.69 (<LOD-2.00)	3.54 (2.31-6.16)	2548
	07-08	*	< LOD	< LOD	1.54 (<LOD-1.69)	3.08 (2.16-4.16)	2604
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	9.55 (<LOD-34.7)	328
	01-02	*	< LOD	< LOD	< LOD	< LOD	393
	03-04	*	< LOD	< LOD	1.54 (<LOD-2.31)	2.62 (1.85-4.77)	342
	05-06	*	< LOD	< LOD	1.69 (<LOD-2.00)	2.16 (2.00-2.62)	356
	07-08	*	< LOD	< LOD	1.39 (<LOD-2.00)	2.16 (1.54-3.85)	389
12-19 years	99-00	*	< LOD	< LOD	< LOD	3.54 (<LOD-31.3)	752
	01-02	*	< LOD	< LOD	< LOD	1.39 (<LOD-1.69)	742
	03-04	*	< LOD	< LOD	< LOD	2.16 (<LOD-2.77)	729
	05-06	*	< LOD	< LOD	2.16 (<LOD-4.31)	5.39 (2.00-12.2)	702
	07-08	*	< LOD	< LOD	2.46 (1.39-5.39)	5.54 (2.46-8.01)	401
20 years and older	99-00	*	< LOD	< LOD	< LOD	4.77 (<LOD-20.3)	1461
	01-02	*	< LOD	< LOD	< LOD	< LOD	1647
	03-04	*	< LOD	< LOD	< LOD	< LOD	1534
	05-06	*	< LOD	< LOD	1.54 (<LOD-2.00)	3.54 (2.16-6.47)	1490
	07-08	*	< LOD	< LOD	1.39 (<LOD-1.69)	2.77 (1.85-3.85)	1814
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	7.55 (<LOD-29.1)	1215
	01-02	*	< LOD	< LOD	< LOD	< LOD	1371
	03-04	*	< LOD	< LOD	< LOD	1.54 (<LOD-2.77)	1250
	05-06	*	< LOD	< LOD	2.00 (1.39-2.93)	4.00 (3.23-6.31)	1270
	07-08	*	< LOD	< LOD	1.54 (<LOD-2.16)	3.23 (2.31-4.93)	1294
Females	99-00	*	< LOD	< LOD	< LOD	3.85 (<LOD-10.5)	1326
	01-02	*	< LOD	< LOD	< LOD	1.39 (<LOD-1.69)	1411
	03-04	*	< LOD	< LOD	< LOD	< LOD	1355
	05-06	*	< LOD	< LOD	1.39 (<LOD-1.54)	2.62 (1.85-4.31)	1278
	07-08	*	< LOD	< LOD	1.39 (<LOD-1.69)	2.77 (2.00-3.70)	1310

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 1.23, 1.23, 1.54, 1.23, and 1.23 respectively.

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

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

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.54 for survey periods 1999-2008 compared with results previously released

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Urinary Mono-isononyl phthalate (MiNP)

Metabolite of Di-isononyl phthalate (DiNP)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	2.31 (<LOD-4.31)	814
	01-02	*	< LOD	< LOD	< LOD	1.54 (<LOD-2.16)	677
	03-04	*	< LOD	< LOD	< LOD	< LOD	652
	05-06	*	< LOD	< LOD	1.54 (<LOD-2.00)	4.31 (2.00-8.62)	637
	07-08	*	< LOD	< LOD	1.39 (<LOD-2.93)	3.08 (2.00-3.85)	531
Non-Hispanic blacks	99-00	*	< LOD	< LOD	3.54 (<LOD-21.3)	10.5 (<LOD-46.5)	603
	01-02	*	< LOD	< LOD	< LOD	1.54 (<LOD-2.62)	703
	03-04	*	< LOD	< LOD	< LOD	2.00 (1.54-3.08)	699
	05-06	*	< LOD	< LOD	2.00 (1.54-2.77)	5.70 (3.54-8.62)	678
	07-08	*	< LOD	< LOD	1.69 (<LOD-2.31)	3.70 (2.16-5.70)	597
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	5.39 (<LOD-24.6)	912
	01-02	*	< LOD	< LOD	< LOD	< LOD	1216
	03-04	*	< LOD	< LOD	< LOD	< LOD	1088
	05-06	*	< LOD	< LOD	1.54 (<LOD-2.16)	3.23 (1.85-6.47)	1038
	07-08	*	< LOD	< LOD	1.39 (<LOD-2.00)	2.77 (1.69-4.93)	1077

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 1.23, 1.23, 1.54, 1.23, and 1.23 respectively.

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

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

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.54 for survey periods 1999-2008 compared with results previously released

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Urinary Mono-isononyl phthalate (MiNP) (creatinine corrected)

Metabolite of Di-isononyl phthalate (DiNP)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	< LOD	6.61 (<LOD-12.8)	2541
	01-02	*	< LOD	< LOD	< LOD	< LOD	2782
	03-04	*	< LOD	< LOD	< LOD	4.50 (<LOD-4.90)	2605
	05-06	*	< LOD	< LOD	3.20 (<LOD-3.82)	5.16 (3.99-5.67)	2548
	07-08	*	< LOD	< LOD	3.35 (<LOD-3.96)	5.05 (4.15-6.22)	2604
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	9.24 (<LOD-21.9)	328
	01-02	*	< LOD	< LOD	< LOD	< LOD	393
	03-04	*	< LOD	< LOD	3.71 (<LOD-4.82)	5.04 (3.71-7.19)	342
	05-06	*	< LOD	< LOD	2.37 (<LOD-2.93)	3.03 (2.54-5.16)	356
	07-08	*	< LOD	< LOD	3.35 (<LOD-5.33)	5.33 (3.11-7.26)	389
12-19 years	99-00	*	< LOD	< LOD	< LOD	3.08 (<LOD-11.8)	752
	01-02	*	< LOD	< LOD	< LOD	3.19 (<LOD-5.13)	742
	03-04	*	< LOD	< LOD	< LOD	3.03 (<LOD-3.99)	729
	05-06	*	< LOD	< LOD	2.66 (<LOD-3.59)	3.99 (2.97-5.28)	702
	07-08	*	< LOD	< LOD	2.56 (2.10-3.23)	3.68 (2.90-6.84)	401
20 years and older	99-00	*	< LOD	< LOD	< LOD	7.11 (<LOD-12.4)	1461
	01-02	*	< LOD	< LOD	< LOD	< LOD	1647
	03-04	*	< LOD	< LOD	< LOD	< LOD	1534
	05-06	*	< LOD	< LOD	3.37 (<LOD-4.19)	5.17 (4.17-6.11)	1490
	07-08	*	< LOD	< LOD	3.48 (<LOD-4.15)	5.45 (4.15-6.39)	1814
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	6.53 (<LOD-15.7)	1215
	01-02	*	< LOD	< LOD	< LOD	< LOD	1371
	03-04	*	< LOD	< LOD	< LOD	3.56 (<LOD-4.54)	1250
	05-06	*	< LOD	< LOD	2.51 (1.96-3.51)	3.99 (2.79-5.61)	1270
	07-08	*	< LOD	< LOD	2.42 (<LOD-2.95)	3.96 (3.23-5.05)	1294
Females	99-00	*	< LOD	< LOD	< LOD	6.61 (<LOD-11.8)	1326
	01-02	*	< LOD	< LOD	< LOD	4.20 (<LOD-4.40)	1411
	03-04	*	< LOD	< LOD	< LOD	< LOD	1355
	05-06	*	< LOD	< LOD	3.67 (<LOD-4.39)	5.37 (4.88-6.27)	1278
	07-08	*	< LOD	< LOD	4.08 (<LOD-4.84)	5.81 (4.36-7.26)	1310

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

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

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.54 for survey periods 1999-2008 compared with results previously released

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Urinary Mono-isononyl phthalate (MiNP) (creatinine corrected)

Metabolite of Di-isononyl phthalate (DiNP)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Race/ethnicity Mexican Americans	99-00	*	< LOD	< LOD	< LOD	5.44 (<LOD-7.70)	814
	01-02	*	< LOD	< LOD	< LOD	3.70 (<LOD-4.20)	677
	03-04	*	< LOD	< LOD	< LOD	< LOD	652
	05-06	*	< LOD	< LOD	2.71 (<LOD-3.73)	4.88 (3.73-6.27)	637
	07-08	*	< LOD	< LOD	2.81 (<LOD-3.23)	3.96 (3.23-5.13)	531
Non-Hispanic blacks	99-00	*	< LOD	< LOD	3.13 (<LOD-8.18)	6.61 (<LOD-22.1)	603
	01-02	*	< LOD	< LOD	< LOD	2.71 (<LOD-3.30)	703
	03-04	*	< LOD	< LOD	< LOD	3.37 (2.57-3.85)	699
	05-06	*	< LOD	< LOD	2.22 (1.83-2.59)	4.39 (2.83-6.75)	678
	07-08	*	< LOD	< LOD	2.49 (<LOD-3.35)	4.19 (3.11-4.62)	597
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	8.39 (<LOD-15.4)	912
	01-02	*	< LOD	< LOD	< LOD	< LOD	1216
	03-04	*	< LOD	< LOD	< LOD	< LOD	1088
	05-06	*	< LOD	< LOD	3.37 (<LOD-3.99)	4.88 (3.99-5.41)	1038
	07-08	*	< LOD	< LOD	3.60 (<LOD-4.15)	5.45 (3.96-6.96)	1077

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

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

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.54 for survey periods 1999-2008 compared with results previously released

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Urinary Mono-(carboxyoctyl) phthalate (MCOP)

Metabolite of Di-isononyl phthalate (DiNP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	05-06	5.39 (4.68-6.22)	5.10 (4.40-6.00)	10.9 (9.10-13.1)	25.5 (19.1-35.4)	54.4 (32.5-85.2)	2548
	07-08	6.79 (5.83-7.92)	6.40 (5.60-7.40)	14.9 (12.1-18.2)	34.6 (25.2-43.8)	63.0 (41.8-80.0)	2604
Age group							
6-11 years	05-06	8.52 (7.19-10.1)	8.90 (7.60-9.90)	15.0 (11.3-19.3)	26.4 (19.9-37.3)	40.3 (26.4-61.6)	356
	07-08	10.8 (9.25-12.6)	10.7 (9.10-13.1)	19.8 (15.8-24.5)	33.8 (26.1-50.3)	59.9 (33.5-79.5)	389
12-19 years	05-06	6.61 (5.42-8.06)	6.30 (5.20-7.30)	11.9 (9.60-16.0)	28.4 (18.2-58.7)	63.2 (28.4-106)	702
	07-08	9.25 (7.33-11.7)	8.10 (6.80-10.3)	20.8 (15.4-28.7)	60.5 (29.6-79.4)	79.4 (49.7-166)	401
20 years and older	05-06	4.96 (4.27-5.76)	4.50 (3.90-5.20)	9.70 (8.20-12.3)	25.1 (18.2-35.7)	54.4 (30.8-88.5)	1490
	07-08	6.15 (5.20-7.29)	5.80 (5.00-6.60)	13.2 (10.5-16.8)	32.0 (23.0-41.8)	61.2 (38.9-80.0)	1814
Gender							
Males	05-06	6.24 (5.25-7.42)	5.70 (4.70-6.90)	12.1 (10.2-15.1)	30.8 (19.0-58.8)	66.4 (33.8-122)	1270
	07-08	7.14 (6.10-8.36)	6.60 (5.70-7.70)	15.6 (12.4-19.3)	35.7 (24.7-43.2)	61.2 (40.1-89.1)	1294
Females	05-06	4.69 (4.14-5.30)	4.50 (4.00-5.20)	9.30 (8.20-11.1)	21.5 (17.5-27.0)	41.7 (28.1-61.7)	1278
	07-08	6.48 (5.49-7.65)	6.20 (5.40-7.40)	14.3 (12.0-17.0)	32.6 (24.8-47.0)	64.8 (47.0-73.3)	1310
Race/ethnicity							
Mexican Americans	05-06	5.77 (4.84-6.87)	5.20 (4.50-5.70)	9.90 (8.50-12.0)	23.6 (14.9-49.7)	54.4 (23.0-185)	637
	07-08	6.83 (6.23-7.49)	6.20 (5.60-6.80)	12.9 (11.3-14.9)	29.1 (25.2-33.8)	52.0 (36.8-61.2)	531
Non-Hispanic blacks	05-06	6.08 (5.60-6.61)	6.00 (5.10-6.70)	11.4 (10.4-13.0)	24.5 (20.3-28.1)	50.0 (32.0-70.3)	678
	07-08	7.55 (6.21-9.17)	7.00 (6.00-8.00)	16.6 (12.0-22.9)	40.3 (25.5-51.9)	60.4 (41.8-97.8)	597
Non-Hispanic whites	05-06	5.25 (4.40-6.27)	5.00 (4.10-6.20)	11.1 (8.60-13.6)	25.5 (17.7-43.5)	56.1 (28.1-88.5)	1038
	07-08	6.81 (5.48-8.46)	6.40 (5.20-7.90)	15.1 (11.0-20.8)	35.7 (23.2-62.0)	64.7 (39.4-89.0)	1077

Limit of detection (LOD, see Data Analysis section) for Survey year 05-06 and 07-08 are 0.7 and 0.7 respectively.

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Urinary Mono-(carboxyooctyl) phthalate (MCOP) (creatinine corrected)

Metabolite of Di-isononyl phthalate (DiNP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	05-06	5.26 (4.54-6.10)	4.53 (3.95-5.11)	9.25 (7.64-11.2)	24.0 (17.1-30.8)	40.2 (30.3-55.2)	2548
	07-08	6.85 (6.05-7.75)	5.94 (5.19-6.67)	12.6 (10.8-14.4)	30.6 (23.4-38.5)	50.2 (40.0-60.0)	2604
Age group							
6-11 years	05-06	9.38 (8.08-10.9)	8.48 (7.66-10.1)	14.8 (12.2-18.7)	30.3 (20.0-38.8)	40.1 (28.2-57.3)	356
	07-08	13.3 (11.4-15.5)	11.6 (9.90-14.2)	23.1 (16.2-32.5)	44.2 (27.0-64.1)	60.3 (44.2-110)	389
12-19 years	05-06	4.93 (4.10-5.93)	4.32 (3.61-4.89)	7.44 (5.93-11.0)	19.4 (12.4-31.8)	34.7 (24.1-58.3)	702
	07-08	7.20 (5.94-8.73)	6.28 (4.79-8.08)	12.6 (10.0-20.7)	32.7 (22.6-56.9)	56.9 (31.4-103)	401
20 years and older	05-06	4.97 (4.26-5.81)	4.17 (3.68-4.77)	8.58 (7.23-10.6)	23.4 (15.5-31.8)	41.1 (29.2-55.9)	1490
	07-08	6.32 (5.49-7.27)	5.31 (4.77-6.05)	11.8 (9.27-13.9)	27.5 (19.5-36.8)	47.7 (34.4-60.9)	1814
Gender							
Males	05-06	5.01 (4.21-5.97)	4.29 (3.75-5.03)	8.44 (7.17-10.9)	21.6 (15.1-35.4)	44.6 (25.7-85.9)	1270
	07-08	6.01 (5.29-6.84)	5.14 (4.54-6.26)	11.5 (9.32-13.6)	24.5 (19.2-31.0)	43.2 (31.2-54.9)	1294
Females	05-06	5.51 (4.75-6.39)	4.73 (4.23-5.32)	9.55 (8.26-12.2)	24.7 (17.3-30.3)	39.3 (30.3-45.0)	1278
	07-08	7.76 (6.84-8.81)	6.52 (5.95-7.39)	13.7 (11.9-16.5)	35.3 (26.6-44.2)	57.7 (43.5-74.4)	1310
Race/ethnicity							
Mexican Americans	05-06	5.19 (4.38-6.14)	4.50 (3.64-5.29)	8.04 (7.13-10.1)	19.5 (12.3-37.7)	43.6 (20.9-93.4)	637
	07-08	6.66 (5.97-7.44)	5.29 (4.69-6.20)	11.6 (10.4-13.0)	25.7 (20.9-29.8)	38.3 (30.8-58.3)	531
Non-Hispanic blacks	05-06	4.28 (3.86-4.74)	3.67 (3.26-4.09)	7.60 (6.80-8.81)	17.1 (13.2-21.5)	31.8 (22.5-43.7)	678
	07-08	5.87 (4.82-7.13)	5.37 (4.16-6.50)	11.1 (8.68-15.2)	28.1 (17.7-37.2)	40.2 (32.0-57.8)	597
Non-Hispanic whites	05-06	5.53 (4.61-6.63)	4.81 (4.13-5.56)	10.0 (7.63-13.3)	25.2 (16.3-34.5)	39.3 (26.8-59.7)	1038
	07-08	7.11 (5.91-8.56)	6.27 (5.09-7.50)	13.0 (10.4-16.3)	31.1 (21.3-43.2)	54.2 (40.2-64.1)	1077

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Urinary Mono-methyl phthalate (MMP)

Metabolite of Dimethyl phthalate (DMP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	1.15 (0.985-1.34)	1.50 (1.30-1.80)	3.30 (2.90-3.70)	6.00 (5.10-7.50)	9.80 (8.00-12.5)	2782
	03-04	*	1.30 (<LOD-1.70)	3.90 (3.00-4.90)	9.70 (7.70-12.2)	16.3 (12.0-20.4)	2605
	05-06	*	< LOD	2.50 (1.90-3.40)	7.40 (6.10-8.60)	12.4 (10.8-14.7)	2548
	07-08	*	< LOD	2.20 (1.80-2.70)	6.50 (4.70-8.30)	11.3 (8.40-16.3)	2604
Age group							
6-11 years	01-02	1.45 (1.13-1.87)	1.90 (1.40-2.80)	4.00 (3.40-4.90)	7.20 (6.00-8.00)	11.8 (7.60-20.8)	393
	03-04	2.10 (1.67-2.63)	1.70 (1.20-2.40)	4.30 (2.80-6.40)	9.50 (6.40-18.8)	18.8 (9.40-33.4)	342
	05-06	*	< LOD	4.00 (3.30-4.80)	10.6 (7.40-13.4)	15.4 (10.6-30.6)	356
	07-08	*	1.20 (<LOD-1.60)	3.70 (3.00-5.30)	8.00 (6.50-8.70)	12.1 (8.30-35.8)	389
12-19 years	01-02	1.59 (1.28-1.96)	2.10 (1.80-2.50)	3.90 (3.30-4.70)	8.50 (5.30-10.5)	13.0 (9.60-17.8)	742
	03-04	*	1.50 (1.00-2.20)	4.40 (3.00-7.00)	13.3 (7.40-20.9)	21.8 (17.8-31.5)	729
	05-06	*	< LOD	3.70 (2.70-4.60)	8.60 (7.00-9.50)	12.4 (9.30-20.7)	702
	07-08	*	< LOD	2.30 (1.70-3.20)	6.70 (4.20-8.90)	12.0 (7.90-17.4)	401
20 years and older	01-02	1.06 (.904-1.25)	1.40 (1.10-1.60)	3.10 (2.50-3.50)	5.60 (4.60-7.10)	9.20 (7.40-12.3)	1647
	03-04	*	1.20 (<LOD-1.50)	3.80 (2.80-4.90)	9.30 (7.10-11.8)	14.3 (10.8-19.9)	1534
	05-06	*	< LOD	2.20 (1.60-2.80)	6.90 (5.30-8.40)	11.9 (9.50-14.7)	1490
	07-08	*	< LOD	2.00 (1.60-2.50)	6.00 (4.20-8.30)	11.1 (8.10-17.3)	1814
Gender							
Males	01-02	1.17 (.962-1.43)	1.50 (1.30-1.90)	3.30 (2.90-4.00)	5.90 (4.80-7.90)	9.20 (7.10-13.5)	1371
	03-04	*	1.30 (1.00-1.80)	4.00 (3.20-5.20)	10.0 (7.30-13.5)	17.7 (11.8-20.4)	1250
	05-06	*	< LOD	2.40 (1.80-3.50)	7.40 (5.70-9.20)	13.4 (11.0-15.7)	1270
	07-08	*	< LOD	2.40 (1.80-3.20)	6.90 (4.70-8.70)	10.3 (8.20-17.2)	1294
Females	01-02	1.13 (.973-1.31)	1.40 (1.10-1.70)	3.30 (2.80-3.70)	6.40 (5.00-7.80)	10.3 (8.20-16.2)	1411
	03-04	*	1.20 (<LOD-1.60)	3.60 (2.80-4.70)	9.50 (7.70-12.2)	15.3 (11.7-22.9)	1355
	05-06	*	< LOD	2.60 (1.80-3.40)	7.40 (5.10-9.30)	12.0 (9.30-16.0)	1278
	07-08	*	< LOD	2.10 (1.70-2.50)	6.20 (4.30-8.20)	12.0 (7.90-16.1)	1310
Race/ethnicity							
Mexican Americans	01-02	1.21 (1.02-1.45)	1.60 (1.30-1.70)	3.30 (2.70-4.00)	5.60 (4.70-7.30)	8.60 (6.40-15.2)	677
	03-04	*	1.40 (1.10-1.80)	4.00 (2.50-6.30)	9.60 (7.30-13.4)	15.0 (11.4-18.8)	652
	05-06	*	< LOD	3.10 (2.20-4.30)	7.30 (5.90-9.40)	11.3 (8.50-18.0)	637
	07-08	*	< LOD	2.50 (1.30-3.70)	6.40 (4.20-11.1)	12.1 (6.80-16.3)	531
Non-Hispanic blacks	01-02	1.64 (1.37-1.98)	2.10 (1.70-2.70)	4.40 (3.60-5.10)	8.30 (6.20-10.1)	11.0 (9.50-13.4)	703
	03-04	2.16 (1.64-2.84)	1.70 (1.00-2.80)	5.10 (3.70-7.00)	11.4 (7.30-17.3)	17.8 (10.2-39.4)	699
	05-06	*	< LOD	3.70 (2.40-4.70)	8.20 (6.10-10.6)	13.0 (10.6-15.8)	678
	07-08	*	< LOD	2.40 (1.50-3.40)	6.10 (4.10-8.80)	10.6 (6.70-16.4)	597
Non-Hispanic whites	01-02	1.08 (.906-1.29)	1.40 (1.10-1.70)	3.20 (2.50-3.60)	5.60 (4.70-6.70)	9.70 (7.10-14.0)	1216
	03-04	*	1.20 (<LOD-1.60)	3.60 (2.80-4.80)	9.70 (7.50-12.2)	16.5 (12.0-20.4)	1088
	05-06	*	< LOD	2.30 (1.70-2.80)	7.40 (5.50-8.80)	12.5 (10.4-15.0)	1038
	07-08	*	< LOD	2.10 (1.70-2.60)	6.80 (4.30-8.50)	11.2 (8.00-18.7)	1077

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, and 07-08 are 0.2, 1.0, 1.1, 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.

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Urinary Mono-methyl phthalate (MMP) (creatinine corrected)

Metabolite of Dimethyl phthalate (DMP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	1.08 (.936-1.25)	1.33 (1.13-1.55)	2.62 (2.36-2.97)	5.00 (3.97-6.02)	8.00 (6.07-11.0)	2782
	03-04	*	1.53 (<LOD-1.79)	3.45 (2.76-4.37)	7.95 (5.83-11.8)	13.5 (11.3-18.1)	2605
	05-06	*	< LOD	2.85 (2.52-3.25)	6.53 (5.49-7.67)	12.2 (9.74-14.3)	2548
	07-08	*	< LOD	2.79 (2.31-3.25)	5.68 (4.77-7.36)	10.8 (8.00-13.6)	2604
Age group							
6-11 years	01-02	1.65 (1.28-2.14)	2.32 (1.72-2.86)	3.97 (3.27-4.71)	7.20 (5.99-9.41)	13.2 (7.60-22.5)	393
	03-04	2.22 (1.75-2.81)	1.88 (1.49-2.60)	4.96 (2.81-6.49)	9.67 (6.15-14.6)	16.2 (12.1-34.5)	342
	05-06	*	< LOD	4.59 (3.09-6.35)	11.0 (8.07-15.0)	18.6 (10.4-21.9)	356
	07-08	*	2.05 (<LOD-2.33)	4.56 (3.85-5.36)	9.06 (6.63-11.4)	13.6 (10.4-36.0)	389
12-19 years	01-02	1.23 (1.01-1.48)	1.51 (1.32-1.82)	2.84 (2.52-3.33)	5.36 (3.68-6.39)	7.27 (5.64-11.4)	742
	03-04	*	1.34 (1.12-1.73)	3.19 (2.26-4.43)	7.84 (4.95-12.1)	13.3 (9.49-19.1)	729
	05-06	*	< LOD	2.80 (2.15-3.55)	5.65 (4.33-6.52)	12.4 (6.45-18.9)	702
	07-08	*	< LOD	2.00 (1.63-2.63)	4.32 (3.10-6.05)	7.25 (4.77-10.8)	401
20 years and older	01-02	1.00 (.868-1.16)	1.21 (1.05-1.40)	2.44 (2.14-2.68)	4.53 (3.49-6.02)	7.72 (5.52-11.4)	1647
	03-04	*	1.52 (<LOD-1.79)	3.39 (2.69-4.31)	7.69 (5.40-11.8)	13.3 (10.1-18.9)	1534
	05-06	*	< LOD	2.76 (2.44-3.12)	6.09 (5.00-7.75)	11.2 (9.17-13.4)	1490
	07-08	*	< LOD	2.75 (2.26-3.25)	5.58 (4.33-7.59)	10.4 (7.09-14.8)	1814
Gender							
Males	01-02	.954 (.794-1.15)	1.17 (1.02-1.40)	2.37 (2.03-2.75)	4.18 (3.45-5.64)	6.42 (4.94-9.59)	1371
	03-04	*	1.35 (1.15-1.52)	2.95 (2.26-4.09)	7.11 (5.00-10.2)	11.8 (9.05-13.3)	1250
	05-06	*	< LOD	2.19 (1.89-2.50)	5.03 (4.09-6.45)	10.2 (7.75-13.4)	1270
	07-08	*	< LOD	2.33 (1.92-2.88)	4.88 (3.85-7.25)	8.56 (6.25-13.8)	1294
Females	01-02	1.21 (1.06-1.38)	1.45 (1.23-1.82)	2.87 (2.58-3.06)	5.56 (4.55-7.14)	10.0 (7.20-15.3)	1411
	03-04	*	1.83 (<LOD-2.10)	3.87 (3.04-4.96)	9.41 (6.41-13.6)	16.5 (12.5-23.5)	1355
	05-06	*	< LOD	3.47 (3.00-4.11)	7.67 (6.00-9.75)	13.2 (9.75-18.7)	1278
	07-08	*	< LOD	3.12 (2.72-3.71)	6.50 (5.20-8.67)	11.7 (8.56-14.8)	1310
Race/ethnicity							
Mexican Americans	01-02	1.14 (.975-1.34)	1.48 (1.30-1.63)	2.50 (2.20-2.94)	4.19 (3.77-5.76)	8.47 (5.58-12.5)	677
	03-04	*	1.36 (1.15-1.71)	3.56 (2.45-4.90)	7.53 (5.62-9.64)	12.5 (9.44-16.9)	652
	05-06	*	< LOD	2.86 (2.07-3.67)	6.48 (4.21-8.24)	11.5 (6.94-21.7)	637
	07-08	*	< LOD	2.59 (2.06-3.39)	5.65 (3.60-8.13)	9.40 (6.06-13.9)	531
Non-Hispanic blacks	01-02	1.15 (.949-1.40)	1.39 (1.29-1.67)	2.70 (2.36-2.95)	4.87 (4.21-5.93)	8.09 (5.86-11.0)	703
	03-04	1.53 (1.21-1.94)	1.40 (1.07-1.75)	3.14 (2.26-4.37)	7.50 (4.29-14.6)	13.7 (7.70-20.7)	699
	05-06	*	< LOD	2.59 (1.87-3.28)	5.20 (4.53-6.29)	8.50 (6.79-10.3)	678
	07-08	*	< LOD	2.10 (1.69-2.44)	4.22 (2.94-5.74)	7.36 (4.88-8.79)	597
Non-Hispanic whites	01-02	1.07 (.914-1.26)	1.30 (1.05-1.58)	2.62 (2.32-2.99)	5.22 (3.68-6.82)	8.26 (6.07-12.6)	1216
	03-04	*	1.56 (<LOD-1.89)	3.50 (2.71-4.67)	8.10 (6.00-11.9)	13.6 (11.3-18.9)	1088
	05-06	*	< LOD	2.98 (2.60-3.39)	7.19 (5.58-9.51)	13.4 (10.4-16.6)	1038
	07-08	*	< LOD	2.89 (2.26-3.67)	6.01 (4.63-8.57)	11.7 (7.47-15.6)	1077

< 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.

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Urinary Mono-(3-carboxypropyl) phthalate (MCPP)

Metabolite of Di-n-octyl phthalate (DOP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	2.75 (2.49-3.04)	3.10 (2.80-3.30)	5.70 (5.10-6.40)	10.0 (8.90-11.3)	14.6 (12.7-17.5)	2782
	03-04	2.91 (2.79-3.04)	3.10 (3.00-3.30)	5.70 (5.20-6.10)	10.2 (9.20-11.8)	15.3 (13.8-16.2)	2605
	05-06	2.05 (1.87-2.26)	2.10 (1.90-2.40)	4.40 (4.00-4.80)	8.90 (7.60-10.1)	13.1 (10.6-17.4)	2548
	07-08	2.76 (2.52-3.04)	2.70 (2.50-3.00)	5.80 (5.20-6.50)	11.1 (9.70-13.1)	18.1 (15.4-22.3)	2604
Age group							
6-11 years	01-02	6.11 (5.46-6.84)	6.70 (5.40-7.50)	11.8 (10.2-13.3)	20.1 (17.8-23.1)	24.7 (22.2-31.6)	393
	03-04	6.86 (5.80-8.11)	7.10 (6.00-8.90)	12.7 (10.4-16.4)	22.0 (17.2-27.7)	29.2 (22.3-36.6)	342
	05-06	4.82 (4.09-5.68)	4.90 (4.30-5.90)	8.50 (6.70-10.4)	13.1 (10.3-17.9)	17.9 (12.6-34.5)	356
	07-08	6.01 (4.80-7.53)	6.40 (5.10-8.00)	11.3 (8.40-15.9)	20.3 (13.2-27.3)	23.9 (19.1-34.1)	389
12-19 years	01-02	3.71 (3.18-4.33)	4.00 (3.40-4.70)	7.10 (6.10-8.10)	11.5 (9.50-12.7)	14.1 (11.8-19.0)	742
	03-04	3.72 (3.33-4.15)	4.10 (3.50-4.60)	7.20 (5.80-8.40)	11.0 (9.50-13.6)	15.4 (13.4-17.9)	729
	05-06	2.96 (2.52-3.46)	3.10 (2.50-3.60)	5.90 (4.80-7.30)	11.8 (9.10-14.5)	17.0 (12.7-21.5)	702
	07-08	3.81 (3.15-4.61)	4.00 (3.20-4.70)	8.20 (6.90-9.40)	13.3 (11.1-17.1)	24.1 (13.8-25.6)	401
20 years and older	01-02	2.37 (2.11-2.66)	2.60 (2.20-3.00)	4.80 (4.30-5.40)	8.10 (7.20-9.50)	12.0 (10.1-14.2)	1647
	03-04	2.53 (2.41-2.66)	2.80 (2.60-2.90)	4.90 (4.50-5.20)	8.10 (7.50-8.90)	13.2 (10.8-14.3)	1534
	05-06	1.76 (1.60-1.93)	1.70 (1.60-2.00)	3.60 (3.20-4.10)	7.10 (6.10-8.40)	11.3 (9.60-13.6)	1490
	07-08	2.41 (2.18-2.67)	2.50 (2.20-2.60)	5.00 (4.60-5.50)	9.60 (8.00-11.1)	15.6 (12.9-19.9)	1814
Gender							
Males	01-02	2.89 (2.64-3.17)	3.10 (2.80-3.40)	5.70 (5.00-6.80)	9.90 (8.70-12.0)	14.2 (12.4-18.1)	1371
	03-04	3.25 (3.01-3.52)	3.30 (3.00-3.60)	6.00 (5.60-6.80)	11.8 (10.1-13.6)	16.0 (14.2-20.0)	1250
	05-06	2.32 (2.11-2.54)	2.40 (2.00-2.70)	4.70 (4.30-5.20)	9.60 (7.90-11.8)	14.5 (11.5-22.3)	1270
	07-08	3.02 (2.70-3.39)	2.90 (2.60-3.30)	5.80 (5.10-6.60)	12.3 (10.1-15.3)	21.3 (16.7-28.5)	1294
Females	01-02	2.62 (2.29-2.99)	3.00 (2.50-3.30)	5.70 (5.00-6.30)	10.0 (8.50-11.5)	14.7 (11.2-20.3)	1411
	03-04	2.63 (2.44-2.83)	3.00 (2.60-3.20)	5.20 (4.70-5.80)	9.20 (8.20-10.3)	13.4 (11.0-16.2)	1355
	05-06	1.83 (1.59-2.10)	1.80 (1.60-2.10)	4.00 (3.30-4.60)	8.00 (6.60-9.50)	12.1 (9.50-14.7)	1278
	07-08	2.54 (2.30-2.79)	2.60 (2.30-3.00)	5.90 (5.00-6.80)	10.5 (9.10-12.3)	15.4 (13.3-21.5)	1310
Race/ethnicity							
Mexican Americans	01-02	2.67 (2.26-3.16)	3.00 (2.30-3.50)	5.30 (4.40-5.90)	9.20 (7.30-12.4)	13.6 (10.4-18.7)	677
	03-04	3.08 (2.86-3.32)	3.10 (2.80-3.40)	5.50 (4.80-6.10)	9.90 (7.90-12.6)	13.7 (11.5-19.8)	652
	05-06	2.24 (1.71-2.94)	2.20 (1.60-3.10)	4.50 (3.30-6.50)	9.40 (6.50-13.1)	14.1 (9.90-25.4)	637
	07-08	2.66 (2.37-3.00)	2.70 (2.40-3.20)	5.00 (4.30-5.70)	8.80 (7.60-11.2)	14.5 (11.5-17.8)	531
Non-Hispanic blacks	01-02	3.09 (2.81-3.40)	3.30 (2.90-3.60)	6.30 (5.50-6.50)	10.9 (9.10-13.0)	15.1 (13.5-22.4)	703
	03-04	3.30 (3.01-3.62)	3.20 (2.90-3.60)	6.10 (5.50-6.90)	11.6 (9.30-13.4)	20.1 (13.6-25.5)	699
	05-06	2.28 (2.03-2.57)	2.40 (2.10-2.80)	4.50 (3.80-5.60)	8.70 (7.10-10.3)	13.3 (10.4-16.5)	678
	07-08	2.94 (2.50-3.44)	2.90 (2.50-3.40)	5.80 (4.90-6.80)	12.2 (8.50-17.1)	21.1 (13.7-42.4)	597
Non-Hispanic whites	01-02	2.72 (2.40-3.08)	3.00 (2.60-3.30)	5.80 (4.80-6.80)	10.3 (8.90-11.9)	15.8 (12.6-19.5)	1216
	03-04	2.87 (2.73-3.02)	3.10 (2.90-3.30)	5.60 (5.00-6.00)	10.1 (9.10-12.0)	15.2 (13.4-16.1)	1088
	05-06	1.97 (1.81-2.15)	2.00 (1.80-2.20)	4.20 (3.80-4.60)	8.70 (6.80-10.3)	13.1 (10.0-17.5)	1038
	07-08	2.84 (2.51-3.21)	2.90 (2.50-3.40)	6.10 (5.30-7.00)	11.4 (9.70-14.0)	18.1 (14.0-24.1)	1077

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, 05-06, and 07-08 are 0.4, 0.2, 0.2, and 0.2 respectively.

[Biomonitoring Summary](#) [Factsheet](#)

Urinary Mono-(3-carboxypropyl) phthalate (MCPP) (creatinine corrected)

Metabolite of Di-n-octyl phthalate (DOP)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	2.58 (2.35-2.83)	2.47 (2.25-2.76)	4.08 (3.87-4.48)	7.24 (6.58-8.00)	11.4 (10.0-12.5)	2782
	03-04	2.74 (2.56-2.93)	2.60 (2.42-2.79)	4.39 (3.94-4.86)	7.70 (6.65-8.60)	10.7 (9.53-11.9)	2605
	05-06	2.00 (1.82-2.20)	1.86 (1.67-2.06)	3.55 (3.14-4.00)	6.80 (5.77-7.95)	10.3 (8.68-12.7)	2548
	07-08	2.79 (2.63-2.96)	2.53 (2.37-2.70)	4.76 (4.33-5.16)	9.70 (8.52-10.9)	14.8 (12.7-17.0)	2604
Age group							
6-11 years	01-02	6.96 (6.29-7.70)	7.08 (5.83-7.87)	11.2 (9.15-14.0)	20.7 (15.5-22.3)	26.4 (20.7-27.0)	393
	03-04	7.25 (6.43-8.18)	7.06 (5.93-7.59)	11.2 (9.38-12.4)	19.1 (14.4-25.6)	26.9 (19.3-29.0)	342
	05-06	5.31 (4.57-6.17)	5.06 (4.57-5.79)	8.78 (7.50-10.0)	13.7 (10.2-21.3)	21.3 (13.2-36.7)	356
	07-08	7.41 (5.87-9.34)	6.81 (5.50-9.05)	11.6 (9.43-14.1)	20.2 (12.7-39.2)	30.4 (16.5-68.9)	389
12-19 years	01-02	2.86 (2.52-3.25)	2.94 (2.50-3.36)	4.59 (4.03-5.23)	6.69 (6.30-7.25)	9.55 (8.03-10.7)	742
	03-04	2.78 (2.54-3.05)	2.75 (2.53-2.99)	4.55 (4.05-5.15)	6.61 (6.15-7.20)	8.24 (7.00-10.2)	729
	05-06	2.20 (1.90-2.55)	2.07 (1.76-2.46)	3.67 (2.99-4.39)	6.84 (5.35-8.67)	9.67 (7.12-11.4)	702
	07-08	2.96 (2.59-3.38)	2.95 (2.51-3.62)	5.04 (4.33-6.00)	8.18 (6.75-10.4)	10.9 (9.38-15.1)	401
20 years and older	01-02	2.24 (2.03-2.47)	2.20 (2.00-2.40)	3.51 (3.11-3.95)	5.39 (4.82-6.18)	7.71 (6.71-9.28)	1647
	03-04	2.43 (2.27-2.61)	2.38 (2.19-2.56)	3.70 (3.33-4.08)	6.09 (5.38-7.06)	8.79 (7.84-9.56)	1534
	05-06	1.76 (1.60-1.94)	1.67 (1.47-1.86)	2.96 (2.60-3.38)	5.55 (4.61-6.46)	8.46 (7.00-10.3)	1490
	07-08	2.48 (2.33-2.64)	2.26 (2.14-2.36)	4.00 (3.68-4.39)	8.03 (7.11-9.09)	12.7 (11.1-14.8)	1814
Gender							
Males	01-02	2.35 (2.17-2.56)	2.20 (2.02-2.42)	3.76 (3.45-4.20)	7.17 (6.27-8.06)	11.5 (9.28-15.1)	1371
	03-04	2.55 (2.39-2.72)	2.36 (2.22-2.47)	4.14 (3.52-4.86)	7.84 (6.80-8.79)	11.6 (10.2-13.5)	1250
	05-06	1.86 (1.70-2.03)	1.70 (1.53-1.88)	3.33 (2.92-3.70)	6.70 (5.59-8.33)	10.7 (8.72-14.2)	1270
	07-08	2.54 (2.34-2.76)	2.32 (2.10-2.50)	4.17 (3.80-4.81)	8.91 (7.37-11.2)	14.7 (12.9-17.5)	1294
Females	01-02	2.81 (2.48-3.18)	2.76 (2.46-3.02)	4.39 (3.97-4.92)	7.66 (6.17-8.69)	11.0 (8.62-15.9)	1411
	03-04	2.93 (2.68-3.20)	2.89 (2.58-3.23)	4.53 (4.09-5.00)	7.58 (6.44-8.57)	10.0 (8.60-11.6)	1355
	05-06	2.15 (1.88-2.45)	2.00 (1.72-2.44)	3.77 (3.15-4.47)	6.90 (5.62-8.43)	10.0 (8.14-12.5)	1278
	07-08	3.04 (2.84-3.25)	2.80 (2.50-3.11)	5.08 (4.64-5.52)	10.3 (8.67-11.3)	15.0 (11.8-17.8)	1310
Race/ethnicity							
Mexican Americans	01-02	2.52 (2.21-2.88)	2.37 (2.07-2.73)	4.29 (3.73-5.00)	7.36 (5.58-10.3)	11.4 (8.36-14.5)	677
	03-04	2.78 (2.56-3.02)	2.63 (2.30-2.96)	4.32 (3.66-4.96)	8.14 (6.72-10.3)	12.8 (9.37-17.1)	652
	05-06	2.02 (1.62-2.51)	1.79 (1.42-2.53)	3.85 (2.74-5.22)	7.00 (5.40-8.82)	10.2 (7.64-16.4)	637
	07-08	2.60 (2.26-2.99)	2.45 (2.05-3.10)	4.31 (3.49-5.22)	8.31 (6.67-9.76)	12.9 (9.50-15.5)	531
Non-Hispanic blacks	01-02	2.17 (2.02-2.33)	2.07 (1.88-2.28)	3.68 (3.25-4.07)	6.73 (5.46-7.70)	10.0 (8.27-13.1)	703
	03-04	2.34 (2.13-2.58)	2.17 (1.99-2.45)	3.96 (3.33-4.43)	6.93 (6.03-8.80)	13.4 (9.32-15.9)	699
	05-06	1.61 (1.42-1.81)	1.58 (1.38-1.77)	2.76 (2.27-3.37)	5.63 (4.33-7.59)	8.68 (6.86-10.4)	678
	07-08	2.28 (1.96-2.65)	2.11 (1.72-2.35)	3.91 (3.33-4.56)	7.97 (5.58-12.8)	16.4 (8.21-57.0)	597
Non-Hispanic whites	01-02	2.69 (2.42-3.00)	2.57 (2.25-2.94)	4.19 (3.87-4.79)	7.63 (6.58-8.45)	11.8 (10.0-14.7)	1216
	03-04	2.83 (2.60-3.09)	2.65 (2.43-2.96)	4.55 (3.90-5.16)	7.79 (6.59-8.79)	10.6 (9.43-11.3)	1088
	05-06	2.08 (1.92-2.24)	1.95 (1.76-2.12)	3.60 (3.26-4.00)	6.47 (5.56-7.93)	10.3 (7.95-13.1)	1038
	07-08	2.96 (2.72-3.23)	2.70 (2.50-2.93)	5.06 (4.35-5.77)	10.3 (8.61-11.5)	15.1 (12.3-19.3)	1077

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Urinary Mono-n-octyl phthalate (MOP)

Metabolite of Di-n-octyl phthalate (DOP)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	2.69 (2.02-3.36)	4.87 (3.86-5.71)	2541
	01-02	*	< LOD	< LOD	< LOD	< LOD	2782
	03-04	*	< LOD	< LOD	< LOD	< LOD	2605
	05-06	*	< LOD	< LOD	< LOD	< LOD	2548
	07-08	*	< LOD	< LOD	< LOD	< LOD	2604
Age group							
6-11 years	99-00	*	< LOD	< LOD	3.70 (<LOD-5.88)	5.38 (2.86-8.40)	328
	01-02	*	< LOD	< LOD	< LOD	< LOD	393
	03-04	*	< LOD	< LOD	< LOD	< LOD	342
	05-06	*	< LOD	< LOD	< LOD	< LOD	356
	07-08	*	< LOD	< LOD	< LOD	< LOD	389
12-19 years	99-00	*	< LOD	< LOD	2.86 (<LOD-4.20)	4.70 (3.36-7.06)	752
	01-02	*	< LOD	< LOD	< LOD	< LOD	742
	03-04	*	< LOD	< LOD	< LOD	< LOD	729
	05-06	*	< LOD	< LOD	< LOD	< LOD	702
	07-08	*	< LOD	< LOD	< LOD	< LOD	401
20 years and older	99-00	*	< LOD	< LOD	2.52 (1.85-3.19)	4.87 (3.53-5.88)	1461
	01-02	*	< LOD	< LOD	< LOD	< LOD	1647
	03-04	*	< LOD	< LOD	< LOD	< LOD	1534
	05-06	*	< LOD	< LOD	< LOD	< LOD	1490
	07-08	*	< LOD	< LOD	< LOD	< LOD	1814
Gender							
Males	99-00	*	< LOD	< LOD	2.69 (1.85-3.70)	4.70 (3.36-5.88)	1215
	01-02	*	< LOD	< LOD	< LOD	< LOD	1371
	03-04	*	< LOD	< LOD	< LOD	< LOD	1250
	05-06	*	< LOD	< LOD	< LOD	< LOD	1270
	07-08	*	< LOD	< LOD	< LOD	< LOD	1294
Females	99-00	*	< LOD	< LOD	2.52 (2.02-3.53)	5.21 (3.70-6.38)	1326
	01-02	*	< LOD	< LOD	< LOD	< LOD	1411
	03-04	*	< LOD	< LOD	< LOD	< LOD	1355
	05-06	*	< LOD	< LOD	< LOD	< LOD	1278
	07-08	*	< LOD	< LOD	< LOD	< LOD	1310

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 1.51, 1.68, 1.68, 1.85, and 1.85 respectively.

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

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

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.68 for survey periods 1999-2008 compared with results previously released.

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Urinary Mono-n-octyl phthalate (MOP)

Metabolite of Di-n-octyl phthalate (DOP)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Race/ethnicity Mexican Americans	99-00	*	< LOD	< LOD	1.85 (<LOD-2.35)	2.69 (2.35-4.37)	814
	01-02	*	< LOD	< LOD	< LOD	< LOD	677
	03-04	*	< LOD	< LOD	< LOD	< LOD	652
	05-06	*	< LOD	< LOD	< LOD	< LOD	637
	07-08	*	< LOD	< LOD	< LOD	< LOD	531
Non-Hispanic blacks	99-00	*	< LOD	< LOD	3.19 (<LOD-5.04)	5.04 (3.70-6.89)	603
	01-02	*	< LOD	< LOD	< LOD	< LOD	703
	03-04	*	< LOD	< LOD	< LOD	< LOD	699
	05-06	*	< LOD	< LOD	< LOD	< LOD	678
	07-08	*	< LOD	< LOD	< LOD	< LOD	597
Non-Hispanic whites	99-00	*	< LOD	< LOD	2.69 (2.02-3.53)	5.04 (3.86-5.88)	912
	01-02	*	< LOD	< LOD	< LOD	< LOD	1216
	03-04	*	< LOD	< LOD	< LOD	< LOD	1088
	05-06	*	< LOD	< LOD	< LOD	< LOD	1038
	07-08	*	< LOD	< LOD	< LOD	< LOD	1077

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, 05-06, and 07-08 are 1.51, 1.68, 1.68, 1.85, and 1.85 respectively.

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

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

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.68 for survey periods 1999-2008 compared with results previously released.

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Urinary Mono-n-octyl phthalate (MOP) (creatinine corrected)

Metabolite of Di-n-octyl phthalate (DOP)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	99-00	*	< LOD	< LOD	4.03 (3.48-4.38)	5.93 (4.96-7.21)	2541
	01-02	*	< LOD	< LOD	< LOD	< LOD	2782
	03-04	*	< LOD	< LOD	< LOD	< LOD	2605
	05-06	*	< LOD	< LOD	< LOD	< LOD	2548
	07-08	*	< LOD	< LOD	< LOD	< LOD	2604
Age group							
6-11 years	99-00	*	< LOD	< LOD	3.73 (<LOD-6.30)	6.30 (3.31-17.2)	328
	01-02	*	< LOD	< LOD	< LOD	< LOD	393
	03-04	*	< LOD	< LOD	< LOD	< LOD	342
	05-06	*	< LOD	< LOD	< LOD	< LOD	356
	07-08	*	< LOD	< LOD	< LOD	< LOD	389
12-19 years	99-00	*	< LOD	< LOD	2.50 (<LOD-2.87)	3.16 (2.59-5.59)	752
	01-02	*	< LOD	< LOD	< LOD	< LOD	742
	03-04	*	< LOD	< LOD	< LOD	< LOD	729
	05-06	*	< LOD	< LOD	< LOD	< LOD	702
	07-08	*	< LOD	< LOD	< LOD	< LOD	401
20 years and older	99-00	*	< LOD	< LOD	4.37 (3.48-4.89)	5.93 (5.04-7.76)	1461
	01-02	*	< LOD	< LOD	< LOD	< LOD	1647
	03-04	*	< LOD	< LOD	< LOD	< LOD	1534
	05-06	*	< LOD	< LOD	< LOD	< LOD	1490
	07-08	*	< LOD	< LOD	< LOD	< LOD	1814
Gender							
Males	99-00	*	< LOD	< LOD	3.06 (2.59-3.48)	4.30 (3.26-5.80)	1215
	01-02	*	< LOD	< LOD	< LOD	< LOD	1371
	03-04	*	< LOD	< LOD	< LOD	< LOD	1250
	05-06	*	< LOD	< LOD	< LOD	< LOD	1270
	07-08	*	< LOD	< LOD	< LOD	< LOD	1294
Females	99-00	*	< LOD	< LOD	5.04 (4.20-5.96)	7.21 (5.59-10.5)	1326
	01-02	*	< LOD	< LOD	< LOD	< LOD	1411
	03-04	*	< LOD	< LOD	< LOD	< LOD	1355
	05-06	*	< LOD	< LOD	< LOD	< LOD	1278
	07-08	*	< LOD	< LOD	< LOD	< LOD	1310

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

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

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.68 for survey periods 1999-2008 compared with results previously released.

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Urinary Mono-n-octyl phthalate (MOP) (creatinine corrected)

Metabolite of Di-n-octyl phthalate (DOP)

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

Race/ethnicity	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Mexican Americans	99-00	*	< LOD	< LOD	3.06 (<LOD-4.70)	5.59 (4.37-6.72)	814
	01-02	*	< LOD	< LOD	< LOD	< LOD	677
	03-04	*	< LOD	< LOD	< LOD	< LOD	652
	05-06	*	< LOD	< LOD	< LOD	< LOD	637
	07-08	*	< LOD	< LOD	< LOD	< LOD	531
Non-Hispanic blacks	99-00	*	< LOD	< LOD	2.28 (<LOD-3.26)	3.73 (2.52-5.49)	603
	01-02	*	< LOD	< LOD	< LOD	< LOD	703
	03-04	*	< LOD	< LOD	< LOD	< LOD	699
	05-06	*	< LOD	< LOD	< LOD	< LOD	678
	07-08	*	< LOD	< LOD	< LOD	< LOD	597
Non-Hispanic whites	99-00	*	< LOD	< LOD	4.38 (3.60-5.17)	6.12 (5.29-8.40)	912
	01-02	*	< LOD	< LOD	< LOD	< LOD	1216
	03-04	*	< LOD	< LOD	< LOD	< LOD	1088
	05-06	*	< LOD	< LOD	< LOD	< LOD	1038
	07-08	*	< LOD	< LOD	< LOD	< LOD	1077

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

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

**To correct for inadequate purity in the analytical standards, all results and LODs have been adjusted by a factor of 1.68 for survey periods 1999-2008 compared with results previously released.

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Urinary Daidzein

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	75.1 (61.9-91.1)	69.8 (57.8-82.6)	229 (184-298)	538 (471-702)	1320 (1020-1540)	2553
	01-02	51.7 (46.6-57.5)	52.3 (48.9-57.4)	192 (151-226)	577 (447-725)	1250 (863-1640)	2794
	03-04	66.7 (60.4-73.7)	62.0 (54.1-69.7)	195 (171-219)	590 (500-675)	1070 (893-1330)	2594
	05-06	66.5 (59.7-74.1)	58.8 (51.0-67.7)	204 (187-226)	648 (485-745)	1180 (1000-1350)	2528
Age group							
6-11 years	99-00	90.5 (75.1-109)	101 (70.3-138)	257 (172-430)	510 (437-840)	1130 (657-1740)	330
	01-02	84.9 (71.6-101)	72.7 (56.3-97.0)	261 (155-385)	605 (437-989)	1060 (645-1500)	396
	03-04	84.9 (71.6-101)	66.8 (55.4-92.8)	229 (151-314)	574 (371-654)	818 (625-1060)	341
	05-06	94.1 (74.3-119)	74.0 (56.0-95.9)	287 (149-471)	1010 (557-1600)	1870 (1040-3830)	351
12-19 years	99-00	123 (91.4-166)	124 (85.6-168)	326 (227-454)	833 (445-1490)	1460 (861-2410)	753
	01-02	69.3 (52.6-91.3)	70.2 (52.5-87.5)	255 (185-344)	774 (573-984)	1360 (922-1950)	744
	03-04	89.0 (75.2-105)	78.0 (59.0-104)	248 (197-332)	808 (500-968)	1200 (900-1790)	729
	05-06	94.4 (76.0-117)	77.1 (59.7-103)	286 (200-416)	836 (530-1170)	1390 (929-2220)	693
20 years and older	99-00	67.6 (55.4-82.4)	60.9 (49.3-74.1)	215 (167-239)	518 (459-573)	1320 (978-1540)	1470
	01-02	46.4 (41.4-52.0)	49.1 (40.8-53.4)	176 (133-216)	520 (396-703)	1210 (771-1900)	1654
	03-04	61.9 (55.2-69.4)	57.9 (48.7-68.5)	180 (150-214)	554 (416-695)	1110 (857-1360)	1524
	05-06	60.5 (53.4-68.7)	54.0 (46.8-63.8)	197 (169-209)	512 (427-664)	1100 (795-1270)	1484
Gender							
Males	99-00	88.9 (71.4-111)	80.6 (66.6-112)	262 (198-355)	587 (501-989)	1540 (989-2080)	1220
	01-02	49.8 (42.8-57.9)	50.8 (46.0-55.0)	190 (137-240)	498 (386-694)	920 (717-1380)	1375
	03-04	73.8 (63.4-85.9)	65.2 (56.1-76.4)	214 (156-311)	709 (535-900)	1200 (969-1380)	1244
	05-06	73.9 (65.3-83.6)	66.4 (53.8-78.5)	210 (180-241)	694 (471-823)	1180 (979-1400)	1252
Females	99-00	64.1 (52.9-77.6)	57.8 (45.0-73.2)	199 (150-244)	476 (389-722)	1220 (566-1700)	1333
	01-02	53.6 (48.1-59.8)	55.7 (49.8-62.7)	199 (149-234)	642 (511-816)	1470 (1170-1980)	1419
	03-04	60.7 (53.6-68.8)	57.4 (49.1-67.6)	175 (159-201)	466 (381-622)	884 (654-1380)	1350
	05-06	60.1 (52.5-68.9)	52.5 (45.0-61.1)	200 (166-231)	587 (420-717)	1140 (811-1440)	1276
Race/ethnicity							
Mexican Americans	99-00	78.9 (59.8-104)	66.2 (48.4-87.1)	254 (170-402)	806 (534-1020)	1360 (968-2780)	816
	01-02	39.2 (28.5-54.0)	39.9 (28.8-59.9)	169 (100-291)	515 (388-669)	896 (613-1480)	679
	03-04	57.4 (50.2-65.7)	45.5 (35.2-53.3)	178 (130-236)	686 (487-934)	1390 (934-1650)	653
	05-06	60.6 (53.3-68.9)	54.1 (44.3-65.2)	193 (155-239)	671 (424-966)	1350 (966-1550)	634
Non-Hispanic blacks	99-00	91.9 (71.9-118)	103 (81.6-133)	286 (243-377)	553 (459-824)	1190 (640-1900)	607
	01-02	66.1 (48.2-90.7)	72.9 (52.8-97.3)	255 (182-393)	757 (448-1400)	1410 (757-2480)	706
	03-04	75.0 (56.1-100)	66.0 (50.7-86.6)	241 (151-340)	622 (408-875)	1190 (660-2300)	699
	05-06	81.3 (71.6-92.4)	76.5 (64.7-97.1)	254 (199-331)	676 (463-874)	1210 (760-1790)	662
Non-Hispanic whites	99-00	74.4 (61.5-89.9)	66.9 (56.2-78.2)	216 (157-298)	512 (438-745)	1360 (989-1710)	917
	01-02	48.6 (43.8-54.0)	49.8 (42.8-54.2)	171 (137-204)	504 (389-658)	1140 (774-1620)	1222
	03-04	65.8 (58.6-74.0)	62.0 (52.8-71.9)	191 (165-215)	572 (416-722)	1070 (823-1330)	1079
	05-06	62.0 (54.4-70.7)	54.2 (46.9-64.1)	200 (164-216)	581 (430-717)	1040 (811-1310)	1039

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, and 05-06 are 0.5, 1.6, 1.6, and 0.4 respectively.

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Urinary Daidzein (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	68.5 (55.9-83.9)	65.1 (52.8-80.8)	204 (156-249)	560 (471-629)	944 (836-1150)	2553
	01-02	48.5 (43.7-54.0)	48.3 (43.1-56.5)	166 (140-196)	500 (391-608)	957 (801-1180)	2794
	03-04	62.5 (58.3-67.0)	56.1 (50.0-63.5)	164 (144-187)	502 (429-591)	1060 (825-1150)	2594
	05-06	64.8 (58.7-71.6)	52.4 (47.4-59.7)	184 (162-209)	564 (461-679)	1070 (896-1310)	2528
Age group							
6-11 years	99-00	92.6 (76.3-112)	93.1 (71.2-114)	251 (157-324)	552 (363-838)	1070 (781-2150)	330
	01-02	96.4 (79.0-118)	85.9 (60.3-127)	275 (159-395)	655 (452-733)	938 (683-1140)	396
	03-04	90.4 (77.2-106)	72.8 (58.1-99.5)	201 (152-240)	454 (329-638)	702 (526-1200)	341
	05-06	104 (83.1-130)	73.8 (59.5-96.7)	305 (175-453)	1040 (686-1830)	2430 (1190-3630)	351
12-19 years	99-00	83.1 (58.4-118)	85.6 (53.8-126)	207 (138-386)	628 (295-1060)	1000 (628-2380)	753
	01-02	53.4 (40.8-70.0)	50.9 (38.3-77.6)	181 (142-248)	549 (385-718)	1030 (622-1360)	744
	03-04	66.6 (55.7-79.6)	56.4 (43.9-74.6)	179 (151-217)	517 (370-753)	877 (617-1240)	729
	05-06	70.0 (56.9-86.2)	55.1 (42.9-74.3)	203 (149-263)	545 (338-845)	914 (659-1750)	693
20 years and older	99-00	63.8 (51.5-79.1)	59.3 (48.7-75.0)	194 (151-234)	554 (471-624)	908 (783-1180)	1470
	01-02	43.9 (39.4-48.9)	43.8 (37.4-53.3)	153 (125-186)	428 (348-590)	946 (728-1220)	1654
	03-04	59.2 (54.3-64.5)	51.7 (46.4-62.6)	155 (131-185)	501 (404-658)	1090 (808-1240)	1524
	05-06	60.7 (54.3-67.8)	50.6 (43.1-59.5)	171 (151-199)	483 (434-609)	1030 (847-1200)	1484
Gender							
Males	99-00	69.7 (54.7-88.8)	70.2 (51.3-84.3)	198 (147-276)	623 (494-836)	1050 (884-1290)	1220
	01-02	40.5 (34.8-47.1)	41.7 (34.5-47.9)	139 (107-179)	348 (260-553)	788 (585-947)	1375
	03-04	57.7 (49.4-67.3)	48.9 (41.6-58.2)	160 (126-205)	467 (368-600)	919 (665-1200)	1244
	05-06	59.5 (53.3-66.3)	51.0 (43.2-57.6)	164 (134-203)	467 (403-612)	927 (781-1100)	1252
Females	99-00	67.4 (54.8-82.9)	62.7 (51.1-80.9)	207 (152-250)	509 (356-624)	850 (610-1410)	1333
	01-02	57.6 (50.8-65.2)	59.5 (48.1-73.4)	191 (159-227)	615 (536-722)	1180 (924-1430)	1419
	03-04	67.4 (60.8-74.9)	65.1 (54.6-73.4)	165 (143-191)	564 (409-699)	1090 (757-1370)	1350
	05-06	70.4 (61.3-80.8)	57.1 (45.1-71.7)	194 (169-216)	609 (463-887)	1200 (957-1750)	1276
Race/ethnicity							
Mexican Americans	99-00	72.5 (59.1-88.9)	64.2 (47.1-91.1)	243 (176-310)	677 (468-1080)	1380 (753-2690)	816
	01-02	36.9 (27.8-49.0)	37.1 (24.8-57.9)	146 (101-225)	441 (307-596)	722 (565-1160)	679
	03-04	51.8 (45.0-59.6)	47.7 (35.9-58.3)	159 (117-209)	502 (354-686)	1130 (779-1390)	653
	05-06	54.7 (45.6-65.7)	47.2 (35.7-61.1)	174 (136-219)	558 (380-617)	925 (642-1140)	634
Non-Hispanic blacks	99-00	59.1 (46.5-75.1)	67.6 (52.1-87.1)	172 (134-207)	381 (316-533)	802 (562-1010)	607
	01-02	46.4 (33.7-63.8)	49.8 (35.5-69.7)	169 (104-249)	504 (263-773)	939 (542-1530)	706
	03-04	53.1 (42.5-66.4)	44.7 (28.6-72.1)	147 (121-191)	415 (275-538)	727 (538-1040)	699
	05-06	57.0 (50.3-64.5)	48.5 (40.3-59.7)	157 (124-221)	467 (370-654)	913 (603-1290)	662
Non-Hispanic whites	99-00	72.8 (60.3-88.0)	67.5 (55.3-81.5)	207 (160-249)	560 (442-659)	908 (742-1350)	917
	01-02	48.1 (43.4-53.3)	47.0 (42.0-56.0)	163 (137-191)	463 (375-627)	957 (805-1220)	1222
	03-04	64.9 (59.8-70.3)	58.2 (50.4-66.3)	165 (138-204)	516 (385-667)	1090 (786-1250)	1079
	05-06	65.2 (57.9-73.3)	52.7 (46.5-60.7)	184 (155-211)	564 (443-737)	1070 (894-1390)	1039

[Biomonitoring Summary](#)

Urinary Enterodiol

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	26.6 (21.9-32.3)	34.0 (29.4-38.7)	78.8 (62.6-95.5)	165 (135-215)	266 (215-335)	2527
	01-02	35.7 (32.5-39.3)	39.4 (36.3-43.4)	89.2 (80.7-96.9)	181 (162-205)	253 (223-308)	2794
	03-04	39.5 (36.1-43.3)	44.9 (40.6-50.3)	106 (97.2-115)	242 (212-264)	367 (311-423)	2594
	05-06	37.7 (33.2-42.9)	42.4 (39.4-47.2)	106 (95.5-120)	244 (226-266)	379 (305-440)	2528
Age group							
6-11 years	99-00	26.5 (17.1-41.0)	29.4 (21.2-44.2)	78.7 (44.2-109)	215 (91.1-279)	276 (131-458)	327
	01-02	33.6 (29.8-37.8)	35.5 (29.4-43.7)	78.1 (63.8-87.0)	152 (113-171)	203 (167-327)	396
	03-04	42.0 (34.5-51.1)	42.1 (34.4-49.2)	91.4 (74.4-110)	199 (126-289)	312 (217-525)	341
	05-06	33.2 (26.1-42.3)	38.5 (34.7-43.2)	70.4 (55.7-91.7)	129 (99.1-162)	181 (129-366)	351
12-19 years	99-00	29.8 (23.8-37.2)	34.0 (27.4-42.0)	84.4 (59.1-101)	166 (112-234)	253 (182-337)	744
	01-02	35.3 (30.5-40.9)	37.7 (34.8-43.4)	84.2 (72.1-96.9)	165 (128-206)	238 (169-343)	744
	03-04	45.1 (39.4-51.6)	46.3 (38.7-56.9)	99.5 (84.9-109)	191 (161-269)	325 (275-415)	729
	05-06	39.1 (34.0-45.0)	41.1 (36.8-46.5)	92.0 (80.2-109)	193 (151-238)	265 (231-303)	693
20 years and older	99-00	26.1 (21.8-31.3)	34.3 (29.8-38.7)	78.3 (63.5-94.8)	160 (132-196)	263 (189-335)	1456
	01-02	36.1 (31.8-41.0)	40.4 (36.0-45.7)	91.2 (79.3-105)	190 (161-220)	256 (224-312)	1654
	03-04	38.4 (34.2-43.0)	44.9 (40.1-51.9)	112 (98.8-125)	255 (215-274)	398 (320-448)	1524
	05-06	38.1 (32.7-44.4)	43.8 (39.0-49.5)	116 (103-130)	266 (242-281)	413 (326-479)	1484
Gender							
Males	99-00	25.3 (19.5-32.7)	33.0 (28.0-38.0)	72.6 (54.7-94.3)	149 (109-219)	258 (169-286)	1206
	01-02	35.2 (31.8-39.1)	40.5 (36.8-44.8)	90.6 (82.3-103)	184 (158-198)	263 (223-338)	1375
	03-04	39.7 (36.2-43.6)	45.1 (40.5-51.1)	102 (92.9-115)	231 (186-266)	361 (268-460)	1244
	05-06	40.4 (32.8-49.8)	46.2 (38.9-52.3)	107 (90.6-127)	264 (227-289)	413 (287-496)	1252
Females	99-00	27.9 (23.4-33.3)	36.0 (29.9-40.3)	84.4 (71.8-97.9)	177 (146-219)	280 (219-375)	1321
	01-02	36.2 (32.2-40.7)	38.5 (35.3-43.4)	87.0 (75.6-98.5)	175 (152-212)	248 (220-283)	1419
	03-04	39.3 (33.8-45.5)	44.9 (38.3-53.0)	110 (97.3-124)	250 (203-294)	398 (309-464)	1350
	05-06	35.4 (30.3-41.2)	41.1 (35.6-45.4)	106 (94.2-123)	225 (186-267)	352 (268-477)	1276
Race/ethnicity							
Mexican Americans	99-00	21.7 (19.5-24.1)	28.0 (24.7-34.7)	70.4 (60.8-78.8)	143 (117-169)	213 (169-256)	791
	01-02	30.5 (25.7-36.3)	34.0 (29.0-39.2)	75.9 (58.8-89.7)	159 (119-202)	244 (192-298)	679
	03-04	33.1 (26.4-41.6)	38.7 (31.2-47.6)	95.2 (78.1-115)	198 (125-307)	307 (186-480)	653
	05-06	38.1 (32.2-45.1)	40.6 (34.6-47.6)	102 (86.8-123)	262 (177-359)	383 (289-511)	634
Non-Hispanic blacks	99-00	25.8 (21.7-30.7)	31.2 (24.4-35.9)	66.0 (50.2-86.7)	157 (122-193)	260 (185-336)	608
	01-02	35.0 (28.9-42.3)	38.7 (33.2-49.2)	83.7 (70.0-103)	169 (132-191)	225 (175-339)	706
	03-04	40.4 (34.9-46.7)	47.1 (40.4-53.7)	100 (81.3-123)	212 (157-254)	293 (232-417)	699
	05-06	34.7 (30.1-40.1)	38.4 (32.6-44.7)	85.1 (70.9-109)	190 (137-242)	269 (245-364)	662
Non-Hispanic whites	99-00	29.2 (24.0-35.4)	37.6 (31.3-43.8)	85.8 (68.3-99.4)	171 (138-228)	270 (187-375)	915
	01-02	35.6 (31.8-40.0)	40.4 (36.1-44.7)	89.6 (78.5-101)	175 (153-198)	254 (214-337)	1222
	03-04	39.8 (35.5-44.7)	45.8 (38.9-54.9)	109 (95.8-126)	255 (206-267)	365 (294-424)	1079
	05-06	37.3 (31.2-44.6)	42.6 (37.1-50.1)	108 (94.0-127)	243 (219-267)	371 (285-456)	1039

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, and 05-06 are 0.8, 1.5, 1.5, and 0.04 respectively.

[Biomonitoring Summary](#)

Urinary Enterodiol (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	24.2 (20.3-28.9)	29.9 (25.0-34.7)	70.5 (59.6-82.1)	146 (124-177)	240 (199-320)	2527
	01-02	33.5 (30.7-36.7)	37.6 (33.0-42.1)	79.2 (72.6-87.3)	149 (136-164)	224 (197-250)	2794
	03-04	37.0 (33.6-40.7)	41.7 (37.9-45.4)	95.9 (85.6-106)	194 (171-213)	294 (247-368)	2594
	05-06	36.8 (32.7-41.4)	41.0 (35.9-46.3)	103 (94.3-114)	204 (174-219)	323 (280-424)	2528
Age group							
6-11 years	99-00	27.0 (18.6-39.3)	33.7 (21.8-43.7)	62.7 (43.0-108)	168 (81.6-290)	290 (150-411)	327
	01-02	38.1 (32.5-44.7)	39.3 (30.8-53.1)	78.3 (66.6-103)	188 (147-244)	304 (242-389)	396
	03-04	44.7 (37.4-53.5)	46.6 (38.5-58.3)	93.3 (73.9-125)	177 (128-205)	215 (181-413)	341
	05-06	36.6 (28.9-46.4)	37.8 (32.3-46.5)	75.6 (60.9-105)	156 (109-219)	223 (165-326)	351
12-19 years	99-00	20.1 (16.7-24.2)	24.1 (19.6-30.1)	55.1 (42.6-71.7)	99.5 (91.5-116)	158 (121-177)	744
	01-02	27.2 (23.3-31.8)	28.7 (24.9-34.9)	62.7 (54.9-71.0)	104 (84.2-139)	152 (111-225)	744
	03-04	33.8 (30.3-37.7)	34.8 (33.2-38.8)	67.6 (64.1-73.9)	130 (107-164)	221 (138-324)	729
	05-06	29.0 (25.2-33.3)	31.4 (27.8-36.1)	68.8 (57.7-80.7)	131 (113-160)	167 (160-216)	693
20 years and older	99-00	24.7 (20.6-29.5)	30.6 (26.0-34.8)	73.0 (62.5-84.5)	157 (129-184)	242 (199-344)	1456
	01-02	34.2 (30.3-38.5)	39.6 (32.5-45.3)	84.1 (73.8-93.3)	152 (136-169)	224 (193-250)	1654
	03-04	36.7 (32.5-41.4)	42.0 (37.1-47.8)	103 (91.8-111)	205 (173-239)	327 (256-431)	1524
	05-06	38.2 (33.1-44.0)	43.1 (36.4-49.4)	111 (96.0-128)	216 (187-242)	358 (291-475)	1484
Gender							
Males	99-00	19.8 (15.4-25.4)	25.4 (20.0-31.4)	55.1 (46.4-64.2)	122 (94.6-168)	199 (145-282)	1206
	01-02	28.7 (26.0-31.7)	31.4 (27.0-36.8)	71.3 (64.2-78.0)	136 (114-160)	212 (179-259)	1375
	03-04	31.1 (27.5-35.0)	34.8 (32.3-38.5)	78.0 (68.8-92.7)	165 (128-211)	249 (187-361)	1244
	05-06	32.5 (26.7-39.5)	34.2 (29.5-41.1)	90.9 (75.2-102)	192 (147-235)	311 (218-490)	1252
Females	99-00	29.3 (25.0-34.4)	35.4 (29.5-41.6)	85.2 (74.5-92.3)	165 (141-201)	321 (226-370)	1321
	01-02	38.9 (34.9-43.3)	43.9 (39.3-48.7)	88.3 (74.7-102)	157 (139-174)	235 (180-304)	1419
	03-04	43.6 (38.3-49.7)	49.0 (43.4-57.7)	109 (98.8-123)	215 (178-270)	377 (278-443)	1350
	05-06	41.4 (36.1-47.4)	48.2 (41.8-55.7)	116 (98.0-131)	210 (183-231)	376 (235-470)	1276
Race/ethnicity							
Mexican Americans	99-00	19.6 (17.3-22.2)	23.5 (19.7-28.7)	60.6 (49.8-77.7)	134 (114-154)	193 (154-227)	791
	01-02	28.7 (24.5-33.7)	31.0 (27.0-37.3)	64.1 (55.0-77.5)	133 (94.4-183)	223 (143-337)	679
	03-04	29.9 (23.8-37.4)	34.0 (26.5-42.8)	74.1 (62.0-101)	176 (118-234)	241 (189-364)	653
	05-06	34.4 (28.3-41.8)	35.3 (30.7-40.0)	84.6 (71.2-110)	200 (145-271)	315 (221-515)	634
Non-Hispanic blacks	99-00	16.6 (13.9-19.7)	18.8 (14.4-22.9)	47.3 (37.7-55.8)	113 (85.9-145)	169 (131-272)	608
	01-02	24.5 (19.7-30.6)	27.0 (22.6-33.3)	57.5 (48.2-73.2)	117 (92.2-143)	157 (118-246)	706
	03-04	28.6 (24.5-33.4)	30.4 (26.1-36.1)	68.3 (53.4-87.5)	126 (96.3-191)	203 (153-227)	699
	05-06	24.3 (20.5-28.9)	25.3 (22.1-30.4)	68.6 (50.3-86.0)	125 (110-147)	190 (139-245)	662
Non-Hispanic whites	99-00	28.6 (24.3-33.6)	34.4 (28.9-39.3)	75.8 (65.3-87.2)	163 (130-197)	252 (203-363)	915
	01-02	35.3 (31.6-39.4)	40.9 (34.3-46.8)	83.3 (74.7-90.3)	152 (136-173)	225 (189-275)	1222
	03-04	39.3 (34.4-44.8)	45.5 (38.4-53.0)	105 (90.2-116)	202 (168-234)	299 (244-374)	1079
	05-06	39.2 (33.3-46.1)	45.0 (39.4-50.2)	111 (96.2-124)	210 (175-235)	331 (277-439)	1039

[Biomonitoring Summary](#)

Urinary Enterolactone

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	239 (200-286)	315 (245-381)	726 (595-879)	1970 (1440-2370)	2800 (2500-3140)	2548
	01-02	259 (233-287)	350 (314-389)	807 (739-873)	1590 (1440-1820)	2720 (1870-3430)	2794
	03-04	298 (265-334)	395 (331-464)	900 (819-969)	1790 (1560-2040)	2620 (2360-2880)	2594
	05-06	283 (245-327)	385 (338-460)	935 (824-1060)	1850 (1710-2040)	2880 (2480-3160)	2528
Age group							
6-11 years	99-00	308 (219-432)	356 (243-474)	721 (520-1320)	1730 (973-2840)	2840 (1700-3590)	331
	01-02	288 (245-339)	329 (271-412)	680 (566-794)	1380 (929-1620)	2200 (1420-2550)	396
	03-04	384 (287-513)	414 (299-567)	926 (589-1190)	1660 (1140-2280)	2360 (1700-3440)	341
	05-06	300 (242-373)	399 (280-546)	851 (667-984)	1390 (1000-1770)	1910 (1390-2460)	351
12-19 years	99-00	250 (191-327)	317 (242-410)	672 (454-888)	1760 (973-2480)	2920 (1950-4330)	746
	01-02	267 (231-308)	321 (255-399)	729 (617-856)	1480 (1230-1800)	2180 (1560-3440)	744
	03-04	314 (267-369)	400 (333-468)	866 (736-1050)	1690 (1410-2080)	2620 (2000-2890)	729
	05-06	292 (245-348)	393 (350-492)	877 (681-1010)	1620 (1470-1800)	2360 (1780-2960)	693
20 years and older	99-00	230 (193-274)	310 (242-375)	734 (599-888)	2000 (1490-2390)	2790 (2510-3540)	1471
	01-02	254 (223-289)	357 (314-397)	835 (760-914)	1660 (1460-1890)	2840 (1890-3610)	1654
	03-04	286 (253-324)	394 (311-465)	900 (824-960)	1820 (1560-2060)	2630 (2350-3100)	1524
	05-06	280 (238-330)	379 (332-460)	958 (843-1110)	1970 (1760-2310)	3130 (2540-3570)	1484
Gender							
Males	99-00	254 (212-304)	351 (266-418)	778 (579-1050)	2000 (1580-2400)	2730 (2430-3350)	1219
	01-02	262 (233-295)	340 (314-387)	873 (769-957)	1810 (1490-2470)	3050 (1990-4070)	1375
	03-04	314 (280-351)	425 (376-477)	938 (840-1060)	1760 (1540-2050)	2620 (2060-3230)	1244
	05-06	301 (247-368)	421 (341-515)	1000 (854-1150)	2020 (1730-2330)	3130 (2660-3340)	1252
Females	99-00	226 (180-284)	287 (236-339)	684 (560-799)	1890 (1200-2460)	2830 (2100-4330)	1329
	01-02	255 (226-288)	357 (298-397)	759 (680-840)	1450 (1190-1700)	2200 (1710-2950)	1419
	03-04	283 (233-343)	371 (278-465)	859 (706-984)	1810 (1440-2170)	2630 (2210-3440)	1350
	05-06	267 (220-324)	359 (318-445)	874 (716-1030)	1770 (1440-2020)	2660 (2040-3270)	1276
Race/ethnicity							
Mexican Americans	99-00	212 (169-265)	281 (230-335)	631 (539-732)	1650 (950-2210)	2690 (2380-3350)	813
	01-02	275 (221-342)	347 (312-395)	778 (671-913)	1520 (1090-1920)	2340 (1610-2990)	679
	03-04	275 (239-316)	376 (316-435)	849 (744-958)	1560 (1320-1860)	2240 (1860-3100)	653
	05-06	359 (311-415)	420 (364-515)	914 (750-1080)	1710 (1340-2060)	2660 (1950-3180)	634
Non-Hispanic blacks	99-00	262 (196-349)	363 (293-440)	759 (629-925)	1730 (1000-2420)	2500 (1870-3280)	605
	01-02	278 (226-342)	418 (341-479)	769 (686-853)	1450 (1160-1840)	2000 (1540-2420)	706
	03-04	328 (285-378)	437 (362-526)	942 (768-1110)	1580 (1360-1820)	2280 (1880-2640)	699
	05-06	276 (237-322)	411 (346-483)	924 (827-1050)	1660 (1430-2040)	2620 (2220-3080)	662
Non-Hispanic whites	99-00	247 (196-311)	317 (240-403)	752 (616-955)	2040 (1600-2450)	3000 (2460-3880)	917
	01-02	267 (235-303)	357 (307-397)	834 (750-923)	1630 (1420-1890)	2780 (1820-3740)	1222
	03-04	299 (254-352)	396 (299-488)	900 (789-996)	1810 (1510-2140)	2680 (2310-3230)	1079
	05-06	274 (228-329)	373 (318-460)	923 (745-1080)	1800 (1610-2020)	2910 (2360-3220)	1039

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, and 05-06 are 0.6, 1.9, 1.9, and 0.1 respectively.

[Biomonitoring Summary](#)

Urinary Enterolactone (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	218 (184-260)	284 (247-336)	733 (613-869)	1580 (1290-1830)	2250 (1860-2830)	2548
	01-02	243 (220-268)	324 (293-360)	756 (668-858)	1430 (1250-1580)	2120 (1720-2450)	2794
	03-04	279 (245-317)	371 (324-430)	810 (697-911)	1590 (1350-1910)	2400 (2000-2890)	2594
	05-06	276 (237-321)	382 (329-448)	856 (775-975)	1640 (1480-1840)	2650 (2240-3380)	2528
Age group							
6-11 years	99-00	315 (238-416)	384 (266-435)	704 (495-1110)	1580 (1110-2010)	2100 (1580-3040)	331
	01-02	327 (274-391)	349 (263-478)	738 (603-994)	1420 (1140-1800)	2020 (1420-2940)	396
	03-04	409 (310-540)	470 (354-632)	904 (669-1150)	1480 (1090-2420)	2300 (1480-2690)	341
	05-06	331 (268-408)	459 (325-528)	778 (637-1010)	1480 (1130-1750)	1820 (1430-2510)	351
12-19 years	99-00	169 (133-214)	210 (172-264)	486 (371-615)	1150 (742-1540)	1850 (1310-2350)	746
	01-02	206 (178-239)	255 (223-293)	619 (466-753)	1110 (869-1480)	1500 (1140-2080)	744
	03-04	235 (202-273)	285 (255-307)	631 (533-744)	1230 (993-1350)	1510 (1240-2230)	729
	05-06	216 (184-254)	297 (255-336)	627 (514-701)	1010 (853-1170)	1410 (1150-1700)	693
20 years and older	99-00	217 (181-261)	288 (249-350)	785 (653-923)	1640 (1330-1890)	2310 (1890-3110)	1471
	01-02	240 (213-271)	331 (300-375)	786 (672-915)	1460 (1300-1630)	2180 (1890-2470)	1654
	03-04	274 (236-318)	377 (316-448)	823 (697-937)	1700 (1430-1980)	2480 (2040-3100)	1524
	05-06	281 (236-335)	399 (326-491)	942 (831-1040)	1730 (1570-2200)	2930 (2350-3530)	1484
Gender							
Males	99-00	199 (170-234)	263 (228-309)	664 (490-828)	1380 (1200-1710)	2030 (1780-2480)	1219
	01-02	213 (191-238)	287 (255-316)	682 (601-764)	1350 (1090-1580)	1980 (1570-2550)	1375
	03-04	245 (215-280)	330 (288-372)	729 (676-808)	1330 (1160-1580)	2040 (1590-2380)	1244
	05-06	243 (196-300)	336 (279-418)	800 (707-897)	1500 (1270-1680)	2200 (1890-2480)	1252
Females	99-00	238 (191-297)	303 (260-379)	819 (662-968)	1720 (1390-2010)	2550 (1940-3390)	1329
	01-02	274 (241-312)	356 (313-407)	833 (710-1000)	1490 (1320-1670)	2150 (1890-2410)	1419
	03-04	314 (257-385)	414 (327-510)	866 (704-1090)	1840 (1460-2280)	2840 (2220-3910)	1350
	05-06	313 (261-375)	419 (337-529)	954 (809-1060)	1840 (1550-2320)	3100 (2350-4580)	1276
Race/ethnicity							
Mexican Americans	99-00	194 (165-228)	254 (225-282)	605 (519-695)	1340 (969-1740)	2100 (1620-2790)	813
	01-02	259 (213-314)	362 (296-409)	730 (586-905)	1240 (1010-1490)	1630 (1240-2540)	679
	03-04	248 (217-282)	350 (310-403)	724 (657-826)	1320 (1020-1560)	1820 (1460-2170)	653
	05-06	324 (267-393)	379 (315-471)	773 (679-953)	1560 (1290-1680)	2060 (1630-2560)	634
Non-Hispanic blacks	99-00	168 (125-226)	214 (173-274)	546 (411-732)	1130 (874-1450)	1590 (1120-2560)	605
	01-02	195 (155-245)	302 (257-331)	562 (470-629)	985 (821-1130)	1490 (1080-1730)	706
	03-04	233 (197-274)	303 (276-347)	621 (512-707)	1050 (917-1350)	1550 (1170-2220)	699
	05-06	193 (167-223)	286 (252-331)	630 (556-729)	1120 (967-1230)	1490 (1220-1650)	662
Non-Hispanic whites	99-00	241 (194-300)	323 (279-388)	828 (674-997)	1780 (1390-2020)	2490 (1930-3340)	917
	01-02	264 (232-301)	339 (299-393)	833 (719-944)	1530 (1340-1880)	2410 (1940-2800)	1222
	03-04	294 (246-353)	399 (326-488)	836 (707-980)	1660 (1330-2040)	2500 (1990-3350)	1079
	05-06	288 (238-347)	403 (326-500)	926 (809-1050)	1700 (1500-2200)	2930 (2230-3710)	1039

[Biomonitoring Summary](#)

Urinary Equol

Metabolite of Daidzein

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	8.37 (7.21-9.72)	8.02 (6.27-9.90)	17.2 (15.2-19.8)	35.0 (28.9-41.6)	53.7 (40.1-74.2)	2182
	01-02	9.17 (7.76-10.8)	9.00 (7.40-10.5)	19.6 (16.6-23.5)	42.1 (34.3-51.5)	73.5 (53.6-89.2)	2794
	03-04	8.02 (7.07-9.10)	8.00 (6.80-9.40)	18.2 (15.2-20.8)	36.6 (31.3-40.0)	64.9 (45.4-97.9)	2590
	05-06	8.40 (7.63-9.24)	8.61 (7.89-9.17)	18.1 (16.4-20.4)	37.6 (33.9-41.8)	64.5 (54.8-85.3)	2527
Age group							
6-11 years	99-00	10.5 (7.65-14.3)	11.7 (5.43-18.6)	24.9 (17.5-29.5)	34.4 (29.5-53.3)	56.1 (30.1-149)	272
	01-02	12.2 (10.2-14.6)	13.7 (11.1-16.2)	26.2 (17.9-37.9)	50.4 (35.0-84.3)	85.4 (50.4-159)	396
	03-04	12.4 (9.71-15.8)	12.1 (8.40-17.8)	24.4 (20.1-31.2)	46.7 (33.5-82.3)	85.8 (44.9-118)	341
	05-06	13.3 (11.3-15.7)	13.5 (12.1-16.8)	26.5 (20.8-34.1)	45.6 (39.3-69.6)	70.3 (44.7-144)	351
12-19 years	99-00	10.9 (8.64-13.8)	10.8 (8.52-13.4)	22.3 (16.0-34.9)	42.9 (34.1-71.3)	71.6 (48.1-210)	657
	01-02	10.2 (8.50-12.1)	10.5 (8.20-12.5)	20.5 (16.8-24.8)	43.1 (30.1-56.1)	70.0 (46.3-99.2)	744
	03-04	10.6 (8.97-12.4)	10.5 (8.70-12.2)	22.6 (19.3-26.4)	39.9 (34.8-45.1)	61.9 (45.1-113)	729
	05-06	11.6 (10.3-13.0)	11.4 (9.25-12.3)	23.2 (20.3-28.8)	46.3 (37.2-64.0)	81.8 (50.1-146)	693
20 years and older	99-00	7.79 (6.79-8.94)	7.43 (5.71-8.85)	16.0 (13.6-18.1)	33.1 (24.4-39.7)	52.2 (36.3-93.9)	1253
	01-02	8.70 (7.29-10.4)	8.00 (6.20-10.2)	18.6 (15.0-22.3)	41.3 (34.1-47.4)	73.5 (53.9-89.0)	1654
	03-04	7.28 (6.37-8.33)	7.20 (6.00-8.70)	16.0 (14.2-19.2)	33.9 (28.2-38.9)	63.0 (41.3-121)	1520
	05-06	7.58 (6.82-8.42)	7.57 (7.01-8.30)	16.6 (14.9-18.2)	33.6 (29.1-42.6)	58.1 (50.6-89.0)	1483
Gender							
Males	99-00	9.15 (7.37-11.4)	8.44 (6.36-11.2)	19.0 (15.9-24.0)	35.6 (29.2-54.8)	71.3 (39.7-166)	1042
	01-02	9.41 (7.99-11.1)	9.20 (7.70-10.8)	20.1 (16.7-26.1)	43.1 (32.4-53.1)	61.7 (51.8-81.5)	1375
	03-04	8.56 (7.54-9.72)	8.70 (7.20-10.2)	19.0 (15.9-21.6)	38.0 (31.9-44.2)	72.6 (45.4-100)	1240
	05-06	9.13 (7.99-10.4)	9.42 (8.16-10.8)	20.0 (16.7-23.8)	39.4 (33.8-45.3)	63.1 (52.0-88.1)	1252
Females	99-00	7.70 (6.79-8.75)	7.57 (5.79-9.04)	15.6 (12.7-18.9)	33.6 (26.7-37.7)	48.2 (37.1-62.9)	1140
	01-02	8.94 (7.38-10.8)	8.60 (6.70-10.7)	19.0 (15.6-22.9)	41.6 (33.3-51.5)	79.8 (56.6-122)	1419
	03-04	7.55 (6.44-8.84)	7.30 (6.20-9.00)	16.9 (14.7-19.8)	33.8 (28.3-40.0)	60.3 (42.5-116)	1350
	05-06	7.75 (6.85-8.78)	7.57 (6.87-8.37)	16.7 (15.0-18.0)	35.6 (30.9-43.1)	69.2 (51.7-125)	1275
Race/ethnicity							
Mexican Americans	99-00	5.24 (4.77-5.76)	4.51 (3.65-5.18)	9.48 (7.96-10.3)	18.5 (14.5-22.6)	30.9 (21.6-48.4)	726
	01-02	7.22 (6.04-8.62)	6.50 (4.40-9.10)	14.2 (11.3-20.1)	31.4 (21.1-41.0)	42.4 (38.1-60.2)	679
	03-04	6.08 (5.08-7.28)	5.70 (4.70-6.80)	12.5 (9.80-15.4)	26.1 (18.1-39.7)	43.6 (34.3-88.2)	653
	05-06	6.04 (5.31-6.87)	6.13 (5.28-7.35)	13.3 (11.2-14.7)	25.2 (19.6-33.4)	47.6 (33.6-67.1)	634
Non-Hispanic blacks	99-00	6.73 (5.20-8.71)	6.24 (3.86-10.0)	15.1 (12.7-17.6)	27.6 (19.4-35.6)	36.4 (28.9-49.4)	514
	01-02	7.15 (6.06-8.43)	6.10 (4.70-7.60)	14.7 (12.0-18.7)	30.9 (22.8-41.9)	45.7 (36.1-90.5)	706
	03-04	7.35 (6.16-8.79)	7.90 (6.00-9.60)	16.5 (14.2-18.3)	32.0 (25.1-37.5)	47.0 (37.8-68.2)	696
	05-06	6.96 (5.89-8.22)	6.37 (5.44-7.95)	15.1 (11.7-20.2)	30.1 (23.8-39.4)	48.8 (38.7-64.9)	662
Non-Hispanic whites	99-00	9.26 (7.80-11.0)	8.98 (6.73-11.9)	19.0 (16.1-22.8)	36.2 (30.1-45.4)	56.1 (42.1-89.4)	758
	01-02	9.91 (7.95-12.4)	10.0 (7.30-12.6)	22.0 (17.4-27.4)	44.4 (35.1-57.5)	74.4 (55.1-107)	1222
	03-04	8.52 (7.26-10.0)	8.80 (7.10-10.3)	19.3 (15.4-23.0)	37.7 (31.7-44.2)	73.1 (46.7-120)	1078
	05-06	9.05 (8.08-10.1)	9.49 (8.47-10.4)	19.4 (16.6-23.2)	39.2 (33.9-45.1)	69.2 (52.2-130)	1038

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, and 05-06 are 3.0, 3.3, 3.3, and 0.06 respectively.

[Biomonitoring Summary](#)

Urinary Equol (creatinine corrected)

Metabolite of Daidzein

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	7.70 (6.82-8.70)	7.96 (6.87-9.35)	16.2 (13.2-18.6)	30.6 (26.9-35.1)	50.3 (41.8-67.3)	2182
	01-02	8.60 (7.26-10.2)	7.98 (6.62-9.76)	17.6 (14.8-21.8)	37.8 (30.3-46.3)	62.6 (50.0-85.0)	2794
	03-04	7.52 (6.83-8.29)	7.29 (6.56-8.18)	14.6 (13.3-15.7)	27.8 (24.7-31.9)	50.6 (39.9-75.0)	2590
	05-06	8.18 (7.33-9.14)	7.92 (7.01-8.76)	15.9 (14.2-17.4)	32.7 (29.9-35.1)	69.1 (48.4-105)	2527
Age group							
6-11 years	99-00	10.3 (7.83-13.5)	11.4 (7.46-16.3)	22.6 (14.7-27.2)	32.7 (25.5-46.0)	47.8 (32.7-150)	272
	01-02	13.9 (11.2-17.2)	14.0 (10.6-17.0)	28.8 (19.6-39.8)	54.4 (34.9-99.8)	88.2 (56.8-186)	396
	03-04	13.2 (10.9-15.9)	13.2 (9.19-17.5)	24.2 (20.6-28.0)	41.6 (35.2-64.1)	93.5 (45.4-117)	341
	05-06	14.7 (12.6-17.1)	15.3 (13.8-17.4)	26.2 (21.2-34.4)	48.0 (40.6-70.3)	88.9 (55.4-267)	351
12-19 years	99-00	7.61 (6.17-9.39)	8.02 (6.72-9.29)	14.0 (11.4-20.4)	27.5 (20.8-38.3)	47.4 (27.5-149)	657
	01-02	7.83 (6.68-9.17)	7.77 (6.29-9.13)	17.4 (14.9-19.2)	31.9 (25.3-41.7)	54.3 (33.0-76.7)	744
	03-04	7.91 (6.59-9.49)	8.11 (6.80-9.09)	14.5 (11.8-17.5)	30.1 (21.0-38.2)	40.6 (32.6-66.9)	729
	05-06	8.61 (7.54-9.83)	8.03 (7.00-9.21)	16.3 (13.4-19.0)	31.8 (25.3-37.6)	62.0 (37.0-129)	693
20 years and older	99-00	7.45 (6.60-8.41)	7.63 (6.35-9.22)	15.3 (12.7-17.7)	30.8 (25.0-37.2)	53.2 (41.2-71.8)	1253
	01-02	8.23 (6.93-9.79)	7.52 (5.97-9.56)	16.6 (14.0-20.7)	36.4 (29.3-42.9)	58.7 (47.9-85.0)	1654
	03-04	6.98 (6.30-7.73)	6.76 (6.05-7.65)	13.6 (12.5-14.8)	24.6 (21.9-29.4)	42.8 (35.7-81.6)	1520
	05-06	7.60 (6.72-8.59)	7.43 (6.63-8.21)	14.1 (12.4-16.4)	30.1 (23.9-34.9)	65.9 (42.7-123)	1483
Gender							
Males	99-00	7.01 (5.93-8.29)	7.32 (5.63-8.78)	13.8 (11.7-17.6)	29.3 (21.4-41.8)	54.1 (35.8-81.0)	1042
	01-02	7.66 (6.39-9.18)	7.43 (5.81-9.16)	16.2 (14.0-19.4)	32.9 (27.9-40.4)	54.3 (37.8-67.1)	1375
	03-04	6.71 (6.02-7.47)	6.63 (5.78-7.29)	13.3 (11.9-15.5)	25.7 (23.1-30.3)	51.1 (37.1-76.7)	1240
	05-06	7.35 (6.40-8.43)	7.03 (5.90-8.67)	14.9 (12.0-18.3)	31.4 (26.8-34.0)	57.6 (42.7-83.5)	1252
Females	99-00	8.41 (7.33-9.66)	8.71 (7.33-10.1)	17.7 (15.1-20.0)	31.6 (27.5-37.2)	46.3 (41.0-56.5)	1140
	01-02	9.60 (7.99-11.5)	8.66 (6.97-10.6)	19.2 (15.7-23.7)	41.7 (32.3-55.9)	85.0 (61.7-115)	1419
	03-04	8.38 (7.39-9.51)	8.29 (7.03-9.28)	15.1 (14.0-16.6)	30.6 (25.0-32.5)	45.4 (38.7-102)	1350
	05-06	9.07 (8.04-10.2)	8.49 (7.90-9.22)	16.7 (15.3-18.1)	34.3 (29.9-40.7)	85.1 (48.4-144)	1275
Race/ethnicity							
Mexican Americans	99-00	4.89 (4.36-5.47)	4.73 (3.90-5.27)	8.85 (8.18-9.91)	22.3 (16.5-26.8)	37.1 (25.3-57.6)	726
	01-02	6.79 (5.82-7.92)	6.81 (5.55-8.04)	14.9 (11.7-17.8)	29.1 (22.9-36.0)	41.3 (31.4-47.1)	679
	03-04	5.48 (4.60-6.54)	4.72 (3.95-5.78)	10.1 (7.76-13.4)	24.4 (17.2-30.9)	35.6 (27.6-102)	653
	05-06	5.45 (4.84-6.14)	5.00 (4.37-5.85)	9.94 (8.80-12.4)	22.3 (19.3-30.0)	39.4 (30.0-61.9)	634
Non-Hispanic blacks	99-00	4.36 (3.41-5.57)	4.57 (2.94-6.23)	10.2 (7.96-12.0)	17.1 (14.8-19.8)	26.0 (19.6-32.0)	514
	01-02	5.01 (4.26-5.89)	4.48 (3.80-5.42)	11.0 (8.80-13.0)	22.7 (16.5-29.3)	35.4 (24.8-46.7)	706
	03-04	5.23 (4.44-6.16)	5.28 (4.67-6.10)	10.3 (8.61-12.3)	20.2 (17.1-23.8)	29.4 (23.9-42.3)	696
	05-06	4.88 (4.11-5.78)	4.72 (3.55-6.00)	9.40 (7.54-12.0)	21.5 (16.8-24.4)	31.6 (24.4-51.4)	662
Non-Hispanic whites	99-00	9.13 (7.85-10.6)	9.51 (7.63-11.2)	18.0 (15.2-21.6)	35.4 (29.5-41.3)	56.5 (46.0-73.0)	758
	01-02	9.81 (7.93-12.1)	9.17 (7.06-12.2)	19.8 (15.4-25.6)	41.3 (30.7-55.9)	66.4 (56.8-85.0)	1222
	03-04	8.40 (7.50-9.41)	8.17 (7.13-9.19)	15.6 (14.1-17.1)	30.6 (25.0-32.8)	56.8 (38.0-107)	1078
	05-06	9.51 (8.48-10.7)	9.17 (8.06-10.5)	17.1 (15.0-19.4)	34.5 (31.0-40.6)	77.7 (48.4-129)	1038

[Biomonitoring Summary](#)

Urinary Genistein

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	24.4 (19.7-30.3)	27.0 (22.5-32.8)	93.6 (75.8-118)	284 (244-331)	563 (413-709)	2557
	01-02	33.0 (30.1-36.2)	29.0 (26.8-31.8)	92.5 (77.9-109)	306 (240-372)	619 (523-719)	2794
	03-04	31.1 (29.0-33.3)	26.2 (23.9-29.7)	87.8 (78.8-102)	286 (239-313)	528 (402-610)	2594
	05-06	28.7 (25.8-32.0)	26.0 (20.9-29.7)	81.0 (73.3-92.4)	261 (232-308)	523 (422-591)	2528
Age group							
6-11 years	99-00	27.6 (21.1-36.1)	31.9 (18.1-42.6)	104 (67.6-151)	220 (151-315)	376 (272-725)	331
	01-02	39.2 (33.4-46.0)	31.7 (25.8-39.6)	94.1 (62.3-158)	258 (190-426)	502 (258-830)	396
	03-04	33.6 (27.8-40.6)	29.3 (23.1-37.8)	79.4 (56.7-111)	193 (146-274)	351 (207-376)	341
	05-06	38.6 (29.8-49.9)	34.6 (25.3-42.5)	109 (76.6-181)	367 (252-568)	629 (367-2390)	351
12-19 years	99-00	43.7 (34.2-55.7)	45.4 (34.3-60.5)	138 (93.7-179)	319 (245-464)	547 (321-777)	754
	01-02	34.1 (27.2-42.8)	29.0 (26.1-32.9)	90.6 (71.5-113)	278 (216-363)	470 (360-687)	744
	03-04	34.7 (29.3-41.0)	29.0 (23.4-37.6)	111 (69.3-141)	304 (206-376)	530 (358-671)	729
	05-06	34.1 (28.8-40.5)	26.9 (20.5-35.6)	90.5 (76.1-115)	307 (209-394)	486 (372-982)	693
20 years and older	99-00	21.9 (17.6-27.2)	24.0 (21.7-28.4)	86.2 (67.5-108)	293 (235-343)	566 (412-744)	1472
	01-02	32.1 (28.8-35.8)	28.8 (25.4-33.4)	93.4 (77.3-110)	312 (235-389)	627 (537-790)	1654
	03-04	30.2 (27.8-32.8)	25.9 (22.3-29.8)	87.8 (77.9-103)	296 (239-321)	557 (412-653)	1524
	05-06	27.0 (23.9-30.6)	25.0 (19.8-28.8)	77.4 (66.7-89.5)	244 (190-308)	518 (413-591)	1484
Gender							
Males	99-00	29.8 (22.2-40.0)	31.9 (26.3-37.2)	108 (79.1-151)	335 (257-440)	709 (437-981)	1222
	01-02	32.2 (27.9-37.2)	29.5 (25.4-33.7)	91.2 (73.4-103)	239 (190-331)	474 (335-719)	1375
	03-04	33.7 (29.6-38.4)	27.3 (23.4-33.0)	92.6 (68.6-124)	310 (228-351)	562 (443-653)	1244
	05-06	32.1 (28.6-36.0)	29.1 (22.7-33.8)	90.2 (77.5-101)	269 (216-340)	494 (394-591)	1252
Females	99-00	20.3 (17.0-24.2)	23.1 (20.1-26.3)	84.7 (59.6-105)	242 (203-288)	446 (339-619)	1335
	01-02	33.7 (30.9-36.8)	28.7 (26.0-32.3)	97.0 (79.9-118)	387 (253-500)	666 (598-807)	1419
	03-04	28.7 (25.5-32.4)	25.0 (22.4-28.4)	85.0 (71.2-106)	256 (218-308)	467 (356-620)	1350
	05-06	25.9 (22.3-29.9)	22.4 (17.9-27.4)	74.5 (61.0-87.0)	246 (195-329)	526 (398-657)	1276
Race/ethnicity							
Mexican Americans	99-00	31.1 (25.1-38.5)	30.0 (25.1-37.3)	117 (82.9-179)	328 (248-494)	573 (419-1180)	819
	01-02	28.3 (22.0-36.4)	25.6 (19.6-32.5)	74.8 (48.8-111)	225 (174-314)	424 (323-523)	679
	03-04	31.1 (27.5-35.2)	25.2 (19.1-32.6)	83.2 (63.6-120)	319 (252-537)	653 (537-851)	653
	05-06	27.6 (24.4-31.2)	26.6 (21.5-30.2)	77.0 (63.3-87.3)	255 (187-319)	412 (320-568)	634
Non-Hispanic blacks	99-00	26.7 (19.2-37.0)	32.9 (24.4-41.5)	103 (84.8-137)	257 (213-367)	495 (329-926)	608
	01-02	37.6 (27.4-51.6)	35.3 (23.6-49.5)	95.5 (71.1-142)	378 (192-530)	598 (375-1120)	706
	03-04	32.3 (24.0-43.4)	27.4 (18.8-44.9)	84.8 (60.5-113)	279 (163-412)	514 (323-852)	699
	05-06	31.0 (26.7-36.1)	27.9 (23.0-34.9)	92.3 (69.3-106)	265 (187-355)	458 (371-643)	662
Non-Hispanic whites	99-00	23.6 (19.1-29.3)	25.6 (21.7-32.0)	91.4 (68.0-122)	288 (227-353)	566 (395-734)	917
	01-02	30.9 (27.8-34.4)	27.6 (24.6-30.8)	89.7 (71.1-105)	278 (226-365)	626 (485-755)	1222
	03-04	30.8 (28.2-33.6)	26.2 (22.6-31.0)	93.6 (78.8-112)	279 (225-313)	504 (376-610)	1079
	05-06	26.9 (23.6-30.6)	23.8 (19.0-29.1)	77.2 (66.2-87.9)	244 (198-316)	518 (391-609)	1039

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, and 05-06 are 0.3, 0.8, 0.8, and 1.0 respectively.

[Biomonitoring Summary](#)

Urinary Genistein (creatinine corrected)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	22.3 (17.7-28.1)	23.8 (18.8-28.9)	84.7 (67.2-105)	222 (182-279)	381 (334-497)	2557
	01-02	30.9 (28.5-33.6)	25.9 (23.4-29.2)	83.3 (72.2-96.3)	256 (211-296)	427 (375-490)	2794
	03-04	29.1 (27.3-31.0)	24.5 (21.3-27.4)	77.7 (67.3-90.9)	231 (203-279)	510 (388-619)	2594
	05-06	28.0 (25.3-31.0)	23.2 (20.3-26.4)	72.0 (63.1-85.2)	242 (197-280)	577 (406-734)	2528
Age group							
6-11 years	99-00	28.3 (21.1-37.9)	27.8 (15.8-41.3)	94.3 (60.5-145)	209 (148-317)	490 (279-895)	331
	01-02	44.5 (37.0-53.5)	37.9 (29.7-49.0)	112 (76.5-146)	252 (173-371)	504 (252-713)	396
	03-04	35.8 (29.7-43.0)	35.4 (24.9-43.2)	78.6 (60.9-119)	172 (130-243)	297 (168-618)	341
	05-06	42.5 (33.1-54.6)	34.1 (23.7-41.9)	138 (89.5-195)	414 (256-850)	1040 (429-1590)	351
12-19 years	99-00	29.4 (22.3-38.8)	32.0 (23.8-41.6)	83.2 (64.1-104)	184 (130-295)	336 (184-816)	754
	01-02	26.3 (21.3-32.5)	21.0 (17.8-26.5)	66.2 (47.9-91.5)	200 (149-298)	321 (261-435)	744
	03-04	25.9 (21.8-30.9)	21.8 (17.0-29.1)	65.6 (51.0-83.1)	201 (145-313)	366 (297-455)	729
	05-06	25.3 (22.1-29.0)	19.6 (16.4-24.0)	76.5 (51.4-91.6)	164 (130-249)	368 (213-520)	693
20 years and older	99-00	20.6 (16.3-26.2)	21.6 (17.7-26.2)	83.1 (64.9-107)	234 (190-287)	381 (325-562)	1472
	01-02	30.4 (27.6-33.4)	24.8 (21.9-30.0)	83.1 (68.5-99.0)	269 (208-328)	435 (374-518)	1654
	03-04	28.9 (26.7-31.3)	24.0 (20.1-27.4)	78.5 (66.1-92.9)	253 (209-302)	542 (399-673)	1524
	05-06	27.1 (24.3-30.3)	23.0 (19.7-26.8)	70.3 (61.2-81.3)	233 (184-275)	575 (349-762)	1484
Gender							
Males	99-00	23.3 (16.8-32.3)	23.8 (17.5-32.2)	86.2 (64.7-115)	236 (178-330)	523 (323-889)	1222
	01-02	26.2 (23.1-29.8)	22.0 (19.4-26.0)	67.6 (57.4-78.1)	186 (144-237)	350 (278-418)	1375
	03-04	26.4 (22.8-30.5)	21.5 (17.3-26.2)	70.0 (51.1-90.5)	203 (159-235)	415 (346-600)	1244
	05-06	25.8 (23.4-28.4)	22.8 (19.3-26.4)	65.0 (54.6-82.2)	207 (154-261)	431 (305-628)	1252
Females	99-00	21.3 (17.5-26.0)	23.2 (17.5-29.3)	83.1 (57.2-106)	211 (154-283)	357 (283-398)	1335
	01-02	36.2 (32.8-39.9)	29.6 (25.2-34.3)	107 (88.4-129)	321 (269-355)	547 (427-729)	1419
	03-04	31.9 (28.7-35.5)	27.1 (23.6-31.6)	87.1 (71.1-102)	278 (209-324)	548 (363-763)	1350
	05-06	30.3 (25.8-35.5)	23.5 (19.8-29.1)	81.3 (67.4-104)	271 (208-406)	658 (444-894)	1276
Race/ethnicity							
Mexican Americans	99-00	28.4 (23.3-34.7)	27.9 (22.5-35.0)	109 (91.5-137)	257 (209-380)	562 (257-981)	819
	01-02	26.6 (21.6-32.9)	21.0 (16.1-28.9)	61.6 (50.6-76.8)	205 (147-270)	372 (271-479)	679
	03-04	28.0 (24.8-31.8)	23.5 (18.5-28.1)	69.2 (52.3-92.8)	254 (187-390)	608 (417-764)	653
	05-06	24.9 (22.1-28.0)	21.7 (17.8-23.8)	72.4 (56.2-90.2)	202 (140-274)	338 (275-648)	634
Non-Hispanic blacks	99-00	17.1 (12.4-23.7)	19.5 (15.7-26.1)	59.5 (43.1-93.7)	179 (132-245)	299 (222-446)	608
	01-02	26.4 (19.3-36.1)	22.7 (16.4-33.6)	69.4 (42.2-115)	217 (139-317)	384 (217-747)	706
	03-04	22.8 (18.1-28.8)	19.6 (14.3-27.1)	55.0 (39.6-78.1)	182 (107-240)	311 (210-514)	699
	05-06	21.7 (18.8-25.1)	18.6 (14.9-21.6)	55.3 (42.6-78.7)	157 (124-235)	351 (235-543)	662
Non-Hispanic whites	99-00	23.2 (18.5-29.0)	24.9 (19.0-31.7)	86.1 (68.4-105)	232 (178-295)	381 (325-523)	917
	01-02	30.6 (28.2-33.2)	25.4 (22.7-29.5)	82.0 (68.3-96.3)	248 (207-320)	427 (365-518)	1222
	03-04	30.4 (27.9-33.0)	26.2 (21.5-31.4)	79.6 (69.1-99.6)	238 (195-321)	534 (352-688)	1079
	05-06	28.2 (25.1-31.8)	23.5 (19.8-29.0)	71.7 (58.9-89.6)	242 (192-305)	615 (423-802)	1039

[Biomonitoring Summary](#)

Urinary O-Desmethylangolensin

Metabolite of Daidzein

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	4.39 (3.37-5.73)	4.98 (3.65-6.77)	22.7 (18.7-30.1)	100 (74.8-141)	222 (182-250)	2271
	01-02	4.08 (3.53-4.73)	3.30 (2.70-4.20)	19.8 (16.7-24.6)	96.0 (70.1-135)	260 (161-437)	2794
	03-04	4.91 (4.34-5.55)	4.60 (4.00-5.20)	23.6 (18.6-27.2)	95.9 (70.7-122)	230 (185-342)	2581
	05-06	4.71 (4.17-5.31)	3.80 (3.10-4.30)	22.5 (19.7-26.6)	101 (86.4-124)	266 (200-385)	2528
Age group							
6-11 years	99-00	5.60 (3.85-8.15)	7.52 (3.43-15.2)	36.2 (20.3-45.0)	78.7 (43.4-191)	176 (74.8-264)	287
	01-02	6.19 (4.51-8.49)	5.90 (3.80-9.30)	26.9 (15.7-52.1)	122 (61.5-215)	281 (161-466)	396
	03-04	6.33 (4.30-9.30)	6.10 (3.50-10.6)	24.0 (17.0-33.8)	70.8 (51.4-122)	138 (80.9-256)	341
	05-06	7.20 (5.20-9.96)	6.20 (4.00-11.0)	37.8 (24.2-55.2)	145 (83.9-295)	386 (201-516)	351
12-19 years	99-00	6.04 (3.76-9.70)	7.60 (5.13-13.5)	36.6 (22.0-57.3)	107 (63.4-165)	194 (107-238)	667
	01-02	5.92 (4.46-7.87)	5.20 (3.70-7.60)	33.6 (18.0-56.8)	125 (91.2-172)	299 (172-435)	744
	03-04	6.37 (4.95-8.18)	5.30 (3.80-8.10)	33.9 (18.2-50.5)	110 (82.2-198)	257 (175-415)	729
	05-06	8.50 (6.48-11.2)	8.10 (5.50-11.6)	41.3 (33.6-49.6)	105 (80.2-213)	385 (139-829)	693
20 years and older	99-00	4.05 (3.12-5.26)	4.46 (3.31-5.64)	19.8 (16.0-26.5)	101 (80.8-150)	228 (179-259)	1317
	01-02	3.65 (3.08-4.32)	2.80 (2.30-3.70)	17.0 (13.9-22.4)	81.5 (63.0-128)	260 (135-526)	1654
	03-04	4.56 (4.02-5.17)	4.40 (3.60-4.90)	22.0 (17.8-25.6)	94.0 (67.6-131)	230 (187-398)	1511
	05-06	4.09 (3.51-4.77)	3.20 (2.60-4.00)	17.9 (14.9-22.3)	91.2 (72.3-124)	248 (182-302)	1484
Gender							
Males	99-00	4.97 (3.71-6.66)	5.62 (4.12-8.73)	29.1 (19.8-42.9)	121 (74.1-190)	235 (177-332)	1087
	01-02	3.81 (3.08-4.71)	3.30 (2.60-4.50)	17.4 (13.2-24.6)	82.8 (58.4-116)	194 (123-324)	1375
	03-04	4.90 (3.93-6.12)	4.60 (3.40-5.50)	23.0 (16.6-30.1)	92.9 (70.7-129)	222 (159-332)	1240
	05-06	4.93 (4.13-5.89)	4.00 (3.40-5.50)	22.3 (16.7-28.1)	90.8 (63.5-137)	235 (171-311)	1252
Females	99-00	3.92 (2.97-5.16)	4.22 (3.18-5.51)	19.4 (14.1-26.1)	83.8 (61.1-114)	192 (123-250)	1184
	01-02	4.36 (3.64-5.23)	3.40 (2.50-4.60)	21.3 (16.8-29.2)	107 (70.6-199)	394 (230-746)	1419
	03-04	4.91 (4.26-5.66)	4.60 (3.90-5.50)	23.9 (18.1-27.4)	99.3 (63.5-155)	283 (160-433)	1341
	05-06	4.50 (3.90-5.20)	3.30 (2.70-4.30)	22.8 (17.9-28.3)	121 (83.2-168)	284 (182-499)	1276
Race/ethnicity							
Mexican Americans	99-00	2.41 (1.55-3.73)	2.14 (1.31-3.37)	21.0 (10.6-30.5)	97.6 (59.7-140)	191 (122-320)	721
	01-02	2.44 (1.51-3.94)	1.40 (.500-3.40)	13.1 (5.80-27.6)	66.4 (33.5-102)	152 (75.8-265)	679
	03-04	2.54 (1.86-3.48)	1.90 (1.00-3.40)	14.4 (9.00-18.1)	62.3 (40.3-99.5)	146 (99.5-254)	652
	05-06	3.04 (2.29-4.05)	2.10 (1.40-2.90)	14.5 (8.20-24.7)	62.8 (39.1-104)	158 (87.0-246)	634
Non-Hispanic blacks	99-00	5.74 (4.55-7.24)	8.71 (5.82-10.9)	33.5 (22.1-52.4)	108 (78.3-156)	192 (149-255)	538
	01-02	5.35 (4.00-7.14)	5.30 (2.90-7.30)	32.7 (22.0-52.4)	128 (75.9-216)	308 (150-436)	706
	03-04	5.49 (4.05-7.46)	4.20 (3.30-6.10)	26.1 (13.4-49.0)	117 (86.2-166)	221 (177-354)	698
	05-06	5.83 (4.49-7.58)	4.90 (3.90-6.30)	32.6 (21.2-46.7)	110 (72.4-189)	297 (162-398)	662
Non-Hispanic whites	99-00	4.50 (3.26-6.22)	4.99 (3.43-7.10)	22.5 (17.1-34.4)	103 (72.0-152)	228 (177-259)	826
	01-02	4.13 (3.43-4.96)	3.40 (2.60-4.40)	17.9 (15.5-23.8)	98.7 (67.4-153)	260 (153-526)	1222
	03-04	5.27 (4.63-5.99)	5.30 (4.40-6.00)	24.2 (18.8-28.5)	99.5 (67.6-149)	246 (183-409)	1070
	05-06	4.72 (4.09-5.45)	3.80 (3.20-4.70)	21.9 (17.5-27.6)	97.7 (72.3-142)	246 (181-363)	1039

Limit of detection (LOD, see Data Analysis section) for Survey years 99-00, 01-02, 03-04, and 05-06 are 0.2, 0.4, 0.4, and 0.2 respectively.

[Biomonitoring Summary](#)

Urinary O-Desmethylangolensin (creatinine corrected)

Metabolite of Daidzein

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	99-00	4.03 (2.97-5.45)	4.44 (3.10-6.35)	21.8 (15.3-31.6)	90.4 (62.9-122)	167 (140-218)	2271
	01-02	3.83 (3.32-4.43)	3.24 (2.55-4.12)	18.9 (16.1-23.2)	85.2 (65.1-117)	281 (149-412)	2794
	03-04	4.58 (4.20-5.01)	4.09 (3.53-4.59)	19.6 (17.4-22.6)	92.9 (76.5-120)	201 (183-261)	2581
	05-06	4.59 (4.04-5.21)	3.70 (3.12-4.42)	20.7 (18.4-22.8)	95.6 (78.0-129)	215 (180-325)	2528
Age group							
6-11 years	99-00	6.00 (4.04-8.91)	7.15 (3.94-16.6)	28.8 (14.3-45.0)	83.3 (45.0-167)	179 (88.2-262)	287
	01-02	7.03 (5.05-9.77)	6.49 (4.24-11.6)	29.9 (16.3-54.1)	101 (75.3-199)	305 (134-464)	396
	03-04	6.73 (4.55-9.97)	5.97 (4.09-8.28)	27.7 (15.6-42.3)	86.1 (45.2-135)	149 (84.3-189)	341
	05-06	7.93 (5.73-11.0)	7.15 (3.90-11.3)	40.9 (27.5-55.9)	164 (85.8-280)	346 (215-497)	351
12-19 years	99-00	4.13 (2.33-7.35)	5.71 (2.82-11.5)	26.0 (14.7-44.4)	71.4 (40.8-122)	122 (75.2-262)	667
	01-02	4.57 (3.44-6.07)	3.88 (2.82-5.32)	26.0 (18.0-35.9)	95.0 (61.4-129)	259 (129-331)	744
	03-04	4.76 (3.71-6.11)	4.26 (3.13-5.97)	22.8 (14.3-39.2)	86.4 (49.0-149)	185 (101-261)	729
	05-06	6.30 (4.89-8.13)	5.69 (3.44-8.40)	28.0 (22.5-37.1)	89.0 (58.5-138)	258 (103-686)	693
20 years and older	99-00	3.82 (2.84-5.13)	3.90 (2.69-5.73)	20.2 (12.9-29.2)	96.5 (61.8-133)	172 (140-252)	1317
	01-02	3.46 (2.95-4.04)	2.74 (2.03-3.64)	16.8 (13.7-20.3)	78.9 (58.2-124)	281 (143-467)	1654
	03-04	4.35 (3.96-4.78)	3.75 (3.23-4.35)	18.6 (15.7-22.6)	95.2 (76.5-131)	228 (192-284)	1511
	05-06	4.10 (3.51-4.79)	3.35 (2.57-4.30)	17.4 (14.0-20.6)	89.3 (64.5-140)	197 (160-332)	1484
Gender							
Males	99-00	3.95 (2.79-5.58)	4.50 (2.88-6.50)	24.5 (13.8-40.5)	96.5 (62.4-122)	210 (125-265)	1087
	01-02	3.10 (2.48-3.86)	2.87 (2.00-3.96)	15.0 (10.4-19.7)	60.7 (41.5-90.2)	154 (96.4-301)	1375
	03-04	3.83 (3.10-4.73)	3.33 (2.41-4.35)	15.6 (13.9-18.9)	76.2 (51.1-99.5)	193 (124-255)	1240
	05-06	3.97 (3.33-4.72)	3.49 (2.73-4.33)	17.7 (14.1-21.4)	68.3 (55.8-85.8)	165 (140-216)	1252
Females	99-00	4.10 (3.00-5.61)	4.17 (2.91-6.35)	20.4 (14.4-27.2)	86.0 (49.1-145)	155 (100-205)	1184
	01-02	4.68 (3.87-5.68)	3.74 (2.77-4.88)	26.8 (18.7-34.0)	111 (70.3-205)	399 (175-739)	1419
	03-04	5.45 (4.71-6.30)	4.82 (4.09-5.92)	24.3 (19.6-28.9)	106 (78.5-163)	255 (193-343)	1341
	05-06	5.27 (4.56-6.09)	4.00 (3.07-5.49)	24.1 (19.8-31.1)	140 (96.8-166)	325 (197-613)	1276
Race/ethnicity							
Mexican Americans	99-00	2.19 (1.49-3.24)	1.88 (1.15-3.10)	16.6 (11.3-25.8)	71.2 (52.3-113)	136 (90.5-251)	721
	01-02	2.30 (1.48-3.57)	1.45 (.769-3.37)	11.8 (4.91-23.6)	46.7 (31.4-87.8)	108 (54.7-218)	679
	03-04	2.30 (1.68-3.15)	1.65 (.845-3.06)	13.2 (6.63-21.2)	51.6 (36.9-75.4)	125 (84.1-165)	652
	05-06	2.75 (1.92-3.93)	1.69 (1.04-2.99)	12.8 (7.27-24.9)	53.0 (33.3-93.2)	135 (72.6-204)	634
Non-Hispanic blacks	99-00	3.65 (2.90-4.60)	5.22 (3.59-6.75)	23.8 (17.6-32.1)	67.1 (52.1-79.7)	116 (81.9-239)	538
	01-02	3.75 (2.76-5.10)	3.57 (2.14-5.48)	22.8 (14.5-30.4)	78.5 (46.5-175)	218 (98.5-339)	706
	03-04	3.89 (3.03-4.99)	3.12 (1.96-4.96)	16.9 (11.3-26.7)	80.0 (58.6-104)	159 (120-255)	698
	05-06	4.09 (3.13-5.34)	4.22 (2.49-5.71)	20.1 (13.5-24.5)	69.9 (44.8-151)	225 (90.2-369)	662
Non-Hispanic whites	99-00	4.42 (3.12-6.27)	4.68 (3.05-7.23)	22.3 (15.3-37.9)	102 (57.6-148)	177 (140-215)	826
	01-02	4.08 (3.41-4.89)	3.51 (2.45-4.57)	21.2 (16.3-27.4)	96.4 (69.8-126)	300 (153-464)	1222
	03-04	5.18 (4.70-5.70)	4.58 (3.89-5.39)	21.6 (17.4-27.7)	103 (77.7-149)	225 (185-271)	1070
	05-06	4.96 (4.33-5.69)	3.97 (3.26-4.67)	21.5 (17.3-26.2)	101 (74.5-142)	227 (183-332)	1039

[Biomonitoring Summary](#)

Urinary 2-Hydroxyfluorene

Metabolite of Fluorene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	304 (262-354)	280 (242-319)	679 (561-815)	1850 (1430-2190)	2670 (2230-3130)	2521
	05-06	316 (297-338)	272 (243-296)	661 (605-743)	2060 (1600-2420)	3150 (2670-3730)	2431
Age group							
6-11 years	03-04	209 (183-239)	228 (189-259)	341 (295-411)	576 (423-728)	763 (613-827)	338
	05-06	201 (184-221)	195 (170-223)	352 (306-402)	497 (436-618)	709 (536-833)	343
12-19 years	03-04	281 (245-321)	292 (259-323)	502 (445-601)	1000 (753-1320)	1480 (1320-1930)	707
	05-06	283 (258-311)	272 (247-300)	482 (425-540)	1080 (843-1250)	1750 (1100-2820)	670
20 years and older	03-04	323 (272-383)	290 (247-334)	832 (653-1020)	2090 (1680-2460)	2920 (2410-3650)	1476
	05-06	340 (311-371)	284 (252-317)	813 (705-917)	2410 (1880-2820)	3460 (2820-4160)	1418
Gender							
Males	03-04	385 (333-446)	338 (300-415)	900 (739-1150)	2120 (1770-2450)	2930 (2490-3390)	1213
	05-06	376 (345-410)	332 (302-364)	823 (658-1030)	2160 (1660-2570)	3120 (2570-3560)	1213
Females	03-04	243 (204-290)	226 (184-269)	490 (405-617)	1400 (907-1930)	2310 (1740-3070)	1308
	05-06	268 (234-307)	227 (199-270)	528 (445-638)	1910 (1020-2830)	3180 (2180-4590)	1218
Race/ethnicity							
Mexican Americans	03-04	248 (215-286)	235 (203-293)	502 (412-580)	1100 (771-1330)	1640 (1250-2240)	629
	05-06	233 (200-271)	216 (180-247)	413 (334-488)	901 (704-1080)	1360 (1060-1950)	615
Non-Hispanic blacks	03-04	432 (361-516)	381 (317-462)	856 (702-1270)	2200 (1830-2610)	2960 (2350-4460)	684
	05-06	404 (346-471)	330 (307-377)	805 (626-1090)	2190 (1610-2930)	3160 (2530-4330)	657
Non-Hispanic whites	03-04	308 (255-372)	280 (233-332)	728 (554-898)	1940 (1540-2390)	2920 (2400-3500)	1045
	05-06	319 (290-350)	270 (237-315)	705 (626-829)	2180 (1700-2540)	3390 (2670-4250)	972

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 5.0 and 5.0 respectively.

Urinary 2-Hydroxyfluorene (creatinine corrected)

Metabolite of Fluorene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	286 (256-320)	221 (200-249)	495 (429-629)	1510 (1150-1800)	2070 (1850-2390)	2521
	05-06	308 (288-330)	227 (209-245)	567 (509-658)	1730 (1540-1850)	2450 (2020-2930)	2431
Age group							
6-11 years	03-04	221 (199-246)	217 (188-238)	305 (270-356)	462 (370-535)	695 (465-807)	338
	05-06	224 (207-243)	219 (197-254)	320 (288-365)	451 (384-523)	527 (450-720)	343
12-19 years	03-04	213 (189-240)	189 (172-211)	310 (275-377)	649 (512-778)	937 (762-1320)	707
	05-06	214 (201-227)	189 (178-197)	286 (266-320)	607 (516-769)	1190 (803-1430)	670
20 years and older	03-04	310 (274-350)	233 (203-269)	659 (494-835)	1730 (1420-1940)	2310 (1930-2590)	1476
	05-06	339 (313-367)	241 (216-262)	754 (629-891)	1870 (1750-2110)	2830 (2250-3200)	1418
Gender							
Males	03-04	302 (271-337)	242 (218-272)	635 (494-758)	1510 (1200-1700)	1940 (1700-2310)	1213
	05-06	302 (278-328)	233 (212-259)	610 (510-744)	1480 (1240-1680)	1920 (1680-2390)	1213
Females	03-04	271 (235-314)	208 (183-244)	415 (352-521)	1530 (991-1890)	2220 (1730-2590)	1308
	05-06	314 (284-347)	217 (198-247)	526 (437-622)	1900 (1680-2240)	2930 (2310-3280)	1218
Race/ethnicity							
Mexican Americans	03-04	224 (197-255)	198 (178-227)	370 (306-432)	745 (562-1030)	1200 (745-1730)	629
	05-06	210 (190-232)	179 (155-205)	294 (250-368)	624 (439-834)	1000 (720-1190)	615
Non-Hispanic blacks	03-04	308 (259-365)	249 (210-305)	609 (430-803)	1430 (939-1870)	1880 (1430-2500)	684
	05-06	284 (250-322)	222 (202-245)	502 (350-714)	1230 (941-1760)	1880 (1510-2440)	657
Non-Hispanic whites	03-04	304 (266-349)	226 (199-261)	581 (449-796)	1630 (1410-1940)	2310 (1940-2540)	1045
	05-06	335 (307-366)	242 (216-270)	687 (561-806)	1840 (1650-2060)	2800 (2070-3260)	972

Urinary 3-Hydroxyfluorene

Metabolite of Fluorene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	134 (115-155)	111 (96.0-126)	253 (207-349)	959 (666-1300)	1620 (1390-1900)	2745
	03-04	126 (108-148)	103 (90.4-118)	302 (231-404)	1090 (934-1270)	1740 (1400-2070)	2502
	05-06	124 (115-134)	99.1 (88.5-110)	304 (268-365)	1060 (830-1210)	1780 (1500-1910)	2398
Age group							
6-11 years	01-02	106 (94.8-119)	106 (91.0-124)	174 (145-200)	287 (235-358)	385 (306-455)	387
	03-04	89.2 (77.3-103)	92.3 (79.7-103)	151 (113-172)	238 (184-331)	343 (241-423)	336
	05-06	81.7 (73.6-90.7)	80.6 (68.3-98.9)	140 (122-174)	235 (189-272)	287 (242-345)	336
12-19 years	01-02	129 (103-161)	113 (97.0-137)	222 (177-266)	542 (325-1070)	1210 (680-2130)	733
	03-04	116 (100-134)	114 (94.7-133)	214 (181-269)	476 (317-748)	924 (609-1410)	701
	05-06	119 (107-133)	112 (94.4-126)	212 (181-229)	588 (436-659)	986 (609-1800)	661
20 years and older	01-02	138 (119-161)	111 (94.0-129)	311 (228-429)	1130 (823-1400)	1850 (1470-2080)	1625
	03-04	134 (112-160)	105 (86.5-125)	408 (300-537)	1240 (1050-1480)	1910 (1620-2290)	1465
	05-06	131 (118-145)	101 (86.2-117)	394 (308-448)	1220 (968-1510)	1900 (1620-2050)	1401
Gender							
Males	01-02	163 (137-194)	134 (115-155)	352 (242-481)	1110 (721-1500)	1850 (1390-2190)	1346
	03-04	165 (140-194)	133 (108-162)	458 (313-681)	1270 (1030-1530)	1920 (1580-2120)	1205
	05-06	155 (138-174)	127 (118-136)	420 (304-510)	1130 (887-1330)	1810 (1440-2050)	1196
Females	01-02	111 (95.0-130)	94.0 (83.0-108)	204 (169-250)	796 (498-1040)	1390 (1250-1670)	1399
	03-04	98.2 (81.2-119)	80.5 (66.7-101)	195 (163-272)	842 (530-1200)	1590 (1180-1800)	1297
	05-06	99.9 (87.0-115)	78.2 (68.3-88.3)	225 (176-278)	961 (558-1390)	1720 (1300-2020)	1202
Race/ethnicity							
Mexican Americans	01-02	108 (87.1-134)	99.0 (81.0-119)	190 (144-255)	476 (302-641)	718 (476-1140)	662
	03-04	93.4 (79.6-110)	83.4 (67.0-96.9)	190 (150-252)	520 (388-726)	1030 (688-1320)	622
	05-06	82.5 (71.0-95.8)	71.8 (60.2-83.9)	143 (116-173)	435 (265-716)	763 (565-1020)	596
Non-Hispanic blacks	01-02	203 (169-244)	162 (135-188)	449 (308-830)	1420 (1130-1780)	2350 (1520-3000)	692
	03-04	195 (157-242)	160 (124-187)	482 (303-827)	1460 (1070-1800)	2110 (1580-2830)	683
	05-06	170 (143-202)	134 (121-149)	345 (246-558)	1300 (929-1760)	1880 (1550-2370)	652
Non-Hispanic whites	01-02	130 (108-157)	108 (93.0-127)	246 (202-352)	948 (621-1320)	1620 (1320-1990)	1207
	03-04	129 (106-155)	105 (87.6-124)	313 (237-464)	1200 (1010-1410)	1870 (1430-2220)	1035
	05-06	123 (111-137)	96.8 (85.4-112)	343 (275-420)	1060 (760-1260)	1870 (1390-2050)	966

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 2.0, 5.0, and 5.0 respectively.

Urinary 3-Hydroxyfluorene (creatinine corrected)

Metabolite of Fluorene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	125 (108-144)	94.4 (83.3-106)	220 (174-303)	754 (622-873)	1060 (909-1290)	2745
	03-04	119 (106-134)	86.6 (76.8-97.3)	256 (201-337)	856 (668-1060)	1330 (1130-1590)	2502
	05-06	121 (111-131)	84.5 (77.5-93.4)	245 (203-297)	930 (806-1020)	1280 (1150-1400)	2398
Age group							
6-11 years	01-02	119 (103-137)	110 (96.7-121)	153 (135-197)	265 (206-377)	382 (254-631)	387
	03-04	94.6 (84.3-106)	92.4 (83.1-98.5)	130 (115-154)	202 (168-282)	311 (197-435)	336
	05-06	90.7 (82.6-99.6)	90.3 (80.1-99.7)	130 (119-142)	210 (167-242)	290 (237-353)	336
12-19 years	01-02	99.3 (81.6-121)	81.9 (74.2-92.6)	144 (109-197)	390 (214-700)	711 (372-1380)	733
	03-04	88.1 (78.0-99.6)	79.0 (72.5-83.2)	137 (114-170)	319 (225-440)	586 (356-880)	701
	05-06	90.1 (84.3-96.3)	73.8 (70.0-81.7)	133 (112-153)	381 (323-426)	618 (437-819)	661
20 years and older	01-02	131 (113-151)	94.4 (81.0-108)	279 (195-367)	862 (727-923)	1210 (1010-1350)	1625
	03-04	128 (113-146)	88.2 (76.8-104)	364 (242-484)	1020 (828-1240)	1500 (1290-1710)	1465
	05-06	131 (119-144)	85.9 (77.1-98.5)	334 (251-476)	1020 (931-1180)	1380 (1220-1550)	1401
Gender							
Males	01-02	132 (111-156)	100 (88.5-117)	260 (194-361)	745 (560-914)	1130 (862-1380)	1346
	03-04	129 (114-147)	95.8 (82.5-111)	338 (226-456)	833 (672-1010)	1220 (980-1510)	1205
	05-06	125 (112-139)	92.4 (84.3-103)	272 (215-404)	784 (660-936)	1100 (874-1310)	1196
Females	01-02	119 (104-136)	88.9 (78.6-103)	179 (156-227)	777 (604-888)	1030 (923-1270)	1399
	03-04	110 (93.4-129)	81.7 (69.5-91.5)	183 (132-285)	920 (488-1270)	1460 (1130-1750)	1297
	05-06	117 (105-130)	77.6 (71.9-90.2)	203 (160-290)	1040 (836-1240)	1400 (1220-1780)	1202
Race/ethnicity							
Mexican Americans	01-02	101 (84.2-121)	84.0 (74.8-97.2)	159 (124-214)	364 (227-598)	604 (357-1230)	662
	03-04	84.8 (73.1-98.4)	68.8 (60.0-80.2)	170 (119-213)	353 (319-435)	668 (353-1050)	622
	05-06	74.0 (66.0-83.1)	59.9 (52.5-69.7)	112 (88.0-136)	282 (217-410)	585 (320-763)	596
Non-Hispanic blacks	01-02	143 (118-173)	110 (90.7-133)	316 (186-525)	849 (622-1230)	1240 (882-1430)	692
	03-04	139 (113-169)	106 (93.1-118)	328 (211-488)	961 (580-1310)	1310 (961-1770)	683
	05-06	119 (103-138)	87.4 (78.4-97.0)	214 (154-388)	711 (523-1000)	1100 (838-1380)	652
Non-Hispanic whites	01-02	128 (108-152)	94.7 (83.4-109)	223 (171-323)	816 (642-914)	1150 (910-1410)	1207
	03-04	127 (110-146)	89.8 (79.1-104)	311 (212-418)	980 (768-1180)	1460 (1270-1700)	1035
	05-06	130 (117-144)	91.1 (81.0-104)	290 (229-426)	973 (836-1180)	1380 (1130-1570)	966

Urinary 9-Hydroxyfluorene

Metabolite of Fluorene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	267 (234-305)	269 (233-313)	541 (463-620)	929 (839-1060)	1390 (1130-1600)	2504
	05-06	308 (289-328)	300 (271-325)	609 (563-652)	1270 (1090-1420)	1820 (1560-2110)	2422
Age group							
6-11 years	03-04	209 (184-238)	216 (173-240)	331 (267-458)	594 (446-809)	853 (553-1500)	333
	05-06	184 (162-209)	190 (153-210)	324 (261-397)	657 (448-783)	823 (671-1220)	342
12-19 years	03-04	253 (216-297)	271 (215-324)	506 (413-560)	894 (773-988)	1210 (929-1510)	698
	05-06	266 (245-290)	278 (253-314)	528 (454-574)	842 (738-1020)	1290 (1070-1510)	668
20 years and older	03-04	277 (240-320)	279 (237-335)	583 (476-656)	979 (842-1140)	1490 (1140-1770)	1473
	05-06	335 (309-363)	323 (292-349)	653 (593-729)	1360 (1180-1610)	1950 (1650-2530)	1412
Gender							
Males	03-04	330 (291-374)	330 (285-372)	632 (583-709)	1090 (898-1370)	1720 (1360-2250)	1208
	05-06	355 (325-387)	334 (296-387)	693 (608-783)	1310 (1150-1620)	2000 (1670-2560)	1208
Females	03-04	218 (188-253)	226 (191-253)	439 (357-521)	833 (697-973)	1100 (955-1310)	1296
	05-06	269 (242-299)	257 (230-297)	503 (426-580)	1090 (845-1400)	1610 (1400-1920)	1214
Race/ethnicity							
Mexican Americans	03-04	229 (200-261)	232 (197-274)	435 (362-492)	773 (561-1010)	1030 (849-1170)	614
	05-06	232 (204-264)	221 (186-262)	407 (361-435)	738 (596-840)	1030 (788-1470)	614
Non-Hispanic blacks	03-04	380 (311-465)	357 (291-475)	709 (559-825)	1260 (1080-1600)	1880 (1560-2330)	679
	05-06	416 (360-481)	406 (366-450)	716 (593-943)	1430 (1010-2250)	2310 (1590-3410)	655
Non-Hispanic whites	03-04	266 (226-313)	266 (228-324)	558 (453-659)	939 (824-1130)	1450 (1090-1770)	1048
	05-06	306 (279-335)	296 (257-331)	613 (548-669)	1290 (1150-1450)	1730 (1530-2140)	966

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 5.0 and 5.0 respectively.

Urinary 9-Hydroxyfluorene (creatinine corrected)

Metabolite of Fluorene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	252 (230-276)	233 (205-266)	412 (371-461)	729 (609-905)	1100 (918-1390)	2504
	05-06	301 (281-322)	270 (252-290)	511 (460-575)	1040 (908-1230)	1510 (1360-1750)	2422
Age group							
6-11 years	03-04	223 (200-247)	208 (176-264)	343 (299-389)	548 (433-689)	866 (533-958)	333
	05-06	205 (180-234)	195 (176-209)	309 (272-371)	590 (402-668)	866 (620-1300)	342
12-19 years	03-04	192 (172-215)	182 (161-200)	323 (286-360)	484 (412-696)	738 (571-1110)	698
	05-06	201 (183-220)	194 (173-223)	325 (283-343)	511 (397-666)	848 (521-941)	668
20 years and older	03-04	267 (242-294)	243 (219-280)	446 (392-490)	788 (641-994)	1280 (991-1560)	1473
	05-06	336 (314-358)	304 (284-323)	573 (506-650)	1200 (1000-1360)	1720 (1490-1900)	1412
Gender							
Males	03-04	260 (238-283)	236 (209-269)	429 (382-480)	739 (591-952)	1300 (916-1800)	1208
	05-06	286 (266-308)	258 (235-291)	498 (422-576)	993 (858-1180)	1410 (1240-1730)	1208
Females	03-04	244 (217-275)	227 (198-269)	396 (342-467)	717 (569-905)	1020 (905-1280)	1296
	05-06	316 (287-348)	278 (253-303)	532 (466-623)	1100 (840-1370)	1610 (1360-1840)	1214
Race/ethnicity							
Mexican Americans	03-04	209 (188-232)	195 (181-209)	335 (293-379)	541 (447-722)	793 (569-1440)	614
	05-06	208 (194-224)	201 (180-220)	304 (270-342)	502 (425-584)	663 (527-919)	614
Non-Hispanic blacks	03-04	272 (226-326)	258 (208-307)	463 (349-568)	777 (628-920)	1040 (863-1300)	679
	05-06	293 (258-332)	261 (230-297)	449 (377-554)	851 (635-1080)	1480 (925-2070)	655
Non-Hispanic whites	03-04	263 (235-295)	244 (211-287)	439 (387-490)	773 (607-1020)	1290 (967-1700)	1048
	05-06	323 (296-353)	293 (266-322)	570 (496-650)	1180 (962-1360)	1630 (1370-1840)	966

Urinary 1-Hydroxyphenanthrene

Metabolite of Phenanthrene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	140 (125-158)	141 (130-154)	266 (229-312)	476 (426-539)	684 (581-763)	2741
	03-04	156 (140-173)	166 (150-179)	287 (263-321)	464 (423-508)	625 (538-745)	2496
	05-06	152 (143-161)	151 (138-163)	275 (257-303)	493 (428-549)	669 (580-852)	2449
Age group							
6-11 years	01-02	119 (104-137)	121 (98.0-142)	228 (182-249)	357 (265-501)	501 (367-661)	387
	03-04	138 (124-154)	131 (111-161)	222 (200-275)	397 (304-500)	615 (384-916)	328
	05-06	111 (101-123)	110 (96.9-121)	176 (150-240)	320 (251-375)	381 (329-540)	345
12-19 years	01-02	133 (110-162)	131 (110-153)	238 (198-303)	431 (376-546)	579 (439-820)	733
	03-04	158 (141-178)	171 (138-193)	300 (262-333)	470 (437-537)	654 (563-745)	692
	05-06	144 (132-157)	154 (130-175)	260 (236-286)	425 (383-496)	666 (496-845)	677
20 years and older	01-02	145 (127-164)	145 (133-164)	274 (237-329)	499 (440-565)	713 (595-819)	1621
	03-04	157 (141-176)	167 (152-182)	296 (264-337)	469 (430-513)	625 (534-783)	1476
	05-06	159 (147-172)	156 (141-172)	287 (265-328)	516 (438-615)	744 (580-996)	1427
Gender							
Males	01-02	150 (133-169)	145 (132-164)	284 (235-348)	501 (424-593)	713 (575-845)	1344
	03-04	176 (161-194)	182 (167-198)	321 (283-363)	492 (459-536)	662 (541-929)	1196
	05-06	169 (156-183)	166 (153-180)	289 (265-334)	519 (438-593)	791 (562-1080)	1222
Females	01-02	132 (115-152)	137 (121-151)	254 (221-297)	464 (390-520)	654 (538-769)	1397
	03-04	138 (122-156)	144 (126-164)	263 (240-294)	430 (404-469)	589 (489-680)	1300
	05-06	137 (123-152)	136 (117-153)	260 (234-297)	460 (391-553)	648 (540-809)	1227
Race/ethnicity							
Mexican Americans	01-02	117 (90.8-152)	116 (88.0-147)	214 (157-306)	369 (254-583)	549 (342-847)	664
	03-04	138 (120-158)	152 (129-175)	246 (213-291)	413 (311-492)	518 (352-896)	611
	05-06	125 (104-151)	129 (107-151)	223 (174-276)	376 (298-460)	523 (399-617)	621
Non-Hispanic blacks	01-02	150 (127-179)	145 (126-170)	287 (243-327)	493 (423-629)	713 (568-975)	690
	03-04	182 (152-217)	178 (149-212)	346 (274-418)	552 (459-645)	797 (606-1050)	679
	05-06	162 (148-177)	155 (141-173)	307 (259-349)	517 (408-695)	753 (545-1110)	658
Non-Hispanic whites	01-02	144 (125-166)	144 (131-162)	276 (241-330)	489 (436-552)	661 (550-793)	1204
	03-04	159 (140-180)	168 (151-186)	296 (265-330)	475 (421-539)	641 (528-843)	1046
	05-06	156 (143-170)	155 (137-173)	279 (251-322)	500 (414-606)	743 (570-1050)	982

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 3.5, 5.0, and 5.0 respectively.

Urinary 1-Hydroxyphenanthrene (creatinine corrected)

Metabolite of Phenanthrene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	132 (118-147)	125 (113-141)	210 (191-231)	344 (310-385)	464 (404-539)	2741
	03-04	146 (138-155)	141 (133-150)	222 (205-244)	352 (330-384)	487 (416-546)	2496
	05-06	147 (138-157)	140 (130-148)	229 (211-247)	372 (339-406)	502 (446-600)	2449
Age group							
6-11 years	01-02	133 (116-153)	126 (110-147)	188 (165-225)	344 (245-437)	467 (364-598)	387
	03-04	145 (129-163)	138 (121-155)	205 (169-240)	315 (244-456)	477 (313-803)	328
	05-06	124 (114-134)	115 (103-133)	191 (162-210)	275 (230-340)	368 (321-396)	345
12-19 years	01-02	103 (87.9-121)	97.3 (81.4-117)	158 (131-192)	240 (198-322)	354 (235-531)	733
	03-04	119 (108-130)	115 (101-131)	176 (157-197)	275 (230-331)	345 (269-496)	692
	05-06	108 (97.5-119)	108 (95.9-116)	163 (148-180)	268 (199-330)	372 (262-609)	677
20 years and older	01-02	137 (122-153)	132 (117-145)	223 (200-243)	351 (319-395)	476 (421-541)	1621
	03-04	151 (142-161)	147 (134-157)	237 (212-254)	365 (335-397)	500 (422-580)	1476
	05-06	158 (147-170)	151 (137-163)	244 (224-265)	397 (362-420)	554 (478-666)	1427
Gender							
Males	01-02	122 (108-137)	116 (104-131)	194 (173-218)	321 (262-395)	455 (348-642)	1344
	03-04	138 (131-146)	130 (117-143)	201 (187-227)	335 (301-391)	437 (392-550)	1196
	05-06	135 (126-145)	125 (117-132)	208 (187-229)	341 (300-385)	498 (391-634)	1222
Females	01-02	142 (125-160)	136 (118-156)	226 (199-256)	355 (323-399)	473 (421-541)	1397
	03-04	154 (142-168)	150 (138-160)	241 (212-269)	364 (323-425)	505 (418-635)	1300
	05-06	160 (149-172)	152 (136-166)	251 (229-275)	398 (367-428)	509 (435-638)	1227
Race/ethnicity							
Mexican Americans	01-02	110 (88.6-136)	101 (85.5-131)	162 (138-203)	275 (187-452)	400 (268-755)	664
	03-04	124 (111-140)	122 (107-136)	183 (159-242)	304 (246-392)	392 (318-437)	611
	05-06	112 (99.2-126)	109 (87.1-129)	170 (145-201)	259 (228-307)	353 (297-414)	621
Non-Hispanic blacks	01-02	106 (88.7-127)	102 (92.4-111)	172 (141-203)	274 (224-356)	384 (308-598)	690
	03-04	129 (112-148)	126 (108-143)	199 (173-242)	337 (272-400)	428 (374-522)	679
	05-06	114 (106-121)	107 (98.6-114)	179 (163-189)	301 (229-370)	449 (321-771)	658
Non-Hispanic whites	01-02	142 (126-161)	137 (119-153)	228 (206-247)	363 (321-406)	476 (411-552)	1204
	03-04	157 (146-168)	150 (140-159)	241 (216-256)	372 (335-424)	515 (426-658)	1046
	05-06	164 (152-176)	154 (141-165)	247 (228-268)	398 (366-428)	554 (466-739)	982

Urinary 2-Hydroxyphenanthrene

Metabolite of Phenanthrene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	54.0 (46.0-63.5)	58.0 (50.0-68.0)	117 (102-140)	240 (201-271)	332 (299-377)	2742
	03-04	59.3 (52.5-66.9)	62.2 (55.4-69.7)	117 (105-129)	206 (180-235)	291 (252-336)	2512
	05-06	65.3 (60.9-70.0)	63.3 (58.5-68.6)	126 (111-139)	234 (203-254)	314 (282-383)	2410
Age group							
6-11 years	01-02	40.5 (34.3-47.7)	46.0 (37.0-57.0)	87.0 (71.0-101)	170 (133-207)	257 (195-320)	387
	03-04	45.3 (40.0-51.3)	48.1 (41.9-56.8)	72.7 (63.2-89.4)	135 (104-176)	225 (136-299)	337
	05-06	42.1 (38.4-46.1)	40.1 (36.4-47.2)	70.4 (58.1-83.2)	110 (89.2-132)	152 (112-213)	341
12-19 years	01-02	49.5 (37.3-65.7)	52.0 (41.0-68.0)	108 (93.0-122)	210 (145-270)	281 (214-524)	733
	03-04	58.0 (50.7-66.2)	62.5 (54.5-71.6)	104 (88.8-132)	198 (166-215)	258 (199-318)	707
	05-06	60.4 (55.4-65.8)	62.4 (56.3-67.1)	114 (93.8-133)	175 (156-195)	250 (198-291)	664
20 years and older	01-02	56.8 (48.1-66.9)	60.0 (52.0-73.0)	126 (104-152)	249 (207-292)	342 (308-398)	1622
	03-04	61.5 (53.7-70.4)	64.9 (57.2-73.5)	125 (111-138)	216 (187-250)	310 (259-389)	1468
	05-06	69.6 (63.6-76.2)	67.3 (61.5-75.3)	137 (118-154)	251 (215-280)	348 (298-446)	1405
Gender							
Males	01-02	62.1 (53.3-72.5)	67.0 (58.0-80.0)	136 (109-161)	274 (245-303)	367 (329-414)	1345
	03-04	72.3 (64.4-81.3)	71.6 (65.8-83.3)	138 (123-150)	240 (200-279)	337 (279-428)	1211
	05-06	76.5 (70.3-83.3)	72.9 (67.4-81.3)	141 (122-156)	254 (219-296)	383 (289-555)	1204
Females	01-02	47.4 (39.1-57.5)	50.0 (41.0-60.0)	105 (88.0-129)	200 (171-240)	294 (236-357)	1397
	03-04	49.0 (42.4-56.6)	52.5 (45.3-58.7)	95.4 (84.1-110)	166 (146-202)	247 (202-291)	1301
	05-06	56.0 (50.2-62.5)	54.4 (49.5-61.0)	107 (94.7-125)	206 (173-245)	275 (248-343)	1206
Race/ethnicity							
Mexican Americans	01-02	46.8 (32.7-66.8)	51.0 (36.0-73.0)	97.0 (72.0-140)	191 (122-332)	303 (187-652)	665
	03-04	53.9 (46.7-62.1)	60.1 (50.8-68.6)	104 (89.5-115)	164 (144-187)	200 (187-219)	627
	05-06	54.6 (45.0-66.3)	56.2 (47.1-67.7)	96.2 (84.4-108)	164 (120-202)	213 (175-294)	612
Non-Hispanic blacks	01-02	71.1 (58.0-87.1)	74.0 (66.0-90.0)	152 (124-182)	262 (217-311)	374 (284-560)	690
	03-04	81.2 (68.1-96.7)	73.4 (61.8-101)	158 (125-199)	280 (219-374)	390 (289-574)	678
	05-06	77.3 (69.0-86.6)	75.3 (65.8-83.5)	141 (114-172)	267 (202-340)	363 (275-546)	641
Non-Hispanic whites	01-02	53.1 (43.6-64.6)	57.0 (48.0-68.0)	117 (99.0-144)	242 (199-286)	333 (303-385)	1204
	03-04	58.2 (50.1-67.7)	60.7 (52.5-71.0)	115 (97.9-133)	209 (172-255)	299 (251-351)	1044
	05-06	65.2 (59.4-71.5)	63.7 (57.0-70.4)	130 (109-144)	244 (206-261)	343 (282-439)	974

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 3.2, 5.0, and 5.0 respectively.

Urinary 2-Hydroxyphenanthrene (creatinine corrected)

Metabolite of Phenanthrene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	50.6 (43.3-59.2)	52.5 (46.4-59.6)	91.4 (78.7-108)	164 (138-200)	233 (206-275)	2742
	03-04	55.4 (51.1-60.0)	52.3 (48.8-55.8)	85.8 (79.4-97.0)	150 (128-174)	212 (180-252)	2512
	05-06	63.1 (58.9-67.5)	57.0 (53.3-61.9)	101 (92.8-110)	178 (157-194)	245 (209-295)	2410
Age group							
6-11 years	01-02	45.3 (38.8-52.8)	50.0 (40.0-57.8)	85.9 (69.6-100)	144 (105-217)	234 (138-397)	387
	03-04	47.9 (43.6-52.7)	46.6 (41.0-51.4)	66.3 (60.3-72.8)	106 (81.0-125)	183 (108-295)	337
	05-06	45.9 (42.0-50.1)	43.6 (38.4-48.7)	65.8 (56.1-85.2)	101 (85.4-110)	116 (101-135)	341
12-19 years	01-02	38.4 (29.6-49.7)	38.5 (30.6-48.7)	64.9 (52.4-84.0)	117 (86.7-167)	173 (128-305)	733
	03-04	43.6 (39.3-48.5)	40.8 (37.7-45.0)	70.6 (55.8-84.7)	106 (88.2-123)	127 (115-176)	707
	05-06	44.5 (39.9-49.7)	42.7 (38.9-47.1)	66.1 (58.0-73.7)	111 (80.0-129)	146 (115-232)	664
20 years and older	01-02	53.7 (46.2-62.4)	55.6 (49.4-62.7)	94.6 (84.1-112)	173 (145-201)	241 (209-287)	1622
	03-04	58.7 (53.6-64.2)	54.8 (50.7-60.9)	91.6 (83.5-105)	164 (139-182)	227 (183-291)	1468
	05-06	69.1 (64.1-74.6)	63.6 (58.4-67.8)	111 (102-123)	191 (168-216)	267 (232-316)	1405
Gender							
Males	01-02	50.4 (43.3-58.5)	52.5 (47.2-59.2)	91.4 (78.6-103)	176 (140-208)	245 (206-349)	1345
	03-04	56.6 (52.5-61.0)	52.3 (48.1-57.1)	84.7 (79.2-96.4)	157 (132-180)	227 (184-284)	1211
	05-06	61.2 (56.7-65.9)	55.7 (50.0-59.3)	102 (89.3-111)	161 (137-194)	244 (190-310)	1204
Females	01-02	50.9 (42.7-60.7)	52.8 (45.5-61.0)	91.6 (75.0-115)	158 (133-183)	214 (200-245)	1397
	03-04	54.3 (48.7-60.5)	52.3 (47.0-57.2)	88.1 (76.4-101)	146 (118-179)	202 (175-246)	1301
	05-06	65.0 (60.0-70.3)	60.5 (55.1-65.3)	101 (91.6-113)	184 (165-201)	256 (224-312)	1206
Race/ethnicity							
Mexican Americans	01-02	43.7 (31.9-59.8)	44.0 (34.3-58.8)	80.8 (59.8-115)	146 (103-245)	245 (144-394)	665
	03-04	48.8 (42.5-55.9)	50.1 (42.4-58.8)	79.5 (68.2-86.1)	124 (96.2-149)	155 (127-206)	627
	05-06	48.7 (43.0-55.2)	46.0 (39.4-56.2)	75.1 (62.9-85.8)	111 (94.5-138)	146 (121-178)	612
Non-Hispanic blacks	01-02	50.2 (40.5-62.2)	49.7 (44.3-56.0)	87.7 (72.6-103)	174 (127-224)	257 (178-459)	690
	03-04	57.6 (49.8-66.7)	53.1 (45.7-63.5)	90.3 (77.9-117)	152 (128-186)	218 (173-348)	678
	05-06	54.3 (49.7-59.3)	47.7 (45.4-51.3)	84.8 (71.3-97.8)	150 (116-192)	211 (167-298)	641
Non-Hispanic whites	01-02	52.5 (43.8-62.9)	54.8 (47.7-61.9)	92.7 (80.5-113)	170 (140-204)	233 (202-293)	1204
	03-04	57.1 (51.7-63.0)	52.9 (49.1-57.2)	88.5 (79.2-102)	159 (128-187)	237 (180-295)	1044
	05-06	67.9 (62.6-73.7)	60.9 (56.5-66.5)	111 (101-123)	191 (162-224)	274 (231-323)	974

Urinary 3-Hydroxyphenanthrene

Metabolite of Phenanthrene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	105 (92.5-118)	105 (92.0-118)	200 (179-225)	401 (336-480)	649 (542-747)	2741
	03-04	115 (104-128)	118 (107-129)	219 (201-237)	424 (351-487)	647 (509-788)	2426
	05-06	103 (96.1-109)	99.8 (90.3-107)	200 (185-210)	399 (365-429)	593 (463-746)	2448
Age group							
6-11 years	01-02	105 (91.1-122)	109 (82.0-138)	195 (160-231)	298 (245-346)	412 (319-545)	387
	03-04	116 (99.9-134)	107 (93.0-135)	205 (170-223)	333 (241-435)	472 (322-881)	325
	05-06	89.6 (79.6-101)	84.0 (72.6-103)	154 (123-176)	245 (193-316)	316 (245-569)	345
12-19 years	01-02	104 (87.3-125)	107 (90.0-122)	201 (165-231)	329 (255-445)	459 (331-631)	733
	03-04	120 (103-141)	127 (107-149)	221 (195-262)	366 (327-424)	564 (391-730)	677
	05-06	105 (96.5-113)	104 (97.3-116)	193 (166-217)	323 (275-383)	453 (377-604)	676
20 years and older	01-02	105 (91.7-119)	105 (89.0-118)	201 (180-231)	433 (366-515)	683 (597-806)	1621
	03-04	114 (103-128)	118 (105-130)	221 (203-243)	450 (353-505)	696 (511-885)	1424
	05-06	104 (95.3-113)	101 (89.6-113)	206 (188-223)	419 (384-466)	657 (481-832)	1427
Gender							
Males	01-02	122 (107-138)	117 (106-132)	224 (188-278)	474 (372-597)	734 (597-1010)	1344
	03-04	137 (122-154)	135 (119-157)	251 (221-287)	487 (398-579)	754 (606-913)	1167
	05-06	125 (114-137)	119 (107-136)	227 (204-261)	427 (395-491)	768 (520-951)	1222
Females	01-02	90.8 (77.7-106)	93.0 (80.0-108)	184 (155-207)	328 (291-399)	518 (434-649)	1397
	03-04	97.7 (86.5-110)	100 (86.6-114)	193 (170-210)	351 (287-445)	531 (447-647)	1259
	05-06	84.6 (75.6-94.5)	82.4 (73.1-92.5)	159 (143-176)	363 (285-404)	480 (421-577)	1226
Race/ethnicity							
Mexican Americans	01-02	83.5 (64.1-109)	84.0 (64.0-111)	144 (117-198)	259 (193-430)	454 (253-1140)	664
	03-04	92.7 (81.3-106)	92.8 (84.1-111)	164 (133-204)	317 (236-374)	436 (338-501)	576
	05-06	77.0 (64.1-92.5)	74.8 (60.0-90.8)	138 (110-162)	260 (191-312)	366 (299-471)	620
Non-Hispanic blacks	01-02	145 (122-172)	135 (120-163)	281 (228-346)	516 (414-684)	957 (609-1410)	690
	03-04	166 (141-195)	159 (137-193)	313 (249-399)	542 (458-670)	798 (579-1200)	686
	05-06	138 (120-159)	125 (113-147)	260 (211-329)	466 (365-671)	716 (491-1100)	658
Non-Hispanic whites	01-02	104 (90.8-120)	106 (92.0-120)	199 (177-224)	401 (331-495)	649 (518-747)	1204
	03-04	114 (100-129)	117 (104-128)	220 (201-237)	440 (332-509)	702 (505-915)	1010
	05-06	101 (93.6-110)	101 (89.3-112)	200 (181-213)	402 (368-434)	657 (449-829)	982

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 3.6, 5.0, and 5.0 respectively.

Urinary 3-Hydroxyphenanthrene (creatinine corrected)

Metabolite of Phenanthrene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	98.0 (87.4-110)	86.5 (78.8-97.1)	158 (142-174)	299 (252-342)	428 (365-621)	2741
	03-04	108 (101-115)	99.5 (91.9-106)	172 (158-189)	321 (273-363)	497 (406-566)	2426
	05-06	99.5 (93.6-106)	88.1 (83.8-93.5)	164 (151-175)	326 (273-364)	443 (402-525)	2448
Age group							
6-11 years	01-02	118 (103-135)	114 (94.9-131)	173 (150-201)	289 (238-368)	410 (308-544)	387
	03-04	124 (110-138)	119 (110-129)	165 (145-202)	283 (231-402)	484 (269-710)	325
	05-06	99.6 (89.4-111)	93.5 (85.7-107)	146 (118-165)	232 (171-292)	292 (232-352)	345
12-19 years	01-02	81.1 (70.1-93.8)	78.0 (66.7-89.4)	116 (96.5-144)	205 (153-275)	283 (198-511)	733
	03-04	90.3 (81.5-100)	84.9 (76.1-93.9)	139 (116-160)	212 (193-231)	295 (225-429)	677
	05-06	78.2 (70.9-86.3)	72.5 (66.7-82.1)	111 (98.8-121)	183 (141-262)	291 (211-465)	676
20 years and older	01-02	98.9 (88.3-111)	85.3 (78.3-96.6)	164 (147-183)	320 (273-356)	488 (379-774)	1621
	03-04	109 (102-117)	99.1 (91.7-106)	180 (161-198)	343 (282-385)	523 (417-608)	1424
	05-06	103 (96.3-111)	90.3 (84.4-97.8)	177 (161-200)	350 (319-387)	506 (426-538)	1427
Gender							
Males	01-02	98.6 (87.7-111)	87.1 (79.5-98.2)	159 (138-188)	310 (245-368)	505 (356-761)	1344
	03-04	107 (98.2-116)	99.2 (87.4-109)	169 (154-184)	305 (261-343)	491 (383-592)	1167
	05-06	100 (92.6-109)	89.2 (81.5-97.0)	166 (147-184)	326 (260-365)	430 (364-553)	1222
Females	01-02	97.5 (84.9-112)	86.4 (76.9-100)	158 (139-178)	292 (245-333)	410 (352-583)	1397
	03-04	109 (99.6-119)	100 (88.9-110)	176 (155-202)	328 (265-398)	497 (380-594)	1259
	05-06	98.7 (91.6-106)	87.3 (80.4-95.1)	160 (144-177)	332 (284-375)	446 (393-518)	1226
Race/ethnicity							
Mexican Americans	01-02	78.2 (62.4-98.0)	70.8 (56.2-87.4)	130 (92.9-171)	224 (173-321)	333 (224-656)	664
	03-04	83.8 (75.1-93.6)	79.5 (72.9-87.0)	137 (111-165)	224 (188-274)	305 (247-406)	576
	05-06	68.8 (61.0-77.7)	61.3 (51.5-73.2)	96.9 (82.9-122)	175 (159-206)	291 (200-387)	620
Non-Hispanic blacks	01-02	102 (85.8-122)	91.9 (79.8-108)	160 (133-202)	296 (234-475)	673 (347-1260)	690
	03-04	118 (103-135)	106 (90.5-126)	186 (156-219)	357 (257-439)	505 (384-772)	686
	05-06	97.0 (86.6-109)	85.7 (77.3-94.1)	141 (125-172)	271 (217-366)	443 (283-623)	658
Non-Hispanic whites	01-02	103 (91.5-117)	89.4 (80.2-102)	167 (148-193)	324 (272-368)	447 (365-738)	1204
	03-04	112 (104-121)	103 (96.9-108)	183 (160-200)	346 (278-402)	544 (417-656)	1010
	05-06	106 (98.8-114)	93.6 (86.4-102)	178 (160-206)	348 (317-387)	506 (416-551)	982

Urinary 4-Hydroxyphenanthrene

Metabolite of Phenanthrene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	25.1 (22.6-27.9)	25.9 (22.5-29.6)	53.7 (47.4-59.7)	96.8 (85.0-116)	152 (118-176)	2443
	05-06	29.3 (26.7-32.2)	29.2 (25.1-31.8)	56.9 (50.1-66.1)	108 (93.1-124)	157 (134-176)	2131
Age group							
6-11 years	03-04	25.2 (22.3-28.4)	26.3 (22.8-30.0)	45.7 (38.6-53.3)	95.5 (61.7-137)	138 (95.1-202)	321
	05-06	20.4 (17.7-23.4)	20.2 (17.6-23.8)	35.1 (27.4-41.6)	59.6 (43.3-93.0)	96.1 (62.2-155)	307
12-19 years	03-04	23.7 (20.3-27.6)	25.8 (20.5-31.4)	49.9 (45.2-53.0)	77.4 (67.2-95.1)	123 (94.6-142)	683
	05-06	26.6 (23.0-30.8)	27.6 (22.4-31.2)	50.9 (43.5-56.8)	79.4 (71.1-89.9)	108 (89.9-140)	568
20 years and older	03-04	25.3 (22.4-28.6)	25.8 (22.4-29.5)	54.8 (48.6-61.9)	101 (87.1-120)	163 (117-197)	1439
	05-06	31.1 (28.1-34.3)	30.7 (26.4-33.7)	62.9 (52.6-75.1)	119 (97.1-140)	165 (138-188)	1256
Gender							
Males	03-04	30.0 (26.5-34.0)	29.6 (25.5-35.1)	60.4 (53.4-68.7)	110 (90.6-130)	169 (118-211)	1180
	05-06	31.9 (28.6-35.5)	30.7 (25.0-36.8)	60.3 (49.7-72.7)	111 (92.3-134)	153 (119-226)	1064
Females	03-04	21.1 (18.7-23.8)	21.3 (18.3-25.3)	46.5 (41.6-53.3)	88.4 (73.5-103)	136 (106-157)	1263
	05-06	27.1 (23.4-31.4)	26.6 (22.7-31.1)	54.0 (41.9-66.9)	107 (82.6-140)	165 (120-189)	1067
Race/ethnicity							
Mexican Americans	03-04	23.5 (20.9-26.3)	24.4 (21.4-29.4)	46.1 (40.1-53.0)	80.5 (60.9-94.1)	99.7 (80.2-154)	607
	05-06	24.5 (20.3-29.6)	24.8 (20.2-31.3)	43.7 (37.2-54.5)	81.2 (62.8-94.4)	112 (82.6-134)	466
Non-Hispanic blacks	03-04	35.4 (29.6-42.3)	37.1 (29.8-46.1)	71.4 (60.3-83.3)	123 (104-145)	167 (133-215)	657
	05-06	36.8 (31.8-42.5)	33.6 (29.7-42.0)	66.0 (56.0-80.5)	130 (98.0-168)	190 (133-276)	612
Non-Hispanic whites	03-04	24.4 (21.5-27.7)	25.2 (21.8-29.1)	51.5 (45.1-58.5)	97.9 (77.4-127)	163 (113-202)	1021
	05-06	28.6 (25.2-32.4)	28.6 (24.5-31.9)	55.5 (47.3-69.3)	108 (90.9-136)	163 (134-188)	890

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 5.0 and 5.0 respectively.

Urinary 4-Hydroxyphenanthrene (creatinine corrected)

Metabolite of Phenanthrene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	23.3 (21.7-25.0)	22.7 (20.5-24.9)	42.0 (38.6-44.6)	74.3 (66.3-85.4)	114 (102-130)	2443
	05-06	28.9 (26.6-31.4)	26.9 (24.1-29.4)	48.4 (43.9-53.7)	88.3 (77.5-102)	127 (106-145)	2131
Age group							
6-11 years	03-04	26.3 (23.7-29.2)	24.8 (21.6-28.6)	43.3 (35.2-48.8)	72.9 (56.3-113)	126 (79.3-173)	321
	05-06	22.9 (19.8-26.5)	21.7 (20.0-24.8)	36.2 (27.8-43.7)	50.0 (42.7-79.3)	79.3 (50.0-98.3)	307
12-19 years	03-04	17.7 (15.9-19.8)	16.7 (15.7-18.4)	31.4 (26.0-37.1)	47.9 (40.7-54.1)	61.7 (51.7-86.0)	683
	05-06	20.1 (18.2-22.2)	19.0 (16.5-22.9)	30.0 (28.3-33.0)	48.7 (41.0-63.5)	79.4 (53.8-98.2)	568
20 years and older	03-04	24.0 (22.0-26.2)	23.3 (21.1-25.4)	43.5 (39.4-48.1)	79.0 (66.8-100)	121 (104-138)	1439
	05-06	31.4 (29.0-34.1)	29.4 (26.9-32.4)	54.6 (48.0-61.6)	102 (86.4-109)	139 (115-166)	1256
Gender							
Males	03-04	23.4 (21.6-25.4)	22.7 (20.3-24.9)	40.9 (35.9-45.7)	72.7 (61.5-86.8)	112 (100-126)	1180
	05-06	26.1 (23.8-28.7)	24.1 (22.2-28.2)	44.3 (40.0-51.1)	74.3 (61.6-87.7)	102 (87.3-120)	1064
Females	03-04	23.2 (21.2-25.5)	22.8 (19.7-26.0)	42.5 (38.3-46.2)	75.1 (63.4-94.0)	119 (93.1-139)	1263
	05-06	31.8 (28.7-35.3)	28.9 (25.8-31.8)	54.2 (46.0-63.2)	103 (85.4-127)	145 (119-174)	1067
Race/ethnicity							
Mexican Americans	03-04	21.2 (18.8-23.8)	20.7 (19.1-22.9)	35.9 (29.8-40.7)	59.0 (43.3-87.5)	83.4 (60.9-139)	607
	05-06	22.5 (20.1-25.3)	21.6 (18.8-27.1)	34.7 (31.4-41.5)	54.5 (48.2-61.6)	81.3 (59.8-86.1)	466
Non-Hispanic blacks	03-04	25.0 (21.6-28.9)	25.3 (23.1-28.8)	42.0 (37.4-51.4)	75.0 (61.6-87.9)	102 (79.2-137)	657
	05-06	25.8 (23.0-29.0)	24.5 (22.0-26.8)	39.4 (36.2-44.7)	68.5 (59.8-88.6)	103 (80.0-146)	612
Non-Hispanic whites	03-04	23.7 (21.5-26.2)	22.4 (19.4-25.4)	43.6 (38.8-47.3)	82.2 (68.5-101)	126 (103-143)	1021
	05-06	30.5 (27.3-34.1)	28.5 (25.0-31.6)	53.0 (45.5-61.5)	102 (83.0-115)	138 (112-174)	890

Urinary 1-Hydroxypyrene

Metabolite of Pyrene

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

	Survey years	Geometric	Selected percentiles				Sample size
		mean (95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	89.2 (79.8-99.7)	91.3 (83.5-98.8)	189 (168-208)	389 (345-459)	569 (493-676)	2515
	05-06	98.3 (91.0-106)	94.0 (85.5-102)	206 (181-227)	440 (373-521)	673 (585-829)	2415
Age group							
6-11 years	03-04	112 (96.9-130)	119 (99.0-143)	193 (163-229)	351 (233-484)	514 (336-680)	333
	05-06	103 (91.3-117)	99.8 (91.7-105)	170 (139-206)	342 (222-413)	469 (353-786)	342
12-19 years	03-04	119 (103-137)	115 (98.0-145)	244 (213-274)	506 (359-608)	705 (636-788)	705
	05-06	118 (104-134)	108 (93.2-132)	218 (179-266)	409 (332-557)	837 (481-992)	667
20 years and older	03-04	82.8 (73.0-93.8)	83.8 (75.6-92.4)	177 (155-203)	387 (337-437)	553 (483-644)	1477
	05-06	94.9 (86.3-104)	89.1 (79.8-100)	208 (173-245)	476 (368-563)	677 (563-913)	1406
Gender							
Males	03-04	108 (96.0-122)	111 (98.7-121)	227 (197-265)	459 (387-518)	644 (526-811)	1214
	05-06	114 (104-125)	108 (98.4-119)	235 (196-279)	465 (386-585)	793 (634-980)	1208
Females	03-04	74.0 (64.3-85.1)	75.3 (66.3-83.9)	158 (143-173)	334 (258-407)	502 (389-604)	1301
	05-06	84.8 (74.5-96.5)	80.0 (69.8-89.9)	173 (148-213)	421 (313-521)	617 (534-677)	1207
Race/ethnicity							
Mexican Americans	03-04	89.4 (78.6-102)	92.4 (79.8-113)	173 (153-191)	331 (281-415)	495 (404-548)	623
	05-06	95.6 (81.0-113)	92.3 (80.1-112)	179 (149-220)	332 (261-455)	490 (367-756)	611
Non-Hispanic blacks	03-04	128 (105-155)	126 (108-153)	296 (226-355)	553 (400-669)	699 (564-935)	681
	05-06	116 (98.5-137)	108 (91.0-124)	230 (185-332)	517 (401-639)	743 (559-1060)	653
Non-Hispanic whites	03-04	84.8 (73.5-97.9)	85.4 (75.6-97.3)	182 (156-214)	386 (336-462)	566 (470-749)	1050
	05-06	94.9 (85.4-106)	91.3 (80.3-104)	203 (170-235)	399 (351-538)	677 (563-899)	968

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 5.0 and 5.0 respectively.

Urinary 1-Hydroxypyrene (creatinine corrected)

Metabolite of Pyrene

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

	Survey years	Geometric	Selected percentiles				Sample size
		mean (95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	83.4 (77.4-90.0)	79.9 (72.6-86.9)	149 (133-167)	279 (236-343)	424 (352-474)	2515
	05-06	95.1 (89.1-102)	85.5 (81.0-91.1)	173 (161-184)	338 (292-371)	492 (427-550)	2415
Age group							
6-11 years	03-04	119 (102-138)	112 (98.2-137)	185 (156-225)	336 (227-440)	475 (336-566)	333
	05-06	115 (102-128)	105 (94.7-116)	181 (145-217)	285 (242-385)	407 (308-517)	342
12-19 years	03-04	89.4 (77.7-103)	81.6 (74.3-93.0)	146 (123-187)	269 (196-364)	364 (251-611)	705
	05-06	88.7 (78.7-99.9)	80.9 (73.8-92.3)	146 (115-176)	250 (199-358)	400 (252-682)	667
20 years and older	03-04	79.1 (73.2-85.4)	73.5 (66.7-82.3)	142 (127-160)	278 (236-331)	424 (349-472)	1477
	05-06	94.1 (87.1-102)	82.5 (75.8-89.3)	177 (163-194)	352 (294-397)	502 (444-558)	1406
Gender							
Males	03-04	84.8 (77.3-93.1)	82.8 (72.7-91.0)	163 (145-175)	290 (241-352)	416 (353-513)	1214
	05-06	91.6 (84.3-99.6)	84.6 (76.9-95.5)	169 (152-182)	308 (268-364)	492 (426-589)	1208
Females	03-04	82.1 (73.5-91.7)	78.3 (69.2-86.8)	137 (119-165)	274 (215-350)	440 (313-479)	1301
	05-06	98.7 (91.7-106)	86.8 (78.5-92.8)	175 (156-195)	345 (295-390)	482 (395-558)	1207
Race/ethnicity							
Mexican Americans	03-04	81.2 (73.9-89.2)	80.9 (70.4-91.7)	146 (122-167)	247 (221-301)	372 (321-460)	623
	05-06	84.9 (76.4-94.2)	78.4 (67.7-91.2)	132 (118-145)	237 (203-287)	374 (279-482)	611
Non-Hispanic blacks	03-04	91.0 (77.7-107)	92.4 (76.6-106)	173 (145-211)	315 (227-433)	451 (301-680)	681
	05-06	81.2 (70.7-93.2)	74.9 (65.6-84.8)	140 (113-173)	295 (206-403)	477 (324-643)	653
Non-Hispanic whites	03-04	83.3 (75.4-92.0)	77.9 (69.1-86.8)	148 (127-174)	287 (241-360)	438 (360-506)	1050
	05-06	99.3 (91.2-108)	90.6 (82.2-99.5)	188 (169-200)	358 (305-395)	495 (427-555)	968

Urinary 1-Hydroxynaphthalene (1-Naphthol)

Metabolite of Naphthalene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	2680 (2360-3050)	2260 (1980-2650)	7660 (6270-9420)	18500 (15500-20900)	26100 (23000-33600)	2595
	05-06	2640 (2390-2920)	1940 (1690-2240)	8450 (7050-9980)	29900 (23200-37100)	48100 (41300-65600)	2385
Age group							
6-11 years	03-04	1540 (1360-1750)	1330 (1110-1680)	2790 (2180-3520)	5770 (4110-8200)	10500 (5870-17000)	340
	05-06	1190 (1010-1400)	1030 (775-1280)	2150 (1690-2730)	8100 (3870-10700)	11000 (7290-44100)	336
12-19 years	03-04	1960 (1680-2280)	1670 (1500-1970)	4190 (3100-5400)	10500 (8430-14300)	20900 (13500-26100)	727
	05-06	1710 (1490-1960)	1360 (1110-1700)	3760 (3100-4370)	14100 (9090-23500)	25800 (12400-46200)	655
20 years and older	03-04	3020 (2580-3520)	2650 (2200-3200)	9420 (7320-11500)	20500 (16500-23400)	29400 (23400-37400)	1528
	05-06	3100 (2740-3510)	2330 (2030-2820)	10500 (8180-13300)	34500 (26700-43400)	55100 (42200-80400)	1394
Gender							
Males	03-04	3170 (2820-3560)	2840 (2370-3390)	8790 (7130-11000)	19600 (16100-22200)	25800 (22500-30600)	1243
	05-06	2970 (2620-3350)	2370 (1980-2970)	8760 (7140-10700)	28900 (21700-33000)	44100 (36000-52300)	1197
Females	03-04	2290 (1940-2720)	1840 (1500-2310)	6380 (4450-8810)	17900 (14000-21500)	28500 (21500-37400)	1352
	05-06	2360 (2010-2770)	1590 (1420-1820)	7350 (5570-10200)	33600 (21600-43900)	56800 (41600-101E3)	1188
Race/ethnicity							
Mexican Americans	03-04	1950 (1720-2190)	1650 (1370-2040)	4380 (3520-5300)	11600 (9040-15500)	20100 (14900-22500)	651
	05-06	1540 (1290-1830)	1290 (1090-1550)	3710 (2680-4430)	11800 (8100-15600)	22200 (15200-34000)	607
Non-Hispanic blacks	03-04	3340 (2800-3990)	2650 (2190-3460)	7840 (6520-10800)	20800 (17000-28600)	34700 (25400-48900)	695
	05-06	3420 (2830-4140)	2670 (2200-3430)	11900 (9120-14600)	29900 (24400-41000)	56400 (42800-71600)	641
Non-Hispanic whites	03-04	2800 (2410-3250)	2310 (1930-2840)	8630 (6820-11000)	19900 (15900-22600)	27600 (23400-35100)	1084
	05-06	2720 (2300-3210)	1980 (1560-2430)	8660 (6730-11300)	32500 (22600-42200)	51300 (41000-85500)	952

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 46.7 and 47.9 respectively.

Urinary 1-Hydroxynaphthalene (1-Naphthol) (creatinine corrected)

Metabolite of Naphthalene

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

	Survey years	Geometric	Selected percentiles				Sample size
		mean (95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	03-04	2520 (2280-2790)	2100 (1870-2400)	6560 (5430-8180)	15100 (13500-17400)	21800 (18200-25400)	2595
	05-06	2560 (2290-2860)	1790 (1570-2060)	7570 (5890-9400)	24700 (20400-31000)	39600 (34100-53000)	2385
Age group							
6-11 years	03-04	1630 (1430-1860)	1360 (1180-1740)	2770 (2260-3200)	5690 (3990-8950)	10200 (5690-16400)	340
	05-06	1300 (1090-1550)	1090 (938-1330)	2210 (1990-2810)	6150 (3330-10300)	10300 (6820-28000)	336
12-19 years	03-04	1470 (1260-1710)	1200 (1020-1390)	2840 (2490-4080)	7560 (5470-9120)	10800 (9120-13400)	727
	05-06	1290 (1140-1450)	995 (854-1100)	2700 (2270-3350)	8760 (5830-10800)	12500 (9370-19600)	655
20 years and older	03-04	2900 (2590-3250)	2520 (2120-3060)	8210 (6450-9810)	16900 (14400-19800)	24200 (20000-27200)	1528
	05-06	3080 (2720-3500)	2320 (1910-2720)	10100 (7670-13900)	29800 (23900-34100)	46400 (39100-57300)	1394
Gender							
Males	03-04	2490 (2250-2750)	2140 (1860-2590)	6560 (5500-8010)	13500 (12300-14400)	18300 (16600-20700)	1243
	05-06	2380 (2110-2680)	1890 (1590-2210)	6450 (4940-9210)	19200 (16100-22400)	31700 (22100-38400)	1197
Females	03-04	2560 (2220-2950)	2040 (1730-2440)	6680 (5000-8850)	17500 (13500-21700)	24700 (19800-30600)	1352
	05-06	2750 (2370-3190)	1750 (1460-2060)	8050 (6080-11800)	31500 (24700-39500)	54100 (40800-64500)	1188
Race/ethnicity							
Mexican Americans	03-04	1750 (1590-1930)	1500 (1260-1690)	3240 (2900-4250)	8550 (7150-12000)	17500 (13500-21400)	651
	05-06	1370 (1150-1640)	1080 (940-1380)	2830 (2130-3820)	9500 (5950-12600)	18800 (12000-21600)	607
Non-Hispanic blacks	03-04	2370 (2020-2780)	2000 (1560-2420)	5900 (4440-7070)	13800 (8930-18700)	21100 (17100-27800)	695
	05-06	2400 (1990-2890)	1980 (1520-2510)	7170 (5280-8850)	20600 (15400-29200)	39200 (29200-54300)	641
Non-Hispanic whites	03-04	2770 (2460-3120)	2350 (1940-2900)	8030 (6330-9260)	16600 (14400-18500)	23600 (20000-26600)	1084
	05-06	2840 (2400-3360)	1990 (1600-2540)	8650 (5940-12600)	28200 (20800-35000)	43100 (38400-59000)	952

Urinary 2-Hydroxynaphthalene (2-Naphthol)

Metabolite of Naphthalene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	2470 (2110-2890)	2280 (1930-2670)	5680 (4580-6830)	14700 (12800-19500)	26000 (22500-29700)	2748
	03-04	3180 (2760-3670)	2960 (2500-3500)	7500 (6190-9690)	17300 (14500-22100)	25800 (22600-27700)	2575
	05-06	3630 (3350-3920)	3440 (3110-3800)	8550 (7840-9420)	20200 (17000-24100)	33100 (28600-38200)	2446
Age group							
6-11 years	01-02	1690 (1560-1840)	1700 (1400-1950)	3010 (2580-3470)	5410 (3890-6700)	7720 (6300-9540)	387
	03-04	2110 (1800-2470)	2140 (1790-2590)	3570 (3140-4380)	5580 (5050-6380)	9710 (5230-20000)	339
	05-06	2160 (1940-2410)	2090 (1950-2330)	3960 (3090-4460)	5640 (5000-9680)	10600 (7200-13300)	345
12-19 years	01-02	2220 (1700-2900)	2150 (1740-2530)	4390 (3150-6110)	11000 (6990-20400)	22500 (13900-28400)	735
	03-04	3040 (2680-3460)	2910 (2510-3500)	5290 (4670-6590)	12400 (8530-16800)	17600 (15100-25900)	721
	05-06	3460 (3030-3950)	3290 (2860-3780)	6750 (5870-7490)	14500 (10300-20800)	23900 (14700-33100)	677
20 years and older	01-02	2620 (2220-3100)	2440 (1940-2950)	6380 (5110-8110)	17600 (14000-21100)	28100 (23300-33700)	1626
	03-04	3360 (2860-3960)	3180 (2590-3960)	8770 (7210-11300)	19200 (16000-23200)	26600 (23400-28800)	1515
	05-06	3880 (3510-4290)	3770 (3250-4330)	9580 (8770-10600)	23000 (18600-28800)	37000 (29200-39500)	1424
Gender							
Males	01-02	2750 (2360-3210)	2510 (2090-2970)	6060 (4820-7810)	16900 (11900-23000)	28100 (20800-35600)	1349
	03-04	3520 (3090-4010)	3370 (2910-3880)	8520 (6960-10500)	18400 (15300-22600)	26100 (22200-27900)	1233
	05-06	4020 (3650-4440)	3850 (3250-4340)	9490 (7840-11300)	19700 (16700-23100)	32900 (25500-38200)	1221
Females	01-02	2220 (1860-2660)	2060 (1650-2480)	5240 (3890-6440)	13900 (12300-17700)	25300 (19700-28300)	1399
	03-04	2890 (2420-3450)	2600 (2140-3160)	6800 (5140-9210)	16600 (12700-21300)	23900 (22100-27600)	1342
	05-06	3280 (2830-3800)	3180 (2640-3600)	7830 (6770-9000)	21300 (14500-29200)	35000 (26700-39600)	1225
Race/ethnicity							
Mexican Americans	01-02	2700 (2360-3080)	2710 (2350-3260)	5140 (4360-6150)	9640 (8150-10600)	14300 (10400-18700)	665
	03-04	3130 (2710-3630)	3110 (2570-3850)	6740 (5600-8280)	14500 (10400-15600)	18000 (15500-20500)	648
	05-06	4520 (4120-4960)	4790 (4130-5430)	8960 (7840-9810)	17300 (12400-23300)	28700 (20000-32600)	621
Non-Hispanic blacks	01-02	3970 (3470-4540)	3460 (3100-4020)	9290 (6820-13200)	22800 (16000-29100)	33000 (25900-38700)	692
	03-04	4690 (3830-5750)	4290 (3250-5540)	10300 (7670-13100)	21200 (17300-26100)	30100 (22300-40600)	690
	05-06	4990 (4410-5650)	4630 (3930-5620)	11600 (9370-14300)	22600 (20000-26900)	31900 (27600-38500)	657
Non-Hispanic whites	01-02	2190 (1760-2720)	1910 (1610-2420)	4970 (3710-6780)	14100 (10700-20200)	25900 (20700-30000)	1207
	03-04	3080 (2580-3670)	2660 (2200-3530)	7640 (5890-10400)	18000 (14600-22900)	26100 (22900-27900)	1072
	05-06	3250 (2900-3640)	2980 (2710-3330)	7900 (6690-9360)	19300 (15800-24700)	34000 (25500-38300)	980

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 2.4, 31.1, and 13.2 respectively.

Urinary 2-Hydroxynaphthalene (2-Naphthol) (creatinine corrected)

Metabolite of Naphthalene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	2310 (1980-2680)	1940 (1670-2300)	4730 (3820-5860)	11500 (9980-13100)	16700 (14100-19200)	2748
	03-04	2990 (2670-3340)	2560 (2200-2970)	6340 (5010-7870)	14100 (11800-16300)	19900 (16000-23800)	2575
	05-06	3520 (3290-3770)	3080 (2670-3400)	7240 (6450-8270)	17000 (14800-18800)	23900 (21900-27200)	2446
Age group							
6-11 years	01-02	1890 (1740-2070)	1830 (1720-1940)	3110 (2510-3470)	5040 (4380-5540)	6490 (5270-12400)	387
	03-04	2240 (1890-2650)	2040 (1660-2440)	3540 (2840-3910)	5950 (4140-8510)	8720 (7560-12000)	339
	05-06	2400 (2100-2750)	2270 (2000-2580)	3680 (3150-4430)	6100 (4840-7040)	7820 (6310-13800)	345
12-19 years	01-02	1720 (1350-2190)	1510 (1340-1830)	2750 (2080-4070)	7180 (4070-10900)	11100 (7860-17400)	735
	03-04	2280 (2060-2520)	2030 (1770-2350)	3780 (3200-4470)	7840 (6130-9110)	10500 (9100-12500)	721
	05-06	2590 (2370-2840)	2310 (2030-2620)	4580 (3990-5020)	8470 (6980-10500)	11900 (10100-15200)	677
20 years and older	01-02	2480 (2130-2880)	2080 (1680-2600)	5630 (4460-6940)	12400 (10900-13900)	17700 (15200-20600)	1626
	03-04	3230 (2870-3640)	2910 (2360-3410)	7540 (6200-9100)	15600 (13100-17900)	21800 (17200-24000)	1515
	05-06	3870 (3590-4170)	3400 (3080-3750)	9200 (7930-10500)	19000 (17400-21200)	27200 (22300-29700)	1424
Gender							
Males	01-02	2230 (1900-2610)	1860 (1630-2100)	4790 (3510-6120)	11400 (8950-14300)	15800 (13100-19200)	1349
	03-04	2770 (2500-3060)	2360 (2130-2810)	6300 (5080-7360)	12800 (11300-14600)	16400 (14600-18300)	1233
	05-06	3230 (3000-3480)	2830 (2530-3140)	6750 (5620-8100)	13800 (12300-16200)	18900 (17400-21200)	1221
Females	01-02	2380 (2050-2770)	1990 (1660-2560)	4730 (3790-6000)	11500 (10300-12800)	17400 (13700-21500)	1399
	03-04	3210 (2760-3730)	2680 (2200-3260)	6430 (4740-8580)	16000 (11500-19900)	22500 (18100-25000)	1342
	05-06	3830 (3390-4330)	3210 (2720-3760)	8080 (6430-9740)	20800 (17000-24700)	29000 (24900-34200)	1225
Race/ethnicity							
Mexican Americans	01-02	2520 (2230-2850)	2350 (2010-2950)	4650 (3970-5210)	7320 (6050-8090)	12000 (7820-15300)	665
	03-04	2830 (2440-3280)	2570 (2200-3230)	5000 (4100-5940)	10300 (6790-13000)	13300 (11000-15500)	648
	05-06	4050 (3770-4350)	4030 (3650-4360)	7050 (6300-8050)	12600 (9530-15100)	17400 (13400-20600)	621
Non-Hispanic blacks	01-02	2790 (2390-3270)	2410 (2040-2770)	5980 (4840-6980)	11600 (9090-15300)	17400 (12200-23400)	692
	03-04	3320 (2700-4090)	3060 (2310-3860)	7050 (5140-9410)	12800 (10200-16500)	19000 (15700-23400)	690
	05-06	3510 (3160-3890)	3100 (2590-3530)	6710 (5330-8040)	12300 (10300-16100)	19700 (16100-25000)	657
Non-Hispanic whites	01-02	2160 (1780-2620)	1740 (1440-2180)	4340 (3320-6090)	11900 (9930-14300)	16900 (13800-20600)	1207
	03-04	3040 (2660-3460)	2480 (2110-3020)	7170 (5100-8950)	15500 (13300-17600)	21800 (17100-24000)	1072
	05-06	3400 (3080-3760)	2730 (2390-3260)	7450 (6100-9650)	17900 (15300-20700)	24900 (21200-29000)	980

Blood 1,1,1-Trichloroethane (Methyl chloroform)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1345
	05-06	*	< LOD	< LOD	< LOD	< LOD	3085
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	911
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1345
	05-06	*	< LOD	< LOD	< LOD	< LOD	1524
60 years and older	05-06	*	< LOD	< LOD	< LOD	.014 (<LOD-.021)	650
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	660
	05-06	*	< LOD	< LOD	< LOD	< LOD	1464
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	685
	05-06	*	< LOD	< LOD	< LOD	< LOD	1621
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	267
	05-06	*	< LOD	< LOD	< LOD	< LOD	762
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	289
	05-06	*	< LOD	< LOD	< LOD	< LOD	791
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	688
	05-06	*	< LOD	< LOD	< LOD	< LOD	1303

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 0.048 and 0.01 respectively. < LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

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

[Biomonitoring Summary](#)

Blood 1,1,2,2-Tetrachloroethane

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1235
	05-06	*	< LOD	< LOD	< LOD	< LOD	3131
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	924
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1235
	05-06	*	< LOD	< LOD	< LOD	< LOD	1542
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	665
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	613
	05-06	*	< LOD	< LOD	< LOD	< LOD	1484
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	622
	05-06	*	< LOD	< LOD	< LOD	< LOD	1647
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	250
	05-06	*	< LOD	< LOD	< LOD	< LOD	753
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	282
	05-06	*	< LOD	< LOD	< LOD	< LOD	823
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	606
	05-06	*	< LOD	< LOD	< LOD	< LOD	1323

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 0.01 and 0.01 respectively.

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

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

[Biomonitoring Summary](#)

Blood 1,1,2-Trichloroethane

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1354
	05-06	*	< LOD	< LOD	< LOD	< LOD	3165
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	936
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1354
	05-06	*	< LOD	< LOD	< LOD	< LOD	1556
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	673
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	664
	05-06	*	< LOD	< LOD	< LOD	< LOD	1499
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	690
	05-06	*	< LOD	< LOD	< LOD	< LOD	1666
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	267
	05-06	*	< LOD	< LOD	< LOD	< LOD	777
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	297
	05-06	*	< LOD	< LOD	< LOD	< LOD	824
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	686
	05-06	*	< LOD	< LOD	< LOD	< LOD	1331

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 0.01 and 0.01 respectively.
 < LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

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

[Biomonitoring Summary](#)

Blood 1,1-Dichloroethane

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1367
	05-06	*	< LOD	< LOD	< LOD	< LOD	3193
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	941
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1367
	05-06	*	< LOD	< LOD	< LOD	< LOD	1569
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	683
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	670
	05-06	*	< LOD	< LOD	< LOD	< LOD	1510
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	697
	05-06	*	< LOD	< LOD	< LOD	< LOD	1683
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	267
	05-06	*	< LOD	< LOD	< LOD	< LOD	778
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	300
	05-06	*	< LOD	< LOD	< LOD	< LOD	832
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	695
	05-06	*	< LOD	< LOD	< LOD	< LOD	1347

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 0.01 and 0.01 respectively.

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

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

[Biomonitoring Summary](#)

Blood 1,1 - Dichloroethene (Vinylidene chloride)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1367
	05-06	*	< LOD	< LOD	< LOD	< LOD	3163
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	931
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1367
	05-06	*	< LOD	< LOD	< LOD	< LOD	1555
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	677
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	670
	05-06	*	< LOD	< LOD	< LOD	< LOD	1502
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	697
	05-06	*	< LOD	< LOD	< LOD	< LOD	1661
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	267
	05-06	*	< LOD	< LOD	< LOD	< LOD	774
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	300
	05-06	*	< LOD	< LOD	< LOD	< LOD	823
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	695
	05-06	*	< LOD	< LOD	< LOD	< LOD	1332

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 0.009 and 0.009 respectively.

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

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

[Biomonitoring Summary](#)

Blood 1,2-Dibromo-3-chloropropane (DBCP)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1170
	05-06	*	< LOD	< LOD	< LOD	< LOD	2998
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	875
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1170
	05-06	*	< LOD	< LOD	< LOD	< LOD	1485
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	638
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	568
	05-06	*	< LOD	< LOD	< LOD	< LOD	1409
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	602
	05-06	*	< LOD	< LOD	< LOD	< LOD	1589
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	234
	05-06	*	< LOD	< LOD	< LOD	< LOD	752
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	239
	05-06	*	< LOD	< LOD	< LOD	< LOD	737
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	603
	05-06	*	< LOD	< LOD	< LOD	< LOD	1287

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

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

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

[Biomonitoring Summary](#)

Blood 1,2-Dichlorobenzene (*o*-Dichlorobenzene)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1327
	05-06	*	< LOD	< LOD	< LOD	< LOD	3083
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	921
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1327
	05-06	*	< LOD	< LOD	< LOD	< LOD	1523
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	639
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	647
	05-06	*	< LOD	< LOD	< LOD	< LOD	1457
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	680
	05-06	*	< LOD	< LOD	< LOD	< LOD	1626
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	250
	05-06	*	< LOD	< LOD	< LOD	< LOD	766
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	291
	05-06	*	< LOD	< LOD	< LOD	< LOD	801
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	682
	05-06	*	< LOD	< LOD	< LOD	< LOD	1288

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

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

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

[Biomonitoring Summary](#)

Blood 1,2-Dichloroethane (Ethylene dichloride)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1346
	05-06	*	< LOD	< LOD	< LOD	< LOD	3082
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	906
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1346
	05-06	*	< LOD	< LOD	< LOD	< LOD	1520
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	656
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	661
	05-06	*	< LOD	< LOD	< LOD	< LOD	1452
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	685
	05-06	*	< LOD	< LOD	< LOD	< LOD	1630
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	267
	05-06	*	< LOD	< LOD	< LOD	< LOD	763
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	289
	05-06	*	< LOD	< LOD	< LOD	< LOD	795
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	689
	05-06	*	< LOD	< LOD	< LOD	< LOD	1297

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 0.01 and 0.01 respectively.

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

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

[Biomonitoring Summary](#)

Blood *cis*-1,2-Dichloroethene

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1366
	05-06	*	< LOD	< LOD	< LOD	< LOD	3140
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	924
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1366
	05-06	*	< LOD	< LOD	< LOD	< LOD	1539
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	677
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	669
	05-06	*	< LOD	< LOD	< LOD	< LOD	1481
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	697
	05-06	*	< LOD	< LOD	< LOD	< LOD	1659
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	267
	05-06	*	< LOD	< LOD	< LOD	< LOD	757
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	300
	05-06	*	< LOD	< LOD	< LOD	< LOD	822
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	694
	05-06	*	< LOD	< LOD	< LOD	< LOD	1329

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 0.01 and 0.01 respectively.

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

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

[Biomonitoring Summary](#)

Blood *trans*-1,2-Dichloroethene

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1367
	05-06	*	< LOD	< LOD	< LOD	< LOD	3193
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	941
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1367
	05-06	*	< LOD	< LOD	< LOD	< LOD	1569
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	683
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	670
	05-06	*	< LOD	< LOD	< LOD	< LOD	1511
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	697
	05-06	*	< LOD	< LOD	< LOD	< LOD	1682
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	267
	05-06	*	< LOD	< LOD	< LOD	< LOD	779
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	300
	05-06	*	< LOD	< LOD	< LOD	< LOD	832
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	695
	05-06	*	< LOD	< LOD	< LOD	< LOD	1346

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 0.01 and 0.01 respectively.

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

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

[Biomonitoring Summary](#)

Blood 1,2-Dichloropropane

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1364
	05-06	*	< LOD	< LOD	< LOD	< LOD	3120
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	918
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1364
	05-06	*	< LOD	< LOD	< LOD	< LOD	1536
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	666
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	667
	05-06	*	< LOD	< LOD	< LOD	< LOD	1478
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	697
	05-06	*	< LOD	< LOD	< LOD	< LOD	1642
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	267
	05-06	*	< LOD	< LOD	< LOD	< LOD	755
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	300
	05-06	*	< LOD	< LOD	< LOD	< LOD	811
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	692
	05-06	*	< LOD	< LOD	< LOD	< LOD	1322

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 0.008 and 0.008 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](#)

Blood 1,3-Dichlorobenzene (*m*-Dichlorobenzene)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1334
	05-06	*	< LOD	< LOD	< LOD	< LOD	3148
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	928
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1334
	05-06	*	< LOD	< LOD	< LOD	< LOD	1545
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	675
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	659
	05-06	*	< LOD	< LOD	< LOD	< LOD	1491
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	675
	05-06	*	< LOD	< LOD	< LOD	< LOD	1657
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	266
	05-06	*	< LOD	< LOD	< LOD	< LOD	774
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	279
	05-06	*	< LOD	< LOD	< LOD	< LOD	809
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	686
	05-06	*	< LOD	< LOD	< LOD	< LOD	1330

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

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

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

[Biomonitoring Summary](#)

Blood 1,4-Dichlorobenzene (Paradichlorobenzene)

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

	Survey years	Geometric	Selected percentiles				Sample size
		mean (95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	*	< LOD	.300 (.190-.550)	1.19 (.610-2.90)	4.10 (1.40-7.60)	807
	03-04	*	< LOD	.320 (.250-.400)	1.10 (.710-1.60)	3.30 (1.70-5.10)	1322
	05-06	*	.085 (.085-.085)	.218 (.180-.260)	.917 (.643-1.31)	3.59 (1.80-5.50)	3126
Age group							
12-19 years	05-06	*	.085 (.085-.085)	.220 (.160-.280)	.960 (.560-2.00)	4.27 (2.37-6.10)	926
20-59 years	01-02	*	< LOD	.300 (.190-.550)	1.19 (.610-2.90)	4.10 (1.40-7.60)	807
	03-04	*	< LOD	.320 (.250-.400)	1.10 (.710-1.60)	3.30 (1.70-5.10)	1322
	05-06	*	.085 (.085-.085)	.220 (.170-.260)	.910 (.540-1.50)	3.77 (1.50-7.33)	1537
60 years and older	05-06	*	.085 (.085-.085)	.207 (.158-.313)	.877 (.525-1.80)	3.06 (1.50-4.20)	663
Gender							
Males	01-02	*	< LOD	.270 (.180-.530)	.900 (.570-2.90)	3.60 (1.10-7.20)	390
	03-04	*	< LOD	.320 (.250-.380)	.770 (.580-1.20)	1.90 (1.20-4.00)	651
	05-06	*	.085 (.085-.085)	.230 (.188-.290)	.950 (.603-1.50)	3.50 (1.50-7.20)	1479
Females	01-02	*	< LOD	.360 (.190-.620)	1.20 (.620-3.90)	4.10 (1.68-8.30)	417
	03-04	*	< LOD	.350 (.220-.450)	1.40 (.810-2.10)	4.10 (2.20-5.90)	671
	05-06	*	.085 (.085-.085)	.180 (.140-.240)	.865 (.522-1.70)	3.59 (2.10-5.18)	1647
Race/ethnicity							
Mexican Americans	01-02		.180 (<LOD-.260)	.790 (.400-1.30)	6.00 (1.30-16.0)	16.0 (6.20-33.0)	217
	03-04		.210 (.140-.400)	.730 (.370-2.90)	6.20 (2.90-9.30)	10.0 (6.30-19.0)	262
	05-06		.210 (.150-.290)	1.20 (.680-2.97)	8.80 (3.80-16.0)	16.0 (8.10-33.0)	772
Non-Hispanic blacks	01-02		.360 (.260-.560)	1.80 (.710-3.90)	6.30 (1.40-29.0)	15.0 (3.60-51.0)	136
	03-04		.340 (.200-.480)	.980 (.550-1.50)	4.10 (1.60-9.20)	11.0 (2.50-19.0)	297
	05-06		.230 (.160-.330)	.860 (.500-1.70)	5.24 (2.00-11.5)	12.7 (8.41-21.0)	805
Non-Hispanic whites	01-02	*	< LOD	.200 (<LOD-.380)	.570 (.300-1.20)	1.19 (.570-3.70)	396
	03-04	*	< LOD	.200 (.160-.260)	.490 (.370-.720)	.940 (.690-2.00)	658
	05-06	*	.085 (.085-.085)	.134 (.085-.180)	.438 (.260-.670)	1.16 (.520-2.30)	1319

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 0.12, 0.12, and 0.011 respectively.

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

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

[Biomonitoring Summary](#)

Blood 2,5-Dimethylfuran

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	.016 (<LOD-.032)	.100 (.083-.110)	.140 (.120-.180)	1213
	05-06	*	< LOD	< LOD	.100 (.069-.120)	.160 (.130-.180)	3160
Age group							
12-19 years	05-06	*	< LOD	< LOD	.013 (<LOD-.029)	.049 (.020-.069)	930
20-59 years	03-04	*	< LOD	.016 (<LOD-.032)	.100 (.083-.110)	.140 (.120-.180)	1213
	05-06	*	< LOD	.013 (<LOD-.035)	.120 (.097-.144)	.170 (.140-.210)	1553
60 years and older	05-06	*	< LOD	< LOD	.069 (.027-.100)	.140 (.106-.160)	677
Gender							
Males	03-04	*	< LOD	.019 (<LOD-.034)	.094 (.071-.110)	.130 (.110-.190)	598
	05-06	*	< LOD	< LOD	.110 (.079-.130)	.160 (.130-.190)	1490
Females	03-04	*	< LOD	.012 (<LOD-.048)	.110 (.071-.120)	.150 (.120-.210)	615
	05-06	*	< LOD	< LOD	.094 (.062-.120)	.158 (.120-.180)	1670
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	.012 (<LOD-.020)	.038 (.013-.054)	237
	05-06	*	< LOD	< LOD	.015 (<LOD-.029)	.033 (.020-.055)	778
Non-Hispanic blacks	03-04	*	< LOD	.042 (.019-.063)	.110 (.079-.170)	.170 (.099-.220)	258
	05-06	*	< LOD	.012 (<LOD-.030)	.085 (.058-.110)	.130 (.095-.180)	825
Non-Hispanic whites	03-04	*	< LOD	.021 (<LOD-.043)	.110 (.087-.120)	.150 (.120-.200)	624
	05-06	*	< LOD	< LOD	.118 (.091-.140)	.170 (.140-.230)	1325

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 0.012 and 0.011 respectively.

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

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

[Biomonitoring Summary](#)

Blood Benzene

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

	Survey years	Geometric	Selected percentiles				Sample size
		mean (95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	*	.030 (<LOD-.050)	.100 (.060-.140)	.190 (.140-.290)	.320 (.190-.480)	837
	03-04	*	.027 (.025-.031)	.064 (.050-.084)	.170 (.150-.190)	.260 (.210-.320)	1345
	05-06	*	.026 (<LOD-.030)	.056 (.047-.072)	.220 (.157-.260)	.310 (.264-.370)	3091
Age group							
12-19 years	05-06	*	.024 (<LOD-.028)	.039 (.031-.056)	.089 (.066-.110)	.120 (.092-.180)	912
20-59 years	01-02	*	.030 (<LOD-.050)	.100 (.060-.140)	.190 (.140-.290)	.320 (.190-.480)	837
	03-04	*	.027 (.025-.031)	.064 (.050-.084)	.170 (.150-.190)	.260 (.210-.320)	1345
	05-06	*	.028 (.025-.032)	.072 (.053-.100)	.240 (.200-.290)	.340 (.300-.390)	1513
60 years and older	05-06	*	< LOD	.042 (.036-.048)	.180 (.100-.230)	.270 (.200-.340)	666
Gender							
Males	01-02	*	.030 (<LOD-.050)	.110 (.060-.160)	.230 (.150-.370)	.370 (.210-.510)	403
	03-04	.039 (.035-.043)	.030 (.027-.035)	.069 (.053-.084)	.160 (.140-.180)	.240 (.190-.320)	654
	05-06	*	.028 (.025-.032)	.066 (.051-.083)	.230 (.165-.280)	.330 (.260-.440)	1459
Females	01-02	*	.030 (<LOD-.050)	.100 (.060-.130)	.180 (.120-.240)	.250 (.170-.330)	434
	03-04	*	.025 (<LOD-.029)	.057 (.040-.090)	.180 (.150-.220)	.290 (.220-.420)	691
	05-06	*	.024 (<LOD-.028)	.049 (.040-.067)	.200 (.150-.230)	.290 (.250-.340)	1632
Race/ethnicity							
Mexican Americans	01-02	*	.030 (<LOD-.070)	.070 (.030-.170)	.140 (.060-.360)	.230 (.130-.370)	227
	03-04	*	.027 (<LOD-.035)	.041 (.034-.057)	.077 (.058-.110)	.130 (.084-.320)	254
	05-06	*	< LOD	.036 (.031-.045)	.060 (.048-.086)	.096 (.072-.140)	744
Non-Hispanic blacks	01-02	*	< LOD	.060 (<LOD-.160)	.180 (.090-.300)	.250 (.160-.480)	137
	03-04	.043 (.033-.058)	.029 (<LOD-.054)	.092 (.055-.140)	.210 (.140-.290)	.320 (.240-.460)	302
	05-06	*	.026 (<LOD-.034)	.077 (.051-.110)	.180 (.150-.221)	.280 (.220-.360)	812
Non-Hispanic whites	01-02	*	.030 (<LOD-.060)	.110 (.070-.160)	.210 (.140-.340)	.330 (.190-.510)	411
	03-04	*	.028 (.025-.033)	.068 (.053-.088)	.180 (.150-.200)	.280 (.210-.330)	687
	05-06	*	.027 (<LOD-.031)	.069 (.049-.091)	.240 (.190-.280)	.330 (.270-.390)	1309

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 0.024, 0.024, and 0.024 respectively.

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

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

[Biomonitoring Summary](#)

Blood Chlorobenzene (Monochlorobenzene)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1366
	05-06	*	< LOD	< LOD	< LOD	< LOD	3072
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	910
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1366
	05-06	*	< LOD	< LOD	< LOD	< LOD	1495
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	667
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	669
	05-06	*	< LOD	< LOD	< LOD	< LOD	1453
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	697
	05-06	*	< LOD	< LOD	< LOD	< LOD	1619
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	267
	05-06	*	< LOD	< LOD	< LOD	< LOD	740
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	300
	05-06	*	< LOD	< LOD	< LOD	< LOD	817
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	694
	05-06	*	< LOD	< LOD	< LOD	< LOD	1287

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 0.011 and 0.011 respectively.

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

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

[Biomonitoring Summary](#)

Blood Dibromomethane

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1355
	05-06	*	< LOD	< LOD	< LOD	< LOD	3152
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	929
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1355
	05-06	*	< LOD	< LOD	< LOD	< LOD	1554
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	669
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	666
	05-06	*	< LOD	< LOD	< LOD	< LOD	1494
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	689
	05-06	*	< LOD	< LOD	< LOD	< LOD	1658
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	267
	05-06	*	< LOD	< LOD	< LOD	< LOD	778
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	292
	05-06	*	< LOD	< LOD	< LOD	< LOD	816
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	693
	05-06	*	< LOD	< LOD	< LOD	< LOD	1324

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 0.03 and 0.03 respectively.
 < LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

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

[Biomonitoring Summary](#)

Blood Dichloromethane (Methylene chloride)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1165
	05-06	*	< LOD	< LOD	< LOD	< LOD	2852
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	837
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1165
	05-06	*	< LOD	< LOD	< LOD	< LOD	1400
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	615
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	568
	05-06	*	< LOD	< LOD	< LOD	< LOD	1338
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	597
	05-06	*	< LOD	< LOD	< LOD	< LOD	1514
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	225
	05-06	*	< LOD	< LOD	< LOD	< LOD	731
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	245
	05-06	*	< LOD	< LOD	< LOD	< LOD	729
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	607
	05-06	*	< LOD	< LOD	< LOD	< LOD	1186

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 0.07 and 0.25 respectively.

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

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

[Biomonitoring Summary](#)

Blood Ethylbenzene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	.034 (.029-.039)	.030 (.030-.040)	.050 (.050-.070)	.090 (.070-.120)	.140 (.090-.180)	879
	03-04	.035 (.033-.037)	.032 (.030-.036)	.053 (.048-.057)	.083 (.077-.088)	.110 (.098-.120)	1299
	05-06	.038 (.036-.041)	.035 (.033-.037)	.059 (.052-.067)	.100 (.093-.114)	.140 (.122-.160)	3119
Age group							
12-19 years	05-06	.032 (.030-.034)	.031 (.029-.033)	.046 (.042-.049)	.070 (.058-.085)	.096 (.075-.120)	909
20-59 years	01-02	.034 (.029-.039)	.030 (.030-.040)	.050 (.050-.070)	.090 (.070-.120)	.140 (.090-.180)	879
	03-04	.035 (.033-.037)	.032 (.030-.036)	.053 (.048-.057)	.083 (.077-.088)	.110 (.098-.120)	1299
	05-06	.040 (.037-.043)	.037 (.034-.039)	.062 (.054-.073)	.110 (.098-.126)	.150 (.130-.180)	1539
	05-06	.037 (.033-.040)	.033 (.030-.036)	.056 (.046-.068)	.098 (.090-.110)	.130 (.110-.160)	671
60 years and older							
Gender							
Males	01-02	.035 (.029-.041)	.030 (<LOD-.040)	.060 (.040-.070)	.100 (.070-.150)	.150 (.090-.220)	419
	03-04	.037 (.034-.041)	.036 (.031-.040)	.057 (.051-.065)	.086 (.078-.099)	.110 (.094-.130)	625
	05-06	.042 (.039-.044)	.038 (.036-.041)	.067 (.057-.074)	.114 (.099-.131)	.160 (.136-.180)	1474
Females	01-02	.033 (.028-.038)	.030 (.030-.040)	.050 (.040-.060)	.080 (.060-.120)	.130 (.070-.180)	460
	03-04	.032 (.030-.034)	.030 (.027-.033)	.048 (.041-.053)	.081 (.071-.089)	.100 (.091-.120)	674
	05-06	.035 (.032-.038)	.032 (.029-.035)	.052 (.047-.061)	.093 (.081-.103)	.120 (.106-.150)	1645
Race/ethnicity							
Mexican Americans	01-02	*	.030 (<LOD-.040)	.040 (.040-.060)	.070 (.050-.110)	.120 (.070-.210)	220
	03-04	.031 (.027-.036)	.029 (<LOD-.035)	.044 (.035-.048)	.064 (.051-.074)	.091 (.066-.170)	253
	05-06	.032 (.028-.036)	.030 (.026-.036)	.047 (.039-.057)	.072 (.051-.093)	.086 (.073-.120)	752
Non-Hispanic blacks	01-02	.032 (.027-.038)	.030 (<LOD-.040)	.050 (.030-.070)	.080 (.060-.130)	.130 (.070-.240)	159
	03-04	.032 (.027-.038)	.030 (<LOD-.037)	.050 (.037-.066)	.079 (.065-.100)	.110 (.084-.130)	281
	05-06	.037 (.035-.040)	.034 (.030-.038)	.057 (.052-.064)	.095 (.085-.100)	.120 (.104-.140)	809
Non-Hispanic whites	01-02	.035 (.029-.043)	.030 (<LOD-.040)	.060 (.050-.070)	.090 (.070-.140)	.150 (.090-.190)	432
	03-04	.036 (.034-.038)	.034 (.030-.038)	.055 (.050-.061)	.087 (.081-.092)	.110 (.098-.130)	669
	05-06	.039 (.037-.042)	.036 (.033-.038)	.061 (.053-.072)	.110 (.095-.120)	.150 (.125-.180)	1326

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 0.024, 0.024, and 0.024 respectively.

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

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

[Biomonitoring Summary](#)

Blood Hexachloroethane

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1366
	05-06	*	< LOD	< LOD	< LOD	< LOD	3155
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	930
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1366
	05-06	*	< LOD	< LOD	< LOD	< LOD	1547
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	678
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	669
	05-06	*	< LOD	< LOD	< LOD	< LOD	1495
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	697
	05-06	*	< LOD	< LOD	< LOD	< LOD	1660
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	267
	05-06	*	< LOD	< LOD	< LOD	< LOD	758
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	300
	05-06	*	< LOD	< LOD	< LOD	< LOD	830
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	694
	05-06	*	< LOD	< LOD	< LOD	< LOD	1335

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 0.011 and 0.011 respectively.

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

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

[Biomonitoring Summary](#)

Blood Methyl-*tert*-butyl ether (MTBE)

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	16.4 (4.77-56.7)	27.7 (7.29-64.9)	73.8 (35.5-127)	132 (64.0-278)	188 (109-339)	672
	03-04	11.0 (5.98-20.1)	10.0 (4.60-25.1)	45.0 (16.0-98.0)	110 (70.0-180)	170 (110-340)	1307
	05-06	6.16 (2.94-12.9)	4.60 (1.80-15.0)	20.0 (5.20-73.0)	75.0 (22.0-140)	110 (49.0-250)	3080
Age group							
12-19 years	05-06	5.85 (2.61-13.1)	4.20 (1.40-18.0)	18.0 (4.60-75.0)	70.0 (18.0-140)	110 (62.0-180)	911
20-59 years	01-02	16.4 (4.77-56.7)	27.7 (7.29-64.9)	73.8 (35.5-127)	132 (64.0-278)	188 (109-339)	672
	03-04	11.0 (5.98-20.1)	10.0 (4.60-25.1)	45.0 (16.0-98.0)	110 (70.0-180)	170 (110-340)	1307
	05-06	6.26 (3.05-12.9)	4.80 (2.00-14.0)	20.0 (5.50-70.0)	71.0 (21.0-150)	110 (46.0-250)	1512
60 years and older	05-06	6.00 (2.67-13.5)	3.80 (1.60-14.0)	22.0 (4.00-94.0)	86.0 (19.0-180)	120 (55.0-290)	657
Gender							
Males	01-02	16.9 (4.96-57.7)	27.9 (6.82-64.6)	75.0 (35.5-131)	132 (54.9-307)	167 (109-417)	334
	03-04	12.2 (6.29-23.6)	11.0 (4.80-29.0)	55.0 (18.0-110)	130 (79.0-200)	200 (110-470)	641
	05-06	6.24 (3.07-12.7)	4.60 (1.90-15.0)	20.0 (5.90-69.0)	73.0 (25.0-120)	110 (52.0-230)	1462
Females	01-02	16.0 (4.12-61.8)	26.6 (5.93-74.6)	72.7 (32.6-132)	142 (73.5-255)	194 (92.3-336)	338
	03-04	9.88 (5.62-17.4)	8.90 (4.30-23.0)	38.0 (14.0-85.0)	94.0 (58.0-160)	140 (90.0-250)	666
	05-06	6.08 (2.81-13.1)	4.50 (1.70-14.0)	19.0 (4.90-79.0)	76.0 (20.0-160)	110 (48.0-250)	1618
Race/ethnicity							
Mexican Americans	01-02	23.3 (4.96-110)	33.4 (2.92-187)	91.3 (26.1-255)	225 (80.6-339)	273 (182-358)	166
	03-04	11.6 (5.35-25.3)	12.0 (3.80-29.0)	32.0 (14.0-80.0)	80.0 (38.0-190)	160 (74.0-220)	245
	05-06	7.61 (2.99-19.3)	5.40 (2.00-33.0)	30.0 (4.60-90.0)	67.0 (26.0-190)	100 (45.0-330)	735
Non-Hispanic blacks	01-02	14.9 (6.11-36.4)	26.4 (3.11-55.6)	52.6 (30.0-86.8)	87.4 (38.6-155)	120 (70.0-155)	119
	03-04	9.63 (4.83-19.2)	10.0 (3.50-28.0)	32.8 (11.0-85.0)	77.0 (36.0-160)	140 (61.0-210)	285
	05-06	9.14 (3.16-26.5)	5.70 (1.80-50.0)	48.0 (5.00-150)	120 (46.0-280)	180 (88.0-460)	820
Non-Hispanic whites	01-02	16.0 (4.13-62.4)	27.9 (4.71-74.6)	72.7 (33.3-132)	132 (59.6-249)	165 (92.8-366)	333
	03-04	11.5 (5.51-23.8)	11.0 (4.00-33.5)	59.0 (14.0-120)	120 (73.0-230)	180 (110-430)	673
	05-06	5.55 (2.47-12.5)	4.00 (<LOD-15.0)	16.0 (4.30-75.0)	70.0 (15.0-150)	110 (40.0-250)	1291

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 0.232, 2.0, and 1.4 respectively. < LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

[Biomonitoring Summary](#)

Blood Nitrobenzene

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	03-04	*	< LOD	< LOD	< LOD	< LOD	1066
	05-06	*	< LOD	< LOD	< LOD	< LOD	3144
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	926
20-59 years	03-04	*	< LOD	< LOD	< LOD	< LOD	1066
	05-06	*	< LOD	< LOD	< LOD	< LOD	1549
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	669
Gender							
Males	03-04	*	< LOD	< LOD	< LOD	< LOD	529
	05-06	*	< LOD	< LOD	< LOD	< LOD	1491
Females	03-04	*	< LOD	< LOD	< LOD	< LOD	537
	05-06	*	< LOD	< LOD	< LOD	< LOD	1653
Race/ethnicity							
Mexican Americans	03-04	*	< LOD	< LOD	< LOD	< LOD	206
	05-06	*	< LOD	< LOD	< LOD	< LOD	773
Non-Hispanic blacks	03-04	*	< LOD	< LOD	< LOD	< LOD	205
	05-06	*	< LOD	< LOD	< LOD	< LOD	816
Non-Hispanic whites	03-04	*	< LOD	< LOD	< LOD	< LOD	564
	05-06	*	< LOD	< LOD	< LOD	< LOD	1322

Limit of detection (LOD, see Data Analysis section) for Survey years 03-04 and 05-06 are 0.3 and 0.3 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](#)

Blood Styrene

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	01-02	*	< LOD	.080 (.050-.100)	.130 (.090-.200)	.200 (.140-.260)	950
	03-04	*	< LOD	.050 (.044-.061)	.089 (.081-.097)	.120 (.110-.130)	1245
	05-06	*	< LOD	.047 (.042-.056)	.099 (.086-.113)	.135 (.120-.160)	2808
Age group							
12-19 years	05-06	*	< LOD	.039 (.031-.049)	.058 (.050-.071)	.072 (.059-.089)	827
20-59 years	01-02	*	< LOD	.080 (.050-.100)	.130 (.090-.200)	.200 (.140-.260)	950
	03-04	*	< LOD	.050 (.044-.061)	.089 (.081-.097)	.120 (.110-.130)	1245
	05-06	*	< LOD	.051 (.044-.065)	.110 (.094-.120)	.150 (.120-.180)	1380
60 years and older	05-06	*	< LOD	.041 (.033-.055)	.083 (.072-.110)	.130 (.100-.150)	601
Gender							
Males	01-02	*	< LOD	.080 (.050-.110)	.140 (.100-.230)	.220 (.140-.340)	445
	03-04	*	< LOD	.056 (.045-.068)	.089 (.081-.100)	.120 (.095-.150)	608
	05-06	*	< LOD	.052 (.043-.067)	.110 (.096-.120)	.142 (.120-.170)	1326
Females	01-02	*	< LOD	.070 (.050-.100)	.120 (.090-.180)	.180 (.120-.260)	505
	03-04	*	< LOD	.048 (.040-.060)	.090 (.074-.100)	.110 (.097-.140)	637
	05-06	*	< LOD	.045 (.038-.052)	.087 (.077-.100)	.129 (.107-.150)	1482
Race/ethnicity							
Mexican Americans	01-02	*	< LOD	.050 (.030-.070)	.090 (.070-.110)	.120 (.090-.170)	225
	03-04	*	< LOD	< LOD	.049 (.033-.066)	.062 (.048-.100)	241
	05-06	*	< LOD	.035 (<LOD-.047)	.060 (.042-.092)	.092 (.064-.110)	603
Non-Hispanic blacks	01-02	*	.040 (<LOD-.080)	.100 (.040-.180)	.180 (.110-.350)	.300 (.170-1.00)	192
	03-04	*	< LOD	.060 (.047-.077)	.100 (.077-.130)	.130 (.110-.160)	264
	05-06	*	< LOD	.056 (.047-.064)	.100 (.079-.120)	.145 (.115-.180)	781
Non-Hispanic whites	01-02	*	.030 (<LOD-.050)	.080 (.050-.110)	.130 (.090-.210)	.200 (.130-.260)	462
	03-04	*	< LOD	.056 (.046-.067)	.096 (.083-.110)	.130 (.110-.140)	646
	05-06	*	< LOD	.049 (.043-.058)	.103 (.087-.120)	.140 (.120-.174)	1217

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 0.03, 0.03, and 0.03 respectively.

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

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

[Biomonitoring Summary](#)

Blood Tetrachloroethene (Perchloroethylene)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	01-02	*	< LOD	.050 (<LOD-.060)	.100 (.070-.150)	.190 (.130-.260)	978
	03-04	*	< LOD	< LOD	.076 (.060-.097)	.140 (.091-.300)	1317
	05-06	*	< LOD	< LOD	.070 (.056-.088)	.126 (.098-.170)	2940
Age group							
12-19 years	05-06	*	< LOD	< LOD	.049 (<LOD-.062)	.079 (.057-.106)	865
20-59 years	01-02	*	< LOD	.050 (<LOD-.060)	.100 (.070-.150)	.190 (.130-.260)	978
	03-04	*	< LOD	< LOD	.076 (.060-.097)	.140 (.091-.300)	1317
	05-06	*	< LOD	< LOD	.074 (.056-.100)	.130 (.098-.199)	1458
60 years and older	05-06	*	< LOD	< LOD	.071 (.054-.092)	.113 (.092-.190)	617
Gender							
Males	01-02	*	< LOD	.050 (<LOD-.060)	.110 (.070-.170)	.210 (.170-.340)	457
	03-04	*	< LOD	< LOD	.082 (.060-.140)	.230 (.097-.410)	639
	05-06	*	< LOD	< LOD	.085 (.062-.126)	.172 (.113-.300)	1404
Females	01-02	*	< LOD	.050 (<LOD-.060)	.100 (.070-.140)	.150 (.100-.220)	521
	03-04	*	< LOD	< LOD	.069 (.050-.091)	.120 (.085-.180)	678
	05-06	*	< LOD	< LOD	.056 (.049-.071)	.090 (.070-.130)	1536
Race/ethnicity							
Mexican Americans	01-02	*	< LOD	< LOD	.060 (<LOD-.070)	.070 (.060-.230)	226
	03-04	*	< LOD	< LOD	.049 (<LOD-.097)	.100 (.054-.180)	248
	05-06	*	< LOD	< LOD	.069 (.056-.074)	.130 (.073-.284)	713
Non-Hispanic blacks	01-02	*	< LOD	< LOD	.070 (.050-.110)	.110 (.060-.190)	195
	03-04	*	< LOD	< LOD	.086 (.050-.220)	.220 (.082-.360)	284
	05-06	*	< LOD	< LOD	.074 (.057-.112)	.120 (.069-.280)	776
Non-Hispanic whites	01-02	*	< LOD	.050 (<LOD-.070)	.110 (.090-.170)	.210 (.150-.260)	487
	03-04	*	< LOD	< LOD	.072 (.060-.091)	.140 (.085-.330)	686
	05-06	*	< LOD	< LOD	.070 (.053-.090)	.130 (.092-.180)	1229

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 0.048, 0.048, and 0.048 respectively.

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

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

[Biomonitoring Summary](#)

Blood Tetrachloromethane (Carbon tetrachloride)

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

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total	01-02	*	< LOD	.010 (<LOD-.010)	.010 (<LOD-.140)	.020 (.010-.050)	742
	03-04	*	< LOD	< LOD	< LOD	< LOD	1362
	05-06	*	< LOD	< LOD	< LOD	< LOD	2979
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	882
20-59 years	01-02	*	< LOD	.010 (<LOD-.010)	.010 (<LOD-.140)	.020 (.010-.050)	742
	03-04	*	< LOD	< LOD	< LOD	< LOD	1362
	05-06	*	< LOD	< LOD	< LOD	< LOD	1476
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	621
Gender							
Males	01-02	*	< LOD	.010 (<LOD-.010)	.010 (<LOD-.140)	.010 (.010-.040)	364
	03-04	*	< LOD	< LOD	< LOD	< LOD	667
	05-06	*	< LOD	< LOD	< LOD	< LOD	1419
Females	01-02	*	< LOD	.010 (<LOD-.010)	.010 (<LOD-.090)	.040 (.010-.080)	378
	03-04	*	< LOD	< LOD	< LOD	< LOD	695
	05-06	*	< LOD	< LOD	< LOD	< LOD	1560
Race/ethnicity							
Mexican Americans	01-02	*	< LOD	< LOD	.010 (<LOD-.750)	.020 (.010-.050)	193
	03-04	*	< LOD	< LOD	< LOD	< LOD	266
	05-06	*	< LOD	< LOD	< LOD	< LOD	740
Non-Hispanic blacks	01-02	*	< LOD	.010 (<LOD-.010)	.010 (<LOD-.020)	.010 (<LOD-.020)	132
	03-04	*	< LOD	< LOD	< LOD	< LOD	299
	05-06	*	< LOD	< LOD	< LOD	< LOD	779
Non-Hispanic whites	01-02	*	< LOD	.010 (<LOD-.010)	.010 (<LOD-.140)	.030 (.010-.080)	366
	03-04	*	< LOD	< LOD	< LOD	< LOD	692
	05-06	*	< LOD	< LOD	< LOD	< LOD	1237

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 0.01, 0.005, and 0.005 respectively.

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

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

[Biomonitoring Summary](#)

Blood Toluene

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

	Survey years	Geometric	Selected percentiles				Sample size
		mean (95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	.156 (.122-.198)	.160 (.120-.220)	.340 (.260-.430)	.670 (.480-.950)	1.06 (.700-1.43)	954
	03-04	.114 (.100-.129)	.096 (.087-.110)	.220 (.180-.260)	.430 (.380-.550)	.680 (.560-.880)	1336
	05-06	.137 (.123-.152)	.120 (.110-.130)	.230 (.200-.262)	.550 (.481-.640)	.814 (.702-.937)	3050
Age group							
12-19 years	05-06	.110 (.098-.122)	.100 (.094-.120)	.170 (.150-.180)	.280 (.240-.310)	.400 (.300-.610)	907
20-59 years	01-02	.156 (.122-.198)	.160 (.120-.220)	.340 (.260-.430)	.670 (.480-.950)	1.06 (.700-1.43)	954
	03-04	.114 (.100-.129)	.096 (.087-.110)	.220 (.180-.260)	.430 (.380-.550)	.680 (.560-.880)	1336
	05-06	.147 (.133-.163)	.120 (.110-.137)	.260 (.210-.340)	.594 (.505-.720)	.900 (.730-1.10)	1505
60 years and older	05-06	.124 (.100-.154)	.114 (.097-.138)	.190 (.167-.230)	.520 (.370-.600)	.720 (.600-.814)	638
Gender							
Males	01-02	.165 (.130-.209)	.170 (.120-.230)	.360 (.260-.520)	.780 (.580-1.06)	1.22 (.850-1.43)	450
	03-04	.128 (.112-.148)	.110 (.096-.130)	.250 (.190-.310)	.500 (.380-.660)	.730 (.590-1.10)	647
	05-06	.152 (.139-.166)	.130 (.120-.140)	.280 (.240-.330)	.640 (.550-.720)	.920 (.790-1.10)	1441
Females	01-02	.147 (.114-.190)	.150 (.110-.220)	.320 (.240-.390)	.550 (.400-.740)	.810 (.530-1.63)	504
	03-04	.101 (.086-.118)	.085 (.070-.100)	.190 (.150-.230)	.410 (.340-.500)	.580 (.480-.750)	689
	05-06	.124 (.107-.144)	.110 (.097-.130)	.190 (.170-.230)	.470 (.380-.550)	.690 (.550-.880)	1609
Race/ethnicity							
Mexican Americans	01-02	.136 (.106-.176)	.140 (.080-.210)	.270 (.210-.340)	.550 (.400-.980)	.990 (.500-1.30)	219
	03-04	.084 (.074-.096)	.076 (.064-.091)	.120 (.100-.170)	.280 (.170-.410)	.400 (.310-.620)	253
	05-06	.110 (.097-.125)	.110 (.096-.120)	.160 (.140-.170)	.240 (.220-.290)	.340 (.290-.460)	737
Non-Hispanic blacks	01-02	.137 (.089-.210)	.150 (.070-.200)	.310 (.200-.460)	.690 (.390-1.19)	1.15 (.660-1.69)	194
	03-04	.105 (.077-.144)	.095 (.070-.130)	.200 (.130-.330)	.440 (.290-.620)	.620 (.480-.710)	297
	05-06	.139 (.120-.161)	.120 (.099-.140)	.230 (.190-.290)	.450 (.370-.550)	.670 (.550-.830)	796
Non-Hispanic whites	01-02	.165 (.125-.217)	.170 (.120-.240)	.350 (.270-.450)	.710 (.450-1.12)	1.14 (.710-1.63)	467
	03-04	.123 (.110-.139)	.100 (.092-.120)	.240 (.210-.280)	.500 (.400-.590)	.750 (.590-.940)	685
	05-06	.144 (.125-.166)	.130 (.110-.140)	.260 (.210-.330)	.600 (.510-.710)	.880 (.760-.990)	1291

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 0.025, 0.025, and 0.025 respectively.
 < LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

[Biomonitoring Summary](#)

Blood Trichloroethene (Trichloroethylene)

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

	Survey years	Geometric	Selected percentiles				Sample size
		mean (95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	*	< LOD	< LOD	< LOD	< LOD	922
	03-04	*	< LOD	< LOD	< LOD	< LOD	1228
	05-06	*	< LOD	< LOD	< LOD	< LOD	3178
Age group							
12-19 years	05-06	*	< LOD	< LOD	< LOD	< LOD	937
20-59 years	01-02	*	< LOD	< LOD	< LOD	< LOD	922
	03-04	*	< LOD	< LOD	< LOD	< LOD	1228
	05-06	*	< LOD	< LOD	< LOD	< LOD	1562
60 years and older	05-06	*	< LOD	< LOD	< LOD	< LOD	679
Gender							
Males	01-02	*	< LOD	< LOD	< LOD	< LOD	434
	03-04	*	< LOD	< LOD	< LOD	< LOD	604
	05-06	*	< LOD	< LOD	< LOD	< LOD	1504
Females	01-02	*	< LOD	< LOD	< LOD	< LOD	488
	03-04	*	< LOD	< LOD	< LOD	< LOD	624
	05-06	*	< LOD	< LOD	< LOD	< LOD	1674
Race/ethnicity							
Mexican Americans	01-02	*	< LOD	< LOD	< LOD	< LOD	228
	03-04	*	< LOD	< LOD	< LOD	< LOD	224
	05-06	*	< LOD	< LOD	< LOD	< LOD	773
Non-Hispanic blacks	01-02	*	< LOD	< LOD	< LOD	< LOD	191
	03-04	*	< LOD	< LOD	< LOD	< LOD	266
	05-06	*	< LOD	< LOD	< LOD	< LOD	828
Non-Hispanic whites	01-02	*	< LOD	< LOD	< LOD	< LOD	441
	03-04	*	< LOD	< LOD	< LOD	< LOD	644
	05-06	*	< LOD	< LOD	< LOD	< LOD	1341

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 0.012, 0.012, and 0.012 respectively.

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

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

[Biomonitoring Summary](#)

Blood *m*- and *p*-Xylene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	.156 (.124-.198)	.150 (.110-.200)	.280 (.190-.430)	.500 (.370-.690)	.670 (.500-.890)	962
	03-04	.136 (.123-.150)	.130 (.120-.150)	.200 (.190-.210)	.280 (.260-.300)	.340 (.310-.400)	1346
	05-06	.132 (.122-.143)	.120 (.110-.130)	.190 (.170-.210)	.301 (.270-.330)	.410 (.360-.450)	3133
Age group							
12-19 years	05-06	.118 (.106-.130)	.120 (.110-.120)	.160 (.150-.170)	.220 (.190-.270)	.330 (.240-.380)	923
20-59 years	01-02	.156 (.124-.198)	.150 (.110-.200)	.280 (.190-.430)	.500 (.370-.690)	.670 (.500-.890)	962
	03-04	.136 (.123-.150)	.130 (.120-.150)	.200 (.190-.210)	.280 (.260-.300)	.340 (.310-.400)	1346
	05-06	.137 (.127-.147)	.130 (.120-.140)	.200 (.180-.220)	.320 (.280-.350)	.430 (.360-.480)	1542
60 years and older	05-06	.126 (.112-.142)	.120 (.100-.130)	.184 (.150-.220)	.303 (.240-.360)	.400 (.335-.463)	668
Gender							
Males	01-02	.155 (.121-.200)	.140 (.110-.190)	.280 (.180-.440)	.510 (.350-.700)	.700 (.500-.890)	455
	03-04	.149 (.134-.166)	.140 (.130-.170)	.220 (.200-.230)	.290 (.270-.320)	.380 (.300-.490)	654
	05-06	.145 (.135-.157)	.130 (.130-.147)	.220 (.190-.240)	.340 (.310-.370)	.460 (.430-.490)	1480
Females	01-02	.157 (.124-.199)	.150 (.110-.220)	.270 (.190-.410)	.480 (.360-.650)	.650 (.460-.890)	507
	03-04	.124 (.112-.138)	.130 (.110-.140)	.180 (.160-.200)	.270 (.240-.300)	.340 (.290-.390)	692
	05-06	.120 (.109-.132)	.110 (.100-.123)	.170 (.151-.197)	.260 (.220-.320)	.340 (.300-.420)	1653
Race/ethnicity							
Mexican Americans	01-02	.134 (.097-.184)	.130 (.090-.180)	.240 (.150-.370)	.400 (.290-.540)	.540 (.380-1.10)	223
	03-04	.132 (.109-.160)	.120 (.110-.150)	.180 (.140-.230)	.250 (.220-.320)	.360 (.260-.490)	257
	05-06	.108 (.093-.125)	.110 (.098-.120)	.150 (.130-.170)	.220 (.170-.290)	.270 (.220-.370)	755
Non-Hispanic blacks	01-02	.147 (.107-.202)	.140 (.090-.220)	.280 (.160-.460)	.470 (.330-.850)	.590 (.420-1.08)	198
	03-04	.117 (.094-.146)	.120 (.099-.140)	.170 (.140-.220)	.270 (.210-.330)	.330 (.260-.450)	297
	05-06	.131 (.120-.144)	.120 (.110-.140)	.190 (.170-.210)	.280 (.250-.320)	.350 (.320-.392)	823
Non-Hispanic whites	01-02	.163 (.124-.214)	.160 (.110-.220)	.300 (.190-.480)	.520 (.370-.740)	.700 (.510-.960)	468
	03-04	.141 (.128-.155)	.140 (.130-.150)	.210 (.190-.220)	.290 (.270-.310)	.350 (.330-.400)	690
	05-06	.136 (.125-.147)	.130 (.120-.140)	.200 (.180-.220)	.324 (.280-.350)	.430 (.368-.480)	1323

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 0.034, 0.034, and 0.034 respectively.
 < LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample.

[Biomonitoring Summary](#)

Blood *o*-Xylene

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

	Survey years	Geometric mean	Selected percentiles				Sample size
		(95% conf. interval)	(95% confidence interval)				
			50th	75th	90th	95th	
Total	01-02	*	< LOD	.070 (.050-.080)	.100 (.080-.130)	.130 (.110-.180)	981
	03-04	*	< LOD	.051 (<LOD-.057)	.072 (.066-.079)	.090 (.081-.097)	1365
	05-06	.037 (.034-.040)	.035 (.032-.039)	.053 (.047-.061)	.083 (.072-.094)	.110 (.094-.120)	3153
Age group							
12-19 years	05-06	.032 (.030-.034)	.031 (.029-.034)	.044 (.040-.049)	.062 (.053-.075)	.088 (.072-.100)	929
20-59 years	01-02	*	< LOD	.070 (.050-.080)	.100 (.080-.130)	.130 (.110-.180)	981
	03-04	*	< LOD	.051 (<LOD-.057)	.072 (.066-.079)	.090 (.081-.097)	1365
	05-06	.038 (.034-.041)	.036 (.032-.039)	.055 (.048-.062)	.083 (.073-.094)	.110 (.093-.120)	1547
60 years and older	05-06	.038 (.033-.044)	.036 (.032-.042)	.054 (.046-.065)	.092 (.065-.115)	.115 (.094-.150)	677
Gender							
Males	01-02	*	< LOD	.070 (.050-.090)	.110 (.080-.140)	.150 (.110-.180)	465
	03-04	*	< LOD	.057 (.050-.060)	.074 (.068-.084)	.096 (.084-.110)	667
	05-06	.040 (.036-.045)	.038 (.033-.041)	.058 (.050-.070)	.092 (.082-.100)	.120 (.100-.140)	1487
Females	01-02	*	< LOD	.060 (.050-.080)	.100 (.070-.130)	.120 (.100-.180)	516
	03-04	*	< LOD	< LOD	.067 (.059-.076)	.085 (.074-.095)	698
	05-06	.034 (.032-.037)	.034 (.031-.036)	.049 (.044-.054)	.072 (.060-.086)	.094 (.078-.110)	1666
Race/ethnicity							
Mexican Americans	01-02	*	< LOD	.060 (<LOD-.080)	.090 (.080-.110)	.120 (.090-.270)	227
	03-04	*	< LOD	.052 (<LOD-.067)	.074 (.067-.080)	.100 (.075-.130)	265
	05-06	.030 (.027-.033)	.029 (.026-.031)	.040 (.036-.045)	.057 (.050-.069)	.079 (.062-.097)	777
Non-Hispanic blacks	01-02	*	< LOD	.050 (<LOD-.070)	.100 (.080-.110)	.110 (.100-.160)	197
	03-04	*	< LOD	< LOD	.065 (.055-.078)	.084 (.068-.100)	301
	05-06	.035 (.033-.038)	.034 (.031-.038)	.049 (.045-.054)	.073 (.064-.077)	.088 (.078-.100)	824
Non-Hispanic whites	01-02	*	< LOD	.070 (.050-.090)	.110 (.080-.140)	.140 (.110-.180)	483
	03-04	*	< LOD	.052 (<LOD-.058)	.073 (.066-.082)	.090 (.081-.100)	694
	05-06	.039 (.035-.043)	.037 (.033-.041)	.056 (.049-.064)	.087 (.074-.100)	.110 (.096-.130)	1319

Limit of detection (LOD, see Data Analysis section) for Survey years 01-02, 03-04, and 05-06 are 0.049, 0.049, and 0.024 respectively.

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

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

[Biomonitoring Summary](#)

Appendix C. References for Biomonitoring Analytical Methods

Tobacco Smoke

Cotinine

Bernert JT, McGuffey JE, Morrison MA, Pirkle JL. Comparison of serum and salivary cotinine measurements by a sensitive high-performance liquid chromatography/tandem mass spectrometry method as an indicator of exposure to tobacco smoke among smokers and nonsmokers. *J Anal Toxicol* 2000;24:333-9.

Bernert JT, Turner WE, Pirkle JL, Sosnoff CS, Akins JR, Waldrep MK, et al. Development and validation of a sensitive measurement of serum cotinine in both smokers and nonsmokers by liquid chromatography/atmospheric pressure ionization tandem mass spectrometry. *Clin Chem* 1997;43:2281-91.

NNAL

Xia Y, Bernert JT. Stability of the tobacco-specific nitrosamine 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol (NNAL) in urine samples stored at various temperatures. *J Anal Toxicol* 2010;34:411-5.

Xia Y, McGuffey JE, Bhattacharyya S, Sellergren B, Yilmaz E, Wang L, et al. Analysis of the tobacco-specific nitrosamine 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol in urine by extraction on a molecularly imprinted polymer column and liquid chromatography/atmospheric pressure ionization tandem mass spectrometry. *Anal Chem*. 2005;77(23):7639-45.

Environmental Phenols

Ye X, Kuklenyik Z, Needham LL, Calafat AM. Automated on-line column-switching HPLC-MS/MS method with peak focusing for the determination of nine environmental phenols in urine. *Anal Chem* 2005;77:5407-13.

Fungicides and Metabolites

Bravo R, Caltabiano LM, Fernandez C, Smith KD, Gallegos M, Whitehead RD, et al. Quantification of phenolic metabolites of environmental chemicals in human urine using gas chromatography-tandem mass spectrometry and isotope dilution quantification. *J Chromatog B* 2005;820(2):229-36.

Hill RH Jr, Shealy DB, Head SL, Williams CC, Bailey SL, Gregg M, et al. Determination of pesticide metabolites in human urine using isotope dilution technique and tandem mass spectrometry. *J Anal Toxicol* 1995;19(5):323-9.

Montesano MA, Olsson AO, Kuklenyik P, Needham LL, Bradman AS, Barr DB. Method for determination of acephate, methamidophos, omethoate, dimethoate, ethylenethiourea and propylenethiourea in human urine using high-performance liquid chromatography-atmospheric pressure chemical ionization tandem mass spectrometry. *J Expo Sci Environ Epidemiol*. 2007;17(4):321-30.

Herbicides and Metabolites

2,4-Dichlorophenol

Ye X, Kuklennyik Z, Needham LL, Calafat AM. Automated on-line column-switching HPLC-MS/MS method with peak focusing for the determination of nine environmental phenols in urine. *Anal Chem* 2005;77:5407-13.

2,4-D and 2,4,5-T

Olsson AO, Baker SE, Nguyen JV, Romanoff LC, Udunka SO, Walker RD, et al. A liquid chromatography-tandem mass spectrometry multiresidue method for quantification of specific metabolites of organophosphorus pesticides, synthetic pyrethroids, selected herbicides, and DEET in human urine. *Anal Chem* 2004;76(9):2453-61.

Sulfonylurea Herbicides

Nguyen JV, Olsson AO, Bravo R, Needham LL, Barr DB. Quantification of atrazine, phenylurea, and sulfonylurea herbicide metabolites in urine by high-performance liquid chromatography-tandem mass spectrometry. *J Anal Toxicol*. 2007;31(4):181-6.

Baker SE, Olsson AO, Needham LL, Barr DB. High-performance liquid chromatography-tandem mass spectrometry method for quantifying sulfonylurea herbicides in human urine: reconsidering the validation process. *Anal Bioanal Chem* 2005; 383:963-76.

Insecticides and Pesticides

Carbamate Metabolites

Bravo R, Caltabiano LM, Fernandez C, Smith KD, Gallegos M, Whitehead RD, et al. Quantification of phenolic metabolites of environmental chemicals in human urine using gas chromatography-tandem mass spectrometry and isotope dilution quantification. *J Chromatog B* 2005;820(2):229-36.

Hill RH Jr, Shealy DB, Head SL, Williams CC, Bailey SL, Gregg M, et al. Determination of pesticide metabolites in human urine using isotope dilution technique and tandem mass spectrometry. *J Anal Toxicol* 1995;19(5):323-9.

Organochlorine Pesticides and Metabolites (2,4,5- and 2,4,6-Trichlorophenol)

Ye X, Kuklennyik Z, Needham LL, Calafat AM. Automated on-line column-switching HPLC-MS/MS method with peak focusing for the determination of nine environmental phenols in urine. *Anal Chem* 2005;77:5407-13.

Other Pesticide Metabolites (2,5-Dichlorophenol)

Ye X, Kuklennyik Z, Needham LL, Calafat AM. Automated on-line column-switching HPLC-MS/MS method with peak focusing for the determination of nine environmental phenols in urine. *Anal Chem* 2005;77:5407-13.

Organophosphorus Insecticides: Specific Metabolites

Montesano MA, Olsson AO, Kuklenyik P, Needham LL, Bradman AS, Barr DB. Method for determination of acephate, methamidophos, omethoate, dimethoate, ethylenethiourea and propylenethiourea in human urine using high-performance liquid chromatography-atmospheric pressure chemical ionization tandem mass spectrometry. *J Expo Sci Environ Epidemiol*. 2007; 17(4):321-30.

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Appendix D. 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 level 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, 2003-2004, 2005-2006, 2007-2008, 2009-2010).

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
Tobacco Smoke								
Cotinine	serum	ng/mL	0.05	0.015/0.05	0.015	0.02	0.015	0.015
NNAL	urine	pg/mL					1.0	0.6
Disinfection By-Products								
Bromodichloromethane	blood	pg/mL		0.233	0.62	0.62		
Dibromochloromethane	blood	pg/mL		0.271	0.62	0.62		
Tribromomethane (Bromoform)	blood	pg/mL		0.596	1.5	1.0		
Trichloromethane (Chloroform)	blood	pg/mL		2.37	2.11	2.1		
Environmental Phenols								
Benzophenone-3	urine	µg/L			0.3	0.4	0.4	0.4
Bisphenol A	urine	µg/L			0.4	0.4	0.4	0.4
4- <i>tert</i> -Octylphenol	urine	µg/L				0.2	0.2	0.2
Triclosan	urine	µg/L			2.3	2.3	2.3	2.3
Fungicides and Metabolites								
<i>ortho</i> -Phenylphenol	urine	µg/L			0.1	0.1	0.1	0.2
Ethylene thiourea	urine	µg/L			0.1			
Pentachlorophenol	urine	µg/L			0.5			
Propylene thiourea	urine	µg/L			0.1			
Herbicides and Metabolites								
2,4-Dichlorophenol	urine	µg/L			0.17	0.2	0.2	0.2
2,4-Dichlorophenoxyacetic acid	urine	µg/L	0.89	0.2	0.1			
2,4,5-Trichlorophenoxyacetic acid	urine	µg/L	1.1	0.1	0.1			
Sulfonyleurea Herbicides								
Bensulfuron-methyl	urine	µg/L			0.05	0.05	0.05	
Chlorsulfuron	urine	µg/L			0.06	0.06	0.06	
Ethametsulfuron-methyl	urine	µg/L			0.1	0.1	0.1	
Foramsulfuron	urine	µg/L			0.05	0.05	0.05	
Halosulfuron	urine	µg/L			0.1	0.1	0.1	
Mesosulfuron-methyl	urine	µg/L			0.06	0.06	0.06	
Metsulfuron-methyl	urine	µg/L			0.05	0.05	0.05	
Nicosulfuron	urine	µg/L			0.1	0.1	0.1	
Oxasulfuron	urine	µg/L			0.06	0.06	0.06	
Primisulfuron-methyl	urine	µg/L			0.07	0.07	0.07	
Prosulfuron	urine	µg/L			0.05	0.05	0.05	
Rimsulfuron	urine	µg/L			0.05	0.05	0.05	
Sulfometuron-methyl	urine	µg/L			0.05	0.05	0.05	
Sulfosulfuron	urine	µg/L			0.1	0.1	0.1	
Thifensulfuron-methyl	urine	µg/L			0.08	0.08	0.08	
Triasulfuron	urine	µg/L			0.07	0.07	0.07	
Triflusulfuron-methyl	urine	µg/L			0.05	0.05	0.05	
Insecticides and Metabolites								
Carbamate Metabolites								
Carbofuranphenol	urine	µg/L	0.4	0.4	0.4			
2-isopropoxyphenol	urine	µg/L	1.1	0.4	0.4			
Organochlorine Pesticides and Metabolites								
2,4,5-Trichlorophenol	urine	µg/L			0.1	0.1	0.1	0.1
2,4,6-Trichlorophenol	urine	µg/L			0.5	0.5	0.5	0.5
Other Pesticides and Metabolites								
2,5-Dichlorophenol	urine	µg/L			0.12	0.2	0.2	0.2
Organophosphorus Insecticides: Specific Metabolites								
Acephate	urine	µg/L			0.1			
Dimethoate	urine	µg/L			0.1			
Methamidophos	urine	µg/L			0.1			
Omethoate	urine	µg/L			0.1			
Organophosphorus Insecticides: Dialkyl Phosphate Metabolites								
Diethylphosphate (DEP)	urine	µg/L	0.2	0.2	0.1		0.37	
Dimethylphosphate (DMP)	urine	µg/L	0.58	0.5	0.5		0.47	
Diethylthiophosphate (DETP)	urine	µg/L	0.09	0.1	0.2		0.56	
Dimethylthiophosphate (DMTP)	urine	µg/L	0.18	0.4	0.5		0.55	
Diethyldithiophosphate (DEDTP)	urine	µg/L	0.05	0.1	0.1		0.39	
Dimethyldithiophosphate (DMDTP)	urine	µg/L	0.08	0.1	0.1		0.51	

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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
Metals and Metalloids								
Antimony	urine	µg/L	0.04	0.04	0.07	0.032	0.032	0.032
Arsenic, Total	urine	µg/L			0.74	0.74	0.74	0.74
Arsenic (V) Acid	urine	µg As/L			1.0	1.0	1.0	1.0
Arsenobetaine	urine	µg As/L			0.4	0.4	0.4	0.4
Arsenocholine	urine	µg As/L			0.6	0.6	0.6	0.6
Arsenous (III) Acid	urine	µg As/L			1.2	1.2	1.2	1.2
Dimethylarsinic Acid	urine	µg As/L			1.7	1.7	1.7	1.7
Monomethylarsonic Acid	urine	µg As/L			0.9	0.9	0.9	0.9
Trimethylarsine oxide	urine	µg As/L			1.0	1.0	1.0	1.0
Barium	urine	µg/L	0.12	0.12	0.31	0.12	0.12	0.12
Beryllium	urine	µg/L	0.13	0.13	0.13	0.072	0.072	0.072
Cadmium	blood	µg/L	0.3	0.3	0.14	0.2	0.2	0.2
Cadmium	urine	µg/L	0.06	0.06	0.06	0.042	0.042	0.042
Cesium	urine	µg/L	0.14	0.14	0.2	0.066	0.066	0.066
Cobalt	urine	µg/L	0.07	0.07	0.08	0.041	0.041	0.041
Lead	blood	µg/dL	0.3	0.3	0.28	0.25	0.25	0.25
Lead	urine	µg/L	0.1	0.1	0.33	0.1	0.1	0.1
Mercury, Inorganic	blood	µg/L			0.42	0.4	0.35	0.35
Mercury, Total	blood	µg/L			0.2	0.33	0.33	0.33
Mercury	urine	µg/L			0.14	0.11	0.08	0.08
Molybdenum	urine	µg/L	0.8	0.8	1.5	0.92	0.92	0.92
Platinum	urine	µg/L	0.04	0.04	0.07	0.009	0.009	0.009
Thallium	urine	µg/L	0.02	0.02	0.02	0.015	0.015	0.015
Tungsten	urine	µg/L	0.04	0.04	0.04	0.021	0.021	0.021
Uranium	urine	µg/L	0.004	0.004	0.005	0.002	0.002	0.0017
Parabens								
Butyl paraben	urine	µg/L				0.2	0.2	0.2
Ethyl paraben	urine	µg/L				1.0	1.0	1.0
Methyl paraben	urine	µg/L				1.0	1.0	1.0
<i>n</i> -Propyl paraben	urine	µg/L				0.2	0.2	0.2
Perchlorate and Other Anions								
Nitrate	urine	mg/L				0.7	0.7	
Perchlorate	urine	µg/L		0.05	0.05	0.05	0.05	
Thiocyanate	urine	mg/L				0.02	0.02	
Perfluorinated Compounds								
Perfluorobutane sulfonic acid (PFBS)	serum	µg/L			0.4	0.1	0.1	0.1
Perfluorodecanoic acid (PFDeA)	serum	µg/L	0.2		0.3	0.2	0.2	0.1
Perfluorododecanoic acid (PFDDoA)	serum	µg/L	0.2		1.0	0.2	0.2	0.1
Perfluoroheptanoic acid (PFHpA)	serum	µg/L	0.4		0.3	0.4	0.4	0.1
Perfluorohexane sulfonic acid (PFHxS)	serum	µg/L	0.1		0.3	0.1	0.1	0.1
Perfluorononanoic acid (PFNA)	serum	µg/L	0.1		0.1	0.1	0.1	0.1
Perfluorooctanoic acid (PFOA)	serum	µg/L	0.1		0.1	0.1	0.1	0.1
Perfluorooctane sulfonic acid (PFOS)	serum	µg/L	0.2		0.4	0.2	0.2	0.2
Perfluorooctane sulfonamide (PFOSA)	serum	µg/L	0.05		0.2	0.1	0.1	0.1
2-(N-Ethyl-perfluorooctane sulfonamido) acetic acid (Et-PFOSA-AcOH)	serum	µg/L	0.2		0.4	0.2	0.2	0.1
2-(N-Methyl-perfluorooctane sulfonamido) acetic acid (Me-PFOSA-AcOH)	serum	µg/L	0.2		0.5	0.2	0.2	0.1
Perfluoroundecanoic acid (PFUA)	serum	µg/L	0.2		0.3	0.2	0.2	0.1
Phthalate Metabolites								
Mono-benzyl phthalate (MBzP)	urine	µg/L	0.576	0.216	0.072	0.216	0.216	
Mono-isobutyl phthalate (MiBP)	urine	µg/L		1.0	0.3	0.3	0.3	
Mono- <i>n</i> -butyl phthalate (MnBP)	urine	µg/L	0.9	1.1	0.4	0.6	0.6	
Mono-cyclohexyl phthalate (MCHP)	urine	µg/L	1.81	0.603	0.402	0.603	0.603	
Mono-ethyl phthalate (MEP)	urine	µg/L	0.792	0.594	0.264	0.528	0.462	
Mono-2-ethylhexyl phthalate (MEHP)	urine	µg/L	1.2	1.0	0.9	1.2	1.1	
Mono-(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP)	urine	µg/L		1.0	0.3	0.7	0.7	
Mono-(2-ethyl-5-oxohexyl) phthalate (MEOHP)	urine	µg/L		1.1	0.5	0.7	0.6	
Mono-(2-ethyl-5-carboxypentyl) phthalate (MECPP)	urine	µg/L			0.3	0.6	0.5	
Mono-(carboxynonyl) phthalate (MCNP)	urine	µg/L				0.6	0.5	
Mono-isononyl phthalate (MiNP)	urine	µg/L	1.23	1.23	1.54	1.23	1.23	
Mono-(carboxyoctyl) phthalate (MCOP)	urine	µg/L				0.7	0.7	
Mono-methyl phthalate (MMP)	urine	µg/L		0.2	1.0	1.1	1.1	
Mono-(3-carboxypropyl) phthalate (MCPP)	urine	µg/L		0.4	0.2	0.2	0.2	
Mono- <i>n</i> -octyl phthalate (MOP)	urine	µg/L	1.51	1.68	1.68	1.85	1.85	

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Chemical	Matrix	Units	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010
Phytoestrogens and Metabolites								
Urinary Daidzein	urine	µg/L	0.5	1.6	1.6	0.4		
Urinary Enterodiol	urine	µg/L	0.8	1.5	1.5	0.04		
Urinary Enterolactone	urine	µg/L	0.6	1.9	1.9	0.1		
Urinary Equol	urine	µg/L	3.0	3.3	3.3	0.06		
Urinary Genistein	urine	µg/L	0.3	0.8	0.8	1.0		
Urinary O-Desmethylangolensin	urine	µg/L	0.2	0.4	0.4	0.2		
Polycyclic Aromatic Hydrocarbon Metabolites								
2-Hydroxyfluorene	urine	ng/L			5.0	5.0		
3-Hydroxyfluorene	urine	ng/L		2.0	5.0	5.0		
9-Hydroxyfluorene	urine	ng/L			5.0	5.0		
1-Hydroxyphenanthrene	urine	ng/L		3.5	5.0	5.0		
2-Hydroxyphenanthrene	urine	ng/L		3.2	5.0	5.0		
3-Hydroxyphenanthrene	urine	ng/L		3.6	5.0	5.0		
4-Hydroxyphenanthrene	urine	ng/L			5.0	5.0		
1-Hydroxypyrene	urine	ng/L			5.0	5.0		
1-Hydroxynaphthalene (1-Naphthol)	urine	ng/L			46.7	47.9		
2-Hydroxynaphthalene (2-Naphthol)	urine	ng/L		2.4	31.1	13.2		
Volatile Organic Compounds								
1,1,1-Trichloroethane (Methyl chloroform)	blood	ng/mL			0.048	0.01		
1,1,2,2-Tetrachloroethane	blood	ng/mL			0.05	0.01		
1,1,2-Trichloroethane	blood	ng/mL			0.01	0.01		
1,1-Dichloroethane	blood	ng/mL			0.01	0.01		
1,1-Dichloroethene (Vinylidene chloride)	blood	ng/mL			0.009	0.009		
1,2-Dibromo-3-chloropropane (DBCP)	blood	ng/mL			0.1	0.1		
1,2-Dichlorobenzene	blood	ng/mL			0.1	0.1		
1,2-Dichloroethane (Ethylene dichloride)	blood	ng/mL			0.01	0.01		
<i>cis</i> -1,2-Dichloroethene	blood	ng/mL			0.01	0.01		
<i>trans</i> -1,2-Dichloroethene	blood	ng/mL			0.01	0.01		
1,2-Dichloropropane	blood	ng/mL			0.008	0.008		
1,3-Dichlorobenzene	blood	ng/mL			0.05	0.05		
1,4-Dichlorobenzene (Paradichlorobenzene)	blood	ng/mL		0.12	0.12	0.011		
2,5-Dimethylfuran	blood	ng/mL			0.012	0.011		
Benzene	blood	ng/mL		0.024	0.024	0.024		
Chlorobenzene	blood	ng/mL			0.011	0.011		
Dibromomethane	blood	ng/mL			0.03	0.03		
Dichloromethane (Methylene chloride)	blood	ng/mL			0.07	0.25		
Ethylbenzene	blood	ng/mL		0.024	0.024	0.024		
Hexachloroethane	blood	ng/mL			0.011	0.011		
Methyl- <i>tert</i> -butyl ether (MTBE)	blood	pg/mL		0.232	2.0	1.4		
Nitrobenzene	blood	ng/mL			0.3	0.3		
Styrene	blood	ng/mL		0.03	0.03	0.03		
Tetrachloroethene (Perchloroethylene)	blood	ng/mL		0.048	0.048	0.048		
Tetrachloromethane (Carbon tetrachloride)	blood	ng/mL		0.01	0.005	0.005		
Toluene	blood	ng/mL		0.025	0.025	0.025		
Trichloroethene (Trichloroethylene)	blood	ng/mL		0.012	0.012	0.012		
<i>m-p</i> -Xylene	blood	ng/mL		0.340	0.034	0.034		
<i>o</i> -Xylene	blood	ng/mL		0.049	0.049	0.024		



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