

Chemicals measured in selected participants for NHANES 2003-2004

CDC is measuring biomonitoring exposure levels of the following chemicals in selected participants for NHANES 2003-2004. For most chemicals, CDC will report results first in the peer-reviewed literature and then in subsequent releases of CDC's *National Report on Human Exposure to Environmental Chemicals*. Because substantial effort is required for chemical measurement, data management, and quality review, most, but not all, chemicals will be included in the *Fourth Report*. Chemicals in green are new and were not included in the *Third Report*.

Metals

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

Phthalates

Mono-methyl phthalate
Mono-ethyl phthalate
Mono-n-butyl phthalate
Mono-isobutyl phthalate
Mono-benzyl phthalate
Mono-cyclohexyl phthalate
Mono-2-ethylhexyl phthalate
Mono-(2-ethyl-5-oxohexyl) phthalate
Mono-(2-ethyl-5-hydroxyhexyl) phthalate
Mono-n-octyl phthalate
Mono-(3-carboxypropyl) phthalate
Mono-isononyl phthalate
Mono-(2-ethyl-5-carboxypentyl) phthalate

Polycyclic Aromatic Hydrocarbons

1-Hydroxybenz[a]anthracene
3- and 9-Hydroxybenz[a]anthracene
1-Hydroxybenzo[c]phenanthrene
2-Hydroxybenzo[c]phenanthrene
3-Hydroxybenzo[c]phenanthrene
1-Hydroxychrysene
2-Hydroxychrysene
3-Hydroxychrysene
4-Hydroxychrysene
6-Hydroxychrysene
3-Hydroxyfluoranthene*
2-Hydroxyfluorene
3-Hydroxyfluorene
9-Hydroxyfluorene
1-Hydroxyphenanthrene
2-Hydroxyphenanthrene
3-Hydroxyphenanthrene
4-Hydroxyphenanthrene
9-Hydroxyphenanthrene
1-Hydroxypyrene
3-Hydroxybenzo[a]pyrene
1-Hydroxynaphthalene
2-Hydroxynaphthalene

Tobacco Smoke

Cotinine

Phytoestrogens

Daidzein
Enterodiol
Enterolactone
Equol
Genistein
O-Desmethylangolensin

Organochlorine Pesticides

Hexachlorobenzene
Beta-hexachlorocyclohexane
Gamma-hexachlorocyclohexane
Pentachlorophenol
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
p,p'-DDT
p,p'-DDE
o,p'-DDT
Oxychlorane
trans-Nonachlor
Heptachlor epoxide
Mirex
Aldrin
Dieldrin
Endrin
Monohydroxy methoxychlor
Dihydroxy methoxychlor
Endosulfan-ether
Endosulfan-lactone
Endosulfan-sulfate

Organophosphate Insecticides: Dialkyl Phosphate Metabolites

Dimethylphosphate
Dimethylthiophosphate
Dimethyldithiophosphate
Diethylphosphate
Diethylthiophosphate
Diethyldithiophosphate

Organophosphate Insecticides: Specific Metabolites

Malathion dicarboxylic acid[†]
3,5,6-Trichloro-2-pyridinol
2-Isopropyl-4-methyl-6-hydroxypyrimidine
para-Nitrophenol
2-(Diethylamino)-6-methylpyrimidin-4-ol/one
3-Chloro-7-hydroxy-4-methyl-2H-chromen-2-one/ol
5-Chloro-1,2-dihydro-1-isopropyl-[3H]-1,2,4-triazol-3-one
Acephate
Methamidaphos

Pyrethroid Pesticides

cis-3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane
carboxylic acid
trans-3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane
carboxylic acid
3-Phenoxybenzoic acid
4-Fluoro-3-phenoxybenzoic acid
cis/trans-Dimethylvinylcyclopropane
carboxylic diacid
cis-3-(2,2-Dibromovinyl)-2,2-dimethylcyclopropane
carboxylic acid

Other Pesticides

2-Isopropoxyphenol
Carbofuranphenol
N,N-Diethyl-3-methylbenzamide (DEET)
2,5-Dichlorophenol

Fungicides

ortho-Phenylphenol
Chlorothalonil
Metalaxyl
Dichloran
Ethylenethio urea (ETU)
Propylenethio urea (PTU)
Phthalimide
Tetrahydrophthalimide

Herbicides: Substituted Ureas

Diuron
Linuron
Dimethoxy pyrimidine
Dimethyl pyrimidine
Methyl methoxytriazine
Bensulfuron-methyl[‡]
Chlorimuron ethyl[‡]
Foramsulfuron[‡]
Halosulfuron[‡]
Nicosulfuron[‡]
Primisulfuron-methyl[‡]
Iodosulfuron[‡]
Rimsulfuron[‡]
Sulfometuron-methyl[‡]
Sulfosulfuron[‡]
Chlorsulfuron[‡]
Ethametsulfuron-methyl[‡]
Metsulfuron-methyl[‡]
Prosulfuron[‡]
Thifensulfuron-methyl[‡]
Triasulfuron[‡]
Triflusulfuron-methyl[‡]

Other Herbicides

2,4,5-Trichlorophenoxyacetic acid
2,4-Dichlorophenoxyacetic acid
2,4-Dichlorophenol
Acetochlor
Acetochlor mercapturate
Alachlor
Alachlor mercapturate[‡]
Atrazine
Atrazine mercapturate
Diaminochlorotriazine
Desethylatrazine
Desisopropylatrazine
Hydroxyatrazine
Metolachlor
Metolachlor mercapturate
Dacthal
Trifluralin

Environmental Phenols

Bisphenol A
2-Hydroxy-4-methoxybenzophenone (Benzophenone-3)
4-*tert*-Octyl phenol
2,4,4'-Trichloro-2'-hydroxyphenyl ether (Triclosan)

*Results available for 1999-2000 only.

[†]Results available for 1999-2000 and 2003-2004, not for 2001-2002.

[‡]Pending availability of acceptable standards.

Polychlorinated Dibenzo-p-dioxins, Dibenzofurans, Coplanar and Mono-Ortho-Substituted Biphenyls

1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)
 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)
 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)
 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)
 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)
 1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)
 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)
 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)
 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)
 1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)
 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)
 1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)
 1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)
 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)
 2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)
 2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)
 2,3,7,8-Tetrachlorodibenzofuran (TCDF)
 2,4,4'-Trichlorobiphenyl (PCB 28)[†]
 2,3',4,4'-Tetrachlorobiphenyl (PCB 66)
 2,4,4',5-Tetrachlorobiphenyl (PCB 74)
 3,4,4',5-Tetrachlorobiphenyl (PCB 81)
 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105)
 2,3,3',4',6-Pentachlorobiphenyl (PCB 110)
 2,3',4,4',5-Pentachlorobiphenyl (PCB 118)
 3,3',4,4',5-Pentachlorobiphenyl (PCB 126)
 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)
 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)
 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)
 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)
 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)

Non-dioxin-like Polychlorinated Biphenyls

2,2',5-Trichloro biphenyl (PCB 18)
 2,2',3,5'-Tetrachloro biphenyl (PCB 44)
 2,2',4,5'-Tetrachloro biphenyl (PCB 49)
 2,2',5,5'-Tetrachlorobiphenyl (PCB 52)
 2,2',3,4,5'-Pentachlorobiphenyl (PCB 87)
 2,2',4,4',5-Pentachlorobiphenyl (PCB 99)
 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101)
 2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128)
 2,2',3,4,4',5' and 2,3,3',4,4',6-Hexachlorobiphenyl
 □□ (PCB 138 & 158)
 2,2',3,4,5,5'-Hexachlorobiphenyl (PCB 146)
 2,2',3,4,5,6'-Hexachlorobiphenyl (PCB 149)
 2,2',3,5,5,6'-Hexachlorobiphenyl (PCB 151)
 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153)
 2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)
 2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172)
 2,2',3,3',4,5,6'-Heptachlorobiphenyl (PCB 177)
 2,2',3,3',5,5,6'-Heptachlorobiphenyl (PCB 178)
 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)
 2,2',3,4,4',5,6'-Heptachlorobiphenyl (PCB 183)
 2,2',3,4,5,5,6'-Heptachlorobiphenyl (PCB 187)
 2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194)
 2,2',3,3',4,4',5,6'-Octachlorobiphenyl (PCB 195)
 2,2',3,3',4,4',5,6' and 2,2',3,4,4',5,5',6'-Octachlorobiphenyl
 □□ (PCB 196 & 203)
 2,2',3,3',4,5,5',6'-Octachlorobiphenyl (PCB 199)
 2,2',3,3',4,4',5,5',6'-Nonachlorobiphenyl (PCB 206)
 2,2',3,3',4,4',5,5',6,6'-Decachloro biphenyl (PCB 209)

Polybrominated Diphenyl Ethers

2,2',4'-Tribromodiphenyl ether (BDE 17)
 2,4,4'-Tribromodiphenyl ether (BDE 28)
 2,2',4,4'-Tetrabromodiphenyl ether (BDE 47)
 2,3',4,4'-Tetrabromodiphenyl ether (BDE 66)
 2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85)
 2,2',4,4',5-Pentabromodiphenyl ether (BDE 99)
 2,2',4,4',6-Pentabromodiphenyl ether (BDE 100)
 2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153)
 2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154)
 2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183)
 2,2',4,4',5,5'-Hexabromobiphenyl (BB 153)

Perfluorinated Compounds

Perfluorooctanoic acid
 Perfluorooctane sulfonic acid
 Perfluorohexane sulfonic acid
 2-(N-Ethyl-perfluorooctane sulfonamido) acetic acid
 2-(N-Methyl-perfluorooctane sulfonamido) acetic acid
 Perfluorodecanoic acid
 Perfluorobutane sulfonic acid
 Perfluoroheptanoic acid
 Perfluorononanoic acid
 Perfluorooctane sulfonamide
 Perfluoroundecanoic acid
 Perfluorododecanoic acid

Volatile Organic Compounds

1,1,1-Trichloroethane
 1,1,2,2-Tetrachloroethane
 1,1,2-Trichloroethane
 1,1-Dichloroethane
 1,1-Dichloroethene
 1,2-dibromo-3-chloropropane
 1,2-Dichlorobenzene
 1,2-Dichloroethane
 1,2-Dichloropropane
 1,3-Dichlorobenzene
 1,4-Dichlorobenzene
 2,5-Dimethylfuran
 Benzene
 Bromodichloromethane
 Bromoform
 Carbon tetrachloride
 Chlorobenzene
 Chloroform
cis-1,2-Dichloroethene
 Dibromochloromethane
 Dibromomethane
 Ethylbenzene
 Hexachloroethane
m-/*p*-Xylene
 Methylene chloride
 Methyl-*tert*-butyl ether (MTBE)
 Nitrobenzene
o-Xylene
 Styrene
 Tetrachloroethene
 Toluene
trans-1,2-Dichloroethene
 Trichloroethene

Other Chemicals

Perchlorate
 Acrylamide
 Glycidamide

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^{*}Pending availability of acceptable standards.