

Chemicals in CDC's *National Report on Human Exposure to Environmental Chemicals*

CDC's *National Report on Human Exposure to Environmental Chemicals* provides exposure data on the following chemicals or classes of chemicals. The *Report* contains cumulative data from national samples collected beginning in 1999–2000. Not all chemicals were measured in each national sample. The data tables are available at <https://www.cdc.gov/environmental-exposure-report/>.

Adducts

Acrylamide
Ethylene Oxide
Formaldehyde
Glycidamide
3-Chlorotyrosine
3,5-Dichlorotyrosine

Tobacco Alkaloids and Metabolites

Total Anabasine
Total Anatabine
Total Cotine
Total Cotine-n-oxide
Hydroxycotinine
Total Trans-3'-hydroxycotinine
1-(3-Pyridyl)-1-butanol-4-carboxylic acid
Nicotine
Total Nicotine 1'-oxide
Total Nor nicotine

Tobacco-Specific Nitrosamines (TSNAs)

N'-Nitrosoanabasine (NAB)
N'-Nitrosoanatabine (NAT)
N'-Nitrosornicotine (NNN)
Total 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol (NNAL)

Volatile N-nitrosamines (VNAs)

N-Nitrosodiethylamine (NDEA)
N-Nitrosoethylmethanamine (NMEA)
N-Nitrosomorpholine (NMOR)
N-Nitrosopiperidine (NPID)
N-Nitrosopyrrolidine (NPYR)

Disinfection By-Products

Bromodichloromethane

Dibromochloromethane

Tribromomethane (Bromoform)

Trichloromethane (Chloroform)

Personal Care and Consumer Product Chemicals and Metabolites

Benzophenone-3

Bisphenol A

Bisphenol F

Bisphenol S

4-tert-Octylphenol

Triclocarban

Triclosan

Butyl paraben

Ethyl paraben

Methyl paraben

n-Propyl paraben

2,4-Dichlorophenol

2,5-Dichlorophenol

Flame Retardant Metabolites

Bis(1-chloro-2-propyl) phosphate (BCPP)

Bis(2-chloroethyl) phosphate (BCEtP)

Bis(1,3-dichloro-2-propyl) phosphate (BDCPP)

Dibenzyl phosphate (DBzP)

Di-n-butylphosphate (DBuP)

Di-o-cresylphosphate (DoCP)

Di-p-cresylphosphate (DpCP)

Diphenyl phosphate (DPhP)

Dicresyl phosphates (DCPs)

2-((Isopropyl)phenyl)phenyl phosphate (iPPPP)

4-((Tert-butyl)phenyl)phenyl phosphate (tBPPP)

2,3,4,5-Tetrabromobenzoic acid (TBBA)

Fungicides and Metabolites

ortho-Phenylphenol
Ethylene thiourea
Pentachlorophenol
Propylene thiourea

Herbicides and Metabolites

Atrazine
Atrazine mercapturate
Desethyl atrazine
Desisopropyl atrazine
Desisopropyl atrazine mercapturate
Diaminochlorotriazine
Glyphosate (N-(Phosphonomethyl)glycine)
2,4-Dichlorophenoxyacetic acid (2,4-D)
2,4,5-Trichlorophenoxyacetic acid

Sulfonyl Urea Herbicides

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

Insect Repellent and Metabolites

N,N-Diethyl-meta-toluamide (DEET)
3-(Diethylcarbamoyl) benzoic acid (DCBA)

3-(Ethylcarbamoyl) benzoic acid (ECBA)

N,N-Diethyl-3-(hydroxymethyl) benzamide (DHMB)

Neonicotinoids Insecticides

Acetamiprid

Clothianidin

N-desmethylacetamiprid

5-hydroxyimidacloprid

Imidacloprid

Thiacloprid

Carbamate Pesticide Metabolites

Carbofuranphenol

2-Isopropoxyphenol

Organochlorine Pesticide Metabolites

2,4,5-Trichlorophenol

2,4,6-Trichlorophenol

Organophosphorus Insecticides: Specific Metabolites

Acephate

Dimethoate

Methamidophos

Omethoate

Malathion diacid (MDA)

2-Isopropyl-4-methyl-6-hydroxypyrimidine (IMPY)

para-Nitrophenol (PNP)

3,5,6-Trichloro-2-pyridinol (TCPY)

Organophosphorus Insecticides: Dialkyl Phosphate Metabolites

Diethylphosphate (DEP)

Dimethylphosphate (DMP)

Diethylthiophosphate (DETP)

Dimethylthiophosphate (DMTP)

Diethyldithiophosphate (DEDTP)

Dimethyldithiophosphate (DMDTP)

Pyrethroid Metabolites

trans-3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid (trans-DCCA)

cis-3-(2,2-Dibromovinyl)-2,2dimethylcyclopropane carboxylic acid (cis-DBCA)

4-Fluoro-3-phenoxy-benzoic acid (4-F-3-PBA)

3-Phenoxybenzoic acid (3-PBA)

Metals and Metalloids

Antimony

Arsenic, Total

Inorganic Arsenic-related Species

Arsenic (V) acid

Arsenobetaine

Arsenocholine

Arsenous (III) acid

Dimethylarsinic acid

Monomethylarsonic acid

Trimethylarsine oxide

Barium

Beryllium

Cadmium

Cesium

Chromium

Cobalt

Copper

Lead

Manganese

Mercury

Molybdenum

Nickel

Platinum

Selenium

Strontium

Thallium

Tin

Tungsten

Uranium

Zinc

Perchlorate and Other Anions

Nitrate

Perchlorate

Thiocyanate

Perfluoroalkyl and Polyfluoroalkyl Substances

Perfluorobutanoic acid (PFBA)

Perfluorobutane sulfonic acid (PFBS)

Perfluorodecanoic acid (PFDA)

Perfluoroheptane sulfonic acid (PFHpS)

Perfluorododecanoic acid (PFDoDA)

Perfluoroheptanoic acid (PFHpA)

Perfluorohexane sulfonic acid (PFHxS)

Perfluorohexanoic acid (PFHxA)

Perfluorononanoic acid (PFNA)

Perfluorooctanoic acid (PFOA)

n-Perfluorooctanoic acid (n-PFOA)

Branched Perfluorooctanoic acid (Sb-PFOA)

Perfluorooctane sulfonic acid (PFOS)

n-Perfluorooctane sulfonic acid (n-PFOS)

Branched Perfluoromethylheptane sulfonic acid (Sm-PFOS)

Perfluorooctane sulfonamide (FOSA)

Perfluoropentanoic acid (PFPeA)

Perfluoroundecanoic acid (PFUnDA)

2-(N-Ethyl-perfluorooctane sulfonamido) acetic acid (EtFOSAA)

2-(N-Methyl-perfluorooctane sulfonamido) acetic acid (Me-FOSAA)

9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)

Adona (4,8-dioxa-3H-perfluorononanoate)

GenX (2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (HFPO-DA))

Phthalate and Phthalate Alternative Metabolites

Mono-benzyl phthalate (MBzP)

Mono-3-hydroxybutyl phthalate (MHBP)

Mono-n-butyl phthalate (MnBP)

Mono-2-methyl-2-hydroxypropyl phthalate (MHiBP)

Mono-isobutyl phthalate (MiBP)

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-carboxyisononyl phthalate (MCNP)
Mono-isononyl phthalate (MiNP)
Mono-oxoisononyl phthalate (MONP)
Mono-carboxyisooctyl phthalate (MCOP)
Mono-methyl phthalate (MMP)
Mono-(3-carboxypropyl) phthalate (MCPP)
Mono-n-octyl phthalate (MOP)
Cyclohexane-1,2-dicarboxylic acid mono hydroxyisononyl ester (MHNCH)
Cyclohexane-1,2-dicarboxylic acid mono carboxyisooctyl ester (MCOCH)
Mono-2-ethyl-5-carboxypentyl terephthalate (MECPTP)
Mono-2-ethyl-5-hydroxyhexyl terephthalate (MEHHTP)

Phytoestrogens and Metabolites

Daidzein
Enterodiol
Enterolactone
Equol
Genistein
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)

Heterocyclic Amines

3-Amino-1,4-dimethyl-5H-pyrido[4,3-b]indole (Trp-P-1)
2-Amino-3-methyl-9H-pyrido[2,3-b]indole (MeA- α -C)
2-Amino-1-methyl-6-phenylimidazo[4,5-b]pyridine (PhIP)

2-Amino-9H-pyrido[2,3-b]indole (A- α -C)
2-Amino-3-methylimidazo[4,5-f]quinoline (IQ)
2-Amino-6-methyldipyrido[1,2-a:3',2'-d]imidazole (Glu-P1)
2-Aminodipyrido[1,2-a:3',2'-d]imidazole (Glu-P2)
1-Methyl-9H-pyrido[3,4-b]indole (Harman)
1-Methyl-3-amino-5H-pyrido[4,3-b]indole (Trp-P-2)
9H-pyrido[3,4-b]indole (Norharman)

Terpenes

α -Pinene
 β -Pinene
Limonene

Volatile Organic Compounds (VOCs)

1,1,1-Trichloroethane (Methyl chloroform)
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,2,3-Trichloropropane
1,1-Dichloroethane
1,1-Dichloroethene (Vinylidene chloride)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane
1,2-Dichlorobenzene (o-Dichlorobenzene)
1,2-Dichloroethane (Ethylene dichloride)
cis-1,2-Dichloroethene
trans-1,2-Dichloroethene
1,2-Dichloropropane
1,3-Dichlorobenzene (m-Dichlorobenzene)
1,4-Dichlorobenzene (Paradichlorobenzene)
1,4-Dioxane
2,5-Dimethylfuran
Benzene
Benzonitrile
Chlorobenzene (Monochlorobenzene)
Chloroethane
Cyclohexane
Dibromomethane
Dichloromethane (Methylene chloride)

Diethyl Ether
Ethyl acetate
Ethylbenzene
Furan
n-Heptane
Hexachloroethane
n-Hexane
Isobutyronitrile
Isopropylbenzene (Cumene)
Methyl Isobutyl Ketone
Methyl-tert-butyl ether (MTBE)
Methylcyclopentane
Nitrobenzene
Nitromethane
n-Octane
Styrene
Tetrachloroethene (Perchloroethylene)
Tetrachloromethane (Carbon tetrachloride)
Tetrahydrofuran
Toluene
Trichloroethene (Trichloroethylene)
 α,α,α -Trifluorotoluene
Vinyl bromide
m-/p-Xylene
o-Xylene

Volatile Organic Compound (VOC) Metabolites

N-Acetyl-S-(2-carboxyethyl)-L-cysteine
N-Acetyl-S-(3-hydroxypropyl)-L-cysteine
N-Acetyl-S-(2-carbamoyl-ethyl)-L-cysteine
N-Acetyl-S-(2-carbamoyl-2-hydroxyethyl)-L-cysteine
N-Acetyl-S-(1-cyano-2-hydroxyethyl)-L-cysteine
N-Acetyl-S-(2-cyanoethyl)-L-cysteine
N-Acetyl-S-(2-hydroxyethyl)-L-cysteine
N-Acetyl-S-(n-propyl)-L-cysteine
N-Acetyl-S-(3,4-dihydroxybutyl)-L-cysteine
N-Acetyl-S-(1-hydroxymethyl-2-propenyl)-L-cysteine
N-Acetyl-S-(2-hydroxy-3-butenyl)-L-cysteine
N-Acetyl-S-(2-hydroxy-3-methyl-3-buten-1-yl)-L-cysteine + N-Acetyl-S-[1-(hydroxymethyl)-2-methyl-2-propen-1-yl]-L-cysteine

N-Acetyl-S-(4-hydroxy-2-butenyl)-L-cysteine
N-Acetyl-S-(4-hydroxy-2-methyl-2-buten-1-yl)-L-cysteine
2-Thioxothiazolidine-4-carboxylic acid
N-Acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine
2-Aminothiazoline-4-carboxylic acid
N-Acetyl-S-(N-methylcarbamoyl)-L-cysteine
Phenylglyoxylic acid
N-Acetyl-S-(2-hydroxypropyl)-L-cysteine
N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine
N-Acetyl-S-(1-phenyl-2-hydroxyethyl)-L-cysteine + N-Acetyl-S-(2-phenyl-2-hydroxyethyl)-L-cysteine
Mandelic acid
N-Acetyl-S-(trichlorovinyl)-L-cysteine
N-Acetyl-S-(benzyl)-L-cysteine
N-Acetyl-S-(1,2-dichlorovinyl)-L-cysteine
N-Acetyl-S-(2,2-dichlorovinyl)-L-cysteine
N-Acetyl-S-(dimethylphenyl)-L-cysteine
2-Methylhippuric acid
3- & 4-Methylhippuric acid
N-Acetyl-S-(6-hydroxy-2,4-cyclohexadiene-1-yl)-L-cysteine (PPMA)
N-Acetyl-S-methyl-L-cysteine (MMA)

Benzene Metabolites

5-Hydroxymethyl-2-furancarboxylic acid
5-Hydroxymethyl-2-furoylglycine
trans, trans-Muconic acid
N-2-Furoylglycine
N-Acetyl-S-(phenyl)-L-cysteine / Phenylmercapturic acid (PMA/PHMA)

Aldehydes

Benzaldehyde
Butyraldehyde
Crotonaldehyde
Decanaldehyde
Heptanaldehyde
Hexanaldehyde
Isopentanaldehyde
Nonanaldehyde
Octanaldehyde
Pentanaldehyde

Propanaldehyde

o-Tolualdehyde

Aromatic Amines

4-Aminobiphenyl

1-Aminonaphthalene

2-Aminonaphthalene

o-Anisidine

2,6-Dimethylaniline

o-Toluidine

Aromatic Diamines

4,4'-Diaminodiphenylmethane (4MDA / 4,4'-MDA)

1,5-Diaminonaphthalene (5NDA / 1,5-DAN)

2,4-Diaminotoluene (4TDA / 2,4-DAT)

2,6-Diaminotoluene (6TDA / 2,6-DAT)

p-Phenylenediamine (PPDA / p-PDA)

Organochlorine Pesticides and Metabolites (Pooled Samples after 2004)

Aldrin

Dieldrin

Endrin

Heptachlor epoxide

Oxychlordane

trans-Nonachlor

p,p'-DDT

p,p'-DDE

o,p'-DDT

Hexachlorobenzene

beta-Hexachlorocyclohexane

gamma-Hexachlorocyclohexane

Mirex

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

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',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE 209)
2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153)

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

1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,6,7,8-HxCDD)
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (1,2,3,4,6,7,8,9-OCDD)
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)

Polychlorinated Dibenzofurans (Pooled Samples after 2004)

1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (1,2,3,4,6,7,8,9-OCDF)
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF)
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)

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

3,4,4',5-Tetrachlorobiphenyl (PCB 81)
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)

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

2,3,3',4,4'-Pentachlorobiphenyl (PCB 105)
2,3,3',4,4'-Pentachlorobiphenyl (PCB 114)
2,3',4,4',5-Pentachlorobiphenyl (PCB 118)
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)

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)
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)

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

2,4,4'-Trichlorobiphenyl (PCB 28)
2,2',3,5'-Tetrachloro biphenyl (PCB 44)
2,2',4,5'-Tetrachloro biphenyl (PCB 49)
2,2',5,5'-Tetrachlorobiphenyl (PCB 52)
2,3',4,4'-Tetrachlorobiphenyl (PCB 66)
2,4,4',5-Tetrachlorobiphenyl (PCB 74)
2,2',3,4,5'-Pentachlorobiphenyl (PCB 87)
2,2',4,4',5-Pentachlorobiphenyl (PCB 99)
2,2',4,5,5'-Pentachlorobiphenyl (PCB 101)
2,3,3',4',6-Pentachlorobiphenyl (PCB 110)
2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128)
2,2',3,4,4',5' & 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' & 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'-Decachlorobiphenyl (PCB 209)