

## Biomonitoring California Priority Chemicals June 2026

The following is a list of priority chemicals for Biomonitoring California.<sup>a</sup> The Scientific Guidance Panel (SGP) recommends chemicals from the designated list as priority chemicals for biomonitoring.

Targets for measurement in biomonitoring studies could include the parent chemical, metabolites and other chemical products formed in the body or the environment (e.g., hemoglobin adduct; environmental degradation product). The approach for biomonitoring a chemical may change as methods development proceeds. For some of the parent chemicals listed below, metabolites or other targets for measurement are shown indented underneath. Chemicals are grouped into categories (like “metals” and “pesticides”); some are included in more than one category. The Program determines the chemicals that are actually biomonitored and the appropriate targets for measurement. To jump to each footnote referenced in the list below, click on the relevant number.

### **Brominated and Chlorinated Organic Compounds used as Flame Retardants <sup>1</sup>**

Allyl 2,4,6-tribromophenyl ether (ATE)  
 2,2-Bis(bromomethyl)-1,3-propanediol  
 2,2-Bis(chloromethyl)trimethylene bis[bis(2-chloroethyl)phosphate]  
 Bis(2-ethyl-1-hexyl)tetrabromophthalate (TBPH)  
 Bis(hexachlorocyclopentadieno)cyclooctane (Dechlorane Plus)  
 1,2-Bis(2,4,6-tribromophenoxy)ethane (BTBPE)  
 2-Bromoallyl-2,4,6-tribromophenyl ether (BATE)  
 Chlorendic acid  
 Chlorinated paraffins  
 Decabromodiphenylethane (DBDPE)  
 1,2-Dibromo-4-(1,2-dibromoethyl)cyclohexane (TBECH)  
 2,4-Dibromophenol  
 2,3-Dibromopropyl-2,4,6-tribromophenyl ether (DPTE)  
 2-Ethyl-1-hexyl-2,3,4,5-tetrabromobenzoate (TBB)  
   2,3,4,5-Tetrabromobenzoic acid (TBBA)  
*N,N'*-Ethylenebis(tetrabromophthalimide)  
 Hexabromobenzene (HBB)  
 2,2',4,4',5,5'-Hexabromobiphenyl (PBB 153)  
 Hexabromocyclododecane (HBCD)  
 Hexachlorocyclopentadienyl-dibromocyclooctane  
 2-Hydroxypropyl 2-(2-hydroxyethyl)ethyl tetrabromophthalate  
 Isobutoxypentabromocyclododecanes (iBPBCDs)  
 Octabromotrimethylphenylindane (OBIND)  
 Pentabromoethylbenzene (PBEB)  
 Pentabromophenol (PBP)  
 Pentabromotoluene (PBT)  
 1,1'-Sulfonylbis[3,5-dibromo-4-(2,3-dibromopropoxy) benzene  
 Tetrabromobisphenol A (TBBPA)

Tetrabromobisphenol A bis(2,3-dibromopropyl) ether (TBBPA-DBPE)  
 Tetrabromobisphenol A bis(2-hydroxyethyl) ether (TBBPA-DHEE)  
 Tetrabromobisphenol A diallyl ether  
 Tetrabromophthalic acid, mixed esters  
 Tetrabromophthalic anhydride  
 2,3,5,6-Tetrabromo-*p*-xylene  
 Tetrachlorophthalic anhydride  
 2,4,6-Tribromophenol  
 Tribromoneopentylalcohol  
 Tris(2-chloroethyl)phosphate (TCEP)  
   Bis(2-chloroethyl)phosphate (BCEP, BCEtP)  
 Tris(1-chloro-2-propyl)phosphate (TCPP)  
   Bis(1-chloro-2-propyl)phosphate (BCPP)  
 Tris(2,3-dibromopropyl) isocyanurate  
 Tris(2,3-dibromopropyl)phosphate (TDBPP)  
 Tris(1,3-dichloro-2-propyl)phosphate (TDCPP)  
   Bis(1,3-dichloro-2-propyl)phosphate (BDCPP)  
 Tris(2,3-dichloro-1-propyl)phosphate  
 Tris(tribromoneopentyl)phosphate  
 2,4,6-Tris(2,4,6-tribromophenoxy)-1,3,5-triazine

### **Polybrominated diphenyl ethers (PBDEs)**

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',5,6'-Octabromodiphenyl ether (BDE 196)

a. California Environmental Contaminant Biomonitoring Program, codified at Health and Safety Code section 105440 et seq.

2,2',3,3',4,4',6,6'-Octabromodiphenyl ether (BDE 197)  
2,2',3,3',4,5',6,6'-Octabromodiphenyl ether (BDE 201)  
2,2',3,3',5,5',6,6'-Octabromodiphenyl ether (BDE 202)  
2,2',3,4,4',5,5',6-Octabromodiphenyl ether (BDE 203)  
2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether (BDE 206)  
2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether (BDE 207)  
2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl ether (BDE 208)  
2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE 209)

**Hydroxy-PBDEs (Metabolites of PBDEs)**

4'-Hydroxy-BDE 17  
4-Hydroxy-BDE 42  
3-Hydroxy-BDE 47  
5-Hydroxy-BDE 47  
6-Hydroxy-BDE 47  
4'-Hydroxy-BDE 49  
2'-Hydroxy-BDE 68  
4-Hydroxy-BDE 90  
5'-Hydroxy-BDE 99  
6'-Hydroxy-BDE 99  
3-Hydroxy-BDE 100  
5'-Hydroxy-BDE 100  
4'-Hydroxy-BDE 101  
4'-Hydroxy-BDE 103

**Cyclosiloxanes <sup>1</sup>**

Decamethylcyclopentasiloxane (D5)  
Dodecamethylcyclohexasiloxane (D6)  
Octamethylcyclotetrasiloxane (D4)

**Diesel Exhaust <sup>2</sup>**

1-Nitropyrene  
6-Hydroxy-1-nitropyrene  
8-Hydroxy-1-nitropyrene

**Diglycidyl Ethers of *p,p'*-Bisphenols <sup>1</sup>**

Bisphenol A diglycidyl ether (BADGE)  
Bisphenol F diglycidyl ether (BFDGE)

**Environmental Phenols <sup>3</sup>**

***p,p'*-Bisphenols <sup>1</sup>**

Bisphenol A (BPA)  
Bisphenol AF (BPAF)

Bisphenol B (BPB)  
Bisphenol F (BPF)  
Bisphenol S (BPS)  
4,4'-Sulfonylbis[2-(2-propen-1-yl)phenol] (TGSA)

**Brominated phenols <sup>3, 4</sup>**

2,4-Dibromophenol  
Pentabromophenol (PBP)  
Tetrabromobisphenol A (TBBPA)  
2,4,6-Tribromophenol

**Chlorinated phenols <sup>3, 5</sup>**

2,4-Dichlorophenol  
2,5-Dichlorophenol  
Triclosan

**Parabens <sup>3</sup>**

Butylparaben <sup>6</sup>  
Ethylparaben  
Methylparaben  
*n*-Propylparaben

**Metals <sup>3</sup>**

Antimony <sup>7</sup>  
Arsenic  
Arsenic (V) acid  
Arsenobetaine  
Arsenocholine  
Arsenous (III) acid  
Dimethylarsinic acid  
Monomethylarsonic acid  
Trimethylarsine oxide  
Beryllium <sup>7</sup>  
Cadmium  
Cobalt  
Lead  
Manganese  
Mercury  
Molybdenum  
Thallium  
Tungsten  
Uranium

**Non-Halogenated Aromatic Phosphates <sup>1</sup>**

Bisphenol A bis(diphenyl phosphate)  
Butylated triphenyl phosphate  
Butyldiphenyl phosphate  
2-*t*-Butylphenyl diphenyl phosphate  
4-*tert*-butylphenyl diphenyl phosphate  
4-((*Tert*-butyl)phenyl)phenyl phosphate (tBPPP)

Dibutylphenyl phosphate  
2-Ethylhexyl diphenyl phosphate  
Isodecyl diphenyl phosphate  
2-Isopropylphenyl diphenyl phosphate (IPPP)  
2-((Isopropyl)phenyl)phenyl phosphate (iPPPP)  
Isopropylated triphenyl phosphate  
Resorcinol bis(diphenyl phosphate)  
Tribenzyl phosphate (TBzP)  
Dibenzyl phosphate (DBzP)  
Tricresyl phosphate (TCP)  
Dicresyl phosphates (DCPs)  
Tri-*o*-cresylphosphate (ToCP)  
Di-*o*-cresylphosphate (DoCP)  
Tri-*p*-cresylphosphate (TpCP)  
Di-*p*-cresylphosphate (DpCP)  
Triphenyl phosphate (TPP)  
Diphenyl phosphate (DPhP)

### Perchlorate

### Perfluoroalkyl and Polyfluoroalkyl Substances (PFASs) [1](#), [8](#)

Ammonium 4,8-dioxa-3H-perfluorononanoate (ADONA)  
Bis(perfluorohexyl)phosphinic acid (6:6 PFPiA)  
Bis(perfluorooctyl)phosphinic acid (8:8 PFPiA)  
6:2 Chlorinated polyfluorinated ether sulfonic acid (F-53B major)  
8:2 Chlorinated polyfluorinated ether sulfonic acid (F-53B minor)  
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid  
*N*-Ethyl-*N*-(2-hydroxyethyl)perfluoro octanesulfonamide phosphate diester  
*N*-Ethyl-*N*-(2-hydroxyethyl)perfluoro octanesulfonamide phosphate monoester  
2-*N*-Ethyl-perfluorooctane sulfonamido acetic acid (Et-PFOSA-AcOH, EtFOSAA)  
6:2 Fluorotelomer acetate  
8:2 Fluorotelomer acetate  
10:2 Fluorotelomer acetate  
6:2 Fluorotelomer acrylate  
8:2 Fluorotelomer acrylate  
10:2 Fluorotelomer acrylate  
5:3 Fluorotelomer carboxylic acid (5:3 FTCA)  
6:2 Fluorotelomer carboxylic acid (6:2 FTCA)  
7:3 Fluorotelomer carboxylic acid (7:3 FTCA)  
8:2 Fluorotelomer carboxylic acid (8:2 FTCA)  
10:2 Fluorotelomer carboxylic acid (10:2 FTCA)  
6:2 Fluorotelomer phosphate diester (6:2 diPAP)  
6:2/8:2 Fluorotelomer phosphate diester  
8:2 Fluorotelomer phosphate diester (8:2 diPAP)  
6:2 Fluorotelomer phosphate monoester (6:2 PAP)  
8:2 Fluorotelomer phosphate monoester (8:2 PAP)

4:2 Fluorotelomer sulfonic acid (4:2 FTS)  
6:2 Fluorotelomer sulfonic acid (6:2 FTS)  
8:2 Fluorotelomer sulfonic acid (8:2 FTS)  
6:2 Fluorotelomer unsaturated carboxylic acid (6:2 FTUCA)  
8:2 Fluorotelomer unsaturated carboxylic acid (8:2 FTUCA)  
10:2 Fluorotelomer unsaturated carboxylic acid (10:2 FTUCA)  
2-*N*-Methyl-perfluorooctane sulfonamido) acetic acid (Me-PFOSA-AcOH, MeFOSAA)  
Perfluorobutane sulfonic acid (PFBS)  
Perfluorobutanoic acid (PFBA)  
Perfluorodecane sulfonic acid (PFDS)  
Perfluorodecanoic acid (PFDeA, PFDA)  
Perfluorodecylphosphonic acid  
Perfluoro-3,6-dioxaheptanoic acid  
Perfluoro-3,6-dioxa-4-methyl-7-octene sulfonic acid  
Perfluorododecanoic acid (PFDoA, PFDoDA)  
Perfluoro(2-ethoxyethane) sulfonic acid  
Perfluoroethylcyclohexane sulfonic acid  
Perfluoroheptane sulfonic acid (PFHpS)  
Perfluoroheptanoic acid (PFHpA)  
Perfluorohexadecanoic acid  
Perfluorohexane sulfonic acid (PFHxS)  
Perfluorohexanoic acid (PFHxA)  
Perfluorohexylperfluorooctylphosphinic acid (6:8 PFPiA)  
Perfluorohexylphosphonic acid (PFHxPA)  
Perfluoro-4-methoxybutanoic acid  
Perfluoro-3-methoxypropanoic acid  
Perfluoro-2-methyl-3-oxahexanoic acid (GenX, 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (HFPO-DA))  
Perfluorononane sulfonic acid (PFNS)  
Perfluorononanoic acid (PFNA)  
Perfluorooctadecanoic acid  
Perfluorooctane sulfonamide (PFOSA, PFOSAm, FOSA)  
Perfluorooctane sulfonic acid (PFOS), including linear and branched isomers  
Perfluorooctanoic acid (PFOA), including linear and branched isomers  
Perfluorooctylphosphonic acid (PFOPA)  
Perfluoropentane sulfonic acid (PFPeS)  
Perfluoropentanoic acid (PFPeA)  
Perfluorotetradecanoic acid (PFTeDA)  
Perfluorotridecanoic acid  
Perfluoroundecanoic acid (PFUA, PFUnDA)

**Pesticides** [3](#), [9](#)

**Herbicides** [3](#)

2,4-Dichlorophenoxyacetic acid (2,4-D), salts and esters

- 2,4-Dichlorophenoxyacetic acid
- 2,4-Dichlorophenol

**Organochlorine Pesticides** [3](#)

Dichlorodiphenyltrichloroethane (DDT) (including *p,p'*-DDT and *o,p'*-DDT)  
*p,p'*-Dichlorodiphenyldichloroethene (*p,p'*-DDE)

**Organophosphate Insecticides** [3](#)

Acephate

Azinphos methyl

- Dimethyldithiophosphate (DMDTP)
- Dimethylphosphate (DMP)
- Dimethylthiophosphate (DMTP)

Chlorethoxyphos

- Diethylphosphate (DEP)
- Diethylthiophosphate (DETP)

Chlorpyrifos

- Diethylphosphate (DEP)
- Diethylthiophosphate (DETP)
- 3,5,6-Trichloro-2-pyridinol (TCPy)

Chlorpyrifos methyl

- Dimethylphosphate (DMP)
- Dimethylthiophosphate (DMTP)
- 3,5,6-Trichloro-2-pyridinol (TCPy)

Coumaphos

- 3-Chloro-7-hydroxy-4-methyl-2H-chromen-2-one/ol
- Diethylphosphate (DEP)
- Diethylthiophosphate (DETP)

Diazinon

- Diethylphosphate (DEP)
- Diethylthiophosphate (DETP)
- 2-Isopropyl-4-methyl-6-hydroxypyrimidine (2-Isopropyl-4-methyl-pyrimidinol) (IMPY)

Dichlorvos (DDVP)

- Dimethylphosphate (DMP)

Dicrotophos

- Dimethylphosphate (DMP)

Dimethoate

- Dimethyldithiophosphate (DMDTP)
- Dimethylphosphate (DMP)
- Dimethylthiophosphate (DMPT)

Disulfoton

- Diethyldithiophosphate (DEDTP)
- Diethylphosphate (DEP)
- Diethylthiophosphate (DETP)
- Ethion
- Diethyldithiophosphate (DEDTP)
- Diethylphosphate (DEP)

Diethylthiophosphate (DETP)

Fenitrothion

- Dimethylphosphate (DMP)
- Dimethylthiophosphate (DMPT)

Fenthion

- Dimethylphosphate (DMP)
- Dimethylthiophosphate (DMPT)

Isazophos-methyl

- 5-Chloro-1,2-dihydro-1-isopropyl-[3H]-1,2,4-triazol-3-one
- Dimethylphosphate (DMP)
- Dimethylthiophosphate (DMPT)

Malathion

- Dimethyldithiophosphate (DMDTP)
- Dimethylphosphate (DMP)
- Dimethylthiophosphate (DMPT)
- Malathion dicarboxylic acid (Malathion diacid)

Methamidophos

Methidathion

- Dimethyldithiophosphate (DMDTP)
- Dimethylphosphate (DMP)
- Dimethylthiophosphate (DMPT)

Methyl parathion

- Dimethylphosphate (DMP)
- Dimethylthiophosphate (DMPT)
- p*-Nitrophenol

Naled

- Dimethylphosphate (DMP)

Oxydemeton-methyl

- Dimethylphosphate (DMP)
- Dimethylthiophosphate (DMPT)

Parathion (Ethyl parathion)

- Diethylphosphate (DEP)
- Diethylthiophosphate (DETP)
- p*-Nitrophenol

Phorate

- Diethyldithiophosphate (DEDTP)
- Diethylphosphate (DEP)
- Diethylthiophosphate (DETP)

Phosmet (Imidan)

- Dimethyldithiophosphate (DMDTP)
- Dimethylphosphate (DMP)
- Dimethylthiophosphate (DMPT)

Pirimiphos-methyl

- 2-(Diethylamino)-6-methylpyrimidin-4-ol/one
- Dimethylphosphate (DMP)
- Dimethylthiophosphate (DMPT)

Sulfotep

- Diethylphosphate (DEP)
- Diethylthiophosphate (DETP)

Temephos

- Dimethylphosphate (DMP)
- Dimethylthiophosphate (DMPT)

Terbufos

Diethyldithiophosphate (DEDTP)  
Diethylphosphate (DEP)  
Diethylthiophosphate (DETP)

Tetrachlorvinphos

Dimethylphosphate (DMP)

**Quaternary Ammonium Herbicides and Pesticides** <sup>1</sup>

*Refer to the category Quaternary Ammonium Compounds (QACs) for the QA herbicides and other members of this class, some of which are registered as pesticides for antimicrobial applications.*

**Pyrethroid Pesticides** <sup>3</sup>

Allethrin

*cis/trans*-Dimethylvinylcyclopropane carboxylic diacid

Cyfluthrin

*cis*-3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid (*cis*-DCCA)

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

4-Fluoro-3-phenoxybenzoic acid

Cyhalothrin (including *lambda*- and *gamma*-)

3-Phenoxybenzoic acid (3-PBA)

Cypermethrin (including *cis*- and *trans*-)

*cis*-3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid (*cis*-DCCA)

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

3-Phenoxybenzoic acid (3-PBA)

Deltamethrin

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

3-Phenoxybenzoic acid (3-PBA)

Fenpropathrin

3-Phenoxybenzoic acid (3-PBA)

Permethrin (including *cis*- and *trans*-)

*cis*-3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid (*cis*-DCCA)

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

3-Phenoxybenzoic acid (3-PBA)

Pyrethrin 1

*cis/trans*-Dimethylvinylcyclopropane carboxylic diacid

Resmethrin

*cis/trans*-Dimethylvinylcyclopropane carboxylic diacid

Tralomethrin

3-Phenoxybenzoic acid (3-PBA)

**Other Pesticides**

1,4-Dichlorobenzene (*p*-Dichlorobenzene)

2,5 Dichlorophenol

**ortho-Phthalates** <sup>1</sup>

Benzylbutyl phthalate (BzBP)

Mono-benzyl phthalate (MBzP)

Mono-*n*-butyl phthalate (MnBP)

Diallyl phthalate

Di-*n*-butyl phthalate (DnBP)

Mono-*n*-butyl phthalate (MnBP)

Mono-3-hydroxybutyl phthalate (MHBP)

Di-isobutyl phthalate (DIBP)

Mono-isobutyl phthalate (MIBP)

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

Dicyclohexyl phthalate (DCHP)

Mono-cyclohexyl phthalate (MCHP)

Diethyl phthalate (DEP)

Mono-ethyl phthalate (MEP)

Di-2-ethylhexyl phthalate (DEHP)

Mono-(2-carboxymethylhexyl) phthalate

Mono-(2-ethyl-5-carboxypentyl) phthalate (MECPP)

Mono-2-ethylhexyl phthalate (MEHP)

Mono-(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP)

Mono-(2-ethyl-5-oxohexyl) phthalate (MEOHP)

Di-*n*-hexyl phthalate

Di-isodecyl phthalate (DIDP)

Mono-(carboxynonyl) phthalate (MCNP)

Di-isoheptyl phthalate

Di-isononyl phthalate (DINP)

Mono-(carboxyoctyl) phthalate (MCOP)

Mono-(hydroxyisononyl) phthalate

Mono-isononyl phthalate (MiNP)

Mono-(oxoisononyl) phthalate (MONP)

Dimethyl phthalate (DMP)

Mono-methyl phthalate (MMP)

Di-*n*-octyl phthalate (DnOP)

Mono-(3-carboxypropyl) phthalate (MCP)

Mono-*n*-octyl phthalate (MnOP, MOP)

Di-*n*-pentyl phthalate

Di-2-propylheptyl phthalate

Diundecyl phthalate  
Di-isoundecyl phthalate  
Di-isotridecyl phthalate

2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 203)  
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)

### Polychlorinated Biphenyls (PCBs), Dioxin-Like <sup>3</sup>

#### Coplanar PCBs <sup>3</sup>

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

#### Mono-ortho-Substituted PCBs <sup>3</sup>

2,3,3',4,4'-Pentachlorobiphenyl (PCB 105)  
2,3,4,4',5-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 (PCBs), Non-Dioxin-Like <sup>3</sup>

2,2',5-Trichlorobiphenyl (PCB 18)  
2,4,4'-Trichlorobiphenyl (PCB 28)  
2,2',3,5'-Tetrachlorobiphenyl (PCB 44)  
2,2',4,5'-Tetrachlorobiphenyl (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'-Hexachlorobiphenyl (PCB 138)  
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)  
2,3,3',4,4',6-Hexachlorobiphenyl (PCB 158)  
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'-Octachlorobiphenyl (PCB 196)  
2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199)

### Polychlorinated Biphenyls (PCBs)

#### Hydroxy-PCBs (Metabolites of PCBs) <sup>10</sup>

4-Hydroxy-PCB 107  
4-Hydroxy-PCB 120  
4'-Hydroxy-PCB 130  
3'-Hydroxy-PCB 138  
4-Hydroxy-PCB 146  
3-Hydroxy-PCB 153  
4'-Hydroxy-PCB 172  
3'-Hydroxy-PCB 180  
4-Hydroxy-PCB 187  
4'-Hydroxy-PCB 193

### Polycyclic Aromatic Hydrocarbons (PAHs) <sup>3, 11</sup>

3-Hydroxybenzo[a]pyrene  
6-Hydroxychrysene  
3-Hydroxyphenanthrene

### Quaternary Ammonium Compounds (QACs) <sup>1</sup>

#### Alkyltrimethyl ammonium compounds (ATMACs) <sup>1</sup>

C20-22-Alkyltrimethyl ammonium chlorides  
Behentrimonium chloride  
Cetrimonium bromide  
Cetrimonium chloride

#### Benzylalkyldimethyl ammonium compounds (BACs) <sup>1</sup>

Alkyl(60%C14, 30%C16, 5%C18, 5%C12)  
dimethylbenzyl ammonium chloride  
C12-14-Alkyl(ethylbenzyl)dimethyl ammonium  
chlorides  
Benzalkonium chloride <sup>12</sup>  
Benzyl-C12-18-alkyldimethyl ammonium chlorides  
Cetalkonium chloride

#### Dialkyldimethyl ammonium compounds (DADMACs) <sup>1</sup>

Di-C14-18-alkyldimethyl ammonium chlorides  
Didecyldimethyl ammonium carbonate  
Didecyldimethyl ammonium chloride  
Dioctyldimethyl ammonium chloride  
Quaternium 18  
Quaternium 24  
Quaternium 34

**Esterquats** <sup>1</sup>

Esterquat 1

**Polyquaternium compounds (Polyquats)** <sup>1</sup>

Polyquaternium 42

**QA Herbicides** <sup>1</sup>

Diquat dibromide

Paraquat dichloride

**Other QACs** <sup>1</sup>

Benzethonium chloride

Cetylpyridinium chloride

(Oxydi-2,1-ethanediyl)bis(coco alkyl)dimethyl

ammonium dichlorides

Quaternium 15

**Tobacco Smoke**

Nicotine

Cotinine

Cotinine *N*-oxide

4-Hydroxy-4-(3-pyridyl)-butanoic acid (1-(3-

Pyridyl)-1-butanol-4-carboxylic acid)

trans-3'-Hydroxycotinine (Hydroxycotinine)

Norcotinine

**Notes**

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- <sup>1</sup> All members of the chemical group are priority chemicals, including, but not limited to, the chemicals listed.
- <sup>2</sup> Diesel exhaust is a complex mixture that contains many components, one or more of which may be useful as an indicator for biomonitoring.
- <sup>3</sup> All members of the chemical group are not priority chemicals; only the specific chemicals listed are priority chemicals.
- <sup>4</sup> These brominated phenols are part of the chemical group “brominated and chlorinated organic compounds used as flame retardants”, which are listed as priority chemicals. The brominated phenols are also included in the category “environmental phenols” because the laboratory measures them with other environmental phenols.
- <sup>5</sup> These chlorinated phenols, with the exception of triclosan, are metabolites of certain pesticides that are listed as priority chemicals. These chlorophenols are also included in the category “environmental phenols” because the laboratory measures them with other environmental phenols.
- <sup>6</sup> Includes *n*-butylparaben and isobutylparaben.
- <sup>7</sup> The SGP recommended that the Program develop methods for antimony and beryllium that meet the Program's quality assurance/quality control (QA/QC) standards.
- <sup>8</sup> For the description of PFASs and example members of this class, refer to Buck et al. (2011) (Integr Environ Assess Manag 7[4]:513–541; link to free article: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3214619/>).
- <sup>9</sup> Fungicides, herbicides, and insecticides are grouped under the general heading of “Pesticides.”
- <sup>10</sup> Hydroxy-PCBs are measured as biomarkers of exposure to the listed PCBs.
- <sup>11</sup> The SGP recommended that the three hydroxy-PAHs shown be listed as priority chemicals. These three hydroxy-PAHs are metabolites of benzo[a]pyrene, chrysene and phenanthrene, respectively.
- <sup>12</sup> Benzalkonium chloride can also be referred to as alkyldimethylbenzyl ammonium chloride (ADBAC).