

APPENDIX B

EPA Methods of Environmental Water Analysis

Table B-1. Inorganic constituents of concern in water samples, the analytical methods used to determine their concentrations, and their contractual reporting limits.

Constituent of concern	Analytical method	Reporting limit (a,b)
Metals and minerals (mg/L)	All alkalinities	SM 2320B
	Aluminum	EPA 200.7 or 200.8
	Ammonia nitrogen (as N)	EPA 350.1 or SM 4500-NH3 D
	Antimony	EPA 200.7 or 200.8
	Arsenic	EPA 200.7 or 200.8
	Barium	EPA 200.7 or 200.8
	Beryllium	EPA 200.7, 200.8 or 6010B
	Boron	EPA 200.7 or 6010B
	Bromide	EPA 300.0
	Cadmium	EPA 200.7 or 200.8
	Calcium	EPA 200.7
	Chloride	EPA 300.0
	Chromium	EPA 200.7 or 200.8
	Chromium(VI)	EPA 218.6 or 7196
	Cobalt	EPA 200.7, 200.8 or 6010B
	Copper	EPA 200.7, 200.8 or 6010B
	Cyanide	EPA 335.4 or 4500-CN
	Fluoride	EPA 300.0
	Hardness, total (as CaCO ₃)	SM 2320B
	Iron	EPA 200.7 or 200.8
	Lead	EPA 200.7 or 200.8
	Magnesium	EPA 200.7 or 200.8
	Manganese	EPA 200.7 or 200.8
	Mercury	EPA 245.2 or 245.1
	Molybdenum	EPA 200.7 or 200.8
	Nickel	EPA 200.7, 200.8 or SM 3113B
	Nitrate (as NO ₃)	EPA 353.2, 300.0 or SM 4500-NO ₃
	Nitrite (as NO ₂)	EPA 353.2, 300.0 or SM 4500-NO ₂
	Ortho-phosphate	EPA 300.0 or SM 4500-P E
	Perchlorate	EPA 314.0
	Potassium	EPA 200.7 or 200.8
	Selenium	EPA 200.7, 200.8 or 6010B
	Silver	EPA 200.7 or 200.8
	Sodium	EPA 200.7
	Sulfate	EPA 300.0
	Surfactants	SM 5540C or EPA 425.1
	Thallium	EPA 200.7 or 200.8
	Total dissolved solids	EPA 160.1 or SM 2540C
	Total suspended solids	EPA 160.2 or SM 2540D
	Vanadium	EPA 200.7 or 200.8
Zinc	EPA 200.7 or 200.8	

B. EPA Methods of Environmental Water Analysis

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Constituent of concern		Analytical method	Reporting limit ^(a,b)
General indicator parameters	pH (pH units)	EPA 150.1 or SM 4500HB	1
	Biochemical oxygen demand (mg/L)	SM 5210B	2
	Conductivity (umhos/cm)	EPA 120.1 or SM2510B	none
	Chemical oxygen demand (mg/L)	EPA 410.4 or SM5220D	5 or 20
	Dissolved oxygen (mg/L)	EPA 360.1 or SM 4500-O G	0.05
	Total organic carbon (mg/L)	EPA 9060 or SM 5310C	1
Radioactivity (Bq/L)	Gross alpha	EPA 900	0.074
	Gross beta	EPA 900	0.11
Radioisotopes (Bq/L)	Tritium	EPA 906	3.7
	Uranium (calculated total)	ASTM D5174	0.0037

(a) The number of decimal places displayed in this table vary by constituent. These variations reflect regulatory agency permit stipulations, or the applicable analytical laboratory contract under which the work was performed, or both.

(b) These reporting limits are for water samples with low concentrations of dissolved solids. If higher concentrations are present, limits are likely to be higher.

B. EPA Methods of Environmental Water Analysis

Table B-2. Organic constituents of concern in water samples and their contractual reporting limits of concentration, sorted by analytical methods.

Constituent of concern	Reporting limit (µg/L) (a,b)	Constituent of concern	Reporting limit (µg/L) (a,b)
EPA Method 1664		<i>m</i> - and <i>p</i> -Xylene isomers	0.2
Oil & Grease	5000	Methylene chloride	0.2
EPA Method 502.2		<i>n</i> -Butylbenzene	0.2
1,1,1,2-Tetrachloroethane	0.2	<i>n</i> -Propylbenzene	0.2
1,1,1-Trichloroethane	0.2	Naphthalene	0.2
1,1,2,2-Tetrachloroethane	0.2	<i>o</i> -Xylene	0.2
1,1,2-Trichloroethane	0.2	Isopropyl toluene	0.2
1,1-Dichloroethane	0.2	<i>sec</i> -Butylbenzene	0.2
1,1-Dichloroethene	0.2	Styrene	0.2
1,1-Dichloropropene	0.2	<i>tert</i> -Butylbenzene	0.2
1,2,3-Trichlorobenzene	0.2	Tetrachloroethene	0.2
1,2,3-Trichloropropane	0.2	Toluene	0.2
1,2,4-Trichlorobenzene	0.2	<i>trans</i> -1,2-Dichloroethene	0.2
1,2,4-Trimethylbenzene	0.2	<i>trans</i> -1,3-Dichloropropene	0.2
1,2-Dichlorobenzene	0.2	Trichloroethene	0.2
1,2-Dichloroethane	0.2	Trichlorofluoromethane	0.2
1,2-Dichloropropane	0.2	Vinyl chloride	0.2
1,3,5-Trimethylbenzene	0.2	EPA Method 507	
1,3-Dichlorobenzene	0.2	Alachlor	0.5
1,3-Dichloropropane	0.2	Atraton	0.5
1,4-Dichlorobenzene	0.2	Atrazine	0.5
2,2-Dichloropropane	0.2	Bromacil	0.5
2-Chlorotoluene	0.2	Butachlor	0.5
4-Chlorotoluene	0.2	Diazinon	0.5
Benzene	0.2	Dichlorvos	0.5
Bromobenzene	0.2	Ethoprop	0.5
Bromochloromethane	0.2	Merphos	0.5
Bromodichloromethane	0.2	Metolachlor	0.5
Bromoform	0.2	Metribuzin	0.5
Bromomethane	0.2	Mevinphos	0.5
Carbon tetrachloride	0.2	Molinate	0.5
Chlorobenzene	0.2	Prometon	0.5
Chloroethane	0.2	EPA Method 547	
Chloroform	0.2	Glyphosate	20
Chloromethane	0.2	EPA Method 601	
<i>cis</i> -1,2-Dichloroethene	0.2	1,1,1-Trichloroethane	0.5
<i>cis</i> -1,3-Dichloropropene	0.5	1,1,2,2-Tetrachloroethane	0.5
Dibromochloromethane	0.2	1,1,2-Trichloroethane	0.5
Dibromomethane	0.2	1,1-Dichloroethane	0.5
Dichlorodifluoromethane	0.2	1,1-Dichloroethene	0.5
Ethylbenzene	0.2	1,2-Dichlorobenzene	0.5
Freon 113	0.2	1,2-Dichloroethane	0.5
Hexachlorobutadiene	0.2	1,2-Dichloroethene (total)	0.5
Isopropylbenzene	0.2	1,2-Dichloropropane	0.5

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Constituent of concern	Reporting limit (µg/L) (a,b)	Constituent of concern	Reporting limit (µg/L) (a,b)
EPA Method 601 (cont.)		Toxaphene	1
1,3-Dichlorobenzene	0.5	PCB 1016	0.2
1,4-Dichlorobenzene	0.5	PCB 1221	0.2
2-Chloroethylvinylether	0.5	PCB 1232	0.2
Bromodichloromethane	0.5	PCB 1242	0.2
Bromoform	0.5	PCB 1248	0.2
Bromomethane	0.5	PCB 1254	0.2
Carbon tetrachloride	0.5	PCB 1260	0.2
Chlorobenzene	0.5	EPA Method 624	
Chloroethane	0.5	1,1,1-Trichloroethane	1
Chloroform	0.5	1,1,2,2-Tetrachloroethane	1
Chloromethane	0.5	1,1,2-Trichloroethane	1
cis-1,2-Dichloroethene	0.5	1,1-Dichloroethane	1
cis-1,3-Dichloropropene	0.5	1,1-Dichloroethene	1
Dibromochloromethane	0.5	1,2-Dichlorobenzene	1
Dichlorodifluoromethane	0.5	1,2-Dichloroethane	1
Freon-113	0.5	1,2-Dichloroethene (total)	1
Methylene chloride	0.5	1,2-Dichloropropane	1
Tetrachloroethene trans-1,2-	0.5	1,3-Dichlorobenzene	1
Dichloroethene trans-1,3-	0.5	1,4-Dichlorobenzene	1
Dichloropropene	0.5	2-Butanone	20
Trichloroethene	0.5	2-Chloroethylvinylether	20
Trichlorofluoromethane	0.5	2-Hexanone	20
Vinyl chloride	0.5	4-Methyl-2-pentanone	20
EPA Method 608		Acetone	10
Aldrin	0.05	Acrolein	5
BHC, alpha isomer	0.05	Acrylonitrile	5
BHC, beta isomer	0.05	Benzene	1
BHC, delta isomer	0.05	Bromodichloromethane	1
BHC, gamma isomer (Lindane)	0.05	Bromoform	1
Chlordane	0.2	Bromomethane	2
Dieldrin	0.1	Carbon disulfide	1
Endosulfan I	0.05	Carbon tetrachloride	1
Endosulfan II	0.1	Chlorobenzene	1
Endosulfan sulfate	0.1	Chloroethane	2
Endrin	0.1	Chloroform	1
Endrin aldehyde	0.1	Chloromethane	2
Heptachlor	0.05	cis-1,2-Dichloroethene	1
Heptachlor epoxide	0.05	cis-1,3-Dichloropropene	1
Methoxychlor	0.5	Dibromochloromethane	1
4,4'-DDD	0.1	Dibromomethane	1
4,4'-DDE	0.1	Dichlorodifluoromethane	2
4,4'-DDT	0.1	Ethylbenzene	1

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Constituent of concern	Reporting limit (µg/L) (a,b)	Constituent of concern	Reporting limit (µg/L) (a,b)
EPA Method 624 (cont.)		Benzo[a]anthracene	5
Freon 113	1	Benzo[a]pyrene	5
Methylene chloride	1	Benzo[b]fluoranthene	5
Styrene	1	Benzo[g,h,i]perylene	5
Tetrachloroethene	1	Benzo[k]fluoranthene	5
Toluene	1	Benzoic acid	25
Total xylene isomers	2	Benzyl alcohol	10
trans-1,2-Dichloroethene	1	Bis(2-chloroethoxy)methane	5
trans-1,3-Dichloropropene	1	Bis(2-chloroisopropyl)ether	5
Trichloroethene	0.5	Bis(2-ethylhexyl)phthalate	5
Trichlorofluoromethane	1	Butylbenzylphthalate	5
Vinyl acetate	1	Chrysene	5
Vinyl chloride	1	Di-n-butylphthalate	5
EPA Method 625		Di-n-octylphthalate	5
1,2,4-Trichlorobenzene	5	Dibenzo[a,h]anthracene	5
1,2-Dichlorobenzene	5	Dibenzofuran	5
1,3-Dichlorobenzene	5	Diethylphthalate	5
1,4-Dichlorobenzene	5	Dimethylphthalate	5
2,4,5-Trichlorophenol	5	Fluoranthene	5
2,4,6-Trichlorophenol	5	Fluorene	5
2,4-Dichlorophenol	5	Hexachlorobenzene	5
2,4-Dimethylphenol	5	Hexachlorobutadiene	5
2,4-Dinitrophenol	25	Hexachlorocyclopentadiene	5
2,4-Dinitrotoluene	5	Hexachloroethane	5
2,6-Dinitrotoluene	5	Indeno[1,2,3-c,d]pyrene	5
2-Chloronaphthalene	5	Isophorone	5
2-Chlorophenol	5	m- and p-Cresol	5
2-Methylphenol	5	N-Nitroso-di-n-propylamine	5
2-Methyl-4,6-dinitrophenol	25	o-Dichlorobenzene	5
2-Methylnaphthalene	5	Naphthalene	5
2-Nitroaniline	25	Nitrobenzene	5
3,3'-Dichlorobenzidine	10	Pentachlorophenol	5
3-Nitroaniline	25	Phenanthrene	5
4-Bromophenylphenylether	5	Phenol	5
4-Chloro-3-methylphenol	10	Pyrene	5
4-Chloroaniline	10	EPA Method 632	
4-Chlorophenylphenylether	5	Diuron	0.1
4-Nitroaniline	25	EPA Method 8260	
4-Nitrophenol	25	1,1,1,2-Tetrachloroethane	0.5
Acenaphthene	25	1,1,1-Trichloroethane	0.5
Acenaphthylene	5	1,1,2,2-Tetrachloroethane	0.5
Anthracene	5	1,1,2-Trichloroethane	0.5

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Constituent of concern	Reporting limit (µg/L) ^(a,b)	Constituent of concern	Reporting limit (µg/L) ^(a,b)
EPA Method 8260 (cont.)		Chloroform	0.5
1,1-Dichloroethane	0.5	Chloromethane	0.5
1,1-Dichloroethene	0.5	Chloroprene	5
1,2,3-Trichloropropane	0.5	Dibromochloromethane	0.5
1,2-Dibromo-3-chloropropane	0.5	Dichlorodifluoromethane	0.5
1,2-Dichloroethane	0.5	Ethanol	1000
1,2-Dichloroethene (total)	0.5	Ethylbenzene	0.5
1,2-Dichloropropane	0.5	Freon-113	0.5
2-Butanone	0.5	Methylene chloride	0.5
2-Chloroethylvinylether	0.5	Styrene	0.5
2-Hexanone	0.5	Tetrachloroethene	0.5
4-Methyl-2-pentanone	0.5	Toluene	0.5
Acetone	10	Total xylene isomers	0.5
Acetonitrile	100	Trichloroethene	0.5
Acrolein	50	Trichlorofluoromethane	0.5
Acrylonitrile	50	Vinyl acetate	20
Benzene	0.5	Vinyl chloride	0.5
Bromodichloromethane	0.5	cis-1,2-Dichloroethene	0.5
Bromoform	0.5	cis-1,3-Dichloropropene	0.5
Bromomethane	0.5	trans-1,2-Dichloroethene	0.5
Carbon disulfide	5	trans-1,3-Dichloropropene	0.5
Carbon tetrachloride	0.5	EPA Method 8330	5 or 1
Chlorobenzene	0.5	HMX(c)	5 or 1
Chloroethane	0.5	RDX(d)	5

- (a) The number of decimal places displayed in this table vary by constituent. These variations reflect regulatory agency permit stipulations, the applicable analytical laboratory contract under which the work was performed, or both.
- (b) These reporting limits are for water samples with low concentrations of dissolved solids. If higher concentrations are present, limits are likely to be higher.
- (c) HMX is octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
- (d) RDX is hexahydro-1,3,5-trinitro-1,3,5-triazine.