

EPA Region III BTAG
 Freshwater Sediment Screening Benchmarks
 8/2006

CAS#	Analyte	FW Sed (mg/kg)	Ref	End Note	Bioaccumulative ⁹	
					Class of Compound	
71-55-6	1,1,1-Trichloroethane	0.0302	a,b	1	Volatile	
79-34-5	1,1,2,2-Tetrachloroethane	1.36	a,b	1	Volatile	
127-18-4	1,1,2,2-Tetrachloroethylene (PCE)	0.468	a,b	1	Volatile	
79-00-5	1,1,2-Trichloroethane	1.24	a,b	1	Volatile	
79-01-6	1,1,2-Trichloroethene (TCE)	0.0969	a,b	1		
92-52-4	1,1-Biphenyl	1.22	a,b	1	PAH	
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.031	a,b	1	Volatile	
75-35-4	1,1-Dichloroethylene	0.031	a,b	1	Volatile	
634-66-2	1,2,3,4-Tetrachlorobenzene	0.702	a,b	1	Other Semi-Volatile	B
87-61-6	1,2,3-Trichlorobenzene	0.858	a,b	1	Other Semi-Volatile	
95-94-3	1,2,4,5-Tetrachlorobenzene	1.09	a,b	1	Other Semi-Volatile	B
120-82-1	1,2,4-Trichlorobenzene	2.1	a,b	1	Volatile	B
95-63-6	1,2,4-Trimethylbenzene				Volatile	B
95-50-1	1,2-Dichlorobenzene	0.0165	a,b	1	Volatile	B
156-60-5	1,2-Trans-Dichloroethylene	1.05	a,b	1	Volatile	
541-73-1	1,3-Dichlorobenzene	4.43	a,b	1	Volatile	B
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene)	0.0000509	a,b	1	Volatile	
542-75-6	1,3-Dichloropropylene	0.0000509	a,b	1	Volatile	
106-46-7	1,4-Dichlorobenzene	0.599	a,b	1	Volatile	B
99-99-0	1-Methyl-4-nitrobenzene (4-Nitrotoluene)	4.06	a,b	1	Other Semi-Volatile	
58-90-2	2,3,4,6-Tetrachlorophenol	0.284	a,b	1	Other Semi-Volatile	
1746-01-6	2,3,7,8-TCDD-Dioxin	0.00000085	c,d		Dioxin/Furans	B
51207-31-9	2,3,7,8-TCDF		d	2	Dioxin/Furans	B
93-72-1	2,4,5-TP (Silvex)	0.675	a,b	1	Volatile	
93-76-5	2,4,5-Trichlorophenoxyacetic acid	12.3	a,b	1	Phenoxyaceticacid Herbicide	
88-06-2	2,4,6-Trichlorophenol	0.213	a,b	1	Other Semi-Volatile	
118-96-7	2,4,6-Trinitrotoluene (TNT)	0.092	e		Other Semi-Volatile	
120-83-2	2,4-Dichlorophenol	0.117	a,b	1	Other Semi-Volatile	
105-67-9	2,4-Dimethylphenol	0.029	f	3	Other Semi-Volatile	
121-14-2	2,4-Dinitrotoluene	0.0416	a,b	1	Other Semi-Volatile	
95-57-8	2-Chlorophenol	0.0312	a,b	1	Other Semi-Volatile	
91-57-6	2-Methylnaphthalene	0.0202	c		PAH	
91-94-1	3,3'- Dichlorobenzidine	0.127	a,b	1	Other Semi-Volatile	
101-55-3	4-Bromophenyl phenyl ether	1.23	a,b	1	Other Semi-Volatile	B
7005-72-3	4-Chlorophenyl- phenyl ether				Other Semi-Volatile	B
106-44-5	4-Methylphenol	0.67	f	3	Other Semi-Volatile	
99-99-0	4-Nitrotoluene	4.06	a,b	1	Other Semi-Volatile	
83-32-9	Acenaphthene	0.0067	c		PAH	B
208-96-8	Acenaphthylene	0.0059	c		PAH	B
309-00-2	Aldrin	0.002	g	4	Organochlorine Pesticide	B
120-12-7	Anthracene	0.0572	h		PAH	B
7440-36-0	Antimony	2	i	5	Inorganic/Metal	
12674-11-2	Aroclor 1016 (PCBs, total)				Other Pesticide/PCB	B
11104-28-2	Aroclor 1221 (PCBs, total)				Other Pesticide/PCB	B
11141-16-5	Aroclor 1232 (PCBs, total)				Other Pesticide/PCB	B
53469-21-9	Aroclor 1242 (PCBs, total)				Other Pesticide/PCB	B
12672-29-6	Aroclor 1248 (PCBs, total)				Other Pesticide/PCB	B
11097-69-1	Aroclor 1254 (PCBs, total)				Other Pesticide/PCB	B
11096-82-5	Aroclor 1260 (PCBs, total)				Other Pesticide/PCB	B
7440-38-2	Arsenic	9.8	h		Inorganic/Metal	B

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1912-24-9	Atrazine	0.00662	a,b	1	Triazine Herbicide	
86-50-0	Azinophosmethyl (Guthion)	0.0000505	a,b	1	Organophosphorus Pesticide	
56-55-3	Benzo(a)anthracene	0.108	h		PAH	B
50-32-8	Benzo(a)pyrene	0.15	h		PAH	B
	Benzo(b+k)fluoranthene	0.0272	j		PAH	B
191-24-2	Benzo(g,h,i)perylene	0.17	g		PAH	B
207-08-9	Benzo(k)fluoranthene	0.24	g		PAH	B
65-85-0	Benzoic Acid	0.65	f	3	Other Semi-Volatile	
319-84-6	BHC, alpha	0.006	g		Organochlorine Pesticide	B
319-85-7	BHC, beta	0.005	g		Organochlorine Pesticide	B
319-86-8	BHC, delta	6.4	a,b	1	Organochlorine Pesticide	B
58-89-9	BHC, gamma (Lindane)	0.00237	h		Organochlorine Pesticide	B
92-52-4	Biphenyl (1,1-Biphenyl)	1.22	a,b	1	Other Semi-Volatile	
117-81-7	bis (2-ethylhexyl) phthalate	0.18	k		Other Semi-Volatile	
75-25-2	Bromoform	0.654	a,b	1	Volatile	
85-68-7	Butyl benzyl phthalate	10.9	a,b	1	Other Semi-Volatile	
7440-43-9	Cadmium	0.99	h	6	Inorganic/Metal	B
63-25-2	Carbaryl (Sevin)	0.000418	a,b	1	Other Pesticide/PCB	
1563-66-2	Carbofuran	0.00344	a,b	1	N-Methylcarbamate Herbicide	
75-15-0	Carbon disulfide	0.000851	a,b	1	Volatile	
56-23-5	Carbon tetrachloride	0.0642	a,b	1	Volatile	
57-74-9	Chlordane	0.00324	h		Organochlorine Pesticide	B
108-90-7	Chlorobenzene	0.00842	a,b	1	Volatile	
510-15-6	Chlorobenzilate	1.45	a,b	1	Other Pesticide/PCB	
2921-88-2	Chloropyrifos	0.00519	a,b	1	Organophosphorus Pesticide	B
7440-47-3	Chromium	43.4	h	6	Inorganic/Metal	
218-01-9	Chrysene	0.166	h		PAH	B
156-59-2	cis-1,2-Dichloroethene (cis-1,2-Dichloroethylene)				Volatile	B
156-59-2	cis-1,2-Dichloroethylene				Volatile	B
7440-48-4	Cobalt	50	g	4	Inorganic/Metal	
7440-50-8	Copper	31.6	h	6	Inorganic/Metal	B
98-82-8	Cumene	0.086	a,b	1	Volatile	
	Cyanide, complex, total				Inorganic/Metal	
57-12-5	Cyanide, free	0.1	g	4	Inorganic/Metal	
72-54-8	DDD (p,p')	0.00488	h		Organochlorine Pesticide	B
72-55-9	DDE	0.00316	h		Organochlorine Pesticide	B
	DDT, total	0.00416	h		Organochlorine Pesticide	B
	DDT/DDE/DDD, total	0.00528	h		Organochlorine Pesticide	B
333-41-5	Diazinon	0.00239	a,b	1	Other Pesticide/PCB	B
53-70-3	Dibenzo(a,h)anthracene	0.033	h		PAH	B
132-64-9	Dibenzofuran	0.415	a,b	1	Other Semi-Volatile	
542-75-6	Dichloropropene (1,3-Dichloropropylene)	0.0000509	a,b	1	Volatile	
115-32-2	Dicofol (Kelthane)				Other Pesticide/PCB	B
60-57-1	Dieldrin	0.0019	h		Organochlorine Pesticide	B
84-66-2	Diethylphthalate	0.603	a,b	1	Other Semi-Volatile	
84-74-2	Di-n-butyl phthalate	6.47	a,b	1	Other Semi-Volatile	
88-85-7	Dinoseb	0.000611	a,b	1	Other Pesticide/PCB	
298-04-4	Disulfoton				Pesticide	B
115-29-7	Endosulfan (alpha and beta)	0.00214	a,b	1	Organochlorine Pesticide	B

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959-98-8	Endosulfan I (a-endosulfan)	0.0029	I		Organochlorine Pesticide	B
33213-65-9	Endosulfan II (b-endosulfan)	0.014	I		Organochlorine Pesticide	B
1031-07-8	Endosulfan sulfate	0.0054	I	7	Organochlorine Pesticide	
72-20-8	Endrin	0.00222	h		Organochlorine Pesticide	B
100-41-4	Ethylbenzene	1.1	a,b	1	Volatile	
206-44-0	Fluoranthene	0.423	h		PAH	B
86-73-7	Fluorene	0.0774	h		PAH	B
86-50-0	Guthion	0.0000505	a,b	1	Other Pesticide/PCB	
319-84-6	HCH, a- (BHC, alpha)	0.006	g		Organochlorine Pesticide	
319-85-7	HCH, b- (BHC, beta)	0.005	g		Organochlorine Pesticide	
319-86-8	HCH, d- (BHC, delta)	6.4	a,b	1	Organochlorine Pesticide	
58-89-9	HCH, gamma (Lindane) (BHC, gamma)	0.00237	h		Organochlorine Pesticide	
76-44-8	Heptachlor	0.068	f	8	Organochlorine Pesticide	B
1024-57-3	Heptachlor epoxide	0.00247	h		Organochlorine Pesticide	B
118-74-1	Hexachlorobenzene	0.02	g	4	Other Semi-Volatile	B
87-68-3	Hexachlorobutadiene				Volatile	B
608-73-1	Hexachlorocyclohexanes (HCH, BHC)	0.003	g	4	Organochlorine Pesticide	B
77-47-4	Hexachlorocyclopentadiene				Organochlorine Pesticide	B
67-72-1	Hexachloroethane	1.027	a,b	1	Volatile	B
110-54-3	Hexane	0.0396	a,b	1	Volatile	
193-39-5	Indeno(1,2,3-c,d)pyrene	0.017	j	9	PAH	B
7439-89-6	Iron	20000	g		Inorganic/Metal	
98-82-8	Isopropylbenzene (Cumene)	0.086	a,b	1		
7439-92-1	Lead	35.8	h	6	Inorganic/Metal	B
58-89-9	Lindane (BHC,gamma)	0.00237	h		Organochlorine Pesticide	
121-75-5	Malathion	0.000203	a,b	1	Other Pesticide/PCB	
7439-96-5	Manganese	460	g	4	Inorganic/Metal	
7439-97-6	Mercury	0.18	h		Inorganic/Metal	
72-43-5	Methoxychlor	0.0187	a,b	1	Organochlorine Pesticide	B
22967-92-6	Methylmercury				Volatile	B
2385-85-5	Mirex	0.007	g	4	Chlorinated Pesticides	B
108-90-7	Monochlorobenzene (Chlorobenzene)	0.00842	a,b	1		
91-20-3	Naphthalene	0.176	h		PAH	
84-74-2	n-Butylphthalate (Di-n-butyl phthalate)	6.47	a,b	1	Other Semi-Volatile	
7440-02-0	Nickel	22.7	h	6	Inorganic/Metal	B
86-30-6	N-Nitrosodiphenylamine	2.68	a,b	1	Other Semi-Volatile	
	PAHs, High Molecular Weight	0.19	j	9	PAH	
	PAHs, Low Molecular Weight	0.076	j		PAH	
SEQ NO-27-3	PAHs, total	1.61	h	10	PAH	
56-38-2	Parathion	0.000757	a,b	1	PAH	
1336-36-3	PCBs, total	0.0598	h	2	Other Pesticide/PCB	B
106-44-5	p-Cresol (4-Methylphenol)	0.67	f	3	Other Semi-Volatile	
608-93-5	Pentachlorobenzene	8.89	a,b	1	Other Semi-Volatile	B
76-01-7	Pentachloroethane	0.826	a,b	1	Other Semi-Volatile	
82-68-8	Pentachloronitrobenzene				Pesticide	B
87-86-5	Pentachlorophenol	0.504	a,b	1	Other Semi-Volatile	B
85-01-8	Phenanthrene	0.204	h		PAH	B
108-95-2	Phenol	0.42	f	3	Other Semi-Volatile	B
100-42-5	Phenylethylene	0.559	a,b	1	Other Semi-Volatile	

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					Class of Compound	
298-02-2	Phorate	0.201	a,b	1		
51207-31-9	Polychlorinated dibenzofurans		d	2	Dioxins/Furans	
	Polychlorinated dibenzo-p-dioxins (PCDDs)		d	2	Dioxins/Furans	
129-00-0	Pyrene	0.195	h		PAH	B
121-82-4	RDX (Cyclonite)	0.013	e		Explosive	
7782-49-2	Selenium	2	m		Inorganic/Metal	B
7440-22-4	Silver	1.0	i	5,6	Inorganic/Metal	B
100-42-5	Styrene (Phenylethylene)	0.559	a,b	1	Volatile	
18946-25-8	Sulfides	130	n	11	Anion	
95-94-3	Tetrachlorobenzene (1,2,4,5-Tetrachlorobenzene)	1.09	a,b	1	Other Semi-Volatile	
79-34-5	Tetrachloroethane (1,1,2,2-Tetrachloroethane)	1.36	a,b	1	Volatile	
127-18-4	Tetrachloroethene (1,1,2,2-Tetrachloroethylene)	0.468	a,b	1	Volatile	
127-18-4	Tetrachloroethylene (1,1,2,2-Tetrachloroethylene)	0.468	a,b	1	Volatile	
56-23-5	Tetrachloromethane (Carbon tetrachloride)	0.0642	a,b	1	Volatile	
8001-35-2	Toxaphene	0.0001	c		Organochlorine Pesticide	B
156-60-5	trans-1,2-Dichloroethylene (1,2-trans-Dichloroethylene)	1.05	a,b	1	Volatile	
75-25-2	Tribromomethane (Bromoform)	0.654	a,b	1	Volatile	
688-73-3	Tributyltin				Inorganic/Metal	B
79-00-5	Trichloroethane (1,1,2-Trichloroethane)	1.24	a,b	1	Volatile	
79-01-6	Trichloroethene (Trichloroethylene)	0.0969	a,b	1	Volatile	
79-01-6	Trichloroethylene	0.0969	a,b	1	Volatile	
1582-09-8	Trifluralin	0.355	a,b	1		
100-42-5	Vinyl benzene (Phenylethylene)	0.559	a,b	1	Volatile	
75-35-4	Vinylidene chloride (1,1-Dichloroethylene)	0.031	a,b	1	Volatile	
108-38-3	Xylene, m-	0.0252	a,b	1	Volatile	
7440-66-6	Zinc	121	h	6	Inorganic/Metal	B

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ENDNOTES

¹Value derived from the EqP method with Region III BTAG freshwater values (2004^a) and logKow values from Karickhoff and Long (1995^b). Only logKow values between 2 and 6 were used, as suggested by the EPA (2000^o).

²Congener- and receptor-specific dioxin equivalency.

³Apparent Effects Threshold (AET) marine value from Washington State Sediment Quality Standards as cited by Jones et al. (1997^f).

⁴Lowest Effect Level (LEL).

⁵Effect Range Lows (ERL), equivalent to the lower 10th percentile of the analyzed data in Long and Morgan (1990^j).

⁶EPA has published Equilibrium Partitioning Sediment Benchmarks (ESB) for metal mixtures including this metal. Implementation of the ESB requires metal concentration data based on the simultaneously extracted metals procedure (SEM) and measurement of the acid volatile sulfide (AVS) concentration during the period from November to May. Application of ESB benefits significantly from the quantification of the organic carbon. BTAG recommends that these metals be screened against listed benchmarks in the screening level ecological risk assessment. Any exceedances should be further evaluated using ESBs following the sampling and analysis guidance in EPA-600-R-02-011 in Step 3 of the baseline ecological risk assessment.

⁷EqP value calculated using GLWQI Tier II and listed in source document (U.S. EPA 1996^l) as "Endosulfan, mixed isomers."

⁸EqP value calculated using Tier II Secondary Chronic Value from Suter and Tsao (1996). Heptachlor LogKow 6.10 from Syracuse Research Corporation.

⁹ARCs TEL (Assessment and Remediation of Contaminated Sediments Program Threshold Effects Level – 28d test using *Hyallela azteca* from U.S. EPA (1996ⁿ).

¹⁰EPA has established an equilibrium partitioning (EqP) approach for PAH mixtures in sediments (EPA-600-R-02-013), which may be used as an alternative or in comparison to this empirical screening value. Use of the EqP $\Sigma\text{ESBTU}_{\text{FCV}}$ as a screening value requires that the PAH analyses include all 34 parent and daughter parameters (i.e., generic correction factors are not applicable). Alternatively, a site-specific correction factor based on 20% of the samples having 34 parameters may be applied for datasets where $n \geq 30$.

¹¹Lowest reliable value among AET (Apparent Effects Threshold) tests: Microtox (Buchman 1999ⁿ)