Last updated on Friday, October 24th, 2008.

Mid-Atlantic Risk Assessment

Ecological Risk Assessment

- Screening Benchmarks Table
- Notes & References
- Benchmark Selection
- Hierarchy for Selection of Freshwater Benchmarks
- Downloadable Files

Freshwater Screening Benchmarks

CAS#	Analyte	Screening Value (ug/l)	Ref	End Note	Class of Compound	Bioaccumulative-B[q]
71-55-6	1,1,1-Trichloroethane	11	a	1	Volatile	
79-34-5	1,1,2,2-Tetrachloroethane	610	a	1	Volatile	
127-18-4	1,1,2,2-Tetrachloroethylene (PCE)	111	b	2	Volatile	
79-00-5	1,1,2-Trichloroethane	1200	a	1	Volatile	
79-01-6	1,1,2-Trichloroethene (TCE)	21	b	2		
92-52-4	1,1-Biphenyl	14	c	1	PAH	
75-34-3	1,1-Dichloroethane	47	c	1	Volatile	
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	25	a	1	Volatile	
75-35-4	1,1-Dichloroethylene	25	a	1	Volatile	
634-66-2	1,2,3,4-Tetrachlorobenzene	1.8	b	2	Other Semi-Volatile	B
87-61-6	1,2,3-Trichlorobenzene	8	b	2	Other Semi-Volatile	
95-94-3	1,2,4,5-Tetrachlorobenzene	3	d	3	Other Semi-Volatile	B
120-82-1	1,2,4-Trichlorobenzene	24	b	2	Volatile	B
95-63-6	1,2,4-Trimethylbenzene	33	e,f	4	Volatile	B
95-50-1	1,2-Dichlorobenzene	0.7	b	2	Volatile	B
107-06-2	1,2-Dichloroethane	100	b	2	Volatile	
540-59-0	1,2-Dichloroethene (1,2-Dichloroethylene)	590	a	1	Volatile	
540-59-0	1,2-Dichloroethylene	590	a	1	Volatile	
156-60-5	1,2-Trans-Dichloroethylene	970	g	5	Volatile	
108-67-8	1,3,5-Trimethylbenzene	71	h,i	6	Volatile	
541-73-1	1,3-Dichlorobenzene	150	b	2	Volatile	B
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene)	0.055	a	1	Volatile	
542-75-6	1,3-Dichloropropylene	0.055	a	1	Volatile	
106-46-7	1,4-Dichlorobenzene	26	b	2	Volatile	B
99-08-1	1-Methyl-3-nitrobenzene	750	h,i	6	Other Semi-Volatile	
99-99-0	1-Methyl-4-nitrobenzene (4-Nitrotoluene)	1900	h,i	6	Other Semi-Volatile	

90-12-0	1-Methylnaphthalene	2.1	a	1	PAH	
71-41-0	1-Pentanol	110	a	1	Volatile	
10222-01-2	2,2-Dibromo-3-nitrilopropionamide	20	e,f	4,7	Other Semi-Volatile	
58-90-2	2,3,4,6-Tetrachlorophenol	1.2	d	3	Other Semi-Volatile	
1746-01-6	2,3,7,8-TCDD-Dioxin	3.1E-09	j	8	Dioxin/Furans	B
51207-31-9	2,3,7,8-TCDF		k	9	Dioxin/Furans	B
93-72-1	2,4,5-TP (Silvex)	30	d	3	Volatile	
93-76-5	2,4,5-Trichlorphenoxyacetic acid	686	l,m	10	Phenoxycaceticacid Herbicide	
634-93-5	2,4,6-Trichloroaniline				Other Semi-Volatile	
88-06-2	2,4,6-Trichlorophenol	4.9	g	5	Other Semi-Volatile	
118-96-7	2,4,6-Trinitrotoluene (TNT)	100	h,i	6	Other Semi-Volatile	
120-83-2	2,4-Dichlorophenol	11	g	5	Other Semi-Volatile	
121-14-2	2,4-Dinitrotoluene	44	g	5	Other Semi-Volatile	
606-20-2	2,6-Dinitrotoluene	81	g	5	Other Semi-Volatile	
35572-78-2	2-Amino-4,6-dinitrotoluene	1480	h,i	6	Other Semi-Volatile	
78-93-3	2-Butanone	14000	a	1	Volatile	
95-57-8	2-Chlorophenol	24	d	3	Other Semi-Volatile	
591-78-6	2-Hexanone	99	a	1	Volatile	
534-52-1	2-Methyl-4,6-dinitrophenol				Other Semi-Volatile	
91-57-6	2-Methylnaphthalene	4.7	e,f	4	PAH	
95-48-7	2-Methylphenol	13	a	1	Other Semi-Volatile	
88-75-5	2-Nitrophenol	1920	h,i	6	Other Semi-Volatile	
111-13-7	2-Octanone	8.3	a	1	Other Semi-Volatile	
67-63-0	2-Propanol	7.5	a	1	Volatile	
91-94-1	3,3'- Dichlorobenzidine	4.5	d	3	Other Semi-Volatile	
99-08-1	3-Nitrotoluene (1-Methyl-3-nitrobenzene)	750	h,i	6	Other Semi-Volatile	
106-68-3	3-Octanone	3571	a	11	Volatile	
101-55-3	4-Bromophenyl phenyl ether	1.5	c	1	Other Semi-Volatile	B
106-47-8	4-Chloroaniline	232	l,m	10	Other Semi-Volatile	
7005-72-3	4-Chlorophenyl- phenyl ether				Other Semi-Volatile	B
99-87-6	4-Isopropyltoluene (Cymene)	85	h,i	6	Other Semi-Volatile	
108-10-1	4-Methyl-2-pentanone	170	a	1	Volatile	
106-44-5	4-Methylphenol	543	h,i	6	Other Semi-Volatile	
100-02-7	4-Nitrophenol	60	a	12	Other Semi-Volatile	
99-99-0	4-Nitrotoluene	1900	h,i	6	Other Semi-Volatile	

83-32-9	Acenaphthene	5.8	b	2	PAH	B
208-96-8	Acenapthylene				PAH	B
67-64-1	Acetone	1500	a	1	Volatile	
75-05-8	Acetonitrile	12000	g	5	Volatile	
309-00-2	Aldrin	3	n	13	Organochlorine Pesticide	B
7429-90-5	Aluminum	87	n	13	Inorganic/Metal	
7664-41-7	Ammonia (un-ionized)	19	b	2	Inorganic	
62-53-3	Aniline	2.2	b	2	Other Semi-Volatile	
120-12-7	Anthracene	0.012	b	2	PAH	B
7440-36-0	Antimony	30	a	1	Inorganic/Metal	
140-57-8	Aramite	3.09	l,m	10	Other Semi-Volatile	
12674-11-2	Aroclor 1016 (total PCBs)	0.000074	j	8	Other Pesticide/PCB	B
11104-28-2	Aroclor 1221 (total PCBs)	0.000074	j	8	Other Pesticide/PCB	B
11141-16-5	Aroclor 1232 (total PCBs)	0.000074	j	8	Other Pesticide/PCB	B
53469-21-9	Aroclor 1242 (total PCBs)	0.000074	j	8	Other Pesticide/PCB	B
12672-29-6	Aroclor 1248 (total PCBs)	0.000074	j	8	Other Pesticide/PCB	B
11097-69-1	Aroclor 1254 (total PCBs)	0.000074	j	8	Other Pesticide/PCB	B
11096-82-5	Aroclor 1260 (total PCBs)	0.000074	j	8	Other Pesticide/PCB	B
7440-38-2	Arsenic	5	b	2	Inorganic/Metal	B
22569-72-8	Arsenic III	55	a	14	Inorganic/Metal	
17428-41-0	Arsenic V	3.1	a	1	Inorganic/Metal	
1912-24-9	Atrazine	1.8	b	2	Triazine Herbicide	
86-50-0	Azinophosmethyl (Guthion)	0.01	n	13	Organophosphorus Pesticide	
60-11-7	Azobenzene (p-Dimethylamino azobenzene)				Other Semi-Volatile	
7440-39-3	Barium	4	a	1	Inorganic/Metal	
71-43-2	Benzene	370	b	2	Volatile	
92-87-5	Benzidine	3.9	a	1	Other Semi-Volatile	
56-55-3	Benzo(a)anthracene	0.018	b	2	PAH	B
50-32-8	Benzo(a)pyrene	0.015	b	2	PAH	B
205-99-2	Benzo(b)fluoranthene				PAH	B
191-24-2	Benzo(g,h,i)perylene				PAH	B
207-08-9	Benzo(k)fluoranthene				PAH	B
65-85-0	Benzoic Acid	42	a	1	Other Semi-Volatile	
100-51-6	Benzyl alcohol	8.6	a	1	Other Semi-Volatile	
7440-41-7	Beryllium	0.66	a	1	Inorganic/Metal	

608-73-1	BHC				Organochlorine Pesticide	
	BHC (non Lindane)	2.2	a	1	Organochlorine Pesticide	
319-84-6	BHC, alpha				Organochlorine Pesticide	B
319-85-7	BHC, beta				Organochlorine Pesticide	B
319-86-8	BHC, delta	141	h,i	6	Organochlorine Pesticide	B
58-89-9	BHC, gamma (Lindane)	0.01	b	2	Organochlorine Pesticide	B
92-52-4	Biphenyl (1,1-Biphenyl)	14	c	1	Other Semi-Volatile	
117-81-7	bis (2-ethylhexyl) phthalate	16	b	2	Other Semi-Volatile	
7440-42-8	Boron	1.6	a	1	Inorganic/Metal	
75-25-2	Bromoform	320	c	1	Volatile	
74-83-9	Bromomethane				Volatile	
85-68-7	Butyl benzyl phthalate	19	c	1	Other Semi-Volatile	
7440-43-9	Cadmium (hardness=100)	0.25	n	15	Inorganic/Metal	B
7440-70-2	Calcium	116000	a	16	Inorganic/Metal	
63-25-2	Carbaryl (Sevin)	0.2	b	2	Other Pesticide/PCB	
1563-66-2	Carbofuran	1.8	b	2	N-Methylcarbamate herbicide	
75-15-0	Carbon disulfide	0.92	a	1	Volatile	
56-23-5	Carbon tetrachloride	13.3	b	2	Volatile	
57-74-9	Chlordane	0.0022	n	13	Organochlorine Pesticide	B
16887-00-6	Chloride	230000	n	13	Inorganic/Metal	
7782-50-5	Chlorine (TRC)	11	n	13	Inorganic/Metal	
108-90-7	Chlorobenzene	1.3	b	2	Volatile	
510-15-6	Chlorobenzilate	7.16	l,m	10	Other Pesticide/PCB	
67-66-3	Chloroform	1.8	b	2	Volatile	
2921-88-2	Chloropyrifos	0.0035	b	2	Organophosphorus Pesticide	B
16065-83-1	Chromium III (hardness=100)	74	n	15	Inorganic/Metal	
7440-47-3	Chromium Total (hardness=100)	85	n		Inorganic/Metal	
18540-29-9	Chromium VI (hardness=100)	11	n		Inorganic/Metal	B
218-01-9	Chrysene				PAH	B
7440-48-4	Cobalt	23	a	1	Inorganic/Metal	
7440-50-8	Copper (hardness=100)	9	n	13,15	Inorganic/Metal	B
98-82-8	Cumene	2.6	e,f	4	Volatile	
57-12-5	Cyanide, free	5	b	2	Inorganic/Metal	
99-87-6	Cymene	85	h,i	6	Volatile	
72-54-8	DDD (p,p')	0.011	a	1	Organochlorine Pesticide	B
72-55-9	DDE				Organochlorine	B

					Pesticide	
50-29-3	DDT (4,4' DDT)	0.0005	n	13	Organochlorine Pesticide	B
	DDT (op + pp)				Organochlorine Pesticide	B
	DDT, Total				Organochlorine Pesticide	B
	DDT/DDE/DDD (total)	0.000011	j	8	Organochlorine Pesticide	B
124-18-5	Decane	49	a	1	Other Semi-Volatile	
8065-48-3	Demeton	0.1	n	13	Other Semi-Volatile	
117-81-7	Di(2-ethylhexyl)phthalate (Bis(2-ethylhexyl) phthalate)	16	b	2	Other Semi-Volatile	
333-41-5	Diazinon	0.043	a	1	Other Pesticide/PCB	B
53-70-3	Dibenzo(a,h)anthracene				PAH	B
132-64-9	Dibenzofuran	3.7	a	1	Other Semi-Volatile	
3252-43-5	Dibromoacetonitrile	20	e,f	4,7	Other Semi-Volatile	
25321-22-6	Dichlorobenzene (mixed isomers)	5	e,f	4,17	Volatile	
75-09-2	Dichloromethane	98.1	b	2	Volatile	
SEQ NO-35-8	Dichlorophenols, total	0.2	b	2	Other Semi-Volatile	
542-75-6	Dichloropropene (1,3-Dichloropropylene)	0.055	a	1	Volatile	
115-32-2	Dicofol (Kelthane)				Other Pesticide/PCB	B
60-57-1	Dieldrin	0.056	n	13	Organochlorine Pesticide	B
84-66-2	Diethylphthalate	210	a	1	Other Semi-Volatile	
60-51-5	Dimethoate	6.2	b	2	Other Pesticide/PCB	
131-11-3	Dimethyl phthalate				Other Semi-Volatile	
84-74-2	Di-n-butyl phthalate	19	b	2	Other Semi-Volatile	
117-84-0	Di-n-octyl phthalate	22	h,i	6	Other Semi-Volatile	
88-85-7	Dinoseb	0.05	b	2	Other Pesticide/PCB	
117-84-0	Dioctylphthalate (Di-n-octyl phthalate)	22	h,i	6	Other Semi-Volatile	
298-04-4	Disulfoton				Pesticide	B
115-29-7	Endosulfan (alpha and beta)	0.02	b	2	Organochlorine Pesticide	B
959-98-8	Endosulfan I (a-endosulfan)	0.051	c	1	Organochlorine Pesticide	B
33213-65-9	Endosulfan II (b-endosulfan)	0.051	c	1	Organochlorine Pesticide	B
1031-07-8	Endosulfan sulfate				Organochlorine Pesticide	
72-20-8	Endrin	0.036	n	13	Organochlorine Pesticide	B
100-41-4	Ethylbenzene	90	b	2	Volatile	
107-06-2	Ethylene dichloride (1,2-Dichloroethane)	100	b	2	Volatile	
107-21-					Other Semi-	

1	Ethylene glycol	192000	b	2	Volatile	
206-44-0	Fluoranthene	0.04	b	2	PAH	B
86-73-7	Fluorene	3	b	2	PAH	B
16984-48-8	Fluoride (hardness = 100)	2119.4	e,f	4,15	Inorganic	
7782-41-4	Fluorine	1080	a	12	Inorganic	
86-50-0	Guthion	0.01	n	13	Other Pesticide/PCB	
319-86-8	HCH, d- (BHC, delta)	141	h,i	6	Organochlorine Pesticide	
58-89-9	HCH, gamma (Lindane) (BHC, gamma)	0.01	b	2	Organochlorine Pesticide	
76-44-8	Heptachlor	0.0019	n	13	Organochlorine Pesticide	B
	Heptachlor & Heptachlor epoxide				Organochlorine Pesticide	B
1024-57-3	Heptachlor epoxide	0.0019	n	13	Organochlorine Pesticide	B
118-74-1	Hexachlorobenzene	0.0003	d	18	Other Semi-Volatile	B
87-68-3	Hexachlorobutadiene	1.3	b	2	Volatile	B
608-73-1	Hexachlorocyclohexanes (HCH, BHC)	0.01	b	2	Organochlorine Pesticide	B
77-47-4	Hexachlorocyclopentadiene				Organochlorine Pesticide	B
67-72-1	Hexachloroethane	12	c	1	Volatile	B
110-54-3	Hexane	0.58	a	1	Volatile	
2691-41-0	HMX (Octogen)	150	h,i	6	Other Pesticide/PCB	
302-01-2	Hydrazine (hardness <50)	5	e,f	4	Volatile	
302-01-2	Hydrazine (hardness =>50)	10	e,f	4	Volatile	
123-31-9	Hydroquinone	2.2	e,f	4	Other Semi-Volatile	
193-39-5	Indeno(1,2,3-c,d)pyrene				PAH	B
7439-89-6	Iron	300	b	2	Inorganic/Metal	
29761-21-5	Isodecyl diphenyl phosphate	1.7	e,f	4	Other Semi-Volatile	
98-82-8	Isopropylbenzene (Cumene)	2.6	e,f	4		
	Isothiazolones, total	1	e,f	4	Other Semi-Volatile	
7439-92-1	Lead (hardness=100)	2.5	n	13,15	Inorganic/Metal	B
58-89-9	Lindane (BHC,gamma)	0.01	b	2	Organochlorine Pesticide	
	Linear alkyl benzene sulfates (LAS)	40	e,f	4,19	Other Semi-Volatile	
7439-93-2	Lithium	14	a	1	Inorganic/Metal	
7439-95-4	Magnesium	82000	a	16	Inorganic/Metal	
121-75-5	Malathion	0.097	c	1	Other Pesticide/PCB	
7439-96-5	Manganese	120	a	1	Inorganic/Metal	
7439-97-6	Mercury	0.026	b	2	Inorganic/Metal	
72-43-5	Methoxychlor	0.019	c	1	Organochlorine Pesticide	B

78-93-3	Methyl ethyl ketone (2-Butanone)	14000	a	1	Volatile	
111-13-7	Methyl hexyl ketone (2-Octanone)	8.3	a	1	Volatile	
108-10-1	Methyl isobutyl ketone (4-Methyl-2-pentanone)	170	a	1	Volatile	
80-62-6	Methyl methacrylate	2800	l,m	10	Volatile	
1634-04-4	Methyl tert-butyl ether (MTBE)	11070	h,i	6	Other Semi-Volatile	
6317-18-6	Methylene bisthiocyanate	1	e,f	4	Other Semi-Volatile	
75-09-2	Methylene chloride (Dichloromethane)	98.1	b	2	Volatile	
22967-92-6	Methylmercury	0.004	b	2	Volatile	B
2385-85-5	Mirex	0.001	n	13	Chlorinated Pesticides	B
7439-98-7	Molybdenum	73	b	2	Inorganic/Metal	
108-90-7	Monochlorobenzene (Chlorobenzene)	1.3	b	2		
	Monochlorophenols, total	7	b	2	Other Semi-Volatile	
91-20-3	Naphthalene	1.1	b	2	PAH	
84-74-2	n-Butylphthalate (Di-n-butyl phthalate)	19	b	2	Other Semi-Volatile	
7440-02-0	Nickel (hardness=100)	52	n	13,15	Inorganic/Metal	B
139-13-9	Nitrilotriacetic acid	5000	e,f	4,20		
	Nitrite (cold water)	20	e,f	4	Anion	
	Nitrite (warm water)	100	e,f	4	Anion	
55-63-0	Nitroglycerine	138	h,i	6	Other Semi-Volatile	
55-18-5	N-Nitrosodiethylamine	768	l,m	10	Other Semi-Volatile	
62-75-9	N-Nitrosodimethylamine	117	o	21	Other Semi-Volatile	
86-30-6	N-Nitrosodiphenylamine	210	a	1	Other Semi-Volatile	
95-48-7	o-Cresol (2-Methylphenol)	13	a	1	Other Semi-Volatile	
56-38-2	Parathion	0.013	n	13	PAH	
	Parathion and methyl parathion	0.008	e,f	4	Organophosphorus Pesticide	
1336-36-3	PCBs, total	0.000074	j	8	Other Pesticide/PCB	
106-44-5	p-Cresol (4-Methylphenol)	543	h,i	6	Other Semi-Volatile	
608-93-5	Pentachlorobenzene	6	b	2	Other Semi-Volatile	B
76-01-7	Pentachloroethane	56.4	l,m	10	Other Semi-Volatile	
87-86-5	Pentachlorophenol (pH = 7.8)	0.5	b	2	Other Semi-Volatile	B
78-11-5	PETN (Pentaerythrite-tetranitrate)	85000	h,i	6	Other Semi-Volatile	
	pH	6.5-9	b	2	Inorganic	
85-01-8	Phenanthrene	0.4	b	2	PAH	B
108-95-2	Phenol	4	b	2	Other Semi-Volatile	B
100-42-5	Phenylethylene	72	b	2	Other Semi-Volatile	
298-02-	Phorate	3.62	l,m	10		

2						
7723-14-0	Phosphorus		p	22	Inorganic/Metal	
51207-31-9	Polychlorinated dibenzofurans		k	9	Dioxins/Furans	
	Polychlorinated dibenzo-p-dioxins (PCDD-S)		k	9	Dioxins/Furans	
7440-09-7	Potassium	53000	a	16	Inorganic/Metal	
103-65-1	Propyl benzene	128	h,i	6	Volatile	
129-00-0	Pyrene	0.025	b	2	PAH	B
110-86-1	Pyridine	2380	l,m	10	Volatile	
	Quaternary ammonium compounds, total	10	e,f	4	Inorganic	
121-82-4	RDX (Cyclonite)	360	h,i	6	Explosive	
7782-49-2	Selenium	1	b	2	Inorganic/Metal	B
7440-22-4	Silver (hardness = 100)	3.2	n	13,15	Inorganic/Metal	B
7440-23-5	Sodium	680000	a	16	Inorganic/Metal	
7440-24-6	Strontium	1500	a	1	Inorganic/Metal	
100-42-5	Styrene (Phenylethylene)	72	b	2	Volatile	
7783-06-4	Sulfide (Hydrogen Sulfide)	2	n	13	Anion	
	Sulfite	200	e,f	4	Anion	
95-94-3	Tetrachlorobenzene (1,2,4,5-Tetrachlorobenzene)	3	d	3	Other Semi-Volatile	
79-34-5	Tetrachloroethane (1,1,2,2-Tetrachloroethane)	610	a	1	Volatile	
127-18-4	Tetrachloroethene (1,1,2,2-Tetrachloroethylene)	111	b	2	Volatile	
127-18-4	Tetrachloroethylene (1,1,2,2-Tetrachloroethylene)	111	b	2	Volatile	
56-23-5	Tetrachloromethane (Carbon tetrachloride)	13.3	b	2	Volatile	
	Tetrachlorophenols, total	1	b	2	Other Semi-Volatile	
7440-28-0	Thallium	0.8	b	2	Inorganic/Metal	
7440-31-5	Tin	73	a	1	Inorganic/Metal	
108-88-3	Toluene	2	b	2	Volatile	
8001-35-2	Toxaphene	0.0002	n	13	Organochlorine Pesticide	B
156-60-5	trans-1,2-Dichloroethylene (1,2-trans-Dichloroethylene)	970	g	5	Volatile	
75-25-2	Tribromomethane (Bromoform)	320	c	1	Volatile	
688-73-3	Tributyltin	0.008	b	2	Inorganic/Metal	B
12002-48-1	Trichlorobenzene (mixed isomers)	5	e,f	4,23	Other Semi-Volatile	
79-00-5	Trichloroethane (1,1,2-Trichloroethane)	1200	a	1	Volatile	
79-01-6	Trichloroethene (Trichloroethylene)	21	b	2	Volatile	
79-01-6	Trichloroethylene	21	b	2	Volatile	
67-66-3	Trichloromethane (Chloroform)	1.8	b	2	Volatile	

25167-82-2	Trichlorophenols, total	18	b	2	Other Semi-Volatile	
1582-09-8	Trifluralin	0.2	b	2		
115-86-6	Triphenyl phosphate	4	e,f	4	Other Semi-Volatile	
7440-61-1	Uranium (hardness = 100)	2.6	a	1	Inorganic/Metal	
7440-62-2	Vanadium	20	a	1	Inorganic/Metal	
1314-62-1	Vanadium pentoxide	15	h,i	6	Inorganic/Metal	
108-05-4	Vinyl acetate	16	a	1	Volatile	
100-42-5	Vinyl benzene (Pheylethylene)	72	b	2	Volatile	
75-01-4	Vinyl chloride	930	d	3	Volatile	
75-35-4	Vinylidene chloride (1,1-Dichloroethylene)	25	a	1	Volatile	
108-38-3	Xylene, m-	1.8	c	1	Volatile	
1330-20-7	Xylenes (total)	13	a	1	Volatile	
7440-66-6	Zinc (hardness = 100)	120	n	15	Inorganic/Metal	B
7440-67-7	Zirconium	17	a	1	Inorganic/Metal	

Note: Values are expressed in terms of dissolved analyte in the water column except for those indicated with endnote 2 which are expressed in terms of total concentration.

[Back to top]

Notes and References

Literature Cited

[a] Suter, G.W. II, and Tsao, C.L. 1996. Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Aquatic Biota: 1996 Revision. ES/ER/TM-96/R2.

[b] CCME (Canadian Council of Ministers of the Environment). 2003. Canadian Environmental Quality Guidelines: Summary Table December 2003. Canadian Council of Ministers of the Environment, Winnipeg, Manitoba. Available at: http://www.ccme.ca/publications/cegg_rcqe.html EXIT Disclaimer

[c] U.S. EPA. OSWER (Office of Solid Waste and Emergency Response). 1996. Eco Update: Ecotox thresholds. Washington, D.C. EPA 540/F-95/038. Available at: http://www.epa.gov/oswer/riskassessment/pdf/eco_updt.pdf

[d] Michigan DEQ (Department of Environmental Quality). 2002. Rule 57: Water Quality Values. Available at: http://www.deq.state.mi.us/documents/deq-swq-gleas-r57inter.xls EXIT Disclaimer

[e] NY DEC (New York State Department of Environmental Conservation), Division of Water. 1993. Technical and Operational Guidance Series (1.1.1). Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. Available at: http://www.dec.state.ny.us/website/dow/togs/togs111.pdf EXIT Disclaimer

[f] NYCRR (New York Compilation of Codes, Rules, and Regulations). 1999. Title 6, Part 706. Available at: http://www.dec.state.ny.us/website/regs/part706.html EXIT Disclaimer

[g] Ohio EPA, Division of Surface Water. 2002. Ohio Administrative Code (OAC) 3745-1-07: Water Use Designations and Statewide Criteria. Available at: http://www.epa.state.oh.us/dsw/rules/3745-1.html and http://www.epa.state.oh.us/dsw/wqs/criteria.html EXIT Disclaimer

[h] TNRCC (Texas Natural Resource Conservation Commission), Toxicology and Risk Assessment Section. December 2001. Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas. Available at: http://www.tceq.state.tx.us/comm_exec/forms_pubs/pubs/rg/rg-263_189521.pdf EXIT Disclaimer

[i] TNRCC (Texas Natural Resources Conservation Commission). 2000. Texas Surface Water Quality Standards. Texas Administrative Code (TAC), Title 30, Chapter 307. Effective August 17, 2000. Available at: http://www.tceq.state.tx.us/permitting/water_quality/wq_assessment/standards/WQ_standards_1997.html EXIT Disclaimer

[j] U.S. EPA 1995. Final Water Quality Guidance for the Great Lakes System. 40CFR Parts 9, 122, 123, 131 and 132. March 23, 1995, 15366-15425. Available at: http://www.epa.gov/npdes/regulations/greatlakes_fedregstr.pdf

[k] Van den Berg, M., Birnbaum, L., Bosveld, A.T.C., Brunstrom, B., Cook, P., Feeley, M., Giesy, J.P., Hanberg, A., Hasegawa, R., Kennedy, S.W., Kubiak, T., Larsen, J.C., Rolaf van Leeuwen, F.X., Liem, A.K.D., Nolt, C., Peterson, R.E., Poellinger, L., Safe, S., Schrenk, D., Tillitt, D., Tysklind, M., Younes, M., Waern, F., and Zacharewski, T. 1998. Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife. Environmental Health Perspectives. 106 (12): 775-792. Available at: http://ehp.niehs.nih.gov/members/1998/106p775-792vandenberg/vandenberg-full.html

[l] U.S. EPA Region 5. 2003. Region 5 EDQL for all media. Available at: http://www.epa.gov/reg5rcra/ca/ESL.pdf.

[m] U.S. EPA Region 5. 1999. Ecological Screening Levels for RCRA Appendix IX Hazardous Constituents. Draft Document.

[n] U.S. EPA. 2004. National Recommended Water Quality Criteria: 2004. Available at: http://www.epa.gov/waterscience/criteria/wqcriteria.html .

[o]Oregon DEQ (Department of Environmental Quality). 1998. Guidance for Ecological Risk Assessment: Level II Screening Benchmark Values. Updated December 2001. Oregon Dept. Env. Qual., Portland. SLV-2. Available at: http://www.deq.state.or.us/wmc/documents/eco-2slv.pdf EXIT Disclaimer

[p] U.S. EPA. Ecoregional Nutrient Criteria. Available at: http://www.epa.gov/waterscience/criteria/nutrient/ecoregions .

[q] U.S. EPA. 2000. Bioaccumulation Testing and Interpretation for the Purpose of Sediment Quality Assessment. Available at: http://www.epa.gov/waterscience/cs/biotesting/bioaccum.pdf

End Notes

[1]GLWQI Tier II values (U.S. EPA OSWER 1996[c], Suter and Tsao 1996[a]).

[2]The Canadian Water Quality Guidelines values refer to the total concentration in an unfiltered sample.

[3]Final Chronic Value.

[4]Value calculated using Tier I or Tier II methodology as described in NYCRR (1999[f]).

[5]Data are Ohio River Basin aquatic life Tier II values from the OMZA.

[6]Values derived using LC_{50} approach in accordance with methodology defined in TNRCC (2000[i], 2001[h]). Concentrations of non-persistent toxic materials shall not exceed concentrations which are chronically toxic (0.1 of acute LC_{50} values) to the most sensitive aquatic species. Concentrations of persistent toxic materials that do not bioaccumulate shall not exceed concentrations which are chronically toxic (0.05 of LC_{50} values) to the most sensitive aquatic species. Concentrations of toxic materials that bioaccumulate shall not exceed concentrations that are chronically toxic (0.01 of LC_{50}) to the most sensitive aquatic species.

[7]The screening value of 20 ug/L is for 2,2-Dibromo-3-nitrilopropionamide and dibromoacetonitrile combined.

[8]This value is based on the food chain and not direct toxicity.

[9]Congener- and receptor-specific dioxin equivalency.

[10]Value is based on an interim criterion developed according to the procedures described in U.S. EPA Region 5 (1999[m]). Source data used in developing interim criteria were obtained through the Aquatic Toxicity Information Retrieval (ACQUIRE) database.

[11]Value is the lowest test EC_{20} for fish (Suter and Tsao 1996[a]).

[12]Value is the lowest population EC_{20} (Suter and Tsao 1996[a]).

[13]Criterion Continuous Concentration (CCC) values are used rather than Criteria Maximum Concentration (CMC) values. The CMC is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect. The CCC is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect. No CCC value is available for silver, therefore the CMC value is used.

[14]Value is the lowest sensitive species test EC_{20} for (Suter and Tsao 1996[a]).

[15]See Freshwater Values for Hardness-Dependent Contaminants table if hardness does not equal 100. AWQC (2002 n) and Suter and Tsao (1996[a]) values were used instead of CCME (2002[b]) values if equations for variable hardness were not provided in the CCME document. The CCME values are: 0.017 ug/l cadmium, 8.9 ug/l chromium III, 1 ug/l chromium VI, 0.1 ug/l silver, and 30 ug/l zinc.

[16]Lowest Chronic Value for Daphnids (Suter and Tsao 1996[a]).

[17]Applies to the sum of 1,2-, 1,3- and 1,4-dichlorobenzene.

[18]Wildlife value.

[19]LAS with side chains greater than 13 carbons only; applies to the sum of these substances. 1996[a]

[20]Applies to nitrilotriacetate (NY DEC 1993[e]).

[21]Oregon Water Quality Criteria Freshwater acute criteria divided by 50, for acute to chronic conversion (Oregon DEQ 1998[o]).

[22]Select a value from the criteria documents (Lakes and Reservoirs, Rivers and Streams) for the ecoregion, which corresponds to the site location.

[23]Applies to the sum of 1,2,3-, 1,2,4- and 1,3,5-trichlorobenzene.

[Back to top]

Benchmark Selection

The screening benchmarks were selected utilizing numerous criteria. Priority was given to values based on direct toxicity over food chain modeling, as site specific food chain exposure modeling and assessment is strongly encouraged for all bioaccumulative compounds. Values under consideration were rejected if the source documents did not provide original citations and the ECOTOX database indicated no studies were available. Acute and subacute exposures and lethal endpoints were accepted if appropriate safety factors were applied. Values for individual Aroclors and PAHs which were based solely on extrapolation from another mixture or compound in the class were rejected. Preference was given to total rather than individual chemical forms for inorganics.

Hierarchy for Selection of Freshwater Benchmarks

- Preference was given to the benchmarks based on chronic exposure, non-lethal endpoint studies

designed to be protective of sensitive species.
- Absent chronic exposure benchmarks, values based on acute studies for multiple species adjusted with acute to chronic ratios were selected.
- Food chain values for water from the EPA Great Lakes Water Quality Initiative were included based on the extent of benchmark evaluation process and the approval of models for DDT, mercury, 2,3,7,8-TCDD, and PCBs.
- Other food chain values were given preference over direct toxicity values only if the direct toxicity value was for a marine environment.

[Back to top]

Downloadable Files

- Freshwater Screening Benchmarks [EXCEL | PDF]
- Notes and References [MS Word]
- Hardness Dependent Values [EXCEL]

[Back to top]

Last updated on Friday, October 24th, 2008.

Mid-Atlantic Risk Assessment

Ecological Risk Assessment

- Screening Benchmarks Table
- Notes & References
- Hierarchy for Selection of Freshwater Sediment Benchmarks
- Downloadable Files

Freshwater Sediment Screening Benchmarks

CAS#	Analyte	FW Sed (mg/kg)	Ref	End Note	Class of Compound	Bioaccumulative-B[o]
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	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-Trichlorphenoxyacetic acid	12.3	a,b	1	Phenoxycaceticacid 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	Acenapthylene	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
1912-24-9	Atrazine	0.00662	a,b	1	Triazine Hersicide	
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
959-98-8	Endosulfan I (a-endosulfan)	0.0029	l		Organochlorine Pesticide	B
33213-65-9	Endosulfan II (b-endosulfan)	0.014	l		Organochlorine Pesticide	B
1031-07-8	Endosulfan sulfate	0.0054	l	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-					Other Semi-	

95-2	Phenol	0.42	f	3	Volatile	B
100-42-5	Phenylethylene	0.559	a,b	1	Other Semi-Volatile	
298-02-2	Phorate	0.201	a,b	1		
51207-31-9	Polychlorinated dibenzofurans		d	2	Dioxins/Furans	
	Polychlorinated dibenzo-p-dioxins (PCDD-S)		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

[Back to top]

Notes and References

Literature Cited

[a]Region III BTAG Freshwater Screening Benchmarks. 2004. http://www.epa.gov/reg3hscd/risk/eco/btag/sbv/fw/screenbench.htm

[b] Karickhoff, S.W. and J.M. Long. Environmental Research Laboratory. U.S. EPA.1995. Internal Report on Summary of Measured, Calculated and Recommended Log K_{ow} Values.

[c] CCME (Canadian Council of Ministers of the Environment). 2003. Canadian Environmental Quality Guidelines: Summary Table December 2003. Canadian Council of Ministers of the Environment, Winnipeg, Manitoba. Available at http://www.ccme.ca/publications/ceqg_rcqe.html EXIT Disclaimer

[d] Van den Berg, M., Birnbaum, L., Bosveld, A.T.C., Brunstrom, B., Cook, P., Feeley, M., Giesy, J.P., Hanberg, A., Hasegawa, R., Kennedy, S.W., Kubiak, T., Larsen, J.C., Rolaf van Leeuwen, F.X., Liem, A.K.D., Nolt, C., Peterson, R.E., Poellinger, L., Safe, S., Schrenk, D., Tillitt, D., Tysklind, M., Younes, M., Waern, F., and Zacharewski, T. 1998. Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife. Environmental Health Perspectives. 106 (12): 775-792. Available at: http://ehp.niehs.nih.gov/members/1998/106p775-792vandenberg/vandenberg-full.html EXIT Disclaimer

[e]Talmage, S.S., D.M. Opresko, C.J. Maxwell, J.E. Welsh, M. Cretella, P.H. Reno, and F.B. Daniel. 1999. Nitroaromatic munition compounds: Environmental effects and screening values. Reviews in Environmental Contamination and Toxicology. 161: 1-156

[f] Jones, D.S., G.W. Suter II and R.N. Hull. 1997. Toxicological benchmarks for screening contaminants of potential concern for effects on sediment-associated biota: 1997 Revision. ES/ER/TM-95/R4. Oak Ridge National Laboratory, Oak Ridge, TN. Available at: http://www.esd.ornl.gov/programs/ecorisk/documents/tm95r4.pdf EXIT Disclaimer

[g] Persaud, D., R. Jaagumagi and A. Hayton. 1993. Guidelines for the protection and management of aquatic sediment quality in Ontario. Ontario Ministry of the Environment. Queen's Printer of Ontario. Available at: http://www.ene.gov.on.ca/envision/gp/B1-3.pdf

[h] MacDonald, D.D., C.G. Ingersoll, and T.A. Berger. 2000. Development and evaluation of consensus-based sediment quality guidelines for freshwater ecosystems. Arch. Environ. Contam. Toxicol. 39: 20-31.

[i]Long, E.R. and L.G. Morgan. 1990. The potential for biological effects of sediment-sorbed contaminants tested in the national status and trends program. NOAA Technical Memorandum NOS OMA 52.

[j]Ingersoll, C.G., P.S. Haverland, E.L. Brunson, T.J. Canfield, F.J. Dwyer, C.E. Henke, N.E. Kemble, D.R. Mount, and R.G. Fox. 1996. Calculation and evaluation of sediment effect concentrations for the amphipod Hyallela azteca and the midge Chironomus riparius. International Association of Great Lakes Research. 22:602-623.

[k] MacDonald, D.D., C.G. Ingersoll, D.E. Smrong, R.A. Lindskoog, G. Sloane, T. Biernacki. 2003. Development and evaluation of numerical sediment quality assessment guidelines for Florida inland waters. Florida Department of Environmental Protection. Available at: http://www.dep.state.fl.us/water/monitoring/docs/seds/SQAGs_for_Florida_Inland_Waters_01_03.PDF EXIT Disclaimer

[l] U.S. EPA. 1996. Eco Update: Ecotox Thresholds. Office of Solid Waste and Emergency Response. Washington, D.C. EPA 540/ F95/038. A vailable at: http://www.epa.gov/oswer/riskassessment/pdf/eco_updt.pdf

[m] Lemley, A.D. 2002. Selenium assessment in aquatic ecosystems. US Forest Service, Blacksburg, VA.

[n] Buchman, M.F. 1999. NOAA Screening Quick Reference Tables, NOAA HAZMAT Report 99-1, Seattle,

WA, Coastal Protection and Restoration Division, National Oceanic Atmospheric Administration. Available at: http://response.restoration.noaa.gov/book_shelf/122_squirt_cards.pdf EXIT Disclaimer

[o] U.S. EPA. 2000. Bioaccumulation Testing and Interpretation for the Purpose of Sediment Quality Assessment. Available at: http://www.epa.gov/waterscience/cs/biotesting/bioaccum.pdf

End Notes

[1]Value 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]).

[2]Congener- and receptor-specific dioxin equivalency.

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

[4]Lowest Effect Level (LEL).

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

[6]EPA 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.

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

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

[9]ARCs TEL (Assessment and Remediation of Contaminated Sediments Program Threshold Effects Level - 28d test using Hyallela azteca from U.S. EPA (1996[h]).

[10]EPA 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 $\Sigma ESBTU_{FCV}$ 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 $n \geq 30$.

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

[Back to top]

Hierarchy for Selection of Freshwater Sediment Benchmarks

- Preference was given to benchmarks based on chronic direct exposure, non-lethal endpoint studies designed to be protective of sensitive species
- Values derived by statistical- or consensus-based evaluation of multiple studies were given first priority
- Equilibrium partitioning values were selected for contaminants with 2.0< log Kow <6.0 if empirical values based on multiple studies were not available

- Absent consensus or equilibrium partitioning values, single study toxicity values were selected
- Marine values were used for freshwater only if a suitable freshwater value did not exist

[Back to top]

Downloadable Files

- Freshwater Sediment Screening Benchmarks [EXCEL| PDF]
- Notes and References [MS Word]
- Table for the Computation of Freshwater Sediment Screening Benchmarks Using Site-Specific Total Organic Carbon [EXCEL]

[Back to top]