

NJDEP Ecological Screening Criteria

Toxic Substance	CAS Number	Surface Water (ug/L)						Sediment (mg/kg)				Wildlife PRGs (flora and fauna)	Terrestrial Plant Tox Benchmarks	Soil (mg/kg)			
		Fresh Water (FW2) Criteria			Saline Water (SE & SC) Criteria			Fresh Water Criteria		Saline Water Criteria				EcoSSLs ²⁰			
		Aquatic		Human Health	Aquatic		Human Health	Lowest Effects Level (LEL) ¹	Severe Effects Level (SEL) ²	Effects Range Low (ER-L) ⁴	Effects Range Medium (ER-M) ⁵			Plants	Soil Invertebrates	Avian	Mammalian
		Acute	Chronic		Acute	Chronic											
Acenaphthene	83-32-9		38 ⁸	670(h)			990(h)	See Saline Criteria ³ 0.00671 ⁸		0.016	0.500	20 ⁹					
Acenaphthylene	208-96-8		4840 ⁸					See Saline Criteria ³ 0.00587 ⁸		0.044	0.640	682 ⁸					
Acrolein	107-02-8		0.19 ⁸	6.1(h)			9.3(h)	0.0000152 ⁸				5.27 ⁸					
Acrylonitrile	107-13-1		66 ⁸	0.051(hc)			0.25(hc)	0.0012 ⁹				0.0239 ⁸					
Aldrin	309-00-2	3	0.017 ⁸	0.000049(hc)	1.3		0.000050(hc)	0.002	8	See Freshwater Criteria ⁶		0.00332 ⁸					
Aluminum	7429-90-5							2.55% ¹⁵			1.8% ¹⁵		50				
Ammonia, un-ionized	7664-41-7	See N.J.A.C. 7:9B-1.14(e)			See N.J.A.C. 7:9B-												
Anthracene	120-12-7		0.035 ⁸	8,300(h)			40,000(h)	0.0572 ⁸	370	0.085	1.1	1,480 ⁸					
Antimony	7440-36-0		80 ⁸	5.6(h)(T)			640(h)(T)		3 ¹⁵		9.3 ¹⁵	5 ⁹	5		78		0.27
Arsenic	7440-38-2	340(d)(s)	150(d)(s)	0.017(hc)(T)	69(d)(s)	36(d)(s)	0.061(hc)(T)	6 9.9790 ⁸	33	8.2	70	9.9 ^{9,10}	10	18		43	46
Asbestos	1332-21-4			7x10 ⁶ fibers/L >10um(h)													
Barium	7440-39-3		220 ⁸	2,000(h)(T)							48 ¹⁵	283 ¹¹	500		330		2,000
Benz(a)anthracene	56-55-3		0.025 ⁸	0.038(hc)			0.18(hc)	0.320 0.108 ⁸	1,480	0.261	1.6	5.21 ⁸					
Benzene	71-43-2		114 ⁸ 824 ¹⁶	0.15(hc)			3.3(hc)	See Saline Criteria ³ 0.142 ⁸		0.34 ⁷		0.255 ⁸					
Benzidine	92-87-5			0.000086(hc)			0.00020(hc)										
3,4-Benzofluoranthene (Benzo(b)fluoranthene)	205-99-2		9.07 ⁸	0.038(hc)			0.18(hc)	10.4 ⁸				1.800 ¹⁵	59.8 ⁸				
Benzo(k)fluoranthene	207-08-9			0.38(hc)			1.8(hc)	0.240	1,340	See Freshwater Criteria ⁶		148 ⁸					
Benzo(g,h,i)perylene	191-24-2		7.64 ⁸					0.170 0.37	320	See Freshwater Criteria ⁶		119 ⁸					
Benzo(a)pyrene (BaP)	50-32-8		0.014 ⁸	0.0038(hc)			0.018(hc)	0.150 ⁸	1,440	0.430	1.6	1.52 ⁸					
Beryllium	7440-41-7		3.6 ⁸	6.0(h)(T)			42(h)(T)					10 ⁹	10		40		21
BHC (Benzohexachloride)								0.003	12	See Freshwater Criteria ⁶							
alpha-BHC (alpha-HCH)	319-84-6		12.4 ⁸	0.0026(hc)			0.0049(hc)	0.006	10			0.0994 ⁸					
beta-BHC (beta-HCH)	319-85-7		0.495 ⁸	0.0091(hc)			0.017(hc)	0.005	21			0.00398 ⁸					
gamma-BHC (gamma-HCH/Lindane)	58-89-9	0.95	0.026 ⁸	0.98(h)	0.16		1.8(h)	0.003	1			0.00500 ⁸					
Biphenyl	92-52-4											60 ⁹					
Bis(2-chloroethyl) ether	111-44-4		1900 ⁸	0.030(hc)			0.53(hc)	3.520 ⁸				23.7 ⁸					
Bis(2-chloroisopropyl) ether	108-60-1			1,400(h)			65,000(h)					19.9 ⁸					
Bis(2-ethylhexyl) phthalate	117-81-7		0.3 ⁸	1.2(hc)			2.2(hc)	0.182 ⁸	0.750 ¹⁵	0.18216 ¹⁵	2.64651 ¹⁵	0.925 ⁸					
Boron	7440-42-8											0.5 ⁹	0.5				
Bromine	7726-95-6											10 ⁹	10				
Bromodichloromethane (Dichlorobromomethane)	75-27-4			0.55(hc)			17(hc)					0.540 ⁸					
Bromoform	75-25-2		230 ⁸	4.3(hc)			140(hc)	0.492 ⁸				15.9 ⁸					

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		Fresh Water (FW2) Criteria			Saline Water (SE & SC) Criteria			Fresh Water Criteria		Saline Water Criteria				EcoSSLs ²⁰			
		Aquatic		Human Health	Aquatic		Human Health	Lowest Effects Level (LEL) ¹	Severe Effects Level (SEL) ²	Effects Range Low (ER-L) ⁴	Effects Range Medium (ER-M) ⁵			Plants	Soil Invertebrates	Avian	Mammalian
		Acute	Chronic		Acute	Chronic											
Butyl benzyl phthalate	85-68-7		23 ⁸	150(h)			190(h)	1.970 ⁸				0.239 ⁸					
Cadmium	7440-43-9	(a)	(a)	3.4(h)(T)	40(d)(s)	8.8(d)(s)	16(h)(T)	0.990 ⁸	10	1.2	9.6	4 ^{9,11}	4	32	140	0.77	0.36
Carbon tetrachloride	56-23-5		240 ⁸	0.33(hc)			2.3(hc)	1.450 ⁸				2.98 ⁸					
Chlordane	57-74-9	2.4	0.0043	0.00010(hc)	0.09	0.004	0.00011(hc)	0.00324 ⁸	6	See Freshwater Criteria ⁶		0.224 ⁸					
Chloride	16887-00-6	860,000	230,000	250,000													
Chlorine Produced Oxidants (CPO)	7782-50-5	19	11		13	7.5											
3-Chloroaniline	108-42-9											20 ⁹	20				
Chlorobenzene	108-90-7		47 ⁸	210(h)			2,500(h)	0.291 ⁸				40 ¹²					
Chloroform	67-66-3		140 ⁸	68(h)			2,100(h)	0.121 ⁸				13.1 ⁸					
2-Chloronaphthalene	91-58-7		0.396 ⁸	1,000(h)			1,600(h)	0.417 ⁸				1.19 ⁸					
2-Chlorophenol	95-57-8		24 ⁸	81(h)			150(h)	0.0319 ⁸			0.008 ¹⁵	0.0122 ⁸					
3-Chlorophenol	108-43-0											0.243 ⁸					
Chlorpyrifos	2921-88-2	0.083	0.041		0.011	0.0056						7 ¹²	7				
Chromium	7440-47-3		42 ⁸	92(h)(T)			750(h)(T)	26				0.4 ¹²	1				
Chromium+3	16065-83-1	(a)	(a)					43.4 ⁸	110	81	370					26	34
Chromium+6	18540-29-9	15(d)(s)	10(d)(s)		1,100(d)(s)	50(d)(s)											130
Chrysene	218-01-9			3.8(hc)			18(hc)	0.34				4.73 ⁸					
Cobalt	7440-48-4		24 ⁸					0.166 ⁸	460	0.384	2.8	20 ⁹					
Copper	7440-50-8	(a)	(a)	1,300(h)(T)	4.8(d)(s)	3.1(d)(s)		50 ⁸			10 ¹⁵	0.14 ⁸	20	13		120	230
Cyanide (Total)	57-12-5	22(fc)	5.2(fc)	140(h)	1.0(fc)	1.0(fc)	140(h)	16	110	34	270	60 ¹²	100	70	80	28	49
4,4'-DDD (p,p'-TDE)	72-54-8			0.00031(hc)			0.00031(hc)	31.6 ⁸				5.4 ⁸					
4,4'-DDE	72-55-9		0.00000000451 ⁸	0.00022(hc)			0.00022(hc)	0.008	6	0.002 ¹⁵	0.02 ¹⁵	0.758 ⁸					
4,4'-DDT	50-29-3	1.1	0.001	0.00022(hc)	0.13	0.001	0.00022(hc)	0.005	19	0.0022	0.027	0.596 ⁸					
DDT (Total)								0.008	71	0.001 ¹⁵	0.007 ¹⁵	0.0035 ⁸					
Demeton	8065-48-3		0.1			0.1		0.007	12	0.0016	0.046					0.093 ²¹	0.021 ²¹
Dibenz(a,h)anthracene	53-70-3			0.0038(hc)			0.018(hc)	0.06				18.4 ⁸					
Dibromochloromethane (Chlorodibromomethane)	124-48-1			0.40(hc)			13(hc)	0.033 ⁸	130	0.063	0.26	2.05 ⁸					
Di-n-butyl phthalate	84-74-2		9.7 ⁸	2,000(h)			4,500(h)	0.008				200 ⁹					
1,2-Dichlorobenzene	95-50-1		14 ⁸	2,000(h)			6,200(h)	1.114 ⁸	0.110 ¹⁵		0.058 ¹⁵	0.15 ⁸					
1,3-Dichlorobenzene	541-73-1		38 ⁸	2,200(h)			8,300(h)	0.294 ⁸				2.96 ⁸					
1,4-Dichlorobenzene	106-46-7		9.4 ⁸	550(h)			2,200(h)	1.315 ⁸				37.7 ⁸					
3,3'-Dichlorobenzidine	91-94-1		4.5 ⁸	0.021(hc)			0.028(hc)				0.110 ¹⁵	0.546 ⁸					
1,2-Dichloroethane	107-06-2		910 ⁸	0.29(hc)			28(hc)	0.127 ⁸				0.646 ⁸					
1,1-Dichloroethylene	75-35-4		65 ⁸	4.7(h)			100(h)	0.260 ⁸				21.2 ⁸					
trans-1,2-Dichloroethylene	156-60-5		970 ⁸	590(h)			43,000(h)	0.0194 ⁸				8.28 ⁸					
								0.654 ⁸				0.784 ⁸					

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		Fresh Water (FW2) Criteria			Saline Water (SE & SC) Criteria			Fresh Water Criteria		Saline Water Criteria				Plants	EcoSSLs ²⁰		
		Aquatic		Human Health	Aquatic		Human Health	Lowest Effects Level (LEL) ¹	Severe Effects Level (SEL) ²	Effects Range Low (ER-L) ⁴	Effects Range Medium (ER-M) ⁵				Soil Invertebrates	Avian	Mammalian
		Acute	Chronic		Acute	Chronic											
2,4-Dichlorophenol	120-83-2		11 ⁸	77(h)			290(h)	0.0817 ⁸			0.005 ¹⁵	87.5 ⁸					
3,4-Dichlorophenol	95-77-2											20 ^{9,12}	20				
1,2-Dichloropropane	78-87-5		360 ⁸	0.50(hc)			15(hc)	0.333 ⁸				32.7 ⁸					
1,3-Dichloropropene (cis and trans)	542-75-6			0.34(hc)			21(hc)										
Dieldrin	60-57-1	0.24	0.056	0.000052(hc)	0.71	0.0019	0.000054(hc)	0.0019 ⁹	91	See Freshwater Criteria ⁶		0.00238 ⁸				0.022	0.0049
Diethyl phthalate	84-66-2		110 ⁸	17,000(h)			44,000(h)	0.295 ⁸			0.006 ¹⁵	100 ⁹					
2,4-Dimethyl phenol	105-67-9		100 ⁸	380(h)			850(h)	0.304 ⁸				24.8 ⁸					
4,6-Dinitro-o-cresol	534-52-1			13(h)			280(h)					0.010 ⁸					
2,4-Dinitrophenol	51-28-5		19 ⁸	69(h)			5,300(h)	0.00621 ⁸				20 ⁹					
2,4-Dinitrotoluene	121-14-2		44 ⁸	0.11(hc)			3.4(hc)	0.0144 ⁸				0.0609 ⁸	20				
1,2-Diphenylhydrazine	122-66-7			0.036(hc)			0.20(hc)					1.28 ⁸					
Endosulfans (alpha and beta)	115-29-7	0.22	0.056	62(h)	0.034	0.0087	89(h)										
Endosulfan sulfate	1031-07-8		2.22 ⁸	62(h)			89(h)	0.0346 ⁸				0.0358 ⁸					
Endrin	72-20-8	0.086	0.036	0.059(h)	0.037	0.0023	0.060(h)	0.00222 ⁸	130	See Freshwater Criteria ⁶		0.0101 ⁸					
Endrin aldehyde	7421-93-4		0.15 ⁸	0.059(h)			0.060(h)	0.480 ⁸				0.0105 ⁸					
Ethylbenzene	100-41-4		14 ⁸ 81 ¹⁶	530(h)			2,100(h)	See Saline Criteria ³ 0.175 ⁸		1.4 ⁷		5.16 ⁸					
Fluoranthene	206-44-0		1.9 ⁸	130(h)			140(h)	0.423 ⁸	1,020	0.600	5.1	122 ⁸					
Fluorene	86-73-7		19 ⁸	1,100(h)			5,300(h)	0.0774 ⁸	160	0.019	0.54	122 ⁸					
Fluorine	7782-41-4											200 ⁹	200				
Furan	110-00-9											600 ⁹					
Guthion	86-50-0		0.01			0.01											
Heptachlor	76-44-8	0.52	0.0038	0.000079(hc)	0.053	0.0036	0.000079(hc)	0.0006 ⁸	0.010 ¹⁵		0.0003 ¹⁵	0.00598 ⁸					
Heptachlor epoxide	1024-57-3	0.52	0.0038	0.000039(hc)	0.053	0.0036	0.000039(hc)	0.00247 ⁸	5	See Freshwater Criteria ⁶		0.152 ⁸					
Hexachlorobenzene	118-74-1		0.0003 ⁸	0.00028(hc)			0.00029(hc)	0.020	24	See Freshwater Criteria ⁶		0.199 ⁸					
Hexachlorobutadiene	87-68-3		0.053 ⁸	0.44(hc)			18(hc)	0.0265 ⁸			0.0013 ¹⁵	0.0398 ⁸					
Hexachlorocyclopentadiene	77-47-4		77 ⁸	40(h)			1,100(h)	0.901 ⁸				10 ⁹					
Hexachloroethane	67-72-1		8 ⁸	1.4(hc)			3.3(hc)	0.584 ⁸			0.073 ¹⁵	0.596 ⁸					
Indeno(1,2,3-cd)pyrene	193-39-5		4.31 ⁸	0.038(hc)			0.18(hc)	0.200	320	See Freshwater Criteria ⁶		109 ⁸					
Iodine	7553-56-2											4 ⁹	4				
Isophorone	78-59-1		920 ⁸	35(hc)			960(hc)	0.432 ⁸				139 ⁸					
Lead	7439-92-1	38(d)(s)	5.4(d)(s)	5.0(h)(T)	210(d)(s)	24(d)(s)		31 35.8 ⁸	250	47	218	40.5 ¹¹	50	120	1,700	11	56
Lithium	7439-93-2											2 ⁹	2				
Malathion	121-75-5		0.1			0.1											
Manganese	7439-96-5						100(h)(T)	630 ¹⁵	1,100 ¹⁵		260 ¹⁵		500	220	450	4,300	4,000
Mercury	7439-97-6	1.4(d)(s)	0.77(d)(s)	0.050(h)(T)	1.8(d)(s)	0.94(d)(s)	0.051(h)(T)	0.2 0.174 ⁸	2	0.15	0.71	0.00051 ¹¹ 0.1 ⁸	0.3				

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		Aquatic		Human Health	Aquatic		Human Health	Lowest Effects Level (LEL) ¹	Severe Effects Level (SEL) ²	Effects Range Low (ER-L) ⁴	Effects Range Medium (ER-M) ⁵			Plants	Soil Invertebrates	Avian	Mammalian
		Acute	Chronic		Acute	Chronic											
Methoxychlor	72-43-5		0.03	40(h)		0.03		0.0136 ⁸			0.0199 ⁸						
Methyl bromide (bromomethane)	74-83-9		16 ⁸	47(h)			1,500(h)	0.00137 ⁸			0.235 ⁸						
Methyl t-butyl ether (MTBE)	1634-04-4	151,000 ¹⁷	51,450 ¹⁶ 51,000 ¹⁷	70(h)	53,000 ¹⁷	18,000 ¹⁷											
Methylene chloride	75-09-2		940 ⁸	2.5(hc)			310(hc)	0.159 ⁸			4.05 ⁸						
2-Methylnaphthalene	91-57-6		330 ⁸					See Saline Criteria ³ 0.0202 ⁸		0.070	0.67	3.24 ⁸					
Mirex	2385-85-5		0.001			0.001		0.007	130	See Freshwater Criteria ⁶							
Molybdenum	7439-98-7										2 ⁸	2					
Naphthalene	91-20-3		13 ⁸					See Saline Criteria ³ 0.176 ⁸		0.16	2.1	0.0994 ⁸					
Nickel	7440-02-0	(a)	(a)	500(h)(T)	64(d)(s)	22(d)(s)	1,700(h)(T)	16 22.7 ⁸	75	21	52	30 ⁹ 13.6 ⁸	30	38	280	210	130
Nitrate (as N)	14797-55-8			10,000(h)													
Nitrobenzene	98-95-3		220 ⁸	17(h)			690(h)	0.145 ⁸				1.31 ⁸					
4-Nitrophenol	100-02-7		60 ⁸					0.0133 ⁸				7 ¹² 5.12 ⁸					
N-Nitrosodi-n-butylamine	924-16-3			0.0063(hc)			0.22(hc)										
N-Nitrosodiethylamine	55-18-5		768 ⁸	0.00023(hc)			0.13(hc)	0.0228 ⁸				0.0693 ⁸					
N-Nitrosodimethylamine	62-75-9			0.00069(hc)			3.0(hc)					0.0000321 ⁸					
N-Nitrosodiphenylamine	86-30-6			3.3(hc)			6.0(hc)					0.545 ⁸					
N-Nitrosodi-n-propylamine (Di-n-propylnitrosamine)	621-64-7			0.0050(hc)			0.51(hc)										
N-Nitrosopyrrolidine	930-55-2			0.016(hc)			34(hc)					0.0126 ⁸					
Parathion	56-38-2	0.065	0.013					0.000757 ⁸				0.00034 ⁸					
Pentachlorobenzene	608-93-5		0.019 ⁸	1.4(h)			1.5(h)	0.024 ⁸				20 ¹² 0.497 ⁸					
Pentachlorophenol	87-86-5	(b)	(b)	0.27(hc)	13	7.9	3.0(hc)	23 ⁸ 0.56 0.204 ⁸			0.017 ¹⁵	0.119 ⁸	3	5.0	31	2.1	2.8
Phenanthrene	85-01-8		3.6 ⁸					950	0.240		1.5	45.7 ⁸					
Phenol	108-95-2		180 ⁸	10,000(h)			860,000(h)	0.0491 ⁸	0.048 ¹⁵		0.130 ¹⁵	30 ¹² 120 ⁸					
Phosphorous (yellow)	7723-14-0					0.1											
PCB Aroclor 1016								0.007	53	See Freshwater Criteria ⁶							
PCB Aroclor 1248								0.030	150	See Freshwater Criteria ⁶							
PCB Aroclor 1254								0.060	34	See Freshwater Criteria ⁶							
PCB Aroclor 1260								0.005	24	See Freshwater Criteria ⁶							
Polychlorinated biphenyls (PCBs)	1336-36-3		0.014	0.000064(hc)		0.03	0.000064(hc)	0.07 0.0598 ⁸ 0.490	530	0.023	0.180	0.371 ¹⁰ 0.000332 ⁸	40				
Pyrene	129-00-0		0.30 ⁸	830(h)			4,000(h)	0.195 ⁸	850	0.665	2.6	78.5 ⁸					

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		Acute	Chronic		Acute	Chronic												
Selenium	7782-49-2	20(s)	5.0(s)	170(h)(T)	290(d)(s)	71(d)(s)	4,200(h)(T)			1 ¹⁵	0.21 ¹³ 0.0276 ⁸	1	0.52	4.1	1.2	0.63		
Silver	7440-22-4	(a)	0.12 ⁸	170(h)(T)	1.9(d)(s)		40,000(h)(T)	See Saline Criteria ³ 0.5 ⁸		1.0	3.7	2 ⁹ 4.04 ⁸	2	560		4.2	14	
Styrene	100-42-5		32 ⁸					0.254 ⁸				300 ⁹ 4.69 ⁸	300					
Sulfide-hydrogen sulfide (undissociated)	7783-06-4		2			2												
TCDF												0.00084 ¹⁴						
Technetium	7440-26-8											0.2 ⁹	0.2					
tert-Butyl alcohol (TBA)	75-65-0		355,000 ¹⁶															
2,3,5,6-Tetrachloroaniline	3481-20-7											20 ⁹	20					
1,2,3,4-Tetrachlorobenzene	634-66-2											10 ⁹						
1,2,4,5-Tetrachlorobenzene	95-94-3		3 ⁸	0.97(h)			1.1(h)	1.252 ²				2.02 ²						
2,3,7,8-Tetrachlorodibenzo-p- dioxin	1746-01-6		0.000000003 ³	0.000000050(hc)			0.000000051(hc)	0.0000012 ⁸	0.0000088 ¹⁵			0.0000036 ¹⁵	0.00000315 ¹⁰ 0.000000199 ⁹					
1,1,2,2-Tetrachloroethane	79-34-5		380 ⁸	4.7(h)			110(h)	0.850 ⁸				0.127 ⁸						
Tetrachloroethylene	127-18-4		45 ⁸	0.34(hc)			1.6(hc)	See Saline Criteria ³ 0.990 ⁸		0.45 ⁷		9.92 ⁸ 20 ¹²						
2,3,4,5-Tetrachlorophenol	4901-51-3																	
Thallium	7440-28-0		10 ⁸	0.24(h)(T)			0.47(h)(T)					1 ⁹	1					
Tin	7440-31-5		180 ⁸									>3.4 ¹⁵	50 ⁹	50				
Toluene	108-88-3		253 ⁸ 822 ¹⁶	1,300(h)			15,000(h)	See Saline Criteria ³ 1.220 ⁸		2.5 ⁷		200 ⁹	200					
Toxaphene	8001-35-2	0.73	0.0002	0.00028(hc)	0.21	0.0002	0.00028(hc)	0.000077 ⁸				0.119 ⁸						
2,4,5-Trichloroaniline	636-30-6											20 ⁹	20					
1,2,3-Trichlorobenzene	87-61-6											20 ¹²						
1,2,4-Trichlorobenzene	120-82-1		30 ⁸	21(h)			42(h)	5.062 ⁸				>0.0048 ¹⁵	20 ¹²					
1,1,1-Trichloroethane	71-55-6		76 ⁸	120(h)			2,600(h)	0.213 ⁸				29.8 ⁸						
1,1,2-Trichloroethane	79-00-5		500 ⁸	13(h)			350(h)	0.518 ⁸				28.6 ⁸						
Trichloroethylene	79-01-6		47 ⁸	1.0(hc)			12(hc)	See Saline Criteria ³ 0.112 ⁸		1.6 ⁷		12.4 ⁸						
2,4,5-Trichlorophenol	95-95-4			1,800(h)			3,600(h)					0.003 ¹⁵	9 ¹²	4				
2,4,6-Trichlorophenol	88-06-2		4.9 ⁸	0.58(hc)			1.0(hc)	0.208 ⁸				0.006 ¹⁵	4 ⁹					
Uranium	7440-61-1											5 ⁹	5					
Vanadium	7440-62-2		12 ⁸									57 ¹⁵	2 ⁹	2			7.8	280
Vinyl chloride	75-01-4		930 ⁸	0.082(hc)			8.1(hc)	0.202 ⁸				0.646 ⁸						
Xylene	1330-20-7		27 ⁸ 296 ¹⁶					See Saline Criteria ³ 0.433 ⁸		>0.12 ⁷		10 ⁸						
Zinc	7440-66-6	(a)	(a)	7,400(h)(T)	90(d)(s)	81(d)(s)	26,000(h)(T)	120 121 ⁸	820	150	410	8.5 ¹¹ 6.62 ⁸	50	160	120	46	79	
Low Molecular Weight PAHs ⁸																	29	100
High Molecular Weight PAHs ¹⁹																	18	1.1

NJDEP Ecological Screening Criteria

Toxic Substance	CAS Number	Surface Water (ug/L)						Sediment (mg/kg)				Wildlife PRGs (flora and fauna)	Terrestrial Plant Tox Benchmarks	Soil (mg/kg)			
		Fresh Water (FW2) Criteria			Saline Water (SE & SC) Criteria			Fresh Water Criteria		Saline Water Criteria				EcoSSLs ²⁰			
		Aquatic		Human Health	Aquatic		Human Health	Lowest Effects Level (LEL) ¹	Severe Effects Level (SEL) ²	Effects Range Low (ER-L) ⁴	Effects Range Medium (ER-M) ⁵			Plants	Soil Invertebrates	Avian	Mammalian
		Acute	Chronic		Acute	Chronic											
Total PAHs							4.0	10,000	4.0	45.0							

(a) Criteria as listed at (f)3 below as formula

(b) Criteria as listed at (f)4 below as formula

(d) Criterion is expressed as a function of the Water Effect Ratio (WER). For criterion in the table, WER equates to the default value of 1.0.

(fc) Criteria expressed as free cyanide (as CN)/L

(h) Human health noncarcinogen

(hc) Human health carcinogen

(s) Dissolved criterion

(T) Total recoverable criterion

1 Lowest Effects Levels (LELs) indicate concentrations at which adverse benthic impact may begin to occur (level tolerated by most benthic organisms). Water column species and wildlife are at potential risk via bio-magnification (food chain toxicity) if site-related sediment concentrations of PCBs, organochlorine pesticides, or mercury are at or above the LEL. Other known biomagnifiers without ESC warrant case-by-case evaluation.

2. Severe Effects Levels (SELs) are also provided, but the SEL is not a BEE screening value. Contamination at this level indicates severe impacts to the benthic community in most cases studied. For non-polar organics (PAHs, organochlorine pesticides, PCBs), the SEL is calculated from a site-specific TOC level. Since the table SEL is based on 100% organic carbon, the calculated site-specific number is lower.

3. Refer to Estuarine/Marine Screening Criteria when a freshwater parameter has no corresponding value. Since the biological activity of non-polar organics is not expected to differ greatly in the estuarine/marine environment, these screens can be used as surrogates. While uncertainty associated with the use of estuarine/marine metal screens as freshwater surrogates is greater than with non-polar organics, one surrogate metal (silver) is provided.

4. Effects Range-Low (ER-L) represents a concentration at which adverse benthic impacts are found in approximately 10% of studies. Water column species and wildlife are at potential risk via biomagnification (food chain toxicity) if site-related sediment concentrations of PCBs, organochlorine pesticides, or mercury are at or above the ER-L. Other known biomagnifiers without NOAA screening numbers (dioxins, furans, other chlorinated organics, and selenium) warrant case-by-case evaluation.

5. The Effects Range-Median (ER-M) is also provided. The ER-M is not a BEE screening value. Contamination greater than the ER-M value indicates adverse benthic impacts in more than 50% of cases studied.

6. Refer to Freshwater Sediment Screening Criteria when a Estuarine/Marine parameter has no corresponding value and for individual Aroclor values. Since the biological activity of non-polar organics is not expected to differ greatly in the fresh water environment, freshwater screens can be used as surrogates.

7. Screening values were developed for the protection of marine receptors; however, for the purpose of this document they are considered surrogates for freshwater systems.

8. USEPA Region 5, RCRA Ecological Screening Levels (ESLs) represent a protective benchmark (e.g., water quality criteria, sediment quality guidelines/ criteria, and chronic no adverse effect levels) for 223 contaminants and are not intended to serve as cleanup levels, but are intended to function as screening levels. <http://www.epa.gov/reg5rcra/ca/ESL.pdf>

9. Wildlife Preliminary Remediation Goal based on plant study.

10. Wildlife Preliminary Remediation Goal based on shrew study.

11. Wildlife Preliminary Remediation Goal based on woodcock study.

12. Wildlife Preliminary Remediation Goal based on earthworm study.

13. Wildlife Preliminary Remediation Goal based on mouse study.

14. Wildlife Preliminary Remediation Goal based on hawk study.

15. Sediment value from NOAA Screening Quick Reference Tables (SQuiRTs).

16. Westhollow Technical Center Levels were developed by Shell Oil for surface water and were approved for use by NJDEP with the following conditions: 1) the source area is removed, 2) these levels are on the fringe of the contamination area, and 3) active remediation is occurring. These levels are applicable to surface water and wetland areas.

17. USEPA Ambient Water Quality Criteria Update for Methyl Tertiary-Butyl Ether (MTBE) <http://www.epa.gov/waterscience/criteria/mtbe-fs.html>

18. Low Molecular Weight PAHs are defined as compounds composed of fewer than four rings.

19. High Molecular Weight PAHs are defined as compounds composed of four or more rings.

20. Guidance for Developing Ecological Soil Screening Levels, OSWER Directive 9285.7-55, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, 1200 Pennsylvania Avenue, N.W., Washington, DC 20460, November 2003, Revised February 2005, http://www.epa.gov/ecotox/ecossl/pdf/ecossl_guidance_chapters.pdf

21. Value applies to DDT and metabolites.

NOTE: See Page 7/7 (SW Calculations tab) for Surface Water Calculator for metals.

NJDEP Ecological Screening Criteria

(f)3 Freshwater aquatic criteria for cadmium, chromium III, copper, nickel, silver, and zinc are expressed as a function of water hardness. Criteria can be calculated at any hardness using these equations as listed below. Criteria thus calculated are multiplied by appropriate conversion factor (CF) to convert total recoverable metal into dissolved metal and by the default Water Effect Ratio (WER) of 1.0.

General formula: $WER [e^{V(\ln(\text{hardness})) + \ln A - V(\ln Z)}] CF$

where:

V = pooled slope

A = FAV at given hardness

Z = selected value of hardness

Cadmium:

Acute dissolved criterion WER $[e^{(1.0166 (\ln [\text{hardness}]) - 3.924)}]$ 0.651

Chronic dissolved criterion WER $[e^{(0.7409 (\ln [\text{hardness}]) - 4.719)}]$ 0.651

Chromium III:

Acute dissolved criterion WER $[e^{(0.819 (\ln [\text{hardness}]) + 3.7256)}]$ 0.277

Chronic dissolved criterion WER $[e^{(0.819 (\ln [\text{hardness}]) + 0.6848)}]$ 0.277

Copper:

Acute dissolved criterion WER $[e^{(0.9422 (\ln [\text{hardness}]) - 1.7)}]$ 0.908

Chronic dissolved criterion WER $[e^{(0.8545 (\ln [\text{hardness}]) - 1.702)}]$ 0.908

Nickel:

Acute dissolved criterion WER $[e^{(0.846 (\ln [\text{hardness}]) + 2.255)}]$ 0.846

Chronic dissolved criterion WER $[e^{(0.846 (\ln [\text{hardness}]) + 0.0584)}]$ 0.846

Silver:

Acute dissolved criterion WER $[e^{(1.72 (\ln [\text{hardness}]) - 6.59)}]$ 0.85

Zinc:

Acute or dissolved criterion WER $[e^{(0.8473 (\ln [\text{hardness}]) + 0.884)}]$ 0.950

Chronic dissolved criterion WER $[e^{(0.8473 (\ln [\text{hardness}]) + 0.884)}]$ 0.950

(f)4 Freshwater criteria for pentachlorophenol are expressed as a function of pH. Criteria are derived in accordance with the formula set forth below:

Acute criterion = $e^{(1.005[\text{pH}] - 4.869)}$

Chronic criterion = $e^{(1.005[\text{pH}] - 5.134)}$