

Appendix D

Screening Values for Chemicals Evaluated

Sediment Concentrations

Table D-1 presents the screening values used in the evaluation of NSI sediment chemistry data. Values listed in this table are in parts per million (ppm) except for the values for EPA draft sediment quality criteria (SQC_{oc}) and sediment quality advisory levels (SQAL_{oc}), which are in micrograms per gram (mg/g) organic carbon. These values were multiplied by the organic carbon content (f_{oc}) of the sediment sample, when known, or the default value if unknown ($f_{oc} = 0.01$). SQALs used in this analysis were calculated specifically for use in the screening analysis of NSI data. Effects range-low (ERL) and effects range-median (ERM) values were taken from Long et al. (1995). Apparent effects threshold-low (AET-L) and apparent effects threshold-high (AET-H) values listed are values that have been normalized to dry weight. AET-Ls and AET-Hs were taken from Barrick et al. (1988). Threshold effects levels (TELs) and probable effects levels (PELs) were taken from FDEP (1994).

Fish Tissue Concentrations

Fish tissue concentrations are presented in the right columns of Table D-1. EPA risk levels were calculated for both a human health cancer risk of 10^{-5} and a noncancer hazard quotient of 1 (USEPA, 1995a, b). Other available EPA sources were consulted as necessary for risk-based concentrations to be used in a screening analysis, including the Environmental Criteria and Assessment Office (as cited in USEPA, 1995c). FDA guidance/action/tolerance levels were obtained from the FDA Office of Seafood (DHHS, 1994; 40 CFR 180.213a and 180.142; USFDA, 1993a, b, c, d, e).

Biota-Sediment Accumulation Factors

The final column in Table D-1 presents the biota-sediment accumulation factors (BSAFs) used in the analysis. The BSAFs were adopted for use in the theoretical bioaccumulation potential (TBP) calculations that represent potential concentrations that might occur in tissues of fish exposed to contaminated sediments. The methodology used in deriving BSAFs and other parameters used in the TBP calculations are described in Appendix C of this document.

Methodology for Combining Chemical Data Using a Risk-Based Approach

Several screening values, as provided in the original source documents, refer to groups of chemicals. The majority of the data included in the NSI exist as specific chemicals. To perform a screening analysis that accommodates the way the data exist in the NSI and provides a reasonably conservative risk-based approach, chemical data were combined in particular cases.

Two of the chemical groups affected by this approach are polychlorinated biphenyls (PCBs) and dioxin compounds. The data for PCBs in the NSI occur in three ways: (1) total PCBs, (2) PCB congeners, and (3) PCB aroclors. The data for the PCB congeners were summarized (excluding as appropriate the lower chlorinated homologs that may be present as laboratory artifacts) to provide a total PCB value where one was not provided by the original database. This summarization enabled comparisons to the screening values available for total PCBs. Aroclor-spe-

Table D-1. Screening Values for Chemicals Evaluated

GUIDELINE VALUES INTENDED ONLY FOR SCREENING-LEVEL HAZARD COMPARISON AMONG CHEMICALS May Be Over- or Underprotective of Sediment at a Given Location Depending on Site-Specific Conditions														
CAS Number	Chemical Name	Code	Sediment Concentration								Fish Tissue Concentration (ppm)			BSAF (unitless)
			SQC _{oc} (µg/g _{oc})	ER-L (ppm)	ER-M (ppm)	AET-L (ppm)	AET-H (ppm)	SQAL _{oc} (µg/g _{oc})	TEL (ppm)	PEL (ppm)	Concen. = EPA Risk 10 ⁻⁵	EPA Noncancer Hazard Quotient = 1	FDA Guidance/ Action/ Tolerance Level	
83329	Acenaphthene	1	130	.016	.5	.5 ^a	2 ^a	130	0.00671	0.0889		650		0.29 ^b
208968	Acenaphthylene	1		.044	.64	1.3 ^{a,b}	1.3 ^{a,b}		0.00587	0.128				
67641	Acetone	1										1100		1.0
98862	Acetophenone	1										1100		
107028	Acrolein	1										220		
107131	Acrylonitrile	1									0.2	11		1.0
15972608	Alachlor/Lasso	1									1.3	110		
116063	Aldicarb/Temik											11		
309002	Aldrin	1,3									0.0063	0.32	0.3	1.80 ^b
62533	Aniline										19			
120127	Anthracene	1		.0853	1.1	.96 ^a	13 ^a		0.0469	0.245		3200		0.29 ^b
999999933	Anthracene & Phenanthrene	1	180	.0853	1.1	.96 ^a	6.9 ^a	180	0.0469	0.245		3200		0.29 ^{b,c}
7440360	Antimony					150 ^b	200 ^a					4.3		
7440382	Arsenic	2		8.2	70	57 ^b	700 ^a		7.24	41.6	0.062	3.2	68	
1912249	Atrazine										0.49	380		
7440393	Barium											750		
92875	Benzidine										0.00047	32		
71432	Benzene	1,6						5.7			3.7			1.0
56553	Benzo(a)anthracene	1		.261	1.6	1.6 ^a	5.1 ^{a,b}		0.0748	0.693	0.15			0.29 ^b
999999955	Benzo(a)anthracene/Chrysene	1		.261	1.6	1.6 ^a	5.1 ^{a,b}		0.0748	0.693	0.15			0.29 ^{b,c}
50328	Benzo(a)pyrene	1		.43	1.6	1.6 ^a	3.6 ^b		0.0888	0.763	0.015			0.29 ^b
205992	Benzo(b)fluoranthene	1				3.6 ^a	9.9 ^b				0.15			0.29 ^b
191242	Benzo(ghi)perylene	1				.72 ^a	2.6 ^b							
207089	Benzo(k)fluoranthene	1				3.6 ^a	9.9 ^b				1.5			0.29 ^b
65850	Benzoic acid					.65 ^{a,b}	.76 ^a					43000		
98077	Benzotrichloride	1									0.0083			

Table D-1. (Continued)

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			SQC _{oc} (µg/g _{oc})	ER-L (ppm)	ER-M (ppm)	AET-L (ppm)	AET-H (ppm)	SQAL _{oc} (µg/g _{oc})	TEL (ppm)	PEL (ppm)	Concen. = EPA Risk 10 ⁻⁵	EPA Noncancer Hazard Quotient = 1	FDA Guidance/ Action/ Tolerance Level	
100516	Benzyl alcohol					.073 ^b	.87 ^{a,b}					3200		
100447	Benzyl chloride	1									0.63			
7440417	Beryllium										.025	54		
319846	BHC, alpha-	1,3							0.00032	0.00099	0.017		0.3	1.80 ^b
319857	BHC, beta-	1,3							0.00032	0.00099	0.060		0.3	1.80 ^b
319868	BHC, delta-	1,3,6						13	0.00032	0.00099	0.060		0.3	1.80 ^b
58899	BHC, gamma- (Lindane)	1,3,6						0.37	0.00032	0.00099	0.083	3.2	0.3	1.80 ^b
608731	BHC, technical grade	1,3						0.37	0.00032	0.00099	0.060	3.2	0.3	1.80 ^b
92524	Biphenyl	1,6						110				540		0.29 ^b
111444	Bis(2-chloroethyl)ether	1									0.098			
108601	Bis(2-chloroisopropyl)ether	1									1.5	430		
117817	Bis(2-ethylhexyl)phthalate	1,6				1.3 ^b	1.9 ^a		0.182	2.65	7.7	220		1.0
542881	Bis(chloromethyl)ether										0.00049			
7440428	Boron											970		
75274	Bromodichloromethane	1									1.7	220		
74839	Bromomethane	1										15		
101553	Bromophenyl phenyl ether, 4-	1,6						130				620		1.0
1689845	Bromoxynil											220		
85687	Butyl benzyl phthalate	1,6				.9 ^{a,b}	.9 ^{a,b}	1100				2200		1.0
7440439	Cadmium	2		1.2	9.6	5.1 ^b	9.6 ^a		0.676	4.21		5.4	3	
63252	Carbaryl/Sevin											1100		
1563662	Carbofuran/furadan											54		
75150	Carbon disulfide											1100		
133904	Chloramben											160		
57749	Chlordane	1,3							0.00226	0.00479	0.083	0.65	0.3	4.77 ^a
5103719	Chlordane, alpha(cis)-	1,3							0.00226	0.00479	0.083	0.65	0.3	4.77 ^a

Table D-1. (Continued)

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5103742	Chlordane, beta(trans)-	1,3							0.00226	0.00479	0.083	0.65	0.3	2 ^a
5566347	Chlordane, gamma(trans)-	1,3							0.00226	0.00479	0.083	0.65	0.3	2.22 ^a
999999247	Chlordane-Nonachlor(cis)-	1,3							0.00226	0.00479	0.083	0.65	0.3	4.77 ^a
999999248	Chlordane-Nonachlor(trans)-	1,3							0.00226	0.00479	0.083	0.65	0.3	4.77 ^a
108907	Chlorobenzene	1,6						82				220		1.0
510156	Chlorobenzilate										0.40	220		
75003	Chloroethane	1										4300		
75014	Chloroethene	1									0.057			
110758	Chloroethylvinyl ether, 2-	1										270		
74873	Chloromethane	1									8.3			
91587	Chloronaphthalene, 2-	1										860		
95578	Chlorophenol, 2-											54		
2921882	Chlorpyrifos/Dursban	1										32		1.80 ^b
7440473	Chromium	2		81	370	260 ^b	270 ^a		52.3	160		54	11	
218019	Chrysene	1		.384	2.8	2.8 ^a	9.2 ^{a,b}		0.108	0.846	15			0.29 ^b
7440508	Copper			34	270	390 ^a	1300 ^a		18.7	108		400		
108394	Cresol, m-					.63 ^{a,o}	.72 ^b					540		
95487	Cresol, o-					.63 ^{a,o}	.72 ^b					540		
106445	Cresol, p-					.67 ^{a,m}	3.6 ^a					54		
1319773	Cresols					.63 ^{a,o}	.72 ^b					54		
98828	Cumene	1										430		
21725462	Cyanazine										0.13	22		
57125	Cyanide											220		
1861321	DCPA/Dacthal	1										110		1.80 ^b
53190	DDD, o,p'-	1,3		.00158	.027	.016 ^b	.043 ^a		0.00122	0.00781	0.45		5	0.28 ^a
72548	DDD, p, p'-	1,3		.00158	.027	.016 ^b	.043 ^a		0.00122	0.00781	0.45		5	0.28 ^a

Table D-1. (Continued)

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CAS Number	Chemical Name	Code	Sediment Concentration								Fish Tissue Concentration (ppm)			BSAF (unitless)
			SQC _{oc} (µg/g _{oc})	ER-L (ppm)	ER-M (ppm)	AET-L (ppm)	AET-H (ppm)	SQAL _{oc} (µg/g _{oc})	TEL (ppm)	PEL (ppm)	Concen. = EPA Risk 10 ⁻⁵	EPA Noncancer Hazard Quotient = 1	FDA Guidance/ Action/ Tolerance Level	
3424826	DDE, o,p'-	1,3		.0022	.027	.009 ^b	.015 ^a		0.00207	0.374	0.32		5	7.7 ^a
72559	DDE, p, p'-	1,3		.0022	.027	.009 ^b	.015 ^a		0.00207	0.374	0.32		5	7.7 ^a
789026	DDT, o,p'-	1,3		.00158	.027	.034 ^b	.034 ^b		0.00119	0.00477	0.32	5.4	5	1.67 ^a
50293	DDT, p, p'-	1,3		.00158	.027	.034 ^b	.034 ^b		0.00119	0.00477	0.32	5.4	5	1.67 ^a
999999300	DDT (Total)	1,3		.00158	.0461	.009 ^b	.015 ^a		0.00389	0.0517	0.32	5.4	5	7.7 ^a
1163195	Decabromodiphenyl oxide	1										110		
84742	Di-n-butyl phthalate	1,6				1.4 ^{a,o}	1.4 ^{a,o}	1100				1100		1.0
117840	Di-n-octyl phthalate	1				6.2 ^b	6.2 ^b					220		1.0
333415	Diazinon/Spectracide	1,6						.019				9.7		1.80 ^b
53703	Dibenzo(a,h)anthracene	1		.0634	.26	.23 ^a	.97 ^b		0.00622	0.135	0.015			0.29 ^b
132649	Dibenzofuran	1,6				.54 ^a	1.7 ^a	200				43		1.0
96128	Dibromo-3-chloropropane, 1,2-	1									0.077			
124481	Dibromochloromethane	1									1.3	220		1.0
1918009	Dicamba											320		
95501	Dichlorobenzene, 1,2-	1,6				0.05 ^{a,b}	0.05 ^{a,b}	34				970		1.0
541731	Dichlorobenzene, 1,3-	1,6						170				960		1.0
106467	Dichlorobenzene, 1,4-	1,6				.11 ^b	.12 ^{a,o}	35			4.5			1.0
25321226	Dichlorobenzenes	1				0.05 ^{a,b}	0.05 ^{a,b}	34			4.5	960		1.0
91941	Dichlorobenzidine, 3,3'-										0.24			
75718	Dichlorodifluoromethane	1										2200		
75343	Dichloroethane 1,1-	1										1100		1.0
107062	Dichloroethane 1,2-	1									1.2			1.0
75354	Dichloroethene, 1,1-	1									0.18	97		
156605	Dichloroethene, trans-1,2-	1										220		1.0
156592	Dichloroethylene, cis-1,2-	1										110		
75092	Dichloromethane	1									14	650		1.0

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			SQC _{oc} (µg/g _{oc})	ER-L (ppm)	ER-M (ppm)	AET-L (ppm)	AET-H (ppm)	SQAL _{oc} (µg/g _{oc})	TEL (ppm)	PEL (ppm)	Concen. = EPA Risk 10 ⁻⁵	EPA Noncancer Hazard Quotient = 1	FDA Guidance/ Action/ Tolerance Level	
120832	Dichlorophenol, 2,4-											32		
94757	Dichlorophenoxyacetic acid, 2,4-	5										110	1	
94826	Dichlorophenoxybutanoic acid, 2,4-											86		
78875	Dichloropropane, 1,2-	1									1.6			1.0
542756	Dichloropropene, 1,3-	1									0.62	3.2		
62737	Dichlorvos	1									0.37	5.4		
115322	Dicofol/Kelthane										0.24			
60571	Dieldrin	1,3,6	11					11	7.15E-4	0.0043	.0067	.54	.3	1.80 ^b
84662	Diethyl phthalate	1,6				0.2 ^b	0.2 ^b	63				8600		1.0
119904	Dimethoxybenzidine,3,3'-										7.7			
131113	Dimethyl phthalate	1				0.16 ^c	0.16 ^c					110000		1.0
105679	Dimethylphenol, 2,4-					.029 ^c	.21 ^b					220		
528290	Dinitrobenzene, 1,2-											4.3		
99650	Dinitrobenzene, 1,3-											1.1		
100254	Dinitrobenzene, 1,4											4.3		
51285	Dinitrophenol, 2,4-											22		
121142	Dinitrotoluene, 2,4-											22		
606202	Dinitrotoluene, 2,6-											11		
88857	Dinoseb/DNBP											11		
122667	Diphenylhydrazine, 1,2-										0.13			
298044	Disulfoton	1										0.43		
959988	Endosulfan, alpha-	1,6						.29				65		1.80 ^b
33213659	Endosulfan, beta-	1,6						1.4				65		1.80 ^b
115297	Endosulfan mixed isomers	1,6						.54				65		1.80 ^b
72208	Endrin	1,6	4.2					4.2				3.2		1.80 ^b
563122	Ethion/Bladen	1										5.4		1.80 ^b

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			SQC _{oc} (µg/g _{oc})	ER-L (ppm)	ER-M (ppm)	AET-L (ppm)	AET-H (ppm)	SQAL _{oc} (µg/g _{oc})	TEL (ppm)	PEL (ppm)	Concn. = EPA Risk 10 ⁻⁵	EPA Noncancer Hazard Quotient = 1	FDA Guidance/ Action/ Tolerance Level	
141786	Ethyl acetate	1										9700		
100414	Ethylbenzene	1,6				.01 ^b	.037 ^a	480				1100		1.0
106934	Ethylene dibromide	1									.0013			
206440	Fluoranthene	1	620	.6	5.1	2.5 ^a	30 ^a	620	0.113	1.494		430		0.29 ^b
86737	Fluorene	1,6		.019	.54	.54 ^a	3.6 ^a	54	0.0212	0.144		430		0.29 ^b
944229	Fonofos	1										22		
76448	Heptachlor	1,3									0.024	5.4	.3	1.80 ^b
1024573	Heptachlor epoxide	1,3									0.012	0.14	.3	1.80 ^b
118741	Hexachlorobenzene	1				.022 ^b	.23 ^a				0.067	8.6		0.09 ^a
87683	Hexachlorobutadiene	1				.011 ^b	.27 ^a				1.4	2.2		1.0
77474	Hexachlorocyclopentadiene	1										75		
67721	Hexachloroethane	1,6						100			7.7	11		1.0
51235042	Hexazinone	1										360		
123319	Hydroquinone											430		
193395	Indeno(1,2,3-cd)pyrene	1				.69 ^a	2.6 ^b				0.15			0.29 ^b
78591	Isophorone	1									110	2200		1.0
33820530	Isopropalin											160		
7439921	Lead	2		46.7	218	450 ^b	660 ^{a,o}		30.2	112			1.3	
121755	Malathion	1,6						.067				220		1.80 ^b
108316	Maleic anhydride											1100		
7439965	Manganese											54		
7439976	Mercury			.15	.71	.59 ^a	2.1 ^{a,b}		0.13	0.696		1.1	1	
72435	Methoxychlor	1,6						1.9				54		1.80 ^b
78933	Methyl ethyl ketone	1										6500		1.0
108101	Methyl isobutyl ketone	1										860		
22967926	Methyl mercury	3										1.1	1	

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91576	Methylnaphthalene, 2-	1		.07	.67	.67 ^a	1.9 ^a		0.0202	0.201				
21087649	Metribuzin											270		
2385855	Mirex/Decchlorane	1,3									0.060	2.2	0.1	1.31 ^a
7439987	Molybdenum											54		
91203	Naphthalene	1,6		.16	2.1	2.1 ^a	2.7 ^b	47	0.0346	0.391		430		0.29 ^b
91598	Naphthylamine, 2-										0.00083			
7440020	Nickel	2		20.9	51.6				15.9	42.8		220	70	
98953	Nitrobenzene											5.4		
100027	Nitrophenol, 4											670		
924163	Nitrosodi-n-butylamine, N-										0.020			
621647	Nitrosodi-n-propylamine, N-										0.015			
55185	Nitrosodimethylamine, N-										0.0021			
86306	Nitrosodiphenylamine, N-					.028 ^b	.13 ^a				22			
999999484	PAHs (high molecular weight)			1.7	9.6	17 ^{aho}	69 ^{aho}		0.655	6.676				
999999502	PAHs (low molecular weight)			.552	3.16	5.2 ^{ab}	24 ^{ab}		0.312	1.442				
56382	Parathion ethyl											65		
12674112	PCB (Aroclor-1016)	1,4		.0227	.180	1.0 ^b	3.1 ^a		0.0216	0.189	0.014	0.75	2	1.85 ^a
11104282	PCB (Aroclor-1221)	1,4		.0227	.180	1.0 ^b	3.1 ^a		0.0216	0.189	0.014	0.22	2	1.85 ^a
11141165	PCB (Aroclor-1232)	1,4		.0227	.180	1.0 ^b	3.1 ^a		0.0216	0.189	0.014	0.22	2	1.85 ^a
53469219	PCB (Aroclor-1242)	1,4		.0227	.180	1.0 ^b	3.1 ^a		0.0216	0.189	0.014	0.22	2	1.85 ^a
12672296	PCB (Aroclor-1248)	1,4		.0227	.180	1.0 ^b	3.1 ^a		0.0216	0.189	0.014	0.22	2	1.85 ^a
11097691	PCB (Aroclor-1254)	1,4		.0227	.180	1.0 ^b	3.1 ^a		0.0216	0.189	0.014	0.22	2	1.85 ^a
11096825	PCB (Aroclor-1260)	1,4		.0227	.180	1.0 ^b	3.1 ^a		0.0216	0.189	0.014	0.22	2	1.85 ^a
608935	Pentachlorobenzene	1,6						69				8.6		0.04 ^a
82688	Pentachloronitrobenzene/Quint- oze										0.41	32		
87865	Pentachlorophenol					.36 ^a	.69 ^b				0.90	320		

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CAS Number	Chemical Name	Code	Sediment Concentration								Fish Tissue Concentration (ppm)			BSAF (unitless)
			SQC _{oc} (μg/g _{oc})	ER-L (ppm)	ER-M (ppm)	AET-L (ppm)	AET-H (ppm)	SQAL _{oc} (μg/g _{oc})	TEL (ppm)	PEL (ppm)	Concen. = EPA Risk 10 ⁻⁵	EPA Noncancer Hazard Quotient = 1	FDA Guidance/ Action/ Tolerance Level	
85018	Phenanthrene	1	180	0.240	1.5	1.5 ^a	6.9 ^a	180	0.0867	0.544				
108952	Phenol					.42 ^b	1.2 ^{a,b}					6500		
298022	Phorate/Famophos/Thimet	1										2.2		
85449	Phthalic anhydride											22000		
1336363	Polychlorinated biphenyls	1,4		0.0227	0.180	1.0 ^b	3.1 ^a		0.0216	0.189	0.014	0.22	2	1.85
1610180	Prometon/Pramitol											160		
7287196	Prometym/Caparol											43		
23950585	Pronamide											810		
1918167	Propachlor											140		
129000	Pyrene	1		.665	2.6	3.3 ^a	16 ^{a,b}		0.153	1.398		320		0.29
91225	Quinoline	1									0.009			
7782492	Selenium											54		
7440224	Silver			1	3.7	6.1 ^a	6.1 ^a		0.733	1.77		54		
122349	Simazine	5									0.90	54	12	
7440246	Strontium											6500		
100425	Styrene	1										2200		
13071799	Terbufos/Counter	1										0.27		
886500	Terbutryn											11		
95943	Tetrachlorobenzene, 1,2,4,5-	1										3.2		1.0
1746016	Tetrachlorodibenzo-p-dioxin,2,3,7,8-	1									6.9E-7			0.059
79345	Tetrachloroethane, 1,1,2,2-	1,6						160			0.54			1.0
127184	Tetrachloroethene	1,6				.057 ^b	.14 ^a	53			2.1	110		1.0
56235	Tetrachloromethane	1,6						120			0.83	7.5		1.0
58902	Tetrachlorophenol, 2,3,4,6-											320		
961115	Tetrachlorvinphos/Gardona/Stirof	1									4.5	320		
7440315	Tin											6500		

Table D-1. (Continued)

GUIDELINE VALUES INTENDED ONLY FOR SCREENING-LEVEL HAZARD COMPARISON AMONG CHEMICALS May Be Over- or Underprotective of Sediment at a Given Location Depending on Site-Specific Conditions														
CAS Number	Chemical Name	Code	Sediment Concentration								Fish Tissue Concentration (ppm)			BSAF (unitless)
			SQC _{sc} (µg/g _{sc})	ER-L (ppm)	ER-M (ppm)	AET-L (ppm)	AET-H (ppm)	SQAL _{sc} (µg/g _{sc})	TEL (ppm)	PEL (ppm)	Concen. = EPA Risk 10 ⁻⁵	EPA Noncancer Hazard Quotient = 1	FDA Guidance/ Action/ Tolerance Level	
108883	Toluene	1,6						89				2200		1.0
8001352	Toxaphene	1,6						10			.098			1.80 ^b
75252	Tribromomethane (Bromoform)	1,6						65			14	220		1.0
120821	Trichlorobenzene, 1,2,4-	1,6				.051 ^a	.064 ^a	920				110		1.0
71556	Trichloroethane, 1,1,1-	1,6						17				970		1.0
79005	Trichloroethane, 1,1,2-	1									1.9	43		1.0
79016	Trichloroethene	1,6						210			9.8	65		1.0
75694	Trichlorofluoromethane	1										3200		1.0
67663	Trichloromethane (Chloroform)	1									18	110		1.0
95954	Trichlorophenol, 2,4,5-											1100		
88062	Trichlorophenol, 2,4,6-										9.8			
93765	Trichlorophenoxyacetic acid, 2,4,5-											110		
93721	Trichlorophenoxypropionic acid, 2,4,5-											86		
1582098	Trifluralin/Treflan										14	81		
95636	Trimethylbenzene, 1,2,4-	1										5.4		
118967	Trinitrotoluene										3.6	5.4		
7440622	Vanadium											75		
108054	Vinyl acetate	1										11000		
108383	Xylene, m-	1,6				.04 ^b	.12 ^a	2.5				22000		1.0
95476	Xylene, o-	1				.04 ^b	.12 ^a	2.5				22000		1.0
106423	Xylene, p-	1				.04 ^b	.12 ^a	2.5						1.0
1330207	Xylenes	1				.04 ^b	.12 ^a	2.5				22000		1.0
7440666	Zinc			150	410	410 ^b	1600 ^a		124	271		3200		
88888881	Dioxin-toxic equivalents	1									6.9E-7			0.025 ^a

Table D-1. (Continued)

Codes:

1. Chemical is a nonpolar organic.
2. FDA criterion is a guideline.
3. FDA criterion is an action level.
4. FDA criterion is a tolerance level, with the force of law.
5. Fish tissue action level set by USEPA, 40 CFR Part 180.
6. Preliminary $SQAL_{oc}$ developed for this chemical is under technical review.

AET Criteria:

- ^a Sediment concentration based on amphipods.
- ^b Sediment concentration based on benthic organisms.
- ^c Sediment concentration based on oysters.

BSAF Sources:

- ^a Cook, 1995.
- ^b Hansen, 1995.

cific data were analyzed separately. In addition, the dioxin congeners were evaluated using the toxicity equivalence factor (TEF) approach (USEPA, 1989). This approach involves summarizing specific dioxin congeners based on their toxicity as compared to 2,3,7,8-tetrachlorodibenzo-p-dioxin, for which screening values are available. PCBs and dioxin represent the only cases where chemical data were actually combined for the NSI evaluation.

Because EPA typically performs risk-based screening by analyzing closely related chemicals with the same risk-based concentrations, this methodology was applied to the NSI evaluation. If no screening values were available for a certain chemical, but were available for a closely related chemical or group of chemicals, the lower or more conservative screening values of the closely related chemicals were used in analyzing the chemicals without screening values. This methodology was applied only for chemicals or chemical groups with more than 20 positive results. The following chemicals and chemical groups were affected by this methodology: BHCs, chlordanes, cresols, DDT and metabolites, dichlorobenzenes, endosulfans, methylmercury, anthracene and phenanthrene, benzo(a)anthracene/chrysene, xylenes, and PCBs (in applying screening values to aroclors with no available screening values).

Frequency of Detection

The frequency at which a given chemical or chemical group is responsible for sites in the NSI being categorized as Tier 1 or Tier 2 is often a reflection of the number of times that chemical is measured and detected in sediment samples. Thus, chemicals that are measured and detected less frequently might not often be identified as posing a potential risk to aquatic life or human health, even though the chemical is highly toxic. Table D-2 lists the number of times each chemical included in the NSI evaluation was measured and detected (i.e., a positive result) in sediment and fish tissue and the number of times each chemical was responsible for Tier 1 or Tier 2 sampling stations being classified.

Table D-2. Frequency of Detection of Chemicals in Sediment and Fish Tissue and Number of Detections Resulting in Risk (Tier 1 or Tier 2)^{a, b}

CAS Number	Chemical Name	Number of Times Measured in Sediment	Number of Positive Sediment Results	Number of Times Measured in Tissue ^c	Number of Positive Tissue Results ^c	Tier 1 Level Results	Tier 2 Level Results
83329	Acenaphthene	6126	1567	777	41	144	359
208968	Acenaphthylene	5774	1286	-	-	74	958
67641	Acetone	547	48	22	16	-	-
107028	Acrolein	-	-	464	-	-	-
107131	Acrylonitrile	1034	9	464	-	-	7
15972608	Alachlor/Lasso	-	-	976	1	-	-
309002	Aldrin	14311	658	8029	612	2	712
62533	Aniline	-	-	10	-	-	-
120127	Anthracene	5211	1798	748	63	168	728
999999933	Anthracene & Phenanthrene	260	199	4	-	82	95
7440360	Antimony	5923	2980	1275	99	-	56
7440382	Arsenic	22281	18791	5528	2113	189	8613
1912249	Atrazine	-	-	880	-	-	-
7440393	Barium	-	-	986	837	-	-
71432	Benzene	2248	136	976	90	-	16
92875	Benzidine	-	-	537	-	-	-
56553	Benzo(a)anthracene	6718	3236	820	153	241	1540
999999955	Benzo(a)anthracene/Chrysene	272	243	-	-	146	76
50328	Benzo(a)pyrene	7011	3263	831	58	317	2292
205992	Benzo(b)fluoranthene	4179	1249	717	26	-	441
191242	Benzo(ghi)perylene	6034	2016	-	-	-	259
207089	Benzo(k)fluoranthene	4192	1093	651	21	-	113
65850	Benzoic acid	1724	247	121	5	-	41
100516	Benzyl alcohol	1910	90	120	-	-	13
7440417	Beryllium	-	-	1301	81	-	39
92524	Biphenyl	1215	873	564	138	-	2
542881	Bis(chloromethyl)ether	-	-	76	-	-	-
111444	Bis(2-chloroethyl)ether	-	-	636	3	-	3
108601	Bis(2-chloroisopropyl)ether	-	-	34	1	-	-
117817	Bis(2-ethylhexyl)phthalate	4606	1998	647	91	401	1109
7440428	Boron	-	-	44	21	-	-
75274	Bromodichloromethane	-	-	560	4	-	-
74839	Bromomethane	-	-	491	3	-	-
101553	Bromophenyl phenyl ether, 4-	2698	20	656	1	-	7
85687	Butyl benzyl phthalate	4069	333	634	4	1	51
319846	BHC, alpha-	9109	219	8148	1670	11	461
319857	BHC, beta-	6761	241	3060	209	-	257
319868	BHC, delta-	4891	99	2156	65	1	94

Table D-2. (Continued)

CAS Number	Chemical Name	Number of Times Measured in Sediment	Number of Positive Sediment Results	Number of Times Measured in Tissue ^c	Number of Positive Tissue Results ^c	Tier 1 Level Results	Tier 2 Level Results
58899	BHC, gamma-/Lindane	14442	999	8750	1391	101	527
608731	BHC, technical grade	169	166	115	31	3	66
7440439	Cadmium	27919	15176	6743	3321	-	7206
75150	Carbon disulfide	-	-	24	21	-	-
57749	Chlordane	12432	2170	7316	4568	116	4228
999999247	Chlordane-Nonachlor(cis)-	1476	9	4468	2101	-	268
999999248	Chlordane-Nonachlor(trans)-	1992	31	4569	2764	-	556
5103719	Chlordane, alpha(cis)-	4416	1516	6092	3659	3	1157
5103742	Chlordane, beta(trans)-	2833	443	5841	3045	3	847
5566347	Chlordane, gamma(trans)-	967	334	85	19	-	207
108907	Chlorobenzene	2111	58	819	18	-	4
510156	Chlorobenzilate	-	-	22	-	-	-
75003	Chloroethane	-	-	557	1	-	-
75014	Chloroethene	-	-	706	2	-	2
110758	Chloroethylvinyl ether, 2-	-	-	534	-	-	-
74873	Chloromethane	-	-	744	12	-	-
91587	Chloronaphthalene, 2-	-	-	655	1	-	-
95578	Chlorophenol, 2-	-	-	629	1	-	-
2921882	Chlorpyrifos/Dursban	305	5	793	143	-	-
7440473	Chromium	27504	25216	5508	3283	426	4126
218019	Chrysene	6975	3580	893	149	185	1618
7440508	Copper	27956	25452	6284	5533	-	11213
108394	Cresol, m-	988	780	-	-	-	41
95487	Cresol, o	1993	745	51	-	-	22
106445	Cresol, p-	985	84	49	3	-	31
1319773	Cresols	18	1	-	-	-	1
21725462	Cyanazine	-	-	326	-	-	-
57125	Cyanide	-	-	14	3	-	-
84742	Di-n-butyl phthalate	4651	986	637	55	9	112
117840	Di-n-octyl phthalate	4179	435	650	6	-	23
333415	Diazinon/Spectracide	3712	249	172	-	-	188
53703	Dibenzo(a,h)anthracene	7564	2431	824	16	419	1732
132649	Dibenzofuran	2564	416	126	-	25	51
124481	Dibromochloromethane	2033	18	562	1	-	-
95501	Dichlorobenzene, 1,2-	4402	107	892	2	38	23
541731	Dichlorobenzene, 1,3-	4315	132	797	2	-	22
106467	Dichlorobenzene, 1,4-	4352	268	887	3	53	41
25321226	Dichlorobenzenes	27	12	-	-	6	3
91941	Dichlorobenzidine, 3,3'-	-	-	639	1	-	-

Table D-2. (Continued)

CAS Number	Chemical Name	Number of Times Measured in Sediment	Number of Positive Sediment Results	Number of Times Measured in Tissue ^c	Number of Positive Tissue Results ^c	Tier 1 Level Results	Tier 2 Level Results
75718	Dichlorodifluoromethane	-	-	174	-	-	-
75343	Dichloroethane 1,1-	1918	19	561	-	-	-
107062	Dichloroethane 1,2-	1981	20	972	8	-	-
156605	Dichloroethene, trans-1,2-	1393	33	793	2	-	-
75354	Dichloroethene, 1,1-	-	-	973	2	-	-
75092	Dichloromethane	2177	576	532	112	-	11
120832	Dichlorophenol, 2,4-	-	-	642	1	-	-
94757	Dichlorophenoxyacetic acid, 2,4-	-	-	39	-	-	-
78875	Dichloropropane, 1,2-	2015	15	563	2	-	-
542756	Dichloropropene, 1,3-	-	-	107	-	-	-
115322	Dicofol/Kelthane	-	-	400	26	-	-
60571	Dieldrin	14702	3113	10243	5583	89	6709
84662	Diethyl phthalate	4188	367	654	2	34	48
131113	Dimethyl phthalate	4118	135	653	-	-	38
105679	Dimethylphenol, 2,4-	4541	80	640	1	-	54
51285	Dinitrophenol, 2,4-	-	-	631	-	-	-
121142	Dinitrotoluene, 2,4-	-	-	636	1	-	-
606202	Dinitrotoluene, 2,6-	-	-	636	1	-	-
122667	Diphenylhydrazine, 1,2-	-	-	509	-	-	-
298044	Disulfoton	-	-	23	-	-	-
1861321	DCPA/Dacthal	129	76	827	586	-	3
53190	DDD, o,p'-	6349	977	3397	428	73	502
72548	DDD, p, p'-	15311	4411	6252	2481	572	2574
3424826	DDE, o,p'-	5434	632	3427	401	118	222
72559	DDE, p, p'-	15961	5980	7656	5715	823	3501
999999300	DDT (Total)	3710	736	5750	4183	122	860
789026	DDT, o,p'-	6056	567	3479	368	25	268
50293	DDT, p, p'-	16028	3268	5843	1677	371	1839
115297	Endosulfan mixed isomers	2606	80	49	12	-	20
959988	Endosulfan, alpha-	5581	84	2832	53	-	45
33213659	Endosulfan, beta-	5886	260	2157	10	-	42
72208	Endrin	12694	289	8192	893	-	8
563122	Ethion/Bladen	2953	38	170	-	-	-
100414	Ethylbenzene	2543	118	807	50	1	42
206440	Fluoranthene	7562	4563	953	216	234	1074
86737	Fluorene	6652	2280	797	14	231	1141
944229	Fonofos	-	-	288	-	-	-
76448	Heptachlor	11952	673	7369	1006	-	210
1024573	Heptachlor epoxide	12829	986	7480	2896	-	1431

Table D-2. (Continued)

CAS Number	Chemical Name	Number of Times Measured in Sediment	Number of Positive Sediment Results	Number of Times Measured in Tissue ^c	Number of Positive Tissue Results ^c	Tier 1 Level Results	Tier 2 Level Results
118741	Hexachlorobenzene	10044	1445	6970	1519	-	224
87683	Hexachlorobutadiene	4198	128	1161	14	-	81
67721	Hexachloroethane	3801	4	636	-	-	1
193395	Indeno(1,2,3-cd)pyrene	5874	1913	756	20	-	559
78591	Isophorone	3400	40	635	4	-	8
33820530	Isopropalin	-	-	392	15	-	-
7439921	Lead	29979	24971	6654	3008	-	8883
121755	Malathion	4041	38	500	1	-	26
108316	Maleic anhydride	-	-	2	-	-	-
7439965	Manganese	-	-	1000	971	-	5
7439976	Mercury	26142	16632	9752	8424	1951	5049
72435	Methoxychlor	9183	154	5912	63	-	33
78933	Methyl ethyl ketone	519	7	20	11	-	-
108101	Methyl isobutyl ketone	-	-	26	-	-	-
22967926	Methyl mercury	-	-	9	8	-	-
91576	Methylnaphthalene, 2-	2629	973	-	-	71	522
21087649	Metribuzin	-	-	289	-	-	-
2385855	Mirex/Decchlorane	5794	544	4800	915	-	40
7439987	Molybdenum	-	-	707	169	-	-
91203	Naphthalene	6823	2820	803	22	291	1247
7440020	Nickel	21519	18550	3120	974	-	9260
98953	Nitrobenzene	-	-	635	-	-	-
100027	Nitrophenol, 4	-	-	606	1	-	-
621647	Nitrosodi-n-propylamine, N-	-	-	645	1	-	1
86306	Nitrosodiphenylamine, N-	3730	66	661	3	-	45
999999484	PAHs (high molecular weight)	1566	885	-	-	93	383
999999502	PAHs (low molecular weight)	1604	895	-	-	112	382
56382	Parathion ethyl	-	-	499	4	-	-
608935	Pentachlorobenzene	114	54	404	30	-	4
82688	Pentachloronitrobenzene/Quintozone	-	-	390	2	-	-
87865	Pentachlorophenol	5622	195	1756	149	-	26
85018	Phenanthrene	7067	4078	-	-	335	694
108952	Phenol	4595	864	647	12	-	155
1336363	Polychlorinated biphenyls	11296	4183	10642	7379	8151	2620
1610180	Prometon/Pramitol	-	-	289	-	-	-
1918167	Propachlor	-	-	1	-	-	-
129000	Pyrene	7558	4555	952	187	482	1896
12674112	PCB (Aroclor-1016)	5098	46	3161	12	19	39
11104282	PCB (Aroclor-1221)	5627	7	3568	2	4	5

Table D-2. (Continued)

CAS Number	Chemical Name	Number of Times Measured in Sediment	Number of Positive Sediment Results	Number of Times Measured in Tissue ^c	Number of Positive Tissue Results ^c	Tier 1 Level Results	Tier 2 Level Results
11141165	PCB (Aroclor-1232)	5417	13	3195	1	4	10
53469219	PCB (Aroclor-1242)	6375	435	4446	220	355	270
12672296	PCB (Aroclor-1248)	6314	559	4464	688	916	280
11097691	PCB (Aroclor-1254)	7178	1305	5871	3343	3664	765
11096825	PCB (Aroclor-1260)	6885	890	6035	3611	3866	531
7782492	Selenium	-	-	2559	2079	-	4
7440224	Silver	11082	6256	1739	515	350	1083
122349	Simazine	-	-	289	-	-	-
7440246	Strontium	-	-	45	45	-	-
100425	Styrene	-	-	191	-	-	-
88888882	SEM est ([SEM]-[AVS])	335	335	-	-	8	161
95943	Tetrachlorobenzene, 1,2,4,5-	97	1	398	12	-	-
1746016	Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	631	38	908	391	353	23
79345	Tetrachloroethane, 1,1,2,2-	1683	49	978	33	-	2
127184	Tetrachloroethene	2429	109	973	49	2	17
56235	Tetrachloromethane	2010	15	979	4	-	-
58902	Tetrachlorophenol, 2,3,4,6-	-	-	71	-	-	-
7440315	Tin	-	-	382	264	-	-
108883	Toluene	2338	325	814	116	-	28
8001352	Toxaphene	10912	75	6566	643	-	684
75252	Tribromomethane/Bromoform	2078	44	818	7	-	-
120821	Trichlorobenzene, 1,2,4-	4256	87	1082	46	6	49
71556	Trichloroethane, 1,1,1-	2083	63	815	23	-	10
79005	Trichloroethane, 1,1,2-	2035	14	879	7	-	-
79016	Trichloroethene	2494	75	975	19	-	1
75694	Trichlorofluoromethane	1096	9	288	15	-	-
67663	Trichloromethane/Chloroform	2277	76	972	37	-	-
95954	Trichlorophenol, 2,4,5-	-	-	73	-	-	-
88062	Trichlorophenol, 2,4,6-	-	-	658	-	-	-
93765	Trichlorophenoxyacetic acid, 2,4,5-	-	-	3	-	-	-
93721	Trichlorophenoxypropionic acid, 2,4,5	-	-	36	-	-	-
1582098	Trifluralin/Treflan	-	-	925	193	-	-
7440622	Vanadium	-	-	768	465	-	-
108054	Vinyl acetate	-	-	21	-	-	-
108383	Xylene, m-	55	31	-	-	4	6
95476	Xylene, o-	61	1	-	-	-	1
106423	Xylene, p-	14	2	-	-	-	2
1330207	Xylenes	922	48	22	13	5	11
7440666	Zinc	27065	26473	4580	4553	-	5176

Table D-2. (Continued)

CAS Number	Chemical Name	Number of Times Measured in Sediment	Number of Positive Sediment Results	Number of Times Measured in Tissue ^c	Number of Positive Tissue Results ^c	Tier 1 Level Results	Tier 2 Level Results
888888881	Dioxin toxic equivalents	56	56	590	590	459	45

^aResults presented at observation level. Multiple observations may have occurred at a given station.

^bObservations recorded here correspond only to stations with available latitude/longitude coordinates.

^cFish tissue results are presented for demersal, resident, and edible species only.

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