APPENDIX B-2

RELATIVE RISK COMPARISON VALUES

Ambient Water Quality

Ambient Water Quality Criteria (AWQC) have been developed under Section 304(a) of the Clean Water Act for priority toxic pollutants as guidelines from which states develop water quality standards. The criteria used to develop the Relative Risk Comparison Values were extracted from *Title 40, Code of Federal Regulations, Part 131, Chapter I, as amended*. These Comparison Values represent promulgated Federal criteria. Additional State requirements vary; thus, these are not represented in this table. The U.S. Environmental Protection Agency (EPA) criteria used in this Appendix are for fresh water and marine chronic exposures; although, acute exposure values have been used (and identified) where no chronic levels exist. Also, the EPA's Lowest Observed Effects Levels are used (as indicated by footnotes) in the absence of established AWQC.

The AWQ Relative Risk Comparison Values should be used for the assessment of surface waters where the potentials for impacts on ecological health are of primary interest.

Please note that synonyms have been added to Appendix B-2 to facilitate its use. In instances where no Chemical Abstract System (CAS) number was available, a unique identifier has been assigned to the analyte for database function purposes.

The Relative Risk Comparison Values will be formally updated as part of future Primer revisions to address new data issued from EPA or other sources, including military unique compounds. The Relative Risk Comparison Values will be posted on the Internet through the U.S. Army Center for Health Promotion and Preventative Medicine home page.

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RELATIVE RISK COMPARISON VALUES
Ambient Water Quality

Analyte	CAS Number	Fresh LeL ug/L	Foot	Marine ER-L ug/L	Foot
Acenaphthene	83-32-9	5.20E+02	a,b	7.10E+02	a,b
Acrolein	107-02-8	2.10E+01	a	5.50E+01	a,b
Acrylaldehyde	107-02-8	2.10E+01	a	5.50E+01	a,b
Acrylic Aldehyde	107-02-8	2.10E+01	a	5.50E+01	a,b
Acrylon	107-13-1	2.60E+03	a	NA	
Acrylonitrile	107-13-1	2.60E+03	a	NA	
Aldrin	309-00-2	3.00E+00	b	1.30E+00	b
Alpha, Beta-Dichloroethane	107-06-2	2.00E+04	a	1.13E+05	a,b
Antimony	7440-36-0	3.00E+01	d	5.00E+02	d
Aroclor	1336-36-3	1.40E-02		3.00E-02	
Arsenic (III)	22569-72-8	1.90E+02		3.60E+01	
1,2-Benzacenaphthene	206-44-0	3.98E+03	a,b	1.60E+01	a
Benzene	71-43-2	5.30E+03	a,b	7.00E+02	a
Benzene, hexachloro-	118-74-1	3.68E+00	d	NA	
Benzene, methyl-	108-88-3	1.75E+04	a,b	5.00E+03	a
Benzene,1,2-(1,8-naphthylene)-	206-44-0	3.98E+03	a,b	1.60E+01	a
Benzene,hydrazodi-	122-66-7	2.70E+02	a,b	NA	
1,2-Benzenedicarboxylic Acid, Bis(2-Ethylhexyl)Ester	117-81-7	3.60E+02	d	3.60E+02	d
Benzenol	108-95-2	2.56E+03	a	5.80E+03	a,b
Benzidine	92-87-5	2.50E+03	a,b	NA	
Benzo(jk)Fluorene	206-44-0	3.98E+03	a,b	1.60E+01	a
Benzodioxathiepin-3-Oxide	115-29-7	5.60E-02		9.00E-03	
Benzoepin	115-29-7	5.60E-02		9.00E-03	
Beryllium	7440-41-7	5.30E+00	a	NA	
BHC	680-73-1	1.00E+02	a,b	3.00E-01	a,b
Biphenyl, polychloro-	1336-36-3	1.40E-02		3.00E-02	
Bis(2-Ethylhexyl)Phthalate (DEHP)	117-81-7	3.60E+02	d	3.60E+02	d
Cadmium	7440-43-9	1.10E+00	c	9.30E+00	
Carbon Dichloride	127-18-4	8.40E+02	a	4.50E+02	a
Carbon Tetrachloride	56-23-5	3.52E+04	a,b	5.00E+04	a,b
Chlordane	57-74-9	4.00E-03		4.00E-03	
Chlordane, alpha- (2)	57-74-9	4.00E-03		4.00E-03	
Chlordane, gamma-	57-74-9	4.00E-03		4.00E-03	
Chlorinated Naphthalenes	RRSE-021	1.60E+03	a,b	7.50E+00	a,b
Chlorinated Benzenes	RRSE-022	5.00E+01	a	1.29E+02	a
Chlorinated biphenyl	1336-36-3	1.40E-02		3.00E-02	
Chlorine	7782-50-5	1.10E+01		7.50E+00	
Chloro-3-methylphenol, 4- (p-Chloro-m-cresol)	59-50-7	3.00E+01	a,b	NA	
p-Chloro-m-Cresol	59-50-7	3.00E+01	a,b	NA	
Chloroform	67-66-3	1.24E+03	a	NA	
4-Chlorophenol	106-48-9	NA		2.97E+04	a,b
Chlorpyrifos	2921-88-2	4.00E-02		6.00E-03	
Chromium (III)	1308-14-1	2.10E+02	c	1.03E+04	a,b
Chromium (VI)	7440-47-3	1.10E+01		5.00E+01	
Copper	7440-50-8	1.20E+01	c	2.90E+00	b
Cyanide	57-12-5	5.20E+00		1.00E+00	b
Cyanide (free)	57-12-5	5.20E+00		1.00E+00	
2,4-DCP	120-83-2	5.70E+03	a	NA	
4,4-DDD	72-54-8	6.00E-01	a,b	3.60E+00	a,b
DDE	72-55-9	1.05E+03	a,b	1.40E+01	a,b
4,4-DDE	72-55-9	1.05E+03	a,b	1.40E+01	a,b

RELATIVE RISK COMPARISON VALUES
Ambient Water Quality

Analyte	CAS Number	Fresh LeL ug/L	Foot	Marine ER-L ug/L	Foot
DDT	50-29-3	1.00E-03		1.00E-03	
4,4-DDT	50-29-3	1.00E-03		1.00E-03	
DEHP	117-81-7	3.60E+02	d	3.60E+02	d
Demeton	8065-48-3	1.00E-01		1.00E-01	
Di(2-ethylhexyl)orthophthalate	117-81-7	3.60E+02	d	3.60E+02	d
Dibenzo(b,e)(1,4)dioxin, 2,3,7,8-tetrachloro-	1746-01-6	1.00E-05	a	NA	
Dibenzo-p-dioxin, 2,3,7,8-tetrachloro-	1746-01-6	1.00E-05	a	NA	
Dichlorobenzenes (total)	25321-22-6	7.63E+02	a	1.97E+03	a,b
1,2-Dichloroethane (EDC)	107-06-2	2.00E+04	a	1.13E+05	a,b
Dichloroethylenes (total)	25323-30-3	1.16E+04	a,b	2.24E+05	a,b
2,4-Dichlorohydroxybenzene	120-83-2	5.70E+03	a	NA	
2,4-Dichlorophenol	120-83-2	5.70E+03	a	NA	
Dichloropropane	26638-19-7	5.70E+03	a	3.04E+03	a
Dichloropropene	26952-23-8	2.44E+02	a	7.90E+02	a,b
Dieldrin	60-57-1	2.00E-03		2.00E-03	
Diethyl mercaptosuccinate s-ester with O,O-	121-75-5	1.00E-01		1.00E-01	
Diethyl mercaptosuccinate, O,O-	121-75-5	1.00E-01		1.00E-01	
O,O-Diethyl Mercaptosuccinate	121-75-5	1.00E-01		1.00E-01	
Di-2-Ethylhexyl Phthalate	117-81-7	3.60E+02	d	3.60E+02	d
Di(2-Ethylhexyl)Orthophthalate	117-81-7	3.60E+02	d	3.60E+02	d
Di(2-Ethylhexyl)Phthalate	117-81-7	3.60E+02	d	3.60E+02	d
Dimethyl Dithiophosphate	121-75-5	1.00E-01		1.00E-01	
2,4-Dimethyl Phenol	105-67-9	2.12E+03	a,b	NA	
2,4-Dimethylphenol	105-67-9	2.12E+03	a,b	NA	
4,6-Dimethylphenol	105-67-9	2.12E+03	a,b	NA	
Dinitotoluene	121-14-2	2.30E+02	a	NA	
Dinitrotoluene (total)	25321-14-6	NA		3.70E+02	a
Dinitrotoluene Mixture	25321-14-6	NA		3.70E+02	a
2,4-Dinitrotoluene	121-14-2	2.30E+02	a	NA	
2,4-Dinitrotoluol	121-14-2	2.30E+02	a	NA	
Dioctyl phthalate	117-81-7	3.60E+02	d	3.60E+02	d
1,2-Diphenyl hydrazine	122-66-7	2.70E+02	a,b	NA	
1,2-Diphenylhydrazine	122-66-7	2.70E+02	a,b	NA	
DTE	72-54-8	6.00E-01	a,b	3.60E+00	a,b
EDC	107-06-2	2.00E+04	a	1.13E+05	a,b
Endocide	115-29-7	5.60E-02		9.00E-03	
Endosol	115-29-7	5.60E-02		9.00E-03	
Endosulfan	115-29-7	5.60E-02		9.00E-03	
Endosulfan alpha	959-98-8	5.60E-02		9.00E-03	
Endosulfan beta	33213-65-9	5.60E-02		9.00E-03	
Endosulfan I	959-98-8	5.60E-02		9.00E-03	
alpha-Endosulfan	959-98-8	5.60E-02		9.00E-03	
beta-Endosulfan	33213-65-9	5.60E-02		9.00E-03	
Endrin	72-20-8	2.00E-03		2.00E-03	
Ethane, 1,2-dichloro-	107-06-2	2.00E+04	a	1.13E+05	a,b
Ethyl benzene	100-41-4	3.20E+04	a,b	4.30E+02	a,b
Ethylbenzene	100-41-4	3.20E+04	a,b	4.30E+02	a,b
Ethylbenzol	100-41-4	3.20E+04	a,b	4.30E+02	a,b
Ethylene dichloride	107-06-2	2.00E+04	a	1.13E+05	a,b
1,2-Ethylene Dichloride	107-06-2	2.00E+04	a	1.13E+05	a,b
Ethylene tetrachloride	127-18-4	8.40E+02	a	4.50E+02	a

RELATIVE RISK COMPARISON VALUES
Ambient Water Quality

Analyte	CAS Number	Fresh LeL ug/L	Foot	Marine ER-L ug/L	Foot
Ethylene, tetrachloro-	127-18-4	8.40E+02	a	4.50E+02	a
2-Ethylhexyl Phthalate	117-81-7	3.60E+02	d	3.60E+02	d
Fluoranthene	206-44-0	3.98E+03	a,b	1.60E+01	a
Free cyanide	57-12-5	5.20E+00		1.00E+00	
Guthion	86-50-0	1.00E-02		1.00E-02	
Haloethers (total)	RRSE-023	1.22E+02	a	NA	
Halomethanes (total)	RRSE-024	1.10E+04	a,b	6.40E+03	a
HCH (gamma) Lindane	58-89-9	8.00E-02		1.60E-01	b
HCH -technical	58-89-9	8.00E-02		1.60E-01	b
Heptachlor	76-44-8	4.00E-03		4.00E-03	
Heptachlor Epoxide	1024-57-3	4.00E-03		4.00E-03	
Hexachloro-5-norbornene-2,3-dimethanol cyclic sulfite	115-29-7	5.60E-02		9.00E-03	
Hexachlorobenzene	118-74-1	3.68E+00	d	NA	
Hexachlorobicyclo(2.2.1)-2-heptene-5,6-bisoxymethylene sulfite	115-29-7	5.60E-02		9.00E-03	
Hexachlorobutadiene	87-68-3	9.30E+00	a	3.20E+01	a,b
1,2,3,4,5,6-Hexachlorocyclo-hexane (HCH), Gamma - Lindane	58-89-9	8.00E-02		1.60E-01	b
Hexachlorocyclohexane (Lindane)	58-89-9	8.00E-02		1.60E-01	b
Hexachlorocyclopentadiene	77-47-4	5.20E+00	a	7.00E+00	a,b
Hexachloroethane	67-72-1	5.40E+02	a	9.40E+02	a,b
Hexachloropentadiene	77-47-4	5.20E+00	a	7.00E+00	a,b
Hydrazobenzene	122-66-7	2.70E+02	a,b	NA	
Hydrazodibenzene	122-66-7	2.70E+02	a,b	NA	
Hydrogen Sulfide	7783-06-4	2.00E+00		2.00E+00	
Hydroxybenzene	108-95-2	2.56E+03	a	5.80E+03	a,b
1-Hydroxy-2,4-dimethylbenzene	105-67-9	2.12E+03	a,b	NA	
Iron	7439-89-6	1.00E+03		NA	
Isophorone	78-59-1	1.17E+05	a,b	1.29E+04	a,b
Lead	7439-92-1	3.20E+00	c	8.50E+00	
Lindane	58-89-9	8.00E-02		1.60E-01	b
Malathion	121-75-5	1.00E-01		1.00E-01	
Mercaptosuccinic acid diethyl ester	121-75-5	1.00E-01		1.00E-01	
Mercury	7439-97-6	1.20E-02		2.50E-02	
Methoxychlor	72-43-5	3.00E-02		3.00E-02	
Methyl Benzene	108-88-3	1.75E+04	a,b	5.00E+03	a
Methyl-4-chlorophenol	59-50-7	3.00E+01	a,b	NA	
Methylbenzene	108-88-3	1.75E+04	a,b	5.00E+03	a
4-Methyl-3-Chlorophenol	59-50-7	3.00E+01	a,b	NA	
1-Methyl-2,4-Dinitrobenzene	121-14-2	2.30E+02	a	NA	
Mirex	2385-85-5	1.00E-03		1.00E-03	
Monohydroxybenzene	108-95-2	2.56E+03	a	5.80E+03	a,b
N,N'-Bianiline	122-66-7	2.70E+02	a,b	NA	
N,N'-Diphenylhydrazine	122-66-7	2.70E+02	a,b	NA	
Naphthalene	91-20-3	6.20E+02	a	2.35E+03	a,b
1,2-(1,8-naphthylene)-Benzene	206-44-0	3.98E+03	a,b	1.60E+01	a
Nickel	7440-02-0	1.60E+02	c	8.30E+00	
Nickel (Soluble Salts)	7440-02-0	1.60E+02	c	8.30E+00	
Nitrobenzene	98-95-3	2.70E+04	a,b	6.68E+03	a,b
Nitrophenols (total)	RRSE-025	1.50E+02	a	4.85E+03	a,b
Nitrosamines	35576-91-1	5.85E+03	a,b	3.30E+06	a,b

RELATIVE RISK COMPARISON VALUES
Ambient Water Quality

Analyte	CAS Number	Fresh LeL ug/L	Foot	Marine ER-L ug/L	Foot
5-Norbornene-2,3-dimethanol, 1,4,5,6,7,7-hexachloro-,cyclicsulfite	115-29-7	5.60E-02		9.00E-03	
O,O-Dimethyl phosphorodithioate	121-75-5	1.00E-01		1.00E-01	
O,O-Dimethyl thiophosphate	121-75-5	1.00E-01		1.00E-01	
Oxybenzene	108-95-2	2.56E+03	a	5.80E+03	a,b
Parathion	56-38-2	1.30E-02		NA	
PCB	1336-36-3	1.40E-02		3.00E-02	
PCBs	1336-36-3	1.40E-02		3.00E-02	
PCE	127-18-4	8.40E+02	a	4.50E+02	a
Pentachloroethane	76-01-7	1.10E+03	a	2.81E+02	a
Pentachlorophenol	87-86-5	1.30E+01	e	7.90E+00	
Pentachlorophenyl chloride	118-74-1	3.68E+00	d	NA	
PERC	127-18-4	8.40E+02	a	4.50E+02	a
Perchlorobenzene	118-74-1	3.68E+00	d	NA	
Perchloroethylene (PCE)	127-18-4	8.40E+02	a	4.50E+02	a
Phenanthrene	85-01-8	6.30E+00	d	4.60E+00	d
Phenol	108-95-2	2.56E+03	a,b	5.80E+03	a,b
Phenol,2,4-dichloro-	120-83-2	5.70E+03	a	NA	
Phenylethane	100-41-4	3.20E+04	a,b	4.30E+02	a,b
Phenylmethane	108-88-3	1.75E+04	a,b	5.00E+03	a
Phosphorus	7723-14-0	NA		1.00E-01	
Phthalate Esters	RRSE-027	3.00E+00	a	3.40E+00	a
Phthalic acid, bis(2-ethylhexyl) ester	117-81-7	3.60E+02	d	3.60E+02	d
Polychlorinated Biphenyls (PCBs)	1336-36-3	1.40E-02		3.00E-02	
Polychlorobiphenyl	1336-36-3	1.40E-02		3.00E-02	
Polynuclear Aromatic Hydrocarbons	RRSE-028	NA		3.00E+02	a,b
2-Propenal	107-02-8	2.10E+01	a	5.50E+01	a,b
Propenenitrile	107-13-1	2.60E+03	a	NA	
2-Propenenitrile	107-13-1	2.60E+03	a	NA	
Propylene aldehyde	107-02-8	2.10E+01	a	5.50E+01	a,b
Selenium	7782-49-2	5.00E+00		7.10E+01	
Silver	7440-22-4	1.20E-01		9.20E-01	d
Succinic acid	121-75-5	1.00E-01		1.00E-01	
Sulfide-Hydrogen Sulfide	7783-06-4	2.00E+00		2.00E+00	
TCDD	1746-01-6	1.00E-05	a	NA	
2,3,7,8-TCDD (Dioxin)	1746-01-6	1.00E-05	a	NA	
2,3,7,8-Tetrachlorobenzo-1,4- Dioxin	1746-01-6	1.00E-05	a	NA	
2,3,7,8-Tetrachlorobenzo-p-Dioxin	1746-01-6	1.00E-05	a	NA	
2,3,7,8-Tetrachlorodibenzo(be) (1,4)Dioxin	1746-01-6	1.00E-05	a	NA	
1,1,2,2-Tetrachloroethane	79-34-5	2.40E+03	a	9.02E+03	a,b
Tetrachloroethanes	25322-20-7	9.32E+03	a,b	NA	
Tetrachloroethylene (PCE)	127-18-4	8.40E+02	a	4.50E+02	a
1,1,2,2,-Tetrachloroethylene	127-18-4	8.40E+02	a	4.50E+02	a
2,3,5,6-Tetrachlorophenol	935-95-5	NA		4.40E+02	a,b
Thallium	7440-28-0	4.00E+01	a	2.13E+03	a,b
Toluene	108-88-3	1.75E+04	a,b	5.00E+03	a
Toluene,2,4-dinitro-	121-14-2	2.30E+02	a	NA	
Toluol	108-88-3	1.75E+04	a,b	5.00E+03	a
Toxaphene	8001-35-2	2.00E-04		2.00E-04	
Trichlorinated Ethanes	25323-89-1	1.80E+04	a,b	NA	
1,1,1-Trichloroethane	71-55-6	NA		3.12E+04	a,b
1,1,2-Trichloroethane	79-00-5	9.40E+03	a	NA	

RELATIVE RISK COMPARISON VALUES
Ambient Water Quality

Analyte	CAS Number	Fresh LeL ug/L	Foot	Marine ER-L ug/L	Foot
Trichloroethylene (TCE)	79-01-6	2.19E+04	a	2.00E+03	a,b
2,4,5-Trichlorophenol	95-95-4	6.30E+01	d	1.10E+01	d
2,4,6-Trichlorophenol	88-06-2	9.70E+02	a	NA	
Vinyl cyanide	107-13-1	2.60E+03	a	NA	
2,4-Xylenol	105-67-9	2.12E+03	a,b	NA	
m-Xylenol	105-67-9	2.12E+03	a,b	NA	
Zinc	7440-66-6	1.10E+02	c	8.60E+01	

Notes -

[a] - Insufficient data to develop criteria. Value presented is the Lowest Observed Effect Level (LOEL).
[b] - No chronic exposure values available; value presented based on available acute toxicity levels.
[c] - Hardness dependent criteria; 100 mg/L $CaCO_3$ used.
[d] - Value presented is a proposed criterion.
[e] - pH dependent criterion; pH = 7.8 used.