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RECALCULATION OF STATE TOXIC CRITERIA

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SUMMARY

In an effort to assist the states in adapting the National water quality criteria to local conditions, EPA has proposed a series of protocols for consideration. One of the protocols, referred to as the State Resident Species Recalculation, modifies the National water quality criteria to reflect the state resident species composition. With the protocol, state water quality criteria may be calculated without the need for additional toxicity testing.

The state Resident Species Recalculation Protocol is implemented in this report. The report includes: a survey of the published literature on the geographical distributions in the United States of 95 freshwater species in the national data base; and a recalculation of state water quality criteria for 21 toxic chemicals whose national water quality criteria have been published by EPA.

Only five percent of the 21 chemicals have met the minimum data requirements on the national level. The state data base is used to recalculate the maximum water quality criteria even when all of the data requirements are not satisfied. Sixty-five percent of these have state criteria which are more stringent than the national criteria. The recalculated instantaneous maximum criteria have been obtained by extrapolation for all cases but two (copper criteria for Maine and New York). The validity of the state water quality criteria is largely dependent on the correct representation of the sensitivity of the state resident population by the resident species data base. Within the framework of the current guidelines and the resident species recalculation method, the results of this study may always be modified with additional toxicity data.

SECTION 1
INTRODUCTION

1.1 BACKGROUND

In the Federal Register of 28 November 1980, the Environmental Protection Agency (EPA) announced the availability of criteria documents for 64 of the 65 pollutants designated as toxic under Section 308 (a) (1) of the Clean Water Act. Water quality criteria for 25 of these 65 designated pollutants were first published in "Quality Criteria for Water" (U.S. EPA, July, 1976), the "Red Book." In a continuing effort, EPA has revised and expanded the original water quality criteria for the designated toxic pollutants (43FR21506, 18 May 1978; 43FR19028, 5 July 1978; 44FR15926, 15 March 1979), leading to the availability of the criteria documents announced in 1980.

Numerical national water quality criteria have been derived by EPA for 21 of the 65 chemicals according to guidelines also published in the Federal Register of 28 November 1980 (45FR79316). These national criteria are based upon standard toxicity tests performed in the laboratory with a variety of aquatic species whose combination meets the minimum data requirement (to be discussed in Section 2.1.1).

A subsequent modification to the guidelines published in the Federal Register includes: use of family rather than species as the biological unit upon which the Final Acute Value (FAV) and the Final Chronic Value (FCV) are based; a change in the minimum data requirement; and a change in the method of regression analysis used for calculating the FAV and FCV. The remaining sections of this report, and the Appendices, are based on this revised methodology.

In recognition of the fact that local environmental conditions may affect the toxicity of a pollutant, EPA intends to give flexibility to the states in the application of the published national water quality criteria by giving them the option of modifying the criteria through a site-specific analysis. In the context of this report, the term "site-specific" will be used synonymously with the term "state-specific."

In an effort to assist the states in adapting the national criteria to local conditions, EPA has developed a series of protocols (Figure 1.1) whereby the laboratory-based water quality criteria may be modified by taking local variation in species composition and water chemistry into account. The first protocol, which is designed to take resident species composition into account, is the subject of this report. This protocol will henceforth be referred to as the recalculation procedure. The remainder of this report is based on:

- a survey of the literature on the geographical distribution in the United States of selected freshwater fish and invertebrates, and
- a recalculation, based on the aquatic species resident in a given state, of the state water quality criteria for the 21 chemicals whose national water quality criteria have been published.

1.2 ORGANIZATION

The methodology used in this report is outlined in Section 2. The results are presented in Section 3 and in the Appendices. A discussion of the results will be found in Section 4.

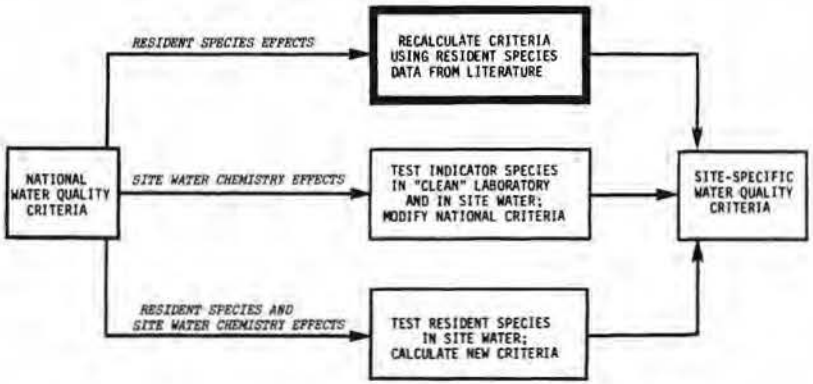

Figure 1.1 Protocols Proposed by EPA for Site-Specific Criteria Modification

SECTION 2

APPROACH

2.1 THE TWO-NUMBER CRITERION

The national criteria for the protection of freshwater aquatic life specify both maximum and 30-day average values (the two-number criterion). The cumulative duration of excursions above the specified 30-day average value is limited to 96 hours in any 30 consecutive days. This two-number, three-part format of numerical water quality criteria is intended to provide adequate protection for aquatic life and its uses for both long-term, nearly constant, continuous exposure situations, and situations of fluctuating concentration including intermittent exposures. The two-number criteria were derived using the revised methodologies (Guidelines) discussed in Section 1.

2.1.1 The Maximum Value Criterion

The maximum value criterion (also referred to as the Final Chronic Value, FCV) is obtained by dividing the Final Acute Value (FAV) by the lower of (a) 2, or (b) the acute-chronic ratio. The FAV is defined as the value which will protect 95 percent of the aquatic organism families in the national data base from acute toxicity.

The acute toxicity data used for the calculation of the FAV should cover at least eight different families such that all of the following are included:

1. the family Salmonidae in the class Osteichthyes,
2. one other (preferably warm water) family in the class Osteichthyes,
3. one other family in the phylum Chordata (e.g. fish, amphibian, etc.),
4. a planktonic crustacean (e.g. cladoceran, copepod, etc.),
5. a benthic crustacean (e.g. ostracod, isopod, acud, glass shrimp, crayfish, etc.),
6. an insect (e.g. mayfly, dragonfly, damselfly, stonefly, caddisfly, mosquito, midge, etc.),
7. a family in a phylum other than Arthropoda or Chordata (e.g. Rotifera, Annelida, Molluscа, etc.), and
8. a family in any order of insect or any phylum not already represented.

2.1.2 The 30-Day Average Criterion

The 30-day average value is defined as the lowest of the following: Final Chronic Value (FCV), Final Plant Value (FPV), and Final Residue Value (FRV). The FCV may be defined by any of the following:

1. the value which will protect 95 percent of the national aquatic organisms from chronic toxicity, with the national aquatic organism population represented by the species in the national chronic toxicity data base; or,

2. the value obtained from dividing the FAV by the acute-chronic ratio; or,
3. the species mean chronic value of an important species, such as a commercially or recreationally important species.

The acute-chronic ratio is the representative value which characterizes the acute sensitivity of a species relative to its chronic toxicity.

The FPV is defined as the lowest value in a chronic test with an aquatic vascular plant or in a 96-hour or longer test with an alga. The FRV is calculated by dividing a maximum permissible tissue concentration by an appropriate bio-concentration factor.

The national 30-day average criteria and the corresponding FCV, FPV and FRV are listed in Table 2.1. There is no 30-day average criterion for Aldrin, Arsenic or Silver. Acute-chronic ratios are available for 15 chemicals, thus permitting calculation of the FCV from the FAV. The FAVs for Copper and Lead were also calculated from chronic toxicity data using the revised methodology. Although the acute toxicity of Zinc is hardness dependent, chronic Zinc toxicity is relatively unaffected by hardness. Therefore, instead of setting a 30-day average criterion based on the FAV and the acute-chronic ratio, a value of 47 mg/l was chosen because it represents the chronic value of both a sensitive invertebrate *(Daphnia Magna)* in hard water and a moderately sensitive fish (Flagfish) in soft water. The FCVs in Table 2.1 were calculated using the revised methodology, therefore, they do not necessarily agree with those published in the Federal Register of 28 November 1980.

2.2 RECALCULATION OF SITE-SPECIFIC CRITERIA

According to the recalculation procedure, site-specific fresh-water aquatic life criteria may be modified without any additional toxicity testing. The modification procedure may be outlined as follows:

1. select the appropriate resident species toxicity data from the national data base,
2. calculate the FAV using the site-specific data base and the revised methodology,
3. define the site-specific maximum criteria by dividing the FAV by the lower of (a) 2, or (b) the acute-chronic ratio,
4. calculate the FCV by either or both of the following steps:
   (a) calculate the FCV by dividing the recalculated FAV by the acute-chronic ratio, or
   (b) if the national FCV is calculated from chronic toxicity data, calculate the FCV using the resident species chronic toxicity data, and
5. define the 30-day average value by selecting the minimum of the FRV, FPV, and the recalculated FCVs.

If there are not enough resident species in the national toxicity data base to meet the minimum data requirement, additional resident species bioassays in laboratory water may be needed in order to apply this procedure. The States should decide on the data requirements appropriate for each situation.

The two-number national criteria have been developed by EPA for 18 chemicals. The derivation of site-specific (state-specific) criteria for these same 18 chemicals is presented in this report. In addition, site-specific maximum criteria have been calculated for three other chemicals for which only national maximum criteria are available.

Table 2.1 National 30-Day Average Criteria

Chemical	Final Chronic Value[1] Type 1 (µg/l)	Type 2 (µg/l)	Type 3 (µg/l)	Final Residue Value (µg/l)	Final Plant Value (µg/l)	30-day[2] Average
Aldrin	—	—	—	—	—	—
Arsenic	—	—	—	—	—	—
Cadmium	$\frac{\exp[1.05(\ln H) - 2.93]^3}{122}$	—	—	290	160	ACR
Chlordane	3.949/14.0	—	—	0.0043	—	FRV
Chromium	24.327/72.0	—	—	—	10	FCV1
Copper	$\frac{\exp[0.94(\ln H) - 0.96]}{5.78}$	5.6	—	—	—	FCV2
Cyanide	62.859/14.8	—	—	—	—	FCV1
DDT	—	—	—	0.001	0.3	FRV
Dieldrin	3.659/8.5	—	—	0.0019	100	FRV
Endosulfan	0.415/3.9	—	—	—	—	FCV1
Endrin	0.402/4.0	—	—	0.0023	175	FRV
Heptachlor	—	—	—	0.0038	26.7	FRV
Lead	$\frac{\exp[1.22(\ln H) - 2.6]}{69.9}$	$\exp[2.35(\ln H) - 10.4]$	—	—	—	FCV2
Lindane	6.435/25.0	—	—	—	1,000	FCV1
Mercury	0.940/3.0	—	—	0.20	—	FRV
Nickel	$\frac{\exp[0.76(\ln H) + 4.19]}{19.4}$	—	—	—	—	ACR
PCB's	—	—	—	0.014	—	FRV
Selenium	165.297/7.5	—	—	—	—	FCV1
Silver	—	—	—	—	—	—
Toxaphene	1.074/123	—	—	0.070	0.38	FCV1
Zinc	$\frac{\exp[0.83(\ln H) + 2.51]}{3.0}$	—	47.0	—	—	FCV3

[1]Type 1: Calculated by dividing FAV by acute-chronic ratio.
Type 2: Calculated from toxicity data base.
Type 3: Obtained from chronic value of important species.

[2]FCV1: Final Chronic Value, Type 1.
FCV2: Final Chronic Value, Type 2.
FCV3: Final Chronic Value, Type 3.
FRV : Final Residue Value.
FPV : Final Plant Value.

[3]H: Hardness as mg/l $CaCO_3$.

The geographical distribution of those species in the national acute and chronic toxicity data bases is required for the calculation of the site-specific water quality criteria. The approach taken in finding the species distributions is described in Section 2.3 and the calculation of the state maximum value criteria is described in Section 2.4. The calculation of the state 30-day average criteria is discussed in Section 2.5. A sample calculation which illustrates all of the procedures involved is presented in Section 2.6.

The geographical distribution of those species in the national acute and chronic toxicity data bases is required for the calculation of the site-specific water quality criteria. The approach taken in finding the species distributions is described in Section 2.3 and the calculation of the state maximum value criteria is described in Section 2.4. The calculation of the state 30-day average criteria is discussed in Section 2.5. A sample calculation which illustrates all of the procedures involved is presented in Section 2.6.

2.3 SPECIES DISTRIBUTION

There are 95 biological species represented in the national toxicity data base for the 21 chemicals discussed in this report. These species are listed in Tables 1 and 3 of each of the criteria documents (U.S. EPA, 1980). Of those 95 species, 48 are fishes and 47 are assorted invertebrates. The species tested in order to develop acute toxicity data for each of the 21 chemicals are listed in Table 2.2.

The classification of these species by family, order, class, and phylum is presented in Appendix A. Appendix A, reproduced from "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Life and Its Uses" (U.S. EPA, 1982), is essential for calculating the family mean acute-chronic values from available species toxicity data, as well as for checking the family composition of the toxicity data base against the minimum data requirements (Section 2.1.1).

A literature survey was conducted on the distribution of these species in the United States. The principal reference for identifying the distribution of the listed 48 fish species was the "Atlas of North American Freshwater Fishes" (Lee et al., 1980). A comparable document is not available for invertebrates. Twenty references were used to identify the geographical distribution of the 47 invertebrate species. A list of invertebrate species and the references used to identify their distribution is presented in Table 2.3. The information in Table 2.3 results from an extensive survey of the literature, however, this information should not be considered definitive as voids may exist in reporting the occurrence of some species, particularly those which are not of high commercial value.

Since there is no convention for recording the geographic distribution of species (i.e., whether by state or by river basin drainage or by other geographical features), several formats are seen in the literature. For the purposes of this report, the state was selected as the most appropriate geographical delimiter.

Table 2.2 List of Species Names in the Acute Toxicity Data Base

Species	Aldrin	Arsenic	Cadmium	Chlordane	Chromium S	Copper	Cyanide	DDT	Dieldrin	Endosulfan	Endrin	Heptachlor	Lead	Lindane	Mercury	Nickel	PCB	Pentachlorophenol	Silver	Toxaphene	Zinc
Planarian (Polycelis Felina)								X													
Rotifer (Philodina Acuticornis)			X		X	X							X		X	X			X		X
Rotifer (Philodina Roseola)					X																
Bristleworm (Nais Sp.)			X			X										X	X				X
Worm (Limnodrilus Hoffmeisteri)						X											X				
Snail (Amnicola Sp.)			X			X															
Snail (Campeloma Decisum)						X															
Snail (Gyraulus Circumstriatus)						X															
Snail (Physa Heterostropha)					X	X	X														X
Snail (Physa Integra)						X															
Snail (Physa Sp.)			X																X		
Cladoceran (Daphnia Carinata)									X												
Cladoceran (Daphnia Magna)		X	X	X	X	X		X		X	X	X	X	X	X	X			X	X	X	X
Cladoceran (Daphnia Pulex)	X	X	X			X	X	X	X			X		X					X		X	X
Cladoceran (Daphnia Pulicaria)						X															
Cladoceran (Simocephalus Serrulatus)	X	X	X					X	X		X	X		X							X	
Seed Shrimp (Cyprideopsis Vidua)								X														
Copepod (Unidentified)										X												
Isopod (Asellus Brevicaudus)	X							X	X		X			X								
Isopod (Asellus Communis)							X															
Scud (Gammarus Fasciatus)	X			X				X	X	X	X	X		X			X				X	
Scud (Gammarus Lacustris)	X			X				X	X	X	X	X		X							X	
Scud (Gammarus Pseudolimnaeus)		X			X	X	X						X				X		X	X	X	
Scud (Gammarus Sp.)			X			X										X	X					X
Scud (Hyalella Azteca)																			X			
Crayfish (Faxonella Clypeata)															X							
Crayfish (Orconectes Hais)								X	X		X	X										
Crayfish (Orconectes Limosus)															X							
Crayfish (Orconectes Rusticus)						X																
Crayfish (Procambarus Acutus)								X														
Glass Shrimp (Palaemonetes Kadiakensis)	X			X				X	X		X	X									X	
Mayfly (Ephemerella Grandis)	X		X					X	X		X											
Mayfly (Ephemerella Subvaria)															X	X						
Mayfly (Hexagenia Bilineata)											X											

Table 2.2 List of Species Names in the Acute Toxicity Data Base (Continued)

Species	Alderfly	Amphipod	Caddisfly	Chironomid	Copepod	Cyanide	Diptera	Ephemeroidea	Fathead Minnow	Isopod	Lamprey	Mayfly	Mysid	Perciformes	Phenol	Stonefly	Trichloroethylene	Zinc
Stonefly (Acroneuria Lycorias)						X							X	X				
Stonefly (Acroneuria Pacifica)	X							X	X		X							
Stonefly (Claassenia Sabulosa)								X			X	X						X
Stonefly (Pteronarcella Badia)			X					X			X	X						X
Stonefly (Pteronarcys Californica)	X	X		X				X	X	X	X	X						X
Damselfly (Ischnura Verticalis)											X				X			
Damselfly (Ischnura Sp.)										X								
Damselfly (Unidentified)			X			X								X		X		X
Midge (Chironomus Plumosus)																		X
Midge (Chironomus Tentans)																X		
Midge (Chironomus Sp.)			X			X								X				X
Midge (Tanytarsus Dissimilis)				X		X										X	X	
Caddisfly (Arctopsyche Grandis)								X										
Caddisfly (Hydropsyche Betteni)													X					
Caddisfly (Hydropsyche Cantorrica)								X										
Caddisfly (Unidentified)			X			X								X				X
American Eel (Anguilla Rostrata)	A		A			X								A				A
Coho Salmon (Oncorhynchus Kisutch)	X			X		X		X	X		X	X		X				X
Sockeye Salmon (Oncorhynchus Nerka)																		X
Chinook Salmon (Oncorhynchus Tshawytscha)	X		X	X		X		X	X		X	X		X				X
Cutthroat Trout (Salmo Clarki)						X		X			X							X
Rainbow Trout (Salmo Gairdneri)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Atlantic Salmon (Salmo Salar)						X												X
Brown Trout (Salmo Trutta)								X					X					X
Brook Trout (Salvelinus Fontinalis)		X	X	X	X	X	X	X			X		X			X	X	X
Lake Trout (Salvelinus Mahaycush)								X										
Northern Pike (Esox Lucius)								X										
Mottled Sculpin (Cottus Bairdi)																X		
Longfin Dace (Agosia Chrysogaster)						X												X
Bonneytail (Gila Elegans)						X												X
Goldfish (Carassius Auratus)	X	X	X	X	X	X	X	X	X		X	X	X	X		X		X
Carp (Cyprinus Carpio)	X		X	X		X		X				X		X				X
Golden Shiner (Notemigonus Crysoleucas)																		X
Striped Shiner (Notropis Chrysocephalus)						X												

Table 2.2 List of Species Names in the Acute Toxicity Data Base (Continued)

Species	Alderfly	Amphipod	Caddisfly	Chironomid	Copepod	Cyanide	Diptera	Ephemeroidea	Fathead Minnow	Isopod	Lamprey	Mayfly	Mysid	Perciformes	Phenol	Stonefly	Trichloroethylene	Zinc
Northern Redbelly Dace (Phoxinus EOS)									X									
Bluntnose Minnow (Pimephales Notatus)						X						X						X
Fathead Minnow (Pimephales Promelas)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Northern Squawfish (Ptychocheilusoregonensis)			X															
Blacknose Dace (Rhinichthys Atratulus)						X												
Speckled Dace (Rhinichthys Osculus)																	X	
Creek Chub (Semotilus Atromaculatus)						X												
White Sucker (Catostomus Commersoni)								X										
Black Bullhead (Ictalurus Melas)							X						X				X	
Brown Bullhead (Ictalurus Nebulosus)							X											
Channel Catfish (Ictalurus Punctatus)		X					X						X			X	X	
Banded Killifish (Fundulus Diaphanus)	X		X			X									X			X
Flagfish (Jordanella Floridae)		X	X			X						X					X	X
Mosquitofish (Gambusia Affinis)			X				X						X			X		
Guppy (Poecilia Reticulata)	X		X	X	X	X	X	X	X	X	X	X	X		X		X	X
Southern Platyfish (Xiphophorus Maculatus)																		X
Brook Stickleback (Culaea Inconstans)							X											
Threespine Stickleback (Gasterosteus Aculeatus)			X					X										
White Perch (Morone Americana)	X		X			X								X				X
Striped Bass (Morone Saxatilis)	X		X		X	X								X				X
Rock Bass (Ambloplites Rupestris)														X				
Green Sunfish (Lepomis Cyanellus)			X				X	X										
Pumpkinseed (Lepomis Gibbosus)			X			X		X						X				X
Bluegill (Lepomis Macrochirus)	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Longear Sunfish (Lepomis Megalotis)								X										
Redear Sunfish (Lepomis Microlophus)								X						X		X		X
Largemouth Bass (Micropterus Salmoides)						X	X	X						X		X	X	X
Black Crappie (Pomoxis Nigromaculatus)								X										
Rainbow Darter (Etheostoma Caeruleum)								X										
Orangethroat Darter (Etheostoma Spectabile)								X										
Yellow Perch (Perca Flavescens)																		

Table 2.3 List of References Used for Identifying the Geographical Distribution of the Invertebrate Species

Species	Reference
Planarian (Polycelis tenva)	Kenk (personal communication)
Rotifer Philodina scuticornis)	
Rotifer (Philodina roseola)	
Bristleworm (Nais Sp.)	Pennak, 1978
Worm (Limnodrilus hoffmeisteri)	Brinkhurst et al., 1971
Snail (Amnicola Sp.)	Emerson et al., 1976
Snail (Campeloma decisum)	"
Snail (Gyrsulus circumstriatus)	Hyman, 1967
Snail (Physa heterostropha)	Emerson et al., 1976
Snail (Physa integra)	"
Snail (Physa Sp.)	"
Cladoceran (Daphnia carinata)	Brooks, 1957
Cladoceran (Daphnia magna)	"
Cladoceran (Daphnia pulex)	"
Cladoceran (Daphnia pulicaria)	"
Cladoceran (Simocephalus serrulatus)	Ward & Whipple, 1972
Seed Shrimp (Cyprideopsis vidua)	"
Copepod (Unidentified)	Pennak, 1978
Isopod (Asellus brentocaudus)	Williams, 1972
Isopod (Asellus communis)	"
Scud (Gammarus fasciatus)	Hoisinger, 1972
Scud (Gammarus lacustris)	"
Scud (Gammarus pseudolimnaeus)	"
Scud (Gammarus Sp.)	Pennak, 1978
Scud (Hyalella azteca)	Bousfield, 1958
Crayfish (Faxonella clypeata)	Hobbs, 1972
Crayfish (Orconectes nais)	"
Crayfish (Orconectes limosus)	"
Crayfish (Orconectes rusticus)	"
Crayfish (Procambarus acutus)	"
Glass Shrimp (Palaemonetes kadiakensis)	Holthuis, 1952
Mayfly (Ephemerella grandis)	Edmunds et al., 1976
Mayfly (Ephemerella subvaria)	Burks et al., 1953
Mayfly (Hexagenia bilineata)	"
Stonefly (Acroneuria lycorias)	Stark et al., 1976
Stonefly (Acroneuria pacifica)	"
Stonefly (Claassenia sabulosa)	"
Stonefly (Pteronarcella badia)	Baumann et al., 1977
Stonefly (Pteronarcys californica)	"
Dameselfly (Ischnura verticalus)	Walker, 1953
Dameselfly (Ischnura Sp.)	Merritt & Cummins, 1978
Dameselfly (Unidentified)	"
Midge (Chironomus plumosus)	U.S. Agr. Res. Service, 1968
Midge (Chironomus tentans)	"
Midge (Chironomus Sp.)	Merritt & Cummins, 1978
Midge (Tanytarsus dissimilis)	U.S. Agr. Res. Service, 1968
Caddisfly (Arctopsyche grandis)	Fischer, 1963
Caddisfly (Hydropsyche betteni)	"
Caddisfly (Hydropsyche californica)	"
Caddisfly (Unidentified)	Merritt & Cummins, 1978

2.4 CALCULATION OF MAXIMUM VALUE CRITERIA BY STATE

2.4.1 Procedures

The calculation of state aquatic life criteria is based on the information in state resident species lists, and on the species toxicity data for the derivation of national water quality criteria, as presented in "Guidelines for Deriving Site Specific Water Quality Criteria for the Protection of Aquatic Life and its Uses" (U.S. EPA, 1982).

2.4.1.1 Maximum Value Criteria Independent of Hardness

Calculation of the maximum value criteria, for those chemicals whose toxicity is independent of hardness, is done according to the following procedure:

1. Using the EPA criteria document for the toxic chemical of interest, select from Table 3 the Species Mean Acute Value (SMAV) for each species resident in the state.
2. For each family with one or more SMAVs available, calculate the Family Mean Acute Value (FMAV) as the geometric mean of the available SMAVs.
3. Calculate the state Final Acute Value using the procedures outlined below which are discussed in "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Life and its Uses" (U.S. EPA, 1982):
   (a) Order the FMAVs from low to high.
   (b) Assign ranks (R) to the FMAVs from "1" for the lowest to "N" for the highest. If two or more FMAVs are identical, arbitrarily assign them successive ranks.
   (c) Calculate the cumulative proportion (P) for each FMAV as R/(N + 1).
   (d) Select the four FMAVs which have cumulative proportions closest to 0.05 (if there are less than 59 FMAVs, these will always be the four lowest FMAVs).
   (e) Using the selected FMAVs and Ps, calculate the following coefficients:

$$M^2 = \frac{\Sigma(P) - ((\Sigma\sqrt{P})^2/4)}{\Sigma(\ln FMAV)^2 - ((\Sigma(\ln FMAV))^2/4)} \quad (2.1)$$

$$\bar{x} = (\Sigma(\ln FMAV))/4 \quad (2.2)$$

$$\bar{y} = (\Sigma\sqrt{P})/4 \quad (2.3)$$

   (f) the *State* FAV is defined as:

$$FAV = e^A \quad (2.4)$$

$$\text{with } A = \bar{x} + \frac{\sqrt{0.05} - \bar{y}}{M} \quad (2.5)$$

4. the state maximum value criteria is defined as the larger of:

   (a) (State FAV)/2, or

   (b) (State FAV)/(acute-chronic ratio) (2.6)

2.4.1.2 Maximum Value Criteria as a Function of Hardness

Hardness has been shown to affect the acute toxicity of six chemicals: Cadmium, Copper, Lead, Nickel, Silver and Zinc. Therefore, criteria for these six chemicals are determined according to a final acute equation which expresses the FAV as a function of hardness:

$$FAV = \exp[v(\ln(H)) + z] \quad (2.7)$$

where H is the hardness expressed as mg/l of $CaCO_3$, v is the mean acute slope, and z is the final acute intercept. The parameter v is defined as the arithmetic mean of all the meaningful acute slopes for individual species (45FR79344, 28 November 1980). The acute slope for an individual species is defined as the slope of the best fitted line when the species acute values are plotted against the hardness concentration in a log-log plot. In other words, for a given chemical the constant value v is assumed applicable to all species in the acute toxicity data. When calculating the state maximum value criteria, the same value of v as used for the national calculation was used for the states.

The calculation of a state maximum value criteria is accomplished as follows:

1. Using the EPA criteria document for the chemical of interest, select from Table 3 the species which are resident in a particular state and record the Species Mean Acute Intercept (SMAI). The SMAI was calculated as the geometric mean of the available intercepts (y), with y defined as:

   $$y = w/\exp[v(\ln H)] \quad (2.8)$$

   where w = the reported LC_{50}, shown in Table 1 of the criteria document.
   v = the mean acute slope for the hardness dependence function shown at the bottom of Table 1 of the criteria document.
   H = hardness concentration at which the bioassay was conducted, in mg/l $CaCO_3$.

2. For each family with one or more SMAIs available, calculate the Family Mean Acute Intercept (FMAI) as the geometric mean of the available SMAIs.
3. Calculate the coefficients $\bar{x}$, $\bar{y}$, and M for the state Final Acute Equation using the procedure ("a" through "e") outlined in Section 2.4.1.1, substituting "FMAI" for "FMAV".
4. The state Final Acute Equation is defined as:

   $$FAV = \exp[v(\ln(H) + A] \quad (2.9)$$

where $A = \bar{x} + \frac{0.05 - \bar{y}}{M}$, (2.10)

and v = mean acute slope for the chemical discussed in step "1".

5. The state maximum value criterion is defined as the larger of:

   (a) (state FAV)/2, or

   (b) (state FAV)/(acute-chronic ratio) (2.11)

2.4.2 Computer Program

An interactive FORTRAN program (FOUR.STATE) was used to calculate the state maximum value criteria. The program is an extended version of a computer program developed at the U.S. EPA Environmental Research Laboratory in Duluth. The Duluth computer program calculates final acute values by the method described in the Federal Register of 28 November 1980. The Duluth program was modified to include the following capabilities:

1. Select resident species data from the national data base for any given state,
2. calculate the FMAV of the available resident species,
3. calculate the FAV using the modified methodology, and
4. check the modified state data base against the modified criteria of the minimum data requirements.

The program operates on five data files:

ACUTE1.DAT	Data file of species acute values (LC_{50} or EC_{50}) as reported in Table 1 of the criteria documents. The only exception is the species acute value for Silver for Speckled Dace (*Rhinichthys osculus*) which is changed from the published 0.2 µg/l to 20.0 µg/l.
SPECIES.DAT	Data file of the species names, their ID numbers and their family ID numbers. This list contains all species for which an acute toxicity value was recorded for the 21 chemicals.
FAMILY.DAT	Data file of family names and their ID numbers.
CHEMNAME.DAT	Data file of 21 chemical names, 18 if which have two-value freshwater aquatic life criteria, and three of which have maximum criteria.

SRES.DAT	Data file of the resident species in 48 states (Hawaii and Alaska not included); both state and species are represented by their ID numbers.
STATENAME.NEW	State names of the 48 states for which the freshwater aquatic criteria have been calculated.

The three data files—ACUTE1.DAT, SPECIES.DAT, CHEMNAME.DAT—were furnished by the U.S. EPA Environmental Research Laboratory in Duluth.

2.5 CALCULATION OF THE STATE 30-DAY AVERAGE CRITERION

2.5.1 Procedures

The 30-day average criterion is defined as the minimum of the FCV, FPV or FRV. The three methods used in deriving the national FCV were also used for deriving the corresponding state FCV. In cases where the national FCV was derived by dividing the national FAV by the acute-chronic ratio, the state FCV was derived by dividing the state FAV by the acute-chronic ratio. For a given chemical, the constant acute-chronic ratio published in the criteria document was used for all states. In the case where the national FCV was derived from a chronic toxicity data base, such as Copper and Lead, the same methodology used for calculation of the FAV (Equation 2.9) was used for calculating the state FCV based on the state resident family chronic toxicity data. The state resident family data base used for the FCV calculation was calculated by one of the following methods:

1. When chronic toxicity is independent of hardness:
   (a) Select the Species Mean Chronic Value (SMCV) of the state resident species from the national chronic toxicity data base.
   (b) For each family with one or more SMCVs available, calculate the Family Mean Chronic Value as the geometric mean of the available SMCVs.

2. When chronic toxicity is a function of hardness:
   (a) Select the Species Mean Chronic Intercept (SMCI) of the state resident species from the national chronic toxicity data base.
   (b) For each family with one or more SMCI available, calculate the Family Mean Chronic Intercept (FMCI) as the geometric mean of the available SMCIs.

2.5.2 Computer Program

Whenever sufficient information was available, the computer program was used to calculate five values—three FCVs, FPV and FRV—for each state. The calculations were done for 18 chemicals (no 30-day average criteria were available for Aldrin, Arsenic and Silver).

The variation in state resident species would affect two of the FCVs:

1. FCV calculated as FAV divided by acute-chronic ratio, and
2. FCV calculated from the state chronic toxicity data base.

The program reads each of these five values for the specified state and chemical. If a value is not available, it is set to an arbitrarily high number (9999.0) so that it will not be chosen as the minimum value. The program then simply compares all five values and chooses the minimum.

2.6 SAMPLE CALCULATION

The calculation of the freshwater aquatic life criteria for Chlordane and Nickel for the State of Pennsylvania are presented to illustrate the recalculation method.

2.6.1 Chlordane Criteria for Pennsylvania

1. The Maximum Value Criterion

   The starting point is the national acute toxicity data base for Chlordane (Table 2.4) where species ID numbers, names and their species mean acute values are presented. The species ID number is given in the column "SNO" and the species mean acute value in the column "LC50," with units of μg/l. With the aid of the resident species list for the State of Pennsylvania (Table 2.5), the resident species toxicity data for the State (Table 2.6) are then readily prepared by selecting the data for resident species from Table 2.4. The eight species in Table 2.6 represent five families (see Appendices A and B-3). The family acute toxicity table for Pennsylvania (Table 2.7) is prepared by calculating the Family Mean Acute Value (FMAV) for each of the eight species shown in Table 2.6. The FMAV is defined as the geometric mean of the available species mean acute values for species belonging to the family. For example, carp, fathead minnow and goldfish all belong to the family of Cyprinidae. The FMAV for Cyprinidae is then calculated as:

$$(3.0 \times 51.0 \times 82.0)^{\frac{1}{3}} = 23.2 \qquad (2.12)$$

where 3.0, 51.0 and 82.0 are the species mean acute values of the three species.

Of aquatic organisms resident in Pennsylvania waters, the four families most sensitive to Chlordane, their rank, cumulative proportion and FMAV are:

Table 2.4 National Acute Toxicity Data for Chlordane

Rank	LC50 (µg/l)	LN LC50	SNO	Species
1	3.0000	1.0986	66.0	Carp (Cyprinus carpio)
2	6.3245	1.8444	31.0	Glass Shrimp (Palaemonetes kadiakensis)
3	15.0000	2.7080	39.0	Stonefly (Pteronarcys californica)
4	25.4808	3.2379	58.0	Rainbow Trout (Salmo gairdneri)
5	26.0000	3.2581	22.0	Scud (Gammarus lacustris)
6	39.9999	3.6889	21.0	Scud (Gammarus fasciatus)
7	44.9999	3.8067	61.0	Brook Trout (Salvelinus fontinalis)
8	51.0134	3.9321	73.0	Fathead Minnow (Pimephales promelas)
9	54.7111	4.0021	93.0	Bluegill (Lepomis machrochirus)
10	56.9999	4.0254	54.0	Coho Salmon (Oncorhynchus kisutch)
11	58.9999	4.0430	56.0	Chinook Salmon (Oncorhynchus tshawytscha)
12	58.2665	4.0650	13.0	Cladoceran (Daphia magna)
13	81.9998	4.4067	67.0	Goldfish (Carassius auratus)
14	189.9997	5.2470	84.0	Guppy (Poecilia reticulata)

Table 2.5 Resident Species List for Pennsylvania

2.0	3.0	4.0	5.0	6.0	7.0	8.0
9.0	10.0	11.0	14.0	15.0	16.0	18.0
20.0	21.0	24.0	25.0	28.0	30.0	31.0
32.0	33.0	40.0	41.0	43.0	45.0	47.0
50.0	52.0	53.0	55.0	58.0	60.0	61.0
62.0	63.0	64.0	66.0	67.0	68.0	69.0
70.0	71.0	73.0	74.0	76.0	77.0	78.0
79.0	80.0	81.0	86.0	87.0	88.0	89.0
90.0	91.0	92.0	93.0	94.0	95.0	96.0
97.0	98.0	99.0	101.0	102.0	4.5	

Table 2.6 Pennsylvania Resident Species Toxicity Data for Chlordane

Rank	LC50 (µg/l)	LN LC50	SNO	Species
1	3.0000	1.0986	66.0	Carp (Cyprinus carpio)
2	6.3245	1.8444	31.0	Glass Shrimp (Palaemonetes kadiakensis)
3	25.4808	3.2379	58.0	Rainbow Trout (Salmo gairdneri)
4	39.9999	3.6889	21.0	Scud (Gammarus fasciatus)
5	44.9999	3.8067	61.0	Brook Trout (Salvelinus fontinalis)
6	51.0134	3.9321	73.0	Fathead Minnow (Pimephales promelas)
7	54.7111	4.0021	93.0	Bluegill (Lepomis macrochirus)
8	81.9998	4.4067	67.0	Goldfish (Carassius auratus)

Table 2.7 Pennsylvania Family Acute Toxicity Table for Chlordane

Rank	FLC50 (µg/l)	LN (FLC50)	FNO	Family
1	6.3245	1.8444	27	Palaemonidae
2	23.2384	3.1456	40	Cyprinidae
3	33.8620	3.5223	38	Salmonidae
4	39.9999	3.6889	25	Gammaridae
5	54.7110	4.0021	48	Centrarchidae

R	P	FMAV	Family
		(µg/l)	
1	0.17	6.32	Palaimonidae
2	0.33	23.24	Cyprinidae
3	0.50	33.66	Salmonidae
4	0.67	40.00	Gammaridae

1. with P calculated as R/(N + 1) where N is the total number of families in the State toxicity data base, which is five in this case. Using the values of FMAV and P for the four most sensitive families, the coefficients M, $\bar{x}$, $\bar{y}$ and A needed for the State Final Acute Value (FAV) can be calculated by applying the formula suggested in the revised methodology:

$$M^2 = \frac{\Sigma(P) - [(\Sigma\sqrt{P})^2/4]}{\Sigma[\ln FMAV)^2] - [(\Sigma(\ln FMAV))^2/4]} = 0.044 \qquad (2.13)$$

$$\bar{x} = [\Sigma(\ln FMAV)]/4 = 3.05 \qquad (2.14)$$

$$\bar{y} = (\Sigma\sqrt{P})/4 = 0.627 \qquad (2.15)$$

$$A = \bar{x} + \frac{\sqrt{0.05} - \bar{y}}{M} = 1.13 \qquad (2.16)$$

The FAV is:

$$FAV = e^A = 3.10\ \mu g/l \qquad (2.17)$$

The State maximum value criterion is defined as the State FAV divided by the smaller of (a) 2, or (b) the acute-chronic ratio. Since the acute-chronic ratio for Chlordane is 14 (>2), the maximum value criterion for Chlordane for the State of Pennsylvania is 1.55, which is the State FAV divided by 2.

2. The 30-Day Average Criterion

The 30-day average criterion is defined as the minimum of the Final Chronic Value (FCV), the Final Residue Value (FRV) or the Final Plant Value (FPV). There is no FPV available for Chlordane. The FRV is 0.0043 µg/l (see Table 2.1). The final chronic data set is not sufficient for the calculation of an FCV. The acute-chronic ratio for Chlordane is 14.0 (see Table 2.1) which gives an FCV for Pennsylvania of 0.22 µg/l, calculated as 3.10/14.0, where 3.10 is the FAV for Pennsylvania. Comparing 0.22 µg/l (FCV) with 0.0043 µg/l (FRV), the 30-day average criterion for Chlordane for the State of Pennsylvania, 0.0043 µg/l, is chosen.

2.6.2 Nickel Criteria for Pennsylvania

1. The Maximum Value Criterion

The acute toxicity of Nickel has been related to the hardness in freshwater by an exponential equation (U.S. EPA, 1980):

$$e^{[0.76\ \ln(\text{hardness}) + z]} \qquad (2.18)$$

Since hardness affects acute toxicity, the effect of hardness has to be removed from the laboratory observed LC_{50} values. Instead of using observed LC_{50}s as the data base, the acute intercept e^z is used. The acute intercept can be viewed as the acute value in the absence of a hardness effect (i.e., ln (hardness) = 0). The national acute toxicity data for Nickel in the absence of a hardness effect is given in Table 2.8 where the values listed in the column "LC50" are species mean acute intercepts. Using this as the starting point and following the procedure described in Section 2.6.1, the resident species toxicity data (Table 2.9) and the resident family toxicity data (Table 2.10) are prepared.

The four families most sensitive to Nickel in the State of Pennsylvania, their family mean acute intercept (FMAI), rank (R), and cumulative proportion (P) are:

R	P	FMAI	Family
		(µg/l)	
1	0.07	4.38	Daphnidae
2	0.14	5.45	Ephemerellidae
3	0.21	5.84	Centrarchidae
4	0.29	5.99	Philodinidae

Table 2.8 National Acute Toxicity Data for Nickel (In The Absence of Hardness Effect)

Rank	LC50 (µg/l)	LN LC50	SNO	Species
1	53.9780	3.9686	13.0	Cladoceran (Daphnia magna)
2	78.4561	4.3625	15.0	Cladoceran (Daphnia pulicaria)
3	208.4833	5.3399	90.0	Rock Bass (Ambloplites rupestris)
4	233.5550	5.4534	33.0	Mayfly (Ephemerella subvaria)
5	301.5102	5.7068	89.0	Striped Bass (Morone saxatilis)
6	388.3505	5.9619	92.0	Pumpkinseed (Lepomis gibbosus)
7	401.2168	5.9945	2.0	Rotifer (Philodina acuticornis)
8	439.8254	6.0864	45.0	Midge (Chironomus Sp.)
9	440.2043	6.0872	73.0	Fathead Minnow (Pimephales promelas)
10	456.6418	6.1239	84.0	Guppy (Poecilia reticulata)
11	508.5306	6.2276	68.0	Carp (Cyprinus carpio)
12	509.2643	6.2330	93.0	Bluegill (Lepomis macrochirus)
13	627.1620	6.4412	53.0	American Eel (Anguilla rostrata)
14	658.5149	6.4900	88.0	White Perch (Morone americana)
15	864.8523	6.4998	24.0	Scud (Gammarus Sp.)
16	721.1063	6.5808	4.0	Bristleworm (Nais Sp.)
17	731.3375	6.5949	5.0	Snail (Amnicola Sp.)
18	1007.69	6.9154	67.0	Goldfish (Carassius auratus)
19	1064.21	6.9686	42.0	Damselfly (Unidentified)
20	1544.49	7.3425	52.0	Caddisfly (Unidentified)
21	2029.91	7.6157	35.0	Stonefly (Acroneuria lycorius)
22	2226.41	7.7061	81.0	Banded Killifish (Fundulus diaphanus)

Table 2.9 Pennsylvania Resident Species Toxicity Data for Nickel

Rank	LC50 (µg/l)	LN LC50	SNO	Species
1	78.4561	4.3625	15.0	Cladoceran (Daphnia pulicaria)
2	208.4833	5.3399	90.0	Rock Bass (Ambloplites rupestris)
3	233.5550	5.4534	33.0	Mayfly (Ephemerella subvaria)
4	301.5102	5.7068	89.0	Striped Bass (Morone saxatilis)
5	388.3505	5.9619	92.0	Pumpkinseed (Lepomis gibbosus)
6	401.2168	5.9945	2.0	Rotifer (Philodina acuticornis)
7	439.8254	6.0864	45.0	Midge (Chironomus Sp.)
8	440.2043	6.0872	73.0	Fathead Minnow (Pimephales promelas)
9	508.5306	6.2276	68.0	Carp (Cyprinus reticulata)
10	509.2643	6.2330	93.0	Bluegill (Lepomis macrochirus)
11	627.1620	6.4412	53.0	American Eel (Anguilla rostrata)
12	658.5149	6.4900	88.0	White Perch (Morone americana)
13	864.8523	6.4998	24.0	Scud (Gammarus Sp.)
14	721.1063	6.5808	4.0	Bristleworm (Nais Sp.)
15	731.3375	6.5949	5.0	Snail (Amnicola Sp.)
16	1007.69	6.9154	67.0	Goldfish (Carassius auratus)
17	1544.49	7.3425	52.0	Caddisfly (Unidentified)
18	2226.41	7.7061	81.0	Banded Killifish (Fundulus diaphanus)

Table 2.10 Pennsylvania Resident Family Toxicity Data for Nickel

Rank	FLC50 (µg/l)	LN(FLC50)	FNO	Family
1	78.4560	4.3625	19	Daphnidae
2	233.5550	5.4534	29	Ephemerellidae
3	345.4717	5.8449	48	Centrarchidae
4	401.2168	5.9945	7	Philodinidae
5	439.8254	6.0864	35	Chironomidae
6	445.5863	6.0994	47	Perchithyidae
7	607.9420	6.4101	40	Cyprinidae
8	627.1620	6.4412	37	Anguillidae
9	864.8523	6.4998	25	Gammaridae
10	721.1063	6.5808	10	Naididae
11	731.3375	6.5949	12	Bithyniidae (Bulimidae) (Hydrobiidae)
12	1544.4968	7.3425	34	Hydropsychidae
13	2226.4189	7.7061	44	Cyprinodontidae

with P calculated as R/(N + 1) where N is the total number of families in the State data base, which is 13 in this case. Substituting these values into equations 2.1 to 2.5, we obtain the following:

$$M^2 = 0.024 \quad (2.19)$$

$$\bar{x} = 5.41 \quad (2.20)$$

$$\bar{y} = 0.411 \quad (2.21)$$

$$A = 4.22 \quad (2.22)$$

The Final Acute Intercept (FAI) is:

$$FAI = e^A = 67.7 \quad (2.23)$$

and the Final Acute Equation is:

$$FAV = FAI \times e^{[0.76 \ln (\text{hardness})]} \quad (2.24)$$

$$FAV = 67.7\, e^{[0.76 \ln (\text{hardness})]} \quad (2.25)$$

or

$$FAV = e^{[0.76 \ln (\text{hardness}) + A]} \quad (2.26)$$

$$FAV = e^{[0.76 \ln (\text{hardness}) + 4.22]} \quad (2.27)$$

Since the acute-chronic ratio for Nickel (19.4) is greater than 2, the maximum value criteria (MVC) for Nickel for the State of Pennsylvania is:

$$MVC = (FAI/2)e^{[0.76 \ln (\text{hardness})]} \quad (2.28)$$

$$MVC = 33.8\, e^{[0.76 \ln (\text{hardness})]} \quad (2.29)$$

or

$$MVC = e^{[0.76 \ln (\text{hardness}) + 3.52]} \quad (2.30)$$

2. The 30-Day Average Criterion

The chronic toxicity of Nickel is related to hardness in freshwater in the same way as is acute toxicity (Equation 2.16). The national chronic toxicity data base (Table 2.11) contains

only two families which are indigenous to Pennsylvania (Cyprinidae and Salmonidae), therefore, the FCV cannot be calculated from the State chronic toxicity data base.

Table 2.11 National Chronic Toxicity Data for Nickel

Rank	FLC50 (µg/l)	LN (FLC50)	FNO	Family
1	2.5476	0.9351	19	Daphnidae
2	7.4587	2.0094	40	Cyprinidae*
3	17.8999	2.8848	38	Salmonidae*
4	23.7813	3.1668	34	Hydropsychidae

*Indigenous to Pennsylvania.

The available acute-chronic ratio is 19.3 (see Table 2.1) which allows a Final Chronic Equation to be calculated from the Final Acute Equation:

$$FCV = FAV/(\text{acute-chronic ratio}) \quad (2.31)$$

With the State Final Acute Equation given by Equation 2.25, the State Final Chronic Equation is defined as:

$$FCV = \frac{67.7}{19.4} e^{[0.76 \ln (\text{hardness})]} \quad (2.32)$$

$$FCV = 3.49\, e^{[0.76 \ln (\text{hardness})]} \quad (2.33)$$

or

$$FCV = e^{[0.76 \ln (\text{hardness}) + 1.25]} \quad (2.34)$$

Since there is no FRV or FPV for Nickel, the Final Chronic Equation, which expresses the Final Chronic Value as a function of hardness, is the Pennsylvania 30-day average criterion for Nickel.

SECTION 3

RESULTS

3.1 SPECIES DISTRIBUTION BY STATE

Much of the information used to recalculate water quality criteria by state is presented in Appendix B. Identification numbers assigned to the states and to families in the national data base are listed in Appendices B-1 and B-2, respectively. Species identification numbers and the corresponding family classifications are presented in Appendix B-3. State and species are listed by identification number in Appendices B-4 and B-5, and the distribution in the United States (Hawaii and Alaska are not included) of the 95 species in the national data base is presented in Appendix B-5.

A complete list of North American species used in toxicity testing (Appendix B-3) includes the taxonomic families into which each organism is classified. There are 58 families. The relationship of these families to the minimum data requirements, which are discussed in Section 2.1.1, is illustrated in Appendix B-6.

The 58 families are arrayed in Appendix B-6 by ID number. The relationship of these families to the minimum data requirements may be determined by matching the code number in the Figure to each of the eight specified data requirements. Note that most of the families may satisfy more than one of the minimum data requirements. For example, after a member of the family Salmonidae has been selected, there are 14 families which satisfy the requirement for one other member of the class Osteichthyes, and 20 families remaining which satisfy the requirement for one other family in the phylum Chordata.

The total number of resident species in the each of 48 states ranges from 39 to 74, approximately 40 to 70 percent of the total species in the national toxicity data base. New York has the greatest number of resident species while Florida has the least. Eighteen species are present in all 48 states:

rotifer *(Philodina acuticornis)*
rotifer *(Philodina roseola)*
bristleworm *(Nais* sp.*)*
worm *(Limnodrilus hoffmeisteri)*
snail *(Gyrsulus circumstriatus)*
snail *(Physa* sp.*)*
cladoceran *(Daphnia pulex)*
cladoceran *(Daphnia pulicaria)*
cladoceran *(Simocephalus serrulatus)*
copepod (unidentified)
scud *(Hyallela azteca)*
damselfly *(Ischnura* sp.*)*
midge *(Chironomus plumaus)*

midge *(Chironomus* sp.*)*
midge *(unidentified)*
caddisfly *(unidentified)*
carp *(Cyprinus carpio)*
large mouth bass *(Micropterus salmoides)*

There are several species that are widely used in testing but whose actual distribution is limited. The planarian, *Polycelis felina* is indigenous only in Central Europe and is not present in any of the 48 states. (Kenk, personal communication, 1981.) The distribution in the United States of an often studied laboratory cladoceran, *Daphnia magna*, is limited. There is no valid record of the natural occurrence of *Daphnia magna* east of the Mississippi River. The known distribution of *Daphnia magna* in the United States is shown in Figure 3.1, which is modified from "The Systematics of North American Daphnia" (Brooks, 1957); the distribution range covers 14 of the western states. *Daphnia pulicaria* is recognized in Europe but is not listed in "The Systematics of North American Daphnia" (Brooks, 1957). *Daphnia pulicaria* and *Daphnia pulex* are extremely similar in their taxonomy (Herbert, P., personal communication, 1981.) In this study, it is assumed that *Daphnia pulex*, which commonly occurs in the states, is the same as *Daphnia pulicaria*.

3.2 STATE WATER QUALITY CRITERIA

The state water quality criteria which result from application of the recalculation method are presented in this report in two formats: first by chemical (Appendix C) and second by state (Appendix D). The state maximum criteria were calculated whenever the state toxicity data bases contained four or more families. Since the revised methodology calls for a regression of four data points, the national value was adopted as the state value whenever the state toxicity data comprised fewer than four families.

In calculating the national maximum value criteria, the minimum data requirement was met by only five chemicals (DDT, Cadmium, Chromium, Copper and Zinc). Those elements of the minimum data requirement which were not satisfied, for each chemical of interest, are indicated in Table 3.1. The national toxicity data bases for ten chemicals (Aldrin, Chlordane, Dieldren, Endosulfan, Endrin, Heptachlor, Lindane, PCB, Toxaphene and Arsenic) include no families in phyla other than Arthropoda or Chordata. The data bases for nine chemicals (Chlordane, Heptachlor, Lindane, PCB, Cyanide, Arsenic, Lead, Selenium and Silver) include no order of insect other than the one used to meet requirement 6, nor do they include any phyla other than Arthropoda, Chordata and one phylum used to meet requirement 7. Data bases of species for seven of the chemicals fail to meet one requirement and nine of them fail to meet two. Ninety-seven (97) percent of the state data bases for calculating the state maximum value criteria do not meet the minimum data requirements. Since the state toxicity data are always a subset of the national toxicity data, the cause of an inability of most state data sets to meet the minimum data requirements is insufficient data in the national toxicity data base.

The use of the tables in Appendices C and D is straightforward. For instance, the water quality criteria for Lindane for the State of Michigan may be obtained from tables of Lindane in Appendix C or

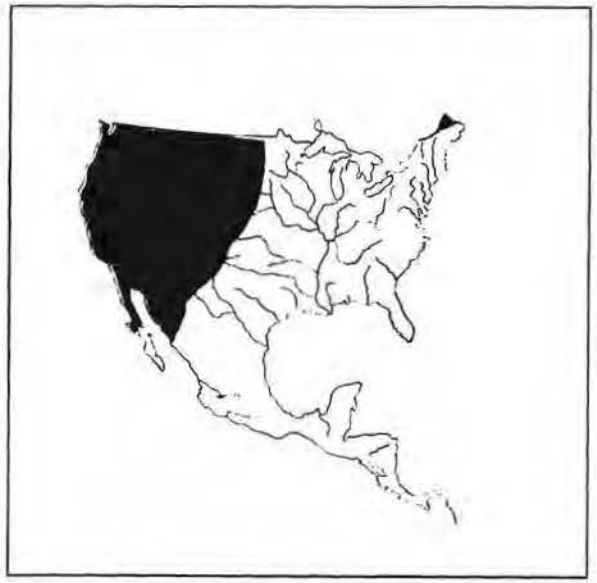

Figure 3.1 Distribution of *Daphnia magna* in the United States (Modified from Brooks, 1957)

Table 3.1 Minimum Data Requirements Which Are Not Met By The National Toxicity Data Base

Chemical Name	Criteria[1] 1	2	3	4	5	6	7	8
Aldrin							x[2]	
Chlordane							x	x
Dieldrin							x	
DDT								
Endosulfan							x	
Endrin							x	
Heptachlor							x	x
Lindane							x	x
PCB							x	x
Toxaphene							x	
Cyanide								x
Arsenic							x	x
Cadmium								
Chromium								
Copper								
Lead						x		x
Mercury		x	x					
Nickel	x							
Selenium								x
Silver								x
Zinc								

[1]The eight criteria of the minimum data requirements:

1. The family Salmonidae in the class Osteichthyes.
2. One other family in the class Osteichthyes.
3. One other family in the phylum Chordata.
4. A planktonic crustacean (e.g. conchostracan, cladoceran, or copepod).
5. A benthic crustacean (e.g., crayfish, isopod, ostracod, scud or glass shrimp).
6. A benthic insect (e.g., a benthic caddisfly, damselfly, dragonfly, mayfly, midge, mosquito or stonefly.
7. A family in a phylum other than Arthropoda or Chordata (e.g., Rotifera, Annelida or Mollusca).
8. Any other order of insect or any other phylum.

[2]"x" indicates criterion is not satisfied.

tables for Michigan in Appendix D. The maximum value criterion is 6.60 μg/l, which was obtained by dividing the State Final Acute Value by 2; the 30-day average criterion is 0.528 μg/l which was derived by dividing the State Final Acute Value by acute-chronic ratio of 25 (see Table 2.1). Other useful information is also available in these tables. The total number of families in the State resident data base for Michigan is eight. The four most sensitive families and their FMAVs are:

Family	FMAV (μg/l)
Salmonidae	21.99
Gammaridae	22.44
Centrarchidae	42.20
Ictaluridae	53.07

One may immediately infer from this information that the Michigan FAV for Lindane is lower than the family mean acute value of the most sensitive family (21.99 μg/l for Salmonidae). Since the FAV is the value which corresponds to the fifth percentile, then the FAV should be less than the family mean acute value of the most sensitive family if the total number of resident families is less than 20.

In all cases, except for those containing less than four resident families, the maximum criteria may be calculated based on the information given in these tables. Take the maximum value criterion of Lindane for Michigan as an example, with a total of eight resident families and mean acute values for the four most sensitive of 21.99, 22.44, 42.20 and 53.07 μg/l. The coefficients needed for the FAV can be calculated by substituting these values into equations 2.1 to 2.5, yielding:

$$M^2 = 0.104 \quad (3.1)$$

$$\bar{x} = 3.48 \quad (3.2)$$

$$\bar{y} = 0.51 \quad (3.3)$$

$$A = 2.58 \quad (3.4)$$

The FAV is:

$$e^A = e^{2.58} = 13.2\ \mu g/l \quad (3.5)$$

The acute-chronic ratio ranges from 3 (Mercury) to 122 (Cadmium), for the 21 chemicals (see footnote 1 of Table 2.1). In other words, the acute-chronic ratios are greater than 2 for all of the chemicals studied. The maximum value criterion, which is defined as the FAV divided by the smaller of (a) 2 or (b) the acute-chronic ratio, may be simply defined as the FAV/2. The maximum value criterion of Lindane for Michigan is therefore defined as:

$$FAV/2 = 13.2/2 = 6.6\ \mu g/l \quad (3.6)$$

In selecting the 30-day average criteria, the information presented in Table 2.1 is used. The acute-chronic ratio is 25.0 which yields the final chronic value of 0.528 μg/l. Comparing this value with the available FRV of 100, the 30-day average criterion is chosen as 0.525 μg/l. The final selection of the 30-day average criterion is indicated in the column (+ +). An "ACR" means that the value was obtained by dividing the FAV with the acute-chronic ratio; "FCV" indicates that the value was calculated from the chronic toxicity data base; "FPV" indicates that the value was the Final Plant Value; "FRV" indicates the Final Residue Value; and "SCV"represents the value as the chronic value of important species.

Whenever the acute toxicity data base does not meet the minimum data requirements, a star (*) is printed next to the maximum value criterion. If the State data set contains less than four families, "***" is printed and the national maximum value criteria is printed as the state maximum value criterion. The state has three options in these cases: to use the calculated value given in the table; to use the national criterion; or to conduct additional toxicity tests of additional species so that the state toxicity data base is adequate to meet the minimum data requirements, and then calculate the criteria. For more detailed information on meeting the minimum data requirements (so as to decide the test species for additional tests), a state may refer to the information given in Appendix E. In Appendix E, the state and chemical as well as the criteria of the minimum data requirements are all represented by their ID numbers. Appendix B-1 may be used for reference.

One of the minimum data requirements is "the family Salmonidae." Salmonid fish are not indigenous in four States: Florida, Kansas, Texas and Mississippi. The approach taken in this study was to relieve these four states from the necessity of meeting this requirement. These four are indicated by a "#" sign to the left of the state's name.

For the six chemicals (Cd, Cu, Pb, Ag, Ni and Zn) whose acute toxicity is dependent on hardness in water, the values shown in the column "LC50 Value" and the maximum value criteria shown in the tables of Appendices C and D refer only to the acute intercepts, that is, the value at zero hardness effect. In order to set appropriate criteria for different hardness conditions, a state should multiply the maximum value criteria (CR) shown in Appendices C and D by the hardness dependence function:

$$VCR = CR \times \exp[v \ln(H)],\ \mu g/l \quad (3.7)$$

where VCR = maximum value criteria for a hardness concentration of H mg/l as $CaCO_3$,

v = the mean acute slope (shown at the bottom of Table 1 of the criteria document),

H = ambient hardness concentration in mg/l $CaCO_3$.

Equation (3.7) may be written as:

$$VCR = \exp[v \ln(H) + z] \quad (3.8)$$

with

$$z = \ln(CR) \qquad (3.9)$$

Table 3.2 presents a tabulation of v (the slope) and z (the log intercept) for the maximum value criteria for the six hardness dependent chemicals.

If the state 30-day average criterion for Lead is chosen as the Final Chronic Value calculated from the chronic toxicity data base (those noted with FCV), then the values shown in both Appendices should be multiplied by the hardness dependence function to account for hardness variability (Equation 3.7) with v equal to 2.35 (U.S. EPA, 1980). For example, the 30-day average Lead criteria for New York is 0.00004 exp[2.35 (ln (Hardness)] which yields a value of 0.39 µg/l for a hardness of 50 mg/l $CaCO_3$.

For those cases in Appendices C and D in which the tabulated 30-day average criterion for these six chemicals is denoted by ACR (meaning the value is the quotient of the FAV divided by the acute-chronic ratio), an adjustment must be made to reflect ambient hardness. In these cases, Equation 3.7 should be used, in which the tabulated 30-day value is substituted for CR and the result (VCR) becomes the 30-day average criterion. For example, the 30-day average Cadmium criterion for New York should be 0.0004 exp[1.05 ln (Hardness)], where 0.0004 is taken from Appendix C or D, and 1.05 is taken from Table 3.2. If the ambient hardness is 50 mg/l as $CaCO_3$, the 30-day average Cadmium criterion for New York becomes 0.0243 µg/l.

There are two chemicals (Copper and Lead) whose national 30-day average criteria are calculated from the chronic data base. Of these, the chronic toxicity for Copper is independent of hardness whereas Lead is dependent on hardness (see Table 2.1).

Table 3.2 Values of v and z in the Maximum Value Criteria Equation exp[v(ln(H)) + z], by State

State	Chemical											
	Cadmium		Copper		Lead		Nickel		Silver		Zinc	
	v	z	v	z	v	z	v	z	v	z	v	z
Alabama	1.05	−3.61	0.94	−1.84	1.22	−3.30	0.76	3.49	1.72	−7.84	0.83	1.82
Alaska	1.05	−4.34	0.94	−1.86	1.23	3.62	0.76	3.46	1.72	−7.86	0.83	2.13
Arizona	1.05	−4.61	0.94	−2.05	1.22	−1.02	0.76	3.15	1.72	−8.12	0.83	1.63
Arkansas	1.05	−1.99	0.94	−2.11	1.22	−3.35	0.76	3.37	1.72	−10.82	0.83	1.52
California	1.05	−4.30	0.94	−2.06	1.22	−1.02	0.76	3.15	1.72	−8.13	0.83	1.62
Colorado	1.05	−4.42	0.94	−2.02	1.22	−1.13	0.76	3.08	1.72	−8.11	0.83	1.60
Connecticut	1.05	−3.68	0.94	−1.87	1.22	2.71	0.76	3.50	1.72	−8.72	0.83	2.13
Delaware	1.05	−3.61	0.94	−1.86	1.22	3.80	0.76	3.50	1.72	−7.84	0.83	1.86
Florida**	1.05	−3.06	0.94	−2.06	1.27	8.66	0.76	3.43	1.72	−7.84	0.83	2.22
Georgia	1.05	−4.66	0.94	−2.06	1.23	3.64	0.76	3.40	1.72	−10.82	0.83	2.25
Idaho	1.05	−4.34	0.94	−2.14	1.22	−1.35	0.76	3.02	1.72	−8.11	0.83	0.99
Illinois	1.05	−3.61	0.94	−1.81	1.22	−2.83	0.76	3.55	1.72	−7.92	0.83	3.28
Indiana	1.05	−3.86	0.94	−1.81	1.22	3.62	0.76	3.51	1.72	−7.99	0.83	2.28
Iowa	1.05	−1.15	0.94	−2.05	1.22	−3.36	0.76	3.44	1.72	−8.47	0.83	1.81
Kansas**	1.05	−3.15	0.94	−2.11	1.23	−3.30	0.76	3.40	1.72	−7.84	0.83	1.99
Kentucky	1.05	−4.34	0.94	−1.95	1.23	−2.85	0.76	3.45	1.72	−7.90	0.83	2.13
Louisiana	1.05	−3.16	0.94	−2.10	1.23	−3.30	0.76	3.37	1.72	−7.84	0.83	2.10
Maine	1.05	−4.35	0.94	−1.86	1.23	−3.30	0.76	3.50	1.72	−7.84	0.83	2.14
Maryland	1.05	−3.86	0.94	−1.87	1.22	2.17	0.76	3.50	1.72	−7.98	0.83	2.14
Massachusetts	1.05	−3.86	0.94	−1.83	1.22	2.17	0.76	3.50	1.72	−9.72	0.83	2.13
Michigan	1.05	−3.77	0.94	−1.83	1.22	−2.86	0.76	3.52	1.72	−7.89	0.83	2.07
Minnesota	1.05	−3.86	0.94	−1.97	1.22	2.71	0.76	3.44	1.72	−9.12	0.83	2.01
Mississippi**	1.05	−2.83	0.94	−2.06	1.27	−3.36	0.76	3.46	1.72	−10.82	0.83	2.04
Missouri	1.05	−2.92	0.94	−2.06	1.27	−3.30	0.76	3.46	1.72	−11.01	0.83	2.04
Montana	1.05	−4.71	0.94	−2.02	1.22	−1.26	0.76	3.08	1.72	−8.60	0.83	1.54
Nebraska	1.05	−3.12	0.94	−1.95	1.23	−1.35	0.76	3.19	1.72	−8.80	0.83	1.76
Nevada	1.05	−4.71	0.94	−2.11	1.22	−1.13	0.76	3.08	1.72	−8.43	0.83	1.31
New Hampshire	1.05	−4.07	0.94	−1.87	1.22	3.37	0.76	3.50	1.72	−9.72	0.83	2.13
New Jersey	1.05	−3.86	0.94	−1.87	1.22	3.84	0.76	3.50	1.72	−7.54	0.83	2.12
New Mexico	1.05	−4.42	0.94	−1.90	1.22	−1.26	0.76	3.22	1.72	−8.11	0.83	1.60
New York	1.05	−3.54	0.94	−1.89	1.27	−2.92	0.76	3.58	1.72	−7.90	0.83	2.04
North Carolina	1.05	−3.95	0.94	−1.97	1.22	2.84	0.76	3.50	1.72	−7.54	0.83	2.12
North Dakota	1.05	−4.27	0.94	−1.95	1.23	−1.13	0.76	3.16	1.72	−8.80	0.83	1.42
Ohio	1.05	−4.30	0.94	−1.93	1.23	3.17	0.76	3.50	1.72	−7.90	0.83	2.07
Oklahoma	1.05	−4.34	0.94	−1.99	1.22	−3.83	0.76	3.45	1.72	−8.87	0.83	2.12
Oregon	1.05	−4.27	0.94	−2.10	1.22	−1.82	0.76	3.08	1.72	−8.25	0.83	1.58
Pennsylvania	1.05	−3.86	0.94	−1.93	1.22	2.71	0.76	3.53	1.72	−7.99	0.83	2.13
Rhode Island	1.05	−3.86	0.94	−1.87	1.22	2.71	0.76	3.50	1.72	−9.72	0.83	2.13
South Carolina	1.05	−4.14	0.94	−2.00	1.22	3.84	0.76	3.44	1.72	−7.84	0.83	2.07
South Dakota	1.05	−4.14	0.94	−1.96	1.23	−1.12	0.76	3.23	1.72	−8.80	0.83	1.46
Tennessee	1.05	−4.34	0.94	−1.96	1.23	−3.83	0.76	3.46	1.72	−7.90	0.83	2.13
Texas**	1.05	−2.18	0.94	−2.11	1.23	4.73	0.76	3.43	1.72	−8.80	0.83	2.04
Utah	1.05	−4.71	0.94	−2.11	1.23	−1.35	0.76	3.08	1.72	−8.11	0.83	1.56
Vermont	1.05	−4.07	0.94	−1.87	1.22	3.37	0.76	3.50	1.72	−9.72	0.83	2.13
Virginia	1.05	−4.07	0.94	−1.90	1.22	3.71	0.76	3.56	1.72	−9.72	0.83	2.12
Washington	1.05	−4.34	0.94	−2.15	1.22	−1.82	0.76	3.08	1.72	−8.25	0.83	0.96
West Virginia	1.05	−4.51	0.94	−2.02	1.23	2.71	0.76	3.44	1.72	−7.26	0.83	2.03
Wisconsin	1.05	−3.56	0.94	−1.93	1.22	−3.92	0.76	3.53	1.72	−7.90	0.83	2.07
Wyoming	1.05	−4.71	0.94	−2.02	1.22	−1.26	0.76	3.08	1.72	−8.11	0.83	1.54

v = Slope of hardness effect.
z = Acute intercept.
* Uses national criteria, state has less than four resident families.
** No indigenous salmonid fish in state.

SECTION 4

DISCUSSION

The minimum data requirement, which was discussed earlier, specifies toxicity test results for at least eight different families. The intent of this requirement is to assure that the organisms considered in a criterion calculation represent a variety of dissimilar organisms commonly found in the aquatic environment. The calculation itself is performed on the four most sensitive of the eight families which are required to satisfy the minimum data requirement.

Over 1,000 cases were considered in this study in order to recalculate criteria for each of 21 chemicals for each of 48 states. The minimum data requirement could not be satisfied in 97 percent of the combinations of state and chemical examined. In some cases, the minimum data base cannot be met. According to the literature on species distribution, for example, salmonids simply are not found in four states: Florida, Kansas, Mississippi and Texas.

For those cases in which the minimum data base could not be satisfied, criteria were calculated nevertheless if there was information available on at least four families. There were 16 chemicals for which toxicity test data were available for at least four families in each state. For many states, however, there were insufficient data for the five remaining chemicals (Arsenic, Chlordane, Endosulfan, Lead and Mercury) to apply the revised methodology. When a state criterion could not be calculated, the national criterion was adopted. This occurred in approximately five percent of the cases examined.

The recalculated state maximum value criteria are compared qualitatively with the national values in Table 4.1, and the 30-day average values are compared in Table 4.2. In examining a single chemical, the state criteria tend to be either predominantly more stringent or predominantly less stringent than the national value for a given pollutant. The recalculated criteria are more stringent in 65 percent of the cases.

The state-specific criteria which were calculated after removing non-resident families are presented in Appendix C by chemical and in Appendix D by state. In each case the national criteria and the state criteria are tabulated together with the number of families in the national data base which are resident in a given state, and the names of the four families used to recalculate the criteria. The national value was used as a state value whenever fewer than four families were available.

The information in these Appendices, which should be of immediate use to the states, reflects the extent of and the limitations imposed by the national data base as constituted when this work was done. The national data base is not a finished product by any means, however, and EPA is continually adding new information.

For those cases in which the minimum data requirement was not satisfied, the addition of toxicity data for new families should improve the quality of recalculated state-specific criteria. Given the large number of combinations of state and chemical for which the minimum data requirement could not be met, it is not likely that the national data base will soon be extensive enough to serve all the states for all the toxic chemicals. This being the case, a state might find it expedient to run selected bioassays in order to augment the data base for a specific pollutant. By comparing the minimum data requirement with the information in Appendix E, state biologists should be able readily to determine those families for which additional toxicity test results are indicated.

Table 4.1 Comparison of National and State Maximum Value Criteria

	Aldrin	Cadmium	Chlordane	Chromium	Copper	Cyanide	DDT	Dieldrin	Endosulfan	Endrin	Heptachlor	Lead	Lindane	Mercury	PCB	Pentachlor	Silver	Toxaphene	Zinc
Alabama	–	+	–	+	–	–	–	–	–	–	+	+	–	–	–	–	–	+	+
Arizona	–	+	–	+	+	–	–	–	–	–	+	+	–	–	–	–	–	+	–
Arkansas	–	+	–	+	–	–	–	–	–	–	+	+	–	–	–	–	–	+	–
California	–	+	–	+	–	–	–	–	–	–	+	+	–	–	*	–	–	–	–
Colorado	–	+	–	+	–	–	–	–	–	–	+	+	–	–	*	–	–	–	–
Connecticut	–	+	–	+	+	–	–	–	–	–	+	+	–	+	–	–	–	+	+
Delaware	–	+	–	+	+	–	–	–	–	–	+	+	–	+	–	–	*	+	+
Florida**	–	+	+	*	–	–	–	–	+	+	+	*	–	*	–	–	*	+	+
Georgia	–	+	–	*	+	–	–	–	–	–	+	+	–	+	–	–	–	+	+
Idaho	–	+	–	+	+	–	–	–	–	–	+	+	–	+	–	–	–	+	–
Illinois	–	–	–	+	+	–	–	–	–	–	+	+	–	+	+	–	–	+	+
Indiana	–	+	–	+	+	–	–	–	–	–	+	+	–	+	+	–	–	+	+
Iowa	–	–	–	+	–	–	+	–	–	+	–	–	–	–	–	–	–	+	–
Kansas**	–	+	–	+	–	–	–	–	–	–	+	+	–	–	–	–	–	+	+
Kentucky	–	–	–	*	–	–	–	–	–	–	+	+	–	+	–	–	–	+	+
Louisiana	–	+	+	+	–	–	+	*	–	*	+	–	–	+	–	–	*	+	+
Maine	–	*	–	*	+	–	–	–	–	–	+	+	–	+	+	–	–	+	+
Maryland	–	+	–	+	+	–	–	–	–	–	+	+	–	+	–	–	–	+	+
Massachusetts	–	+	–	+	–	–	–	–	–	–	+	–	–	+	–	–	–	+	+
Michigan	–	–	–	+	–	–	–	–	–	–	+	+	–	+	+	–	–	+	+
Minnesota	–	+	–	+	+	–	–	–	–	–	+	+	–	+	–	–	–	+	+
Mississippi**	–	–	–	*	–	–	–	–	–	–	+	–	–	–	–	–	–	+	+
Missouri	–	+	–	*	–	–	–	–	–	–	+	–	–	–	–	–	–	+	+
Montana	–	+	–	+	+	–	–	–	–	–	+	+	–	–	–	–	–	+	–
Nebraska	–	+	–	+	+	–	–	–	–	–	+	+	–	–	–	–	–	+	+
Nevada	–	+	–	+	+	–	–	–	–	–	+	+	–	–	–	–	–	+	–
New Hampshire	–	+	–	+	–	–	–	–	–	–	+	+	+	+	–	–	–	+	+
New Jersey	–	+	–	+	+	–	–	–	–	–	+	+	–	+	–	–	–	+	+
New Mexico	–	+	–	+	–	–	–	–	–	–	+	+	–	–	–	–	–	+	+
New York	–	+	–	–	–	–	–	–	+	+	+	+	–	+	–	–	–	+	+
North Carolina	–	+	–	+	+	–	–	–	–	–	+	+	–	+	–	–	*	+	+
North Dakota	–	+	–	+	+	–	–	–	–	–	+	+	–	–	–	–	–	+	+
Ohio	–	–	–	–	–	–	–	–	–	–	+	+	–	+	–	–	–	+	+
Oklahoma	–	–	–	–	–	–	–	–	–	–	+	+	–	–	+	–	–	+	+
Oregon	–	+	–	+	+	–	–	–	–	–	+	+	–	–	–	–	–	+	–
Pennsylvania	–	+	–	+	+	–	–	–	–	–	+	+	–	+	–	–	–	+	+
Rhode Island	–	+	–	+	+	–	–	–	–	–	+	+	–	+	–	–	–	+	+
South Carolina	–	+	–	*	+	–	–	–	–	–	+	+	–	*	–	–	*	+	+
South Dakota	–	+	–	+	+	–	–	–	–	–	+	+	–	–	–	–	–	+	+
Tennessee	–	–	–	+	–	–	–	–	–	–	+	+	–	–	+	–	–	+	+
Texas**	–	+	+	+	–	–	–	–	+	–	+	+	–	*	–	–	–	+	+
Utah	–	+	–	+	+	–	–	–	–	–	+	+	–	–	–	–	–	+	–
Vermont	–	+	–	+	+	–	–	–	–	–	+	+	+	+	–	–	–	+	+
Virginia	–	+	–	+	+	–	–	–	–	–	+	+	–	–	–	–	–	+	+
Washington	–	+	–	+	+	–	–	–	–	–	+	+	–	–	–	–	–	+	–
West Virginia	–	+	–	*	+	–	–	–	–	–	+	+	–	–	–	–	–	+	+
Wisconsin	–	+	–	+	–	–	–	–	–	–	+	+	–	+	+	–	–	+	+
Wyoming	–	+	–	+	+	–	–	–	–	–	+	+	–	–	–	–	–	+	–

\+ State water quality criterion is less stringent than the National criterion.
– State water quality criterion is more stringent than the National criterion.
* State had less than four resident families; used national criterion.
** State has no resident Salmonid family.

Table 4.2 Comparison of National and State 30-Day Average Criteria

	Aldrin	Arsenic	Cadmium	Chlordane	Chlorine	Cyanide	DDT	Dieldrin	Endrin	Heptachlor	Lead	Lindane	Mercury	Nickel	PCB	Selenium	Silver	Toxaphene	Zinc
Alabama	*	*	–		+	+	–		–		+	+		+		–	*		+
Arizona			–		+	–	–		–			+	–	+		–			+
Arkansas			+		–	–	–		–			–	–	+		–			+
California			–		+	–	–		–			+	–	+		–			–
Colorado			–		+	+	–		–			–	–	+		–			–
Connecticut			–		+	+	–		–			–		+		–			+
Delaware					+	+	–		–		+	–		+		–			+
Florida**			+		+	+					+	+		+		–			+
Georgia			–		+	+	–		–			+	+	+		–			+
Idaho			–		+	–	–		–			–	+	–	+	–			+
Illinois			+		–	–	–		–			+	–		+	–			+
Indiana			–		+	+	–		–			+	–		+	–			+
Iowa			+		–	–	+		+				–		+	–			+
Kansas**			+		+	+	–		–				+		+	–			+
Kentucky			–		–	–	–		–			+	–		+	–			+
Louisiana			+		+	+							–		+	–			+
Maine			–		+	+	+		–				–		+	–			+
Maryland			–		+	+	–		–				–		+	–			+
Massachusetts			–		+	+	–		–			+	–		+	–			+
Michigan			–		–	–	–		–			+	+		+	–			+
Minnesota			–		+	+	–		–			+	+		+	–			+
Mississippi**			+		–	–						+	–	+		–			+
Missouri			+		+	+	–		–				–		+	–			+
Montana			+		+	–	–		–				+	–	+	–			+
Nebraska			–		+	+	–		–			+	+	–	+	–			+
Nevada			–		+	+	–		–				+	–	+	–			+
New Hampshire			–		+	+	–		–				+		+	–			+
New Jersey			–		+	+	–		–		+		+		+	–			+
New Mexico			–		+	+	–		–		+	+	–	+		–			–
New York					+	–	–		–		+	+		+		–			+
North Carolina			–		+	+	–		–				–		+	–			+
North Dakota			–		+	+	–		–				–	–	+	–			+
Ohio			–		+	+	–		–		+	–		+		–			+
Oklahoma			–		–	–	–		–			+		+		–			+
Oregon			–		+	+	–		–			–	+	–		–			+
Pennsylvania			–		+	+	–		–			+	–			–			+
Rhode Island			*		+	+	–		–				–		+	–			+
South Carolina			–		+	+	–		–				+		+	–			+
South Dakota			–		+	+	–		–				+	–		–			+
Tennessee			–		–	–	–		–		+	–			+	–			+
Texas**			+		+	+	–		–			+	+		+	–			+
Utah			–		+	+	–		–				+	–	+	–			+
Vermont			–		+	+	–		–				–		+	–			+
Virginia			–		+	+	–		–				–		+	–			+
Washington			–		+	+	–		–		–	+	–	+		–			+
West Virginia			–		+	+	–		–		+	+		+		–			+
Wisconsin			–		+	+	–		–		+	+		+		–			+
Wyoming			–		+	+	–		–			+	–	+		–			+

* State 30-day average less stringent than the National value.
– State 30-day average more stringent than the National value.
– No 30-day average value
** No resident Salmonid families.

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APPENDIX A
RESIDENT NORTH AMERICAN SPECIES OF AQUATIC ANIMALS USED IN TOXICITY TESTS

This Appendix identifies species of aquatic animals which have been used in toxicity tests and have been confirmed to be resident North American species for the purposes of the "Guidelines for Deriving National Water Quality Criteria for the Protection of Aquatic Life and its Uses." "North America" includes only the 48 contiguous states, Canada, and Alaska. Species do not have to be native to be resident. Other species should be considered resident North American species if they can be similarly confirmed or if the test organisms were obtained from a wild population in North America.

The sequence for fishes is taken from *A List of Common and Scientific Names of Fishes from the United States and Canada*. For other species, the sequence of phyla, classes and families is taken from the NODC Taxonomic Code, Third Edition, National Oceanographic Data Center, NOAA, Washington, D.C. 20235, July, 1981, and the numbers given are from that source to facilitate verification. Within a family, genera are in alphabetical order, as are species in a genus. An asterisk (*) beside a common name indicates that the species is nonresident.

Freshwater Species

Class	Family	Species: Common Name	Species: Scientific Name
PHYLUM PORIFERA (29)			
Demospongia 2680	Spongillidae 268301	Sponge	Ephydatia fluviatilis
PHYLUM PLATYHELMINTHES (39)			
Turbellaria 3801	Planariidae	Planarian	Planaria gonocephala
		Planarian*	Polycelis felina
	Dendrocoelidae 380101	Planarian	Polycelis tenuis Dugesia dorotocephala Dugesia tigrina
PHYLUM GASTROTRICHA (44)			
Chaetonotoida 4402	Chaetonotidae 440201	Gastrotrich	Lepidodermella squamatum
PHYLUM ROTIFERA (ROTATORIA) (45)			
Bdelloidea 4505	Philodinidae 480402	Rotifer	Philodina acuticornis
		Rotifer	Philodina roseola
Monogononta 4508	Brachionidae 450801	Rotifer	Keratella cochlearis
PHYLUM ANNELIDA (50)			
Archiannelida 5002	Aeolosomatidae 500301	Worm	Aeolosoma headleyi
Oligochaeta 5004	Lumbriculidae 502501	Worm	Lumbriculus variegatus
	Tubificidae 502802	Tubificid worm	Limnodrilus hoffmeisteri
		Tubificid worm	Tubifex tubifex
	Naididae 502803	Worm	Nais sp.
		Worm	Pristina sp.
PHYLUM MOLLUSCA (5066)			
Gastropoda 51	Viviparidae 510308	Snail	Campeloma decisum
	Bithyniidae (Ammnicolidae) Bulimnidae (Hydrobiidae) 510317	Snail	Amnicola sp.

Freshwater Species

Class	Family	Species: Common Name	Species: Scientific Name
	Planorbidae 510402	Snail	Gyraulus circumstriatus
		Snail	Gyraulus parvus
		Snail	Helisoma anceps
		Snail	Helisoma campanulatum
		Snail	Helisoma trivolvis
		Snail	Menetus dilatatus
		Snail	Promenetus exacuous
	Lymnaeidae	Snail	Lymnaea sp.
		Snail	Lymnaea elodes
		Snail	Lymnaea emarginata
		Snail	Lymnaea humilis
		Snail	Lymnaea palustris
		Snail	Lymnaea stagnalis
		Snail	Lymnaea sp.
	Physidae 511413	Snail*	Physella gyrina
		Snail	Physella sp.
		Snail	Physella virgata
		Snail	Aplexa hypnorum
		Snail*	Physa fontinalis
		Snail	Physa gyrina
		Snail	Physa heterostropha
		Snail	Physa integra
		Snail	Physa sp.
	Margaritiferidae 551301	Mussel	Margaritifera margaritifera
Bivalvia (Pelecypoda) 55	Unionidae 551302	Mussel	Carunculina parulina
	Corbiculidae 551545	Asiatic clam	Corbicula fluminea
		Asiatic clam	Corbicula manilensis
	Pisidiidae (Sphaeriidae) 551546	Fingernail clam	Eupera cubensis (Eupera singleyi)
		Fingernail clam	Musculium transversum
		Fingernail clam	Pisidium (subtruncatum)
			Sphaerium corneum
PHYLUM ARTHROPODA (56-68)			
Crustacea 61	Lysiosillidae 610701	Conchostracan	Limnosa brachyrhyncha
	Sididae 610801	Cladoceran	Diaphanosoma sp.
	Daphnidae 610802	Cladoceran	Ceriodaphnia reticulata

APPENDIX A
RESIDENT NORTH AMERICAN SPECIES OF AQUATIC ANIMALS USED IN TOXICITY TESTS

Freshwater Species				Freshwater Species			
		Species				Species	
Class	Family	Common Name	Scientific Name	Class	Family	Common Name	Scientific Name
		Cladoceran	Daphnia ambigua			Crayfish	Orconectes rusticus
		Cladoceran	Daphnia carinata			Crayfish	Orconectes virilis
		Cladoceran	Daphnia dubia			Crayfish	Pacifastacus leniusculus
		Cladoceran	Daphnia galeata mendotae			Crayfish	Procambarus acutus
		Cladoceran	Daphnia hyalina			Crayfish	Procambarus clarki
		Cladoceran	Daphnia longispina				Orconectes causeyi
		Cladoceran	Daphnia magna			Crayfish	Procambarus spp.
		Cladoceran	Daphnia pulex			Crayfish	Procambarus spp.
		Cladoceran	Daphnia pulicaria				
		Cladoceran	Daphnia retrocurva	Insecta 6348	Hexagenidae 621601	Mayfly	Hexagenia bilineata
		Cladoceran	Simocephalus serrulatus			Mayfly	Ephemerella subvaria
	Bosminidae 619803	Cladoceran	Bosmina longirostris		Baetidae 621402	Mayfly	Callibaetis spp.
	Polyphemidae 619806	Cladoceran	Polyphemus pediculus		Ephemerellidae	Mayfly	Ephemerella dorothea
	Cyprididae (Cyprideis) 611303	Ostracod*	Cypretta kawai			Mayfly	Ephemerella grandis
						Mayfly	Ephemerella infrequens
						Mayfly	Ephemerella spp.
					Caenidae 621632	Mayfly	Caenis diminuta
	Daphniidae 611818	Ostracod	Ceriodaphnia dubia				
		Copepod*	Selenastrum capricornutum		Siphlonuridae 622203	Mayfly	Hexagenia bilineata
	Cyclopidae 613008	Copepod*	Cyclops abyssorum			Mayfly	Hexagenia rigida
						Mayfly	Hexagenia spp.
		Copepod	Cyclops bicuspidatus		Libellulidae 623501	Dragonfly	Perithemis tenera
		Copepod	Cyclops scutifer				Celithemis eponina
		Copepod	Eucyclops agilis		Corixidae (Agraptocorixa) 623504	Community	Hesperocorixa laticincta
		Copepod	Macrocyclops fuscus				
	Acartiidae 619302	Copepod*	Acartia clausi			Community	Hesperocorixa spp.
							Trichocorixa reticulata
		Copepod	Acartia tonsa		Pleidae 623504	Community	Neoplea spp.
		Copepod	Acartia californiensis				Neoplea striola
		Copepod*	Acartia clausi		Planorbidae 626201	Biomphy	Helisoma anceps
		Copepod	Acartia hudsonica				Helisoma campanulatum
	Gammaridae 619821	Scud	Crangonyx pseudogracilis			Biomphy	Helisoma trivolvis
						Biomphy	Menetus dilatatus
		Scud	Gammarus fasciatus			Biomphy	Promenetus exacuous
		Scud	Gammarus lacustris		Physidae 626401	Biomphy	Aplexa hypnorum
		Scud	Gammarus pseudomucronatus			Biomphy	Physella gyrina
		Scud	Gammarus spp.			Biomphy	Physella integra
	Hyalellidae (Talitridae) 619823	Scud	Hyalella azteca (Hyalella knickerbockeri)		Planorbidae 626402	Biomphy	Gyraulus circumstriatus
						Biomphy	Gyraulus parvus
	Palaemonidae 617911	Glass shrimp	Palaemonetes kadiakensis		Dytiscidae 620005	Beetle	Laccophilus maculosus
	Astacidae 618102	Crayfish	Cambarus bartonii		Elmidae (Stenelmis) 621604	Beetle	Stenelmis crenata
		Crayfish	Faxonella clypeata		Hydropsychidae 641604	Caddisfly	Arctopsyche grandis
		Crayfish	Orconectes juvenilis				
		Crayfish	Orconectes limosus			Caddisfly	Hydropsyche betteni

APPENDIX A
RESIDENT NORTH AMERICAN SPECIES OF AQUATIC ANIMALS USED IN TOXICITY TESTS

Freshwater Species				Freshwater Species			
		Species				Species	
Class	Family	Common Name	Scientific Name	Class	Family	Common Name	Scientific Name
		Caddis fly	Hydropsyche californica			Common shiner	Notropis cornutus
		Caddis fly	Hydropsyche sp.			Fragnose minnow	Notropis emiliae
		Caddis fly	Brachycentrus sp.			Spottail shiner	Notropis hudsonius
	Brachycentridae 641615					Red shiner	Notropis lutrensis
	Ceratopogonidae 660004	Biting midge				Spottin shiner	Notropis spectrunculus
	Chironomidae 660606	Midge	Chironomus stigmatipennis			Northern redbelly dace	Phoxinus eos
		Midge	Chironomus tentans			Bluntnose minnow	Pimephales notatus
		Midge	Chironomus sp.			Fathead minnow	Pimephales promelas
		Midge	Tanytarsini (Gastropela)			Northern squawfish	Ptychocheilus oregonensis
						Blacknose dace	Rhinichthys atratulus
						Speckled dace	Rhinichthys osculus
PHYLUM ECHINODERMATA (EKHYNODAY (79)						Roach	Rutilus rutilus erythrophthalmus
	Psychrochaetidae 7917	Pectinodermidae	Bryozoa sp.			Orsek shub	Semotilus atromaculatus
						Pearl dace	Semotilus margarita
		Lophopodidae	Bryozoa sp.			Tench	Tinca tinca
		Phylactolaemidae	Bryozoa sp.			White sucker	Catostomus commersoni
					Cammaridae 677804		
PHYLUM CHORDATA (CHR					Ictaluridae 677702	Black bullhead	Ictalurus melas
	Agnatha 99	Petromyzontidae 680201	Sea lamprey	Petromyzon marinus			
	Osteichthyes 6717	Anguillidae 674101	Anguilla rostrata	American eel		Yellow bullhead	Ictalurus natalis
		Salmonidae 675001	Pink salmon	Oncorhynchus gorbuscha		Brown bullhead	Ictalurus nebulosus
			Coho salmon	Oncorhynchus kisutch		Channel catfish	Ictalurus punctatus
			Sockeye salmon	Oncorhynchus nerka		Walking catfish	Clarias batrachus
			Chinook salmon	Oncorhynchus tshawytscha	Clariidae 677713		
			Golden trout	Salmo aguabonita	Percichthyidae 680404	Banded killifish	Fundulus diaphanus
			Cutthroat trout	Salmo clarki			
			Rainbow trout	Salmo gairdneri			
			Brown trout	Salmo trutta			
			Atlantic salmon	Salmo salar			
			Brook trout	Salvelinus fontinalis			
			Lake trout	Salvelinus namaycush			
			Northern pike	Esox lucius			
		Sacramento 675601					
		Cyprinidae 677601	Chum salmon	Oncorhynchus keta			
			Longfin dace	Agosia chrysogaster			
			Central stoneroller	Campostoma anomalum			
			Goldfish	Carassius auratus			
			Common carp	Cyprinus carpio			
			Zebra danio*	Danio rerio			
			Zebrafish*	Brachydanio rerio			
			Golden shiner	Notemigonus crysoleucas			
			Pugnose shiner	Notropis anogenus			
			Emerald shiner	Notropis atherinoides			
			Striped shiner	Notropis chrysocephalus			

APPENDIX A
PRESENT NORTH AMERICAN SPECIES OF AQUATIC ANIMALS USED IN TOXICITY TESTS

Freshwater Species

Class	Family	Species	
		Common Name	Scientific Name
		Rainbow sunfish	Lepomis microlophus
		Smallmouth bass	Micropterus dolomieui
		Largemouth bass	Micropterus salmoides
		Black crappie	Pomoxis nigromaculatus
	Percidae	Rainbow darter	Etheostoma caeruleum
		Johnny darter	Etheostoma nigrum
		Orangethroat darter	Etheostoma spectabile
		Yellow perch	Perca flavescens
		Walleye	Stizostedion vitreum vitreum
		Freshwater drum	Aplodinotus grunniens
	Salmonidae (SIC)SA		
	Clupeidae (SIC)SA	Mooneye	Hiodon tergisus
		Maple	
	Cyprinidae (SIC)FW	Mottled sculpin	Cottus bairdi

APPENDIX B-1
STATE IDENTIFICATION NUMBERS

ID NUMBER	STATE
0	NATIONAL
1	MAINE
2	NEW HAMPSHIRE
3	VERMONT
4	MASSACHUSETTS
5	RHODE ISLAND
6	CONNECTICUT
7	NEW YORK
8	PENNSYLVANIA
9	NEW JERSEY
10	DELAWARE
11	MARYLAND
12	VIRGINIA
13	NORTH CAROLINA
14	SOUTH CAROLINA
15	GEORGIA
16	FLORIDA
17	WEST VIRGINIA
18	KENTUCKY
19	TENNESSEE
20	ALABAMA
21	OHIO
22	MICHIGAN
23	INDIANA
24	MISSISSIPPI
25	WISCONSIN
26	ILLINOIS
27	MINNESOTA
28	IOWA
29	MISSOURI
30	ARKANSAS
31	LOUISIANA
32	NORTH DAKOTA
33	SOUTH DAKOTA
34	NEBRASKA
35	KANSAS
36	OKLAHOMA
37	TEXAS
38	MONTANA
39	WYOMING
40	COLORADO
41	NEW MEXICO
42	IDAHO
43	UTAH
44	ARIZONA
45	WASHINGTON
46	OREGON
47	NEVADA
48	CALIFORNIA

APPENDIX B-2
FAMILY IDENTIFICATION NUMBERS

ID NUMBER	FAMILY
1	CRYPTOMONADIDAE
2	AMOEBIDAE
3	PANAMIDIDAE
4	SPIROSTOMATIDAE (SPIROSTOMATIDAE)
5	PLANARIIDAE
6	CHAETONOTIDAE
7	PHLOEDRIIDAE
8	AEOLOSOMATIDAE
9	TUBIFICIDAE
10	NAIDIDAE
11	VIVIPARIDAE
12	BITHYNIIDAE (BULIMIDAE) (HYDROBIIDAE)
13	PLEUROCERIDAE
14	LYMNAEIDAE
15	PLANORBIDAE
16	PHYSIDAE
17	PISIDIDAE (SPHAERIIDAE)
18	LYMCEIDAE
19	DAPHNIIDAE
20	POLYPHEMIDAE
21	CYPRIDIDAE (CYPRIDAE)
22	DIAPTOMIDAE
23	CYCLOPIDAE
24	ASELLIDAE
25	GAMMARIDAE
26	HYALELLIDAE (TALITRIDAE)
27	PALAEMONIDAE
28	ASTACIDAE
29	EPHEMERELLIDAE
30	EPHEMERIDAE (SIC)TIDAE)
31	OCENADRIDAE (AGRIONIDAE)
32	PTERONARCIDAE
33	PERLIDAE
34	HYDROPSYCHIDAE
35	CHIRONOMIDAE
36	PETRONYZONTIDAE
37	ANGUILLIDAE
38	SALMONIDAE
39	ESOCIDAE
40	CYPRINIDAE
41	CATOSTOMIDAE
42	ICTALURIDAE
43	CLARIIDAE
44	CYPRINODONTIDAE
45	POECILIIDAE
46	GASTEROSTEIDAE
47	PERCOPHYTIDAE
48	CENTRARCHIDAE
49	PERCIDAE
50	SCIAENIDAE
51	CICHLIDAE
52	COTTIDAE
53	RANIDAE
54	MICROHYLIDAE
55	BUFONIDAE
56	HYLIDAE
57	AMBYSTOMATIDAE
58	SALAMANDRIDAE

APPENDIX B-5
SPECIES IDENTIFICATION NUMBERS AND FAMILY CLASSIFICATION

FAMILY ID NUMBER	SPECIES ID NUMBER	SPECIES NAME
5	1.00	PLANARIAN (POLYCELIS FELINA)
7	2.00	ROTIFER (PHILODINA ADJITCDRINI)
7	3.00	ROTIFER (PHILODINA ROSEOLA)
10	4.00	BRISTLEWORM (HIAS SP.)
9	4.20	TUBIFICID WORM (TUBIFEX TUBIFEX)
9	4.50	WORM (LIMNODRILUS HOFFMEISTERI)
12	5.00	SNAIL (AMNICOLA SP.)
11	6.00	SNAIL (CAMPELOMA DECISUM)
16	7.00	SNAIL (GYRAULUS CIRCUMSTRIATUS)
14	8.00	SNAIL (LYMNAEA PALUSTRIS)
15	9.00	SNAIL (PHYSA HETEROSTROPHA)
16	10.00	SNAIL (PHYSA INTEGRA)
16	11.00	SNAIL (PHYSA SP.)
17	11.30	FINGERNAIL CLAM (SUBCULUM TRANSVERSUM)
18	13.00	CLADOCERAN (DAPHNIA CARINATA)
19	13.05	CLADOCERAN (DAPHNIA MAGNA)
19	14.00	CLADOCERAN (DAPHNIA PULEX)
19	15.05	CLADOCERAN (DAPHNIA PULICARIA)
19	16.00	CLADOCERAN (SIMOCEPHALUS SERRULATUS)
21	17.00	SEED SHRIMP (CYPRIDOPSIS VIDUA)
23	18.00	COPEPOD (UNIDENTIFIED)
24	19.00	ISOPOD (ASELLUS BREVICAUDUS)
24	20.00	ISOPOD (ASELLUS COMMUNIS)
25	21.00	SCUD (GAMMARUS FASCIATUS)
25	22.00	SCUD (GAMMARUS LACUSTRIS)
25	23.00	SCUD (GAMMARUS PSEUDOLIMNAEUS)
25	24.00	SCUD (GAMMARUS SP.)
26	25.00	SCUD (HYALELLA AZTECA)
28	26.00	CRAYFISH (FALLICAMBARUS CLYPEATA)
28	27.00	CRAYFISH (ORCONECTES NAIS)
28	28.00	CRAYFISH (ORCONECTES LANCIFER)
28	29.00	CRAYFISH (ORCONECTES RUSTICUS)
28	30.00	CRAYFISH (PROCAMBARUS ACUTUS)
27	31.00	GLASS SHRIMP (PALAEMONETES KADIAKENSIS)
29	32.00	MAYFLY (EPHEMERELLA GRANDIS)
29	33.00	MAYFLY (EPHEMERELLA SUBVARIA)
31	34.00	MAYFLY (HEXAGENIA BILINEATA)
33	35.00	STONEFLY (ACRONEURIA LYCORIAS)
33	36.00	STONEFLY (ACRONEURIA PACIFICA)
33	37.00	STONEFLY (CLASSENIA SABULOSA)
32	38.00	STONEFLY (PTERONARCELLA BADIA)
32	39.00	STONEFLY (PTERONARCYS CALIFORNICA)
31	40.00	DAMSELFLY (BECHNURA VERTICALIS)
31	41.00	DAMSELFLY (BECHNURA SP.)
31	42.00	DAMSELFLY (UNIDENTIFIED)
36	43.00	MIDGE (CHIRONOMUS PLUMOSUS)
36	44.00	MIDGE (CHIRONOMUS TENTANS)
36	45.00	MIDGE (CHIRONOMUS SP.)
36	46.00	MIDGE (TANYTARSUS DISSIMILIS)
36	47.00	MIDGE (UNIDENTIFIED)
34	48.00	CADDISFLY (ARCTOPSYCHE GRANDIS)
34	49.00	CADDISFLY (CLISTORONIA MAGNIFICA)
34	50.00	CADDISFLY (HYDROPSYCHE BETTENI)
34	51.00	CADDISFLY (HYDROPSYCHE CALIFORNICA)
34	52.00	CADDISFLY (UNIDENTIFIED)
37	53.00	AMERICAN EEL (ANGUILLA ROSTRATA)
38	54.00	COHO SALMON (ONCORHYNCHUS KIBUTCH)
38	55.00	SOCKEYE SALMON (ONCORHYNCHUS NERKA)
38	56.00	PINK SALMON (ONCORHYNCHUS GORBUSCHA)
38	57.00	CHINOOK SALMON (ONCORHYNCHUS TSHAWYTSCHA)
38	58.00	CUTTHROAT TROUT (SALMO CLARKI)
38	59.00	RAINBOW TROUT (SALMO GAIRDNERI)
38	60.00	ATLANTIC SALMON (SALMO SALAR)
38	61.00	BROWN TROUT (SALMO TRUTTA)
38	62.00	GOLDEN TROUT (SALMO AQUABONITA)
38	63.00	BROOK TROUT (SALVELINUS FONTINALIS)
38	64.00	LAKE TROUT (SALVELINUS NAMAYCUSH)
38	65.00	SIBCONET (SALVELINUS NAMAYCUSH SIBCONET)
39	66.00	NORTHERN PIKE (ESOX LUCIUS)
42	67.00	MOTTLED SCULPIN (COTTUS BAIRDI)
42	68.40	SLIMY SCULPIN (COTTUS COGNATUS)
45	69.00	LONGFIN DACE (AGOSIA CHRYSOGASTER)
45	70.00	STONEROLLER (CAMPOSTOMA ANOMALUM)
45	71.00	GOLDFISH (CARASSIUS AURATUS)
45	72.00	CARP (CYPRINUS CARPIO)
45	73.00	GOLDEN SHINER (NOTEMIGONUS CRYSOLEUCAS)
45	74.00	SPOTFIN SHINER (NOTROPIS SPILOPTERUS)
45	75.00	STRIPED SHINER (NOTROPIS CHRYSOCEPHALUS)
45	76.00	RED SHINER (NOTROPIS LUTRENSIS)
45	77.00	NORTHERN REDBELLY DACE (PHOXINUS EOS)
45	78.00	BLUNTNOSE MINNOW (PIMEPHALES NOTATUS)
45	79.00	FATHEAD MINNOW (PIMEPHALES PROMELAS)
45	80.00	NORTHERN SQUAWFISH (PTYCHOCHEILUS OREGONENSIS)
45	81.00	BLACKNOSE DACE (RHINICHTHYS ATRATULUS)
45	82.00	SPECKLED DACE (RHINICHTHYS OSCULUS)
41	83.00	CREEK CHUB (SEMOTILUS ATROMACULATUS)
41	84.00	LONGNOSE SUCKER (CATOSTOMUS CATOSTOMUS)
41	85.00	WHITE SUCKER (CATOSTOMUS COMMERSONI)
42	86.00	BLACK BULLHEAD (ICTALURUS MELAS)
42	87.00	BROWN BULLHEAD (ICTALURUS NEBULOSUS)
42	88.00	CHANNEL CATFISH (ICTALURUS PUNCTATUS)
44	89.00	BANDED KILLIFISH (FUNDULUS DIAPHANUS)
44	90.00	FLAGFISH (JORDANELLA FLORIDAE)
46	91.00	MOSQUITOFISH (GAMBUSIA AFFINIS)
46	92.00	GUPPY (POECILIA RETICULATA)
46	93.00	SOUTHERN PLATYFISH (XIPHOPHORUS MACULATUS)
46	94.00	BROOK STICKLEBACK (CULAEA INCONSTANS)
47	95.00	THREESPINE STICKLEBACK (GASTEROSTEUS ACULEATUS)
47	96.00	WHITE PERCH (MORONE AMERICANA)
47	97.00	STRIPED BASS (MORONE SAXATILIS)
47	98.00	ROCK BASS (AMBLOPLITES RUPESTRIS)
47	99.00	GREEN SUNFISH (LEPOMIS CYANELLUS)
47	100.00	PUMPKINSEED (LEPOMIS GIBBOSUS)
47	101.00	BLUEGILL (LEPOMIS MACROCHIRUS)
47	102.00	LONGEAR SUNFISH (LEPOMIS MEGALOTIS)
47	103.00	REDEAR SUNFISH (LEPOMIS MICROLOPHUS)
47	104.00	SMALLMOUTH BASS (MICROPTERUS DOLOMIEUI)
47	105.00	LARGEMOUTH BASS (MICROPTERUS SALMOIDES)
47	106.00	BLACK CRAPPIE (POMOXIS NIGROMACULATUS)
48	107.00	RAINBOW DARTER (ETHEOSTOMA CAERULEUM)
48	108.00	ORANGETHROAT DARTER (ETHEOSTOMA SPECTABILE)
48	109.00	YELLOW PERCH (PERCA FLAVESCENS)
48	110.00	WALLEYE (STIZOSTEDION VITREUM VITREUM)
49	111.00	FRESHWATER DRUM (APLODINOTUS GRUNNIENS)

APPENDIX B-6
RESIDENT SPECIES, BY STATE

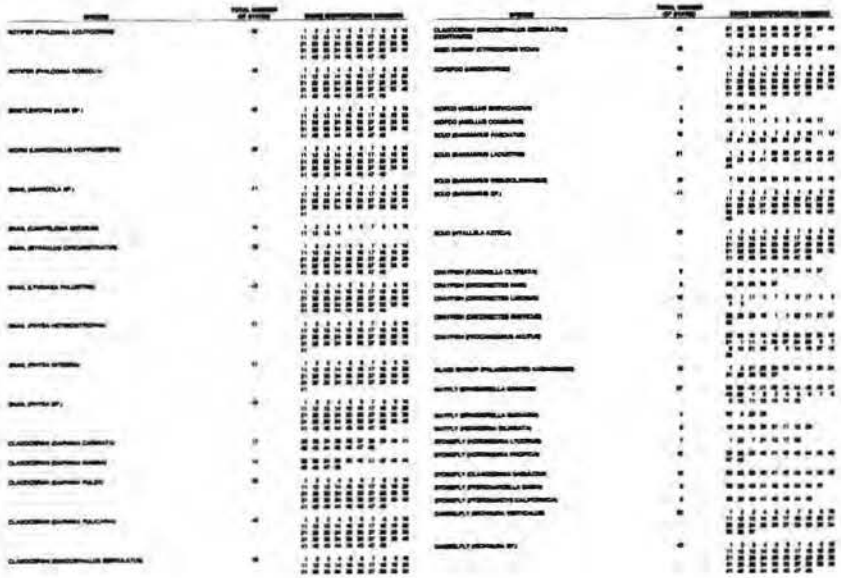
STATE	NUMBER OF SPECIES	SPECIES IDENTIFICATION NUMBERS
ALABAMA	91	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
ARIZONA	18	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
ARKANSAS	51	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
CALIFORNIA	51	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
COLORADO	14	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
CONNECTICUT	36	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
DELAWARE	31	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
FLORIDA	58	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
GEORGIA	58	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
IDAHO	36	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
ILLINOIS	71	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
INDIANA	54	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
IOWA	58	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
KANSAS	52	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
KENTUCKY	58	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
LOUISIANA	46	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
MAINE	36	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
MARYLAND	52	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00
MASSACHUSETTS	36	1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 11.30 13.00 14.00 15.05 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 61.00 62.00 63.00 64.00 65.00 66.00 67.00 68.40 69.00 70.00 71.00 72.00 73.00 74.00 75.00 76.00 77.00 78.00 79.00 80.00 81.00 82.00 83.00 84.00 85.00 86.00 87.00 88.00 89.00 90.00 91.00 92.00 93.00 94.00 95.00 96.00 97.00 98.00 99.00 100.00 101.00 102.00 103.00 104.00 105.00 106.00 107.00 108.00 109.00 110.00 111.00

APPENDIX B-4
RESIDENT SPECIES, BY STATE

APPENDIX B-4
RESIDENT SPECIES, BY STATE

APPENDIX B-4
RESIDENT SPECIES, BY STATE

APPENDIX B-6
SPECIES DISTRIBUTION IN THE UNITED STATES

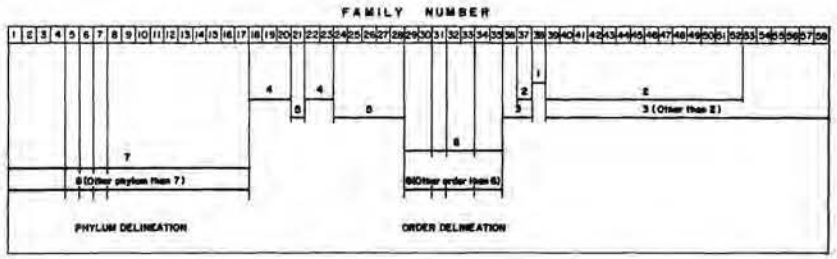


APPENDIX B-6
SPECIES DISTRIBUTION IN THE UNITED STATES

APPENDIX B-6
SPECIES DISTRIBUTION IN THE UNITED STATES

SPECIES	TOTAL NUMBER OF STATES	STATE IDENTIFICATION NUMBER
THREESPINE STICKLEBACK (GASTEROSTEUS ACULEATUS)	13	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 48
WHITE PERCH (MORONE AMERICANA)	14	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 50
STRIPED BASS (MORONE SAXATILIS)	22	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22
ROCK BASS (AMBLOPLITES RUPESTRIS)	26	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26
GREEN SUNFISH (LEPOMIS CYANELLUS)	31	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31
PUMPKINSEED (LEPOMIS GIBBOSUS)	30	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30
BLUEGILL (LEPOMIS MACROCHIRUS)	31	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31
LONGEAR SUNFISH (LEPOMIS MEGALOTIS)	19	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19
REDEAR SUNFISH (LEPOMIS MICROLOPHUS)	20	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
SMALLMOUTH BASS (MICROPTERUS DOLOMIEUI)	41	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41
LARGEMOUTH BASS (MICROPTERUS SALMOIDES)	42	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42
BLACK CRAPPIE (POMOXIS NIGROMACULATUS)	41	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41
RAINBOW DARTER (ETHEOSTOMA CAERULEUM)	17	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
ORANGETHROAT DARTER (ETHEOSTOMA SPECTABILE)	12	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
YELLOW PERCH (PERCA FLAVESCENS)	33	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33
WALLEYE (STIZOSTEDION VITREUM VITREUM)	37	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37
FRESHWATER DRUM (APLODINOTUS GRUNNIENS)	36	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36

APPENDIX B-6
MINIMUM DATA REQUIREMENT



The eight minimum data requirements are:

1. The family Salmonidae in the class Osteichthyes.
2. One other family in the class Osteichthyes.
3. One other family in the phylum Chordata.
4. A planktonic crustacean (e.g., cladoceran, copepod, ostracod, or isopod).
5. A benthic crustacean (e.g., crayfish, isopod, scud, ostracod, snail or gilled shrimp).
6. A benthic insect (e.g., a benthic caddisfly, damselfly, dragonfly, mayfly, midge, mosquito or stonefly).
7. A family in a phylum other than Arthropoda or Chordata (e.g. flatworm, Annelida or Mollusca).
8. Any other order of insect or any other phylum.

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: ALDRIN

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE NONFISH FAMILY (GENUS)	MOST SENSITIVE NONFISH FAMILY LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 96-HOUR AVERAGE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: CHRONIC (ug/L)
NATIONAL	11	CRUSTACEA/INSECTA	1.400	3.000	*	
		ANELLIDA	5.000			
		MOLLUSCA	5.000			
ALABAMA	7	CRUSTACEA/INSECTA	1.400	1.700	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
ARIZONA	10	CRUSTACEA/INSECTA	1.400	1.500	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
ARKANSAS	4	CRUSTACEA/INSECTA	1.400	2.101	*	
		ANNELIDA	5.000			
		MOLLUSCA	5.000			
CALIFORNIA	9	CHORDATA/OSTEICHTHYES	1.400	2.000	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
COLORADO	8	CRUSTACEA/INSECTA	1.400	1.400	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
CONNECTICUT	8	CRUSTACEA/INSECTA	1.400	1.400	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
DELAWARE	8	CRUSTACEA/INSECTA	1.400	1.300	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
FLORIDA	9	CRUSTACEA/INSECTA	1.400	2.500	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
GEORGIA	7	CRUSTACEA/INSECTA	1.400	1.700	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
IDAHO	8	CRUSTACEA/INSECTA	1.400	1.900	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
ILLINOIS	10	CRUSTACEA/INSECTA	1.400	2.000	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
INDIANA	9	CRUSTACEA/INSECTA	1.400	2.097	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
IOWA	7	CRUSTACEA/INSECTA	1.400	2.172	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
KANSAS	9	CRUSTACEA/INSECTA	1.400	2.000	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
KENTUCKY	7	CRUSTACEA/INSECTA	1.400	1.774	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
LOUISIANA	7	CRUSTACEA/INSECTA	1.400	2.015	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
MAINE	8	CRUSTACEA/INSECTA	1.400	2.513	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
MARYLAND	8	CRUSTACEA/INSECTA	1.400	2.745	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
MASSACHUSETTS	8	CRUSTACEA/INSECTA	1.400	1.900	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			

TOXICANT: ALDRIN

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE NONFISH FAMILY (GENUS)	MOST SENSITIVE NONFISH FAMILY LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 96-HOUR AVERAGE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: CHRONIC (ug/L)
MICHIGAN	9	CRUSTACEA/INSECTA	1.400	2.797	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
MINNESOTA	7	CRUSTACEA/INSECTA	1.400	1.300	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
MISSISSIPPI	7	CRUSTACEA/INSECTA	1.400	2.000	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
MISSOURI	9	CRUSTACEA/INSECTA	1.400	2.001	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
MONTANA	9	CRUSTACEA/INSECTA	1.400	2.000	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
NEBRASKA	8	CRUSTACEA/INSECTA	1.400	1.500	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
NEVADA	9	CRUSTACEA/INSECTA	1.400	1.700	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
NEW HAMPSHIRE	8	CRUSTACEA/INSECTA	1.400	1.700	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
NEW JERSEY	9	CRUSTACEA/INSECTA	1.400	1.700	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
NEW MEXICO	10	CRUSTACEA/INSECTA	1.400	1.600	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
NEW YORK	10	CRUSTACEA/INSECTA	1.400	1.600	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
NORTH CAROLINA	9	CRUSTACEA/INSECTA	1.400	1.700	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
NORTH DAKOTA	7	CRUSTACEA/INSECTA	1.400	1.600	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
OHIO	9	CRUSTACEA/INSECTA	1.400	1.600	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
OKLAHOMA	9	CRUSTACEA/INSECTA	1.400	1.470	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
OREGON	9	CRUSTACEA/INSECTA	1.400	2.000	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
PENNSYLVANIA	10	CRUSTACEA/INSECTA	1.400	1.500	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
RHODE ISLAND	3	CRUSTACEA/INSECTA	1.400	1.500	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
SOUTH CAROLINA	8	CRUSTACEA/INSECTA	1.400	1.700	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
SOUTH DAKOTA	8	CRUSTACEA/INSECTA	1.400	1.500	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			

FOOTNOTES:
- * — FAILED TO MEET MINIMUM DATA CRITERIA
- ** — STATE HAS LESS THAN 3 NONSPORT FAMILIES—NATIONAL VALUE USED
- # — NO MEANINGFUL SALMONID FISH IN STATE
- $ — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE HARDNESS ABOVE
- EIGHT-HOUR CRITERIA
- FAV — FINAL ACUTE VALUE
- FCV — FINAL CHRONIC VALUE
- FPV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ICR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- SCV — SENSITIVE SPECIES CHRONIC VALUE

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: ALDRIN

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE NONFISH FAMILY (GENUS)	MOST SENSITIVE NONFISH FAMILY LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 96-HOUR AVERAGE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: CHRONIC (ug/L)
TENNESSEE	7	CRUSTACEA/INSECTA	1.400	1.900	*	
		CRUSTACEA/INSECTA	1.400			
		CRUSTACEA/INSECTA	1.400			
TEXAS	7	ANNELIDA	5.000	2.640	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
UTAH	6	CRUSTACEA/INSECTA	1.400	2.000	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
VERMONT	8	CRUSTACEA/INSECTA	1.400	1.710	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
VIRGINIA	8	CRUSTACEA/INSECTA	1.400	1.900	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
WASHINGTON	8	CRUSTACEA/INSECTA	1.400	2.245	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
WEST VIRGINIA	8	CRUSTACEA/INSECTA	1.400	1.144	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
WISCONSIN	8	CRUSTACEA/INSECTA	1.400	2.041	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			
WYOMING	8	CRUSTACEA/INSECTA	1.400	1.400	*	
		CRUSTACEA/INSECTA	1.400			
		ANNELIDA	5.000			

TOXICANT: ARSENIC

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE NONFISH FAMILY (GENUS)	MOST SENSITIVE NONFISH FAMILY LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 96-HOUR AVERAGE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: CHRONIC (ug/L)
NATIONAL	8	ANNELIDA/INSECTA	69.000	170.000	*	
		CRUSTACEA/INSECTA	114.000			
		CRUSTACEA/INSECTA	147.000			
ALABAMA	8	CRUSTACEA/INSECTA	147.000	171.010	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
ARIZONA	8	CRUSTACEA/INSECTA	147.000	497.000	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
ARKANSAS	8	CRUSTACEA/INSECTA	147.000	45.977	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
CALIFORNIA	8	CRUSTACEA/INSECTA	147.000	300.445	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
COLORADO	8	CRUSTACEA/INSECTA	147.000	297.000	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
CONNECTICUT	8	CRUSTACEA/INSECTA	147.000	141.000	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
DELAWARE	8	CRUSTACEA/INSECTA	147.000	171.010	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
FLORIDA	8	CRUSTACEA/INSECTA	147.000	169.000	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
GEORGIA	8	CRUSTACEA/INSECTA	147.000	171.400	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
IDAHO	8	CRUSTACEA/INSECTA	147.000	300.007	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
ILLINOIS	8	CRUSTACEA/INSECTA	147.000	85.594	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
INDIANA	8	CRUSTACEA/INSECTA	147.000	171.000	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
IOWA	8	CRUSTACEA/INSECTA	147.000	45.977	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
KANSAS	8	CRUSTACEA/INSECTA	147.000	169.000	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
KENTUCKY	8	CRUSTACEA/INSECTA	147.000	85.594	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
LOUISIANA	8	CRUSTACEA/INSECTA	147.000	169.000	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
MAINE	8	CRUSTACEA/INSECTA	147.000	170.000	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
MARYLAND	8	CRUSTACEA/INSECTA	147.000	341.000	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			
MASSACHUSETTS	8	CRUSTACEA/INSECTA	147.000	171.000	*	
		CRUSTACEA/INSECTA	147.000			
		ANNELIDA	69.000			

FOOTNOTES:
- * — FAILED TO MEET MINIMUM DATA CRITERIA
- ** — STATE HAS LESS THAN 3 NONSPORT FAMILIES—NATIONAL VALUE USED
- # — NO MEANINGFUL SALMONID FISH IN STATE
- $ — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE HARDNESS ABOVE
- EIGHT-HOUR CRITERIA
- FAV — FINAL ACUTE VALUE
- FCV — FINAL CHRONIC VALUE
- FPV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ICR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- SCV — SENSITIVE SPECIES CHRONIC VALUE

RECALCULATION OF STATE TOXIC CRITERIA

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U.S. Environmental Protection Agency
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APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: ARSENIC

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY GENUS	FAMILY LOWEST VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: NARRATIVE (ug/L)	1-HOUR AVERAGE (ug/L)	24-HOUR AVERAGE (ug/L)
ALABAMA	8	DAPHNIA	48,000	19,000	*	
		SALMONIDAE	1,700			
		SALMONIDAE	1,700			
ARKANSAS	8	DAPHNIA	1,700	171,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
* CALIFORNIA	8	CENTRARCHIDAE	1,700	18,377	*	
		DAPHNIA	940			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
COLORADO	8	DAPHNIA	940	140,000	*	
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
CONNECTICUT	8	DAPHNIA	940	140,000	*	
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
DELAWARE	8	DAPHNIA	940	140,000	*	
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
FLORIDA	8	DAPHNIA	940	140,000	*	
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
GEORGIA	8	DAPHNIA	940	140,000	*	
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
IDAHO	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
ILLINOIS	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
INDIANA	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
IOWA	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
KANSAS	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
KENTUCKY	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
LOUISIANA	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
MAINE	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
MARYLAND	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
MASSACHUSETTS	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
MICHIGAN	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
MINNESOTA	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
MISSISSIPPI	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
MISSOURI	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
MONTANA	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
NEBRASKA	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
NEVADA	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
NEW HAMPSHIRE	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		CYPRINIDAE	1,700			
		CENTRARCHIDAE	1,700			
NEW JERSEY	8	DAPHNIA	940	171,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
NEW MEXICO	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
NEW YORK	8	DAPHNIA	940	19,000	*	
		SALMONIDAE	1,700			
		CENTRARCHIDAE	1,700			
NORTH CAROLINA	8	DAPHNIA	940	190,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
NORTH DAKOTA	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		CYPRINIDAE	1,700			
		CENTRARCHIDAE	1,700			
OHIO	8	DAPHNIA	940	171,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
OKLAHOMA	8	DAPHNIA	940	20,700	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
OREGON	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
PENNSYLVANIA	8	DAPHNIA	940	171,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
RHODE ISLAND	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		CENTRARCHIDAE	1,700			
SOUTH CAROLINA	8	DAPHNIA	940	190,000	*	
		SALMONIDAE	1,700			
		CENTRARCHIDAE	1,700			
SOUTH DAKOTA	8	DAPHNIA	940	200,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			

TOXICANT: ARSENIC

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY GENUS	FAMILY LOWEST VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: NARRATIVE (ug/L)	1-HOUR AVERAGE (ug/L)	24-HOUR AVERAGE (ug/L)
TENNESSEE	8	DAPHNIA	940	50,000	*	
		SALMONIDAE	1,700			
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
† TEXAS	7	ACTALURIDAE	1,700	140,000	*	
		CYPRINIDAE	1,700			
		CENTRARCHIDAE	1,700			
UTAH	8	DAPHNIA	940	187,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
VERMONT	8	DAPHNIA	940	140,000	*	
		SALMONIDAE	1,700			
		CENTRARCHIDAE	1,700			
VIRGINIA	8	DAPHNIA	940	341,000	*	
		SALMONIDAE	1,700			
		CENTRARCHIDAE	1,700			
WASHINGTON	8	CYPRINIDAE	1,700	940,000	*	
		SALMONIDAE	1,700			
		CENTRARCHIDAE	1,700			
WEST VIRGINIA	8	DAPHNIA	940	171,000	*	
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
WISCONSIN	8	DAPHNIA	940	85,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			
WYOMING	8	DAPHNIA	940	187,000	*	
		SALMONIDAE	1,700			
		ACTALURIDAE	1,700			
		CENTRARCHIDAE	1,700			

FOOTNOTE

- * — LISTS #1 SALMONIDAE FOR LITVP
- ** — FAILED TO MEET MINIMUM DATA CRITERIA
- *** — STATE HAS LESS THAN 4 RESIDENT FAMILIES
- † — NO FRESHWATER SALMONID PRSV IN STATE
- ‡ — NARRATIVE CRITERIA = NUMERICAL VALUE
- FAV = FINAL ACUTE VALUE
- FCV = FINAL CHRONIC VALUE
- FPV = FINAL PLANT VALUE
- FRV = FINAL RESIDUE VALUE
- ACR = CORRELATION BY ACUTE TO CHRONIC RATIO METHOD
- RCV = FINAL CHRONIC VALUE
- ECV = EARNESTINE SPECIES CHRONIC VALUE
- ACUTE = ACUTE CRITERIA
- 24-HOUR AVERAGE CRITERIA

TOXICANT: CADMIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE ANIMAL FAMILY: GENUS	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (ug/L)		CHRONIC (ug/L)		AVERAGE (ug/L)
			[1]	[2]	[1]	[2]	
NATIONAL	46	SALMONIDAE	0.82		0.357		ACR
		SALMONIDAE	0.82		0.357		ACR
		SALMONIDAE	0.82		0.357		ACR
ALABAMA	41	SALMONIDAE	0.82		0.315		ACR
		PERCICHTHYIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
ARIZONA	12	SALMONIDAE	0.82		0.315		ACR
		PERCICHTHYIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
ARKANSAS	12	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
CALIFORNIA	41	SALMONIDAE	0.82		0.315		ACR
		PERCICHTHYIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
COLORADO	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
CONNECTICUT	46	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
DELAWARE	41	SALMONIDAE	0.82		0.315		ACR
		PERCICHTHYIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
FLORIDA	32	PERCICHTHYIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
GEORGIA	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
IDAHO	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
ILLINOIS	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
INDIANA	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
IOWA	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
KANSAS	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
KENTUCKY	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
LOUISIANA	41	PERCICHTHYIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
MAINE	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
MARYLAND	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
MASSACHUSETTS	46	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR

TOXICANT: CADMIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE ANIMAL FAMILY: GENUS	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (ug/L)		CHRONIC (ug/L)		AVERAGE (ug/L)
			[1]	[2]	[1]	[2]	
MICHIGAN	46	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
MINNESOTA	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
MISSOURI	41	PERCICHTHYIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
MONTANA	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
NEBRASKA	41	SALMONIDAE	0.82		0.315		ACR
		PERCICHTHYIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
NEVADA	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
NEW HAMPSHIRE	46	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
NEW JERSEY	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
NEW MEXICO	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
NEW YORK	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
NORTH CAROLINA	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
NORTH DAKOTA	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
OHIO	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
OKLAHOMA	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
OREGON	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
PENNSYLVANIA	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
RHODE ISLAND	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
SOUTH CAROLINA	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
SOUTH DAKOTA	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR

FOOTNOTE:
* — UNITS IN MICROGRAMS PER LITER
** — STATE HAS LESS THAN 3 MINIMUM FAMILIES—NATIONAL VALUE USED
FAV — FINAL ACUTE VALUE
FCV — FINAL CHRONIC VALUE
ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
SCV — SENSITIVE SPECIES CHRONIC VALUE
F — NO FRESHWATER SALMONID FISH IN STATE
[1] — APPLY EQUATION [1] TO DETERMINE AVERAGE

TOXICANT: CADMIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE ANIMAL FAMILY: GENUS	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (ug/L)		CHRONIC (ug/L)		AVERAGE (ug/L)
			[1]	[2]	[1]	[2]	
TENNESSEE	41	SALMONIDAE	0.82		0.315		ACR
		PERCICHTHYIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
TEXAS	32	PERCICHTHYIDAE	0.82		0.315	*	ACR
		SALMONIDAE	0.82		0.315		ACR
		PERCIDAE	0.82		0.315		ACR
UTAH	33	SALMONIDAE	0.82		0.315		ACR
		PERCICHTHYIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
VERMONT	46	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
VIRGINIA	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
WASHINGTON	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
WEST VIRGINIA	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
WISCONSIN	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
WYOMING	41	SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR
		SALMONIDAE	0.82		0.315		ACR

TOXICANT: CHLORDANE

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE ANIMAL FAMILY: GENUS	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (ug/L)		CHRONIC (ug/L)		AVERAGE (ug/L)
			[1]		[1]	[2]	
NATIONAL	5	PALAEMONIDAE	0.09		1.841	*	0.045
		PTEROMARCIDAE	0.09		1.841		0.045
		CYPRINIDAE	0.09		1.841		0.045
ALABAMA	4	SALMONIDAE	0.09		1.841	*	0.045
		PALAEMONIDAE	0.09		1.841		0.045
		CYPRINIDAE	0.09		1.841		0.045
ARIZONA	7	SALMONIDAE	0.09		1.841		0.045
		CENTRARCHIDAE	0.09		1.841		0.045
		PTEROMARCIDAE	0.09		1.841		0.045
ARKANSAS	6	SALMONIDAE	0.09		1.841	*	0.045
		PALAEMONIDAE	0.09		1.841	**	0.045
		CYPRINIDAE	0.09		1.841		0.045
CALIFORNIA	6	CYPRINIDAE	0.09		1.841	*	0.045
		SALMONIDAE	0.09		1.841		0.045
COLORADO	6	PTEROMARCIDAE	0.09		1.841	*	0.045
		CENTRARCHIDAE	0.09		1.841		0.045
CONNECTICUT	6	CYPRINIDAE	0.09		1.841	*	0.045
		CYPRINIDAE	0.09		1.841		0.045
DELAWARE	6	SALMONIDAE	0.09		1.841	*	0.045
		SALMONIDAE	0.09		1.841		0.045
FLORIDA	5	CENTRARCHIDAE	0.09		1.841	*	0.045
		CENTRARCHIDAE	0.09		1.841	**	0.045
GEORGIA	6	CENTRARCHIDAE	0.09		1.841	*	0.045
		SALMONIDAE	0.09		1.841		0.045
IDAHO	6	PTEROMARCIDAE	0.09		1.841	*	0.045
		CENTRARCHIDAE	0.09		1.841		0.045
ILLINOIS	6	PALAEMONIDAE	0.09		1.841	*	0.045
		CENTRARCHIDAE	0.09		1.841		0.045
INDIANA	6	CYPRINIDAE	0.09		1.841	*	0.045
		CENTRARCHIDAE	0.09		1.841		0.045
IOWA	6	PALAEMONIDAE	0.09		1.841	*	0.045
		CENTRARCHIDAE	0.09		1.841		0.045
KANSAS	6	CENTRARCHIDAE	0.09		1.841	*	0.045
		CENTRARCHIDAE	0.09		1.841	**	0.045
KENTUCKY	6	CYPRINIDAE	0.09		1.841	*	0.045
		SALMONIDAE	0.09		1.841	**	0.045
LOUISIANA	6	PALAEMONIDAE	0.09		1.841	*	0.045
		CYPRINIDAE	0.09		1.841		0.045
MAINE	6	SALMONIDAE	0.09		1.841	*	0.045
		SALMONIDAE	0.09		1.841	**	0.045
MARYLAND	6	CYPRINIDAE	0.09		1.841	*	0.045
		SALMONIDAE	0.09		1.841		0.045
MASSACHUSETTS	6	CYPRINIDAE	0.09		1.841	*	0.045
		SALMONIDAE	0.09		1.841		0.045
		CYPRINIDAE	0.09		1.841		0.045

FOOTNOTE:
* — UNITS IN MICROGRAMS PER LITER
** — STATE HAS LESS THAN 3 MINIMUM FAMILIES—NATIONAL VALUE USED
FAV — FINAL ACUTE VALUE
FCV — FINAL CHRONIC VALUE
ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
SCV — SENSITIVE SPECIES CHRONIC VALUE
F — NO FRESHWATER SALMONID FISH IN STATE
[1] — APPLY EQUATION [1] TO DETERMINE AVERAGE

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: CHLORDANE

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	RESIDENT FAMILY LC50 VALUE (ug/L) (1)	FRESHWATER AQUATIC LIFE CRITERIA: CRITERIA (ug/L) (2)	FRESHWATER AQUATIC LIFE CRITERIA: DURATION (hours) (2)	FRESHWATER AQUATIC LIFE CRITERIA: INTERVAL (years) (2+1)
MICHIGAN	8	PALAEMONIDAE	6.05	1.211 *	5.000	FAV
		CYPRINIDAE	20.00			
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
		PERCIDAE	58.00			
MINNESOTA	8	PALAEMONIDAE	6.05	1.211 *	5.000	FAV
		CYPRINIDAE	20.00			
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
* MISSISSIPPI	8	PALAEMONIDAE	6.05	1.211 *	5.000	FAV
		CYPRINIDAE	20.00	**		
		CENTRARCHIDAE	48.00			
MISSOURI	8	PALAEMONIDAE	6.05	1.211 *	5.000	FAV
		CYPRINIDAE	20.00	**		
		CENTRARCHIDAE	48.00			
MONTANA	8	PTERONARCIDAE	5.00	5.001 *	5.000	FAV
		CYPRINIDAE	20.00			
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
NEBRASKA	8	CYPRINIDAE	20.00	12.10 *	5.000	FAV
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
NEVADA	8	CYPRINIDAE	20.00	4.029 *	5.000	FAV
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
NEW HAMPSHIRE	8	CYPRINIDAE	20.00	2.110 *	5.000	FAV
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
NEW JERSEY	8	CYPRINIDAE	20.00	4.029 *	5.000	FAV
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
NEW MEXICO	8	CYPRINIDAE	20.00	5.000 *	5.000	FAV
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
NEW YORK	8	PALAEMONIDAE	6.05	1.000 *	5.000	FAV
		CYPRINIDAE	20.00			
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
NORTH CAROLINA	8	PALAEMONIDAE	6.05	4.029 *	5.000	FAV
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
NORTH DAKOTA	8	CYPRINIDAE	20.00	5.000 *	5.000	FAV
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
OHIO	8	PALAEMONIDAE	6.05	1.000 *	5.000	FAV
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
OKLAHOMA	8	PALAEMONIDAE	6.05	1.000 *	5.000	FAV
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
OREGON	8	CYPRINIDAE	20.00	4.029 *	5.000	FAV
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
PENNSYLVANIA	8	PALAEMONIDAE	6.05	1.000 *	5.000	FAV
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
RHODE ISLAND	8	CYPRINIDAE	20.00	1.000 *	5.000	FAV
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
SOUTH CAROLINA	8	CYPRINIDAE	20.00	1.004 *	5.000	FAV
		SALMONIDAE	45.00	**		
		CENTRARCHIDAE	48.00			
SOUTH DAKOTA	8	CYPRINIDAE	20.00	5.004 *	5.000	FAV
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			

TOXICANT: CHLORDANE

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	RESIDENT FAMILY LC50 VALUE (ug/L) (1)	FRESHWATER AQUATIC LIFE CRITERIA: CRITERIA (ug/L) (2)	FRESHWATER AQUATIC LIFE CRITERIA: DURATION (hours) (2)	FRESHWATER AQUATIC LIFE CRITERIA: INTERVAL (years) (2+1)
TENNESSEE	8	PALAEMONIDAE	6.05	1.000 *	5.000	FAV
		CYPRINIDAE	20.00			
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
* TEXAS	8	PALAEMONIDAE	6.05	1.000 *	5.000	FAV
		CYPRINIDAE	20.00			
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
UTAH	8	PTERONARCIDAE	5.00	5.000 *	5.000	FAV
		CYPRINIDAE	20.00			
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
VERMONT	8	CYPRINIDAE	20.00	5.000 *	5.000	FAV
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
VIRGINIA	8	CENTRARCHIDAE	48.00	7.000 *	5.000	FAV
		SALMONIDAE	45.00			
		CYPRINIDAE	20.00			
		PERCIDAE	58.00			
WASHINGTON	8	PTERONARCIDAE	5.00	3.775 *	5.000	FAV
		CYPRINIDAE	20.00			
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
WEST VIRGINIA	8	CYPRINIDAE	20.00	1.004 *	5.000	FAV
		SALMONIDAE	45.00	**		
		CENTRARCHIDAE	48.00			
WISCONSIN	8	PALAEMONIDAE	6.05	1.211 *	5.000	FAV
		CYPRINIDAE	20.00			
		SALMONIDAE	45.00			
		CENTRARCHIDAE	48.00			
WYOMING	8	PTERONARCIDAE	5.00	5.000 *	5.000	FAV
		CYPRINIDAE	20.00			
		SALMONIDAE	45.00			

FOOTNOTE
* -- UNITS IN MICROGRAMS PER LITER
** -- STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
FAV FINAL PLANT VALUE
FRV FINAL RESIDUE VALUE
ACR COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV FINAL CHRONIC VALUE
SCV SENSITIVE SPECIES CHRONIC VALUE
* -- FAILED TO MEET MINIMUM DATA CRITERIA
** -- STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
# -- NO WARMWATER SALMONID FISH IN STATE
I -- HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 2.7 TO DETERMINE MAXIMUM ANNUAL AVERAGE CRITERIA

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: CHROMIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	RESIDENT FAMILY LC50 VALUE (ug/L) (1)	FRESHWATER AQUATIC LIFE CRITERIA: CRITERIA (ug/L) (2)	FRESHWATER AQUATIC LIFE CRITERIA: DURATION (hours) (2)	FRESHWATER AQUATIC LIFE CRITERIA: INTERVAL (years) (2+1)
NATIONAL	18	SALMONIDAE	31.000	12.164	0.3570	ACR
		SALMONIDAE	1600.000			
		PHILOMYCIDAE	1600.000			
		PHYSIDAE	1600.000			
ALABAMA	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
ARIZONA	7	SALMONIDAE	1600.000	1.042421 *	10.0	FRV
		CYPRINIDAE	3040.000			
		PHILOMYCIDAE	3040.000			
		PERCIDAE	3040.000			
ARKANSAS	8	SALMONIDAE	31.000	2.000 *	0.3000	ACR
		PHYSIDAE	1600.000			
		CYPRINIDAE	3040.000			
		PHILOMYCIDAE	3040.000			
CALIFORNIA	7	SALMONIDAE	31.000	7.442421 *	10.0	FRV
		CYPRINIDAE	3040.000			
		PHILOMYCIDAE	3040.000			
		PERCIDAE	3040.000			
COLORADO	8	SALMONIDAE	31.000	10.000 *	10.0	FRV
		PHILOMYCIDAE	1600.000			
		PHYSIDAE	1600.000			
		CYPRINIDAE	3040.000			
CONNECTICUT	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
DELAWARE	8	PHYSIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
* FLORIDA	8	SALMONIDAE	31.000	2189.328 *	10.0	FRV
		PHYSIDAE	1600.000			
		PHILOMYCIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
GEORGIA	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
IDAHO	8	SALMONIDAE	31.000	545.000 *	10.0	FRV
		SALMONIDAE	1600.000			
		CYPRINIDAE	3040.000			
		PHYSIDAE	3040.000			
ILLINOIS	7	SALMONIDAE	31.000	0.307 *	0.1400	ACR
		PHILOMYCIDAE	1600.000			
		CYPRINIDAE	3040.000			
		PERCENTYRIDAE	3040.000			
INDIANA	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
IOWA	8	SALMONIDAE	31.000	0.307 *	0.3000	ACR
		PHILOMYCIDAE	1600.000			
		PHYSIDAE	1600.000			
		CYPRINIDAE	3040.000			
* KANSAS	8	CYPRINIDAE	3040.000	1600.000 *	10.0	FRV
		PHILOMYCIDAE	3040.000			
		PERCENTYRIDAE	3040.000			
		PHYSIDAE	3040.000			
KENTUCKY	7	SALMONIDAE	31.000	0.307 *	0.1400	ACR
		SALMONIDAE	1600.000			
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
LOUISIANA	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
MAINE	8	PHILOMYCIDAE	1600.000	971.100 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
MARYLAND	8	PHYSIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
MASSACHUSETTS	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			

TOXICANT: CHROMIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	RESIDENT FAMILY LC50 VALUE (ug/L) (1)	FRESHWATER AQUATIC LIFE CRITERIA: CRITERIA (ug/L) (2)	FRESHWATER AQUATIC LIFE CRITERIA: DURATION (hours) (2)	FRESHWATER AQUATIC LIFE CRITERIA: INTERVAL (years) (2+1)
MICHIGAN	8	SALMONIDAE	31.000	5.207 *	5.0000	ACR
		PHYSIDAE	1600.000			
		PHYSIDAE	1600.000			
		CYPRINIDAE	3040.000			
MINNESOTA	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		CYPRINIDAE	3040.000			
		PERCENTYRIDAE	3040.000			
* MISSISSIPPI	8	SALMONIDAE	31.000	4.165 *	0.1141	ACR
		PHILOMYCIDAE	1600.000			
		PHYSIDAE	1600.000			
		CYPRINIDAE	3040.000			
MISSOURI	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
MONTANA	8	SALMONIDAE	31.000	10.000 *	10.0	FRV
		PHILOMYCIDAE	1600.000			
		PHYSIDAE	1600.000			
		CYPRINIDAE	3040.000			
NEBRASKA	7	CYPRINIDAE	3040.000	1600.000 *	10.0	FRV
		PHILOMYCIDAE	3040.000			
		PERCENTYRIDAE	3040.000			
		PHYSIDAE	3040.000			
NEVADA	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
NEW HAMPSHIRE	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
NEW JERSEY	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
NEW MEXICO	7	SALMONIDAE	31.000	1600.000 *	10.0	FRV
		PHILOMYCIDAE	1600.000			
		PHYSIDAE	1600.000			
		CYPRINIDAE	3040.000			
NEW YORK	7	SALMONIDAE	31.000	0.307 *	0.1400	ACR
		PHILOMYCIDAE	1600.000			
		PHYSIDAE	1600.000			
		CYPRINIDAE	3040.000			
NORTH CAROLINA	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
NORTH DAKOTA	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
OHIO	8	SALMONIDAE	31.000	1600.000 *	10.0	FRV
		PHILOMYCIDAE	1600.000			
		PHYSIDAE	1600.000			
		CYPRINIDAE	3040.000			
OKLAHOMA	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
OREGON	8	SALMONIDAE	31.000	0.307 *	0.1400	ACR
		PHILOMYCIDAE	1600.000			
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
PENNSYLVANIA	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
RHODE ISLAND	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
SOUTH CAROLINA	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			
SOUTH DAKOTA	8	PHILOMYCIDAE	1600.000	1600.000 *	10.0	FRV
		PHYSIDAE	1600.000			
		PERCENTYRIDAE	3040.000			
		CYPRINIDAE	3040.000			

FOOTNOTE
* -- UNITS IN MICROGRAMS PER LITER
** -- STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
FAV FINAL PLANT VALUE
FRV FINAL RESIDUE VALUE
ACR COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV FINAL CHRONIC VALUE
SCV SENSITIVE SPECIES CHRONIC VALUE
* -- FAILED TO MEET MINIMUM DATA CRITERIA
** -- STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
# -- NO WARMWATER SALMONID FISH IN STATE
I -- HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 2.7 TO DETERMINE MAXIMUM ANNUAL AVERAGE CRITERIA

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: CHROMIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	MOST SENSITIVE RESIDENT FAMILY LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)		24-HOUR AVERAGE (+)	24-HOUR AVERAGE (++)
TERRITORIES	7	SALMONIDAE	37.265	0.307	*	0.1495	ACR
		PHILODINIDAE	1062.700				
		PHYSIDAE	2970.000				
		PERCICHTHYIDAE	3916.700				
* TEXAS	7	PHILODINIDAE	2071.100	*	45.8	FPV	
		PHYSIDAE	5680.000				
		PERCICHTHYIDAE	8992.000				
UTAH	6	SALMONIDAE	3916.700				
		SALMONIDAE	3916.700				
		CYPRINIDAE	8992.000				
VERMONT	6	PHILODINIDAE	1443.800	*	45.8	FPV	
		PHYSIDAE	5680.000				
		CYPRINIDAE	8992.000				
VIRGINIA	6	SALMONIDAE	3916.700				
		PHILODINIDAE	1635.400	*	45.8	FPV	
		PHYSIDAE	5680.000				
		PERCICHTHYIDAE	8992.000				
WASHINGTON	6	CYPRINIDAE	8992.000				
		SALMONIDAE	3916.700				
		PHILODINIDAE	1635.400	*	45.8	FPV	
		SALMONIDAE	3916.700				
WEST VIRGINIA	6	CYPRINIDAE	8992.000				
		PHILODINIDAE	1635.400	*	45.8	FPV	
		PHYSIDAE	5680.000				
		CYPRINIDAE	8992.000				
WISCONSIN	6	SALMONIDAE	3916.700				
		GAMMARIDAE	37.265		0.307	*	0.1495	ACR
		PHILODINIDAE	1062.700				
		PHYSIDAE	2970.000				
WYOMING	6	CYPRINIDAE	8992.000				
		SALMONIDAE	3916.700				
		PHILODINIDAE	1635.400	*	45.8	FPV	
		PHYSIDAE	5680.000				
		CYPRINIDAE	8992.000				

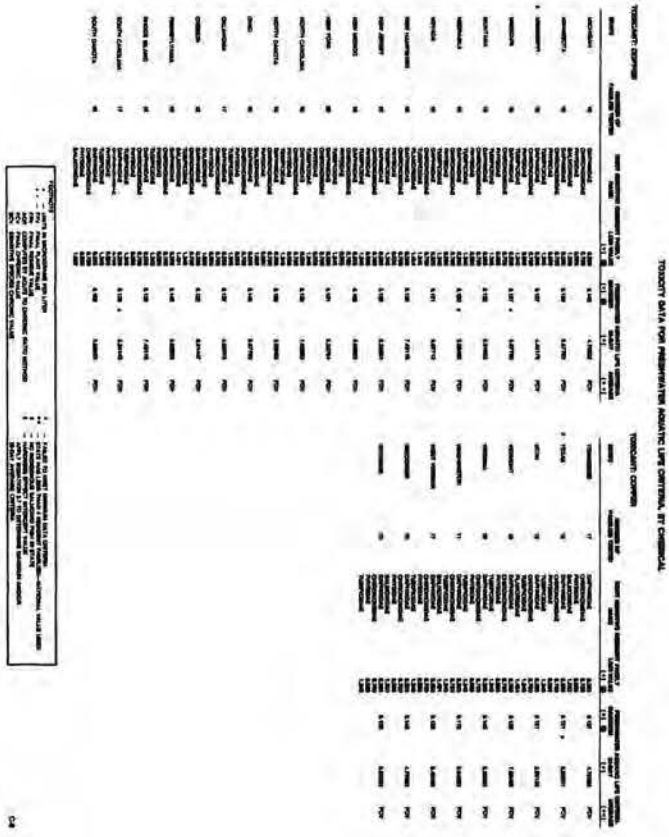
TOXICANT: COPPER

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	MOST SENSITIVE RESIDENT FAMILY LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)		24-HOUR AVERAGE (+)	24-HOUR AVERAGE (++)
NATIONAL	32	GAMMARIDAE	6.356	6.164		3.4816	FCV
		CHIRONOMIDAE	6.356				
		SIMULIIDAE	6.356				
		TRICORYTHIDAE	6.356				
ALABAMA	17	GAMMARIDAE	6.356	6.157		3.4048	FCV
		SALMONIDAE	6.356				
		CHIRONOMIDAE	6.356				
		PHYSIDAE	6.356				
		SALMONIDAE	6.356				
ARIZONA	16	GAMMARIDAE	6.356	6.155		3.7408	FCV
		SALMONIDAE	6.356				
		PLANORBIDAE	6.356				
		CHIRONOMIDAE	6.356				
ARKANSAS	16	PHYSIDAE	6.356	6.121	*	4.7500	FCV
		CHIRONOMIDAE	6.356				
		SIMULIIDAE	6.356				
		TRICORYTHIDAE	6.356				
CALIFORNIA	13	GAMMARIDAE	6.356	6.155		3.7408	FCV
		SALMONIDAE	6.356				
		CHIRONOMIDAE	6.356				
		SIMULIIDAE	6.356				
COLORADO	13	GAMMARIDAE	6.356	6.158		6.0000	FCV
		SALMONIDAE	6.356				
		PHYSIDAE	6.356				
		SALMONIDAE	6.356				
CONNECTICUT	16	GAMMARIDAE	6.356	6.156		7.4016	FCV
		SALMONIDAE	6.356				
		PHYSIDAE	6.356				
		CHIRONOMIDAE	6.356				
DELAWARE	16	GAMMARIDAE	6.356	6.148		6.3356	FCV
		SALMONIDAE	6.356				
		PHYSIDAE	6.356				
		SALMONIDAE	6.356				
* FLORIDA	16	GAMMARIDAE	6.356	6.127	*	6.3541	FCV
		SALMONIDAE	6.356				
		PLANORBIDAE	6.356				
		CHIRONOMIDAE	6.356				
GEORGIA	16	PHYSIDAE	6.356	6.127	*	6.3541	FCV
		CHIRONOMIDAE	6.356				
		SIMULIIDAE	6.356				
		TRICORYTHIDAE	6.356				
IDAHO	11	GAMMARIDAE	6.356	6.116		3.1000	FCV
		SALMONIDAE	6.356				
		CHIRONOMIDAE	6.356				
		SIMULIIDAE	6.356				
ILLINOIS	16	GAMMARIDAE	6.356	6.140		4.0846	FCV
		SALMONIDAE	6.356				
		PHYSIDAE	6.356				
		SALMONIDAE	6.356				
INDIANA	16	GAMMARIDAE	6.356	6.149		3.4048	FCV
		SALMONIDAE	6.356				
		PHYSIDAE	6.356				
		CHIRONOMIDAE	6.356				
IOWA	17	GAMMARIDAE	6.356	6.135	*	4.0864	FCV
		SALMONIDAE	6.356				
		PHYSIDAE	6.356				
		CHIRONOMIDAE	6.356				
* KANSAS	14	GAMMARIDAE	6.356	6.178	*	6.3591	FCV
		SALMONIDAE	6.356				
		PHYSIDAE	6.356				
		SALMONIDAE	6.356				
KENTUCKY	16	GAMMARIDAE	6.356	6.148		4.7500	FCV
		SALMONIDAE	6.356				
		PHYSIDAE	6.356				
		SALMONIDAE	6.356				
LOUISIANA	16	GAMMARIDAE	6.356	6.152	*	6.0000	FCV
		SALMONIDAE	6.356				
		PHYSIDAE	6.356				
		SALMONIDAE	6.356				
MAINE	16	GAMMARIDAE	6.356	6.161		7.0000	FCV
		SALMONIDAE	6.356				
		PHYSIDAE	6.356				
		SALMONIDAE	6.356				
MARYLAND	16	GAMMARIDAE	6.356	6.159		6.3568	FCV
		SALMONIDAE	6.356				
		PHYSIDAE	6.356				
		SALMONIDAE	6.356				
MASSACHUSETTS	16	GAMMARIDAE	6.356	6.143		6.4714	FCV
		SALMONIDAE	6.356				
		PHYSIDAE	6.356				
		SALMONIDAE	6.356				

FOOTNOTE

- * -- FAILED TO MEET MINIMUM DATA CRITERIA
- ** -- STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- *** -- NO INDIGENOUS SALMONID FISH IN STATE
- + -- HARDNESS EFFECT INTERCEPT VALUE
- ++ -- APPLY EQUATION 3.7 TO DETERMINE GAMMARUS ANDOR 24-DAY AVERAGE CRITERIA

- ug/L -- UNITS IN MICROGRAMS PER LITER
- FPV -- FINAL PLANT VALUE
- FRV -- FINAL RESIDUE VALUE
- ACR -- COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV -- FINAL CHRONIC VALUE
- SCV -- SENSITIVE SPECIES CHRONIC VALUE



APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: CYANIDE

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER GENUS	FRESHWATER FAMILY LOAD VALUE (ug/L)	FRESHWATER ACUTE-CHRONIC RATIO	FRESHWATER AQUATIC LIFE CRITERIA ACUTE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA CHRONIC (ug/L)
NATIONAL	16	SALMONIDAE	76.82	21.89	1.647E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
FLORIDA	5	SALMONIDAE	76.82	9.09	2.09E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
ARIZONA	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
ARKANSAS	4	SALMONIDAE	76.82	27.89	2.72E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
CALIFORNIA	6	SALMONIDAE	76.82	19.86	3.86E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
COLORADO	6	SALMONIDAE	76.82	43.48	1.76E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
CONNECTICUT	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
DELAWARE	4	SALMONIDAE	76.82	31.66	2.42E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
FLORIDA	5	SALMONIDAE	76.82	9.09	2.09E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
GEORGIA	4	SALMONIDAE	76.82	14.97	1.28E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
IDAHO	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
ILLINOIS	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
INDIANA	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
IOWA	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
KANSAS	4	SALMONIDAE	76.82	27.89	2.72E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
KENTUCKY	4	SALMONIDAE	76.82	19.64	3.91E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
LOUISIANA	4	SALMONIDAE	76.82	19.64	3.91E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
MAINE	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
MARYLAND	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
MASSACHUSETTS	4	SALMONIDAE	76.82	30.66	2.50E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER GENUS	FRESHWATER FAMILY LOAD VALUE (ug/L)	FRESHWATER ACUTE-CHRONIC RATIO	FRESHWATER AQUATIC LIFE CRITERIA ACUTE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA CHRONIC (ug/L)
MICHIGAN	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
MINNESOTA	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
MISSISSIPPI	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
MISSOURI	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
MONTANA	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
NEBRASKA	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
NEVADA	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
NEW HAMPSHIRE	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
NEW JERSEY	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
NEW MEXICO	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
NEW YORK	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
NORTH CAROLINA	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
NORTH DAKOTA	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
OHIO	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
OKLAHOMA	4	SALMONIDAE	76.82	27.89	2.72E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
OREGON	4	SALMONIDAE	76.82	19.64	3.91E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
PENNSYLVANIA	4	SALMONIDAE	76.82	19.64	3.91E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
RHODE ISLAND	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
SOUTH CAROLINA	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
SOUTH DAKOTA	4	SALMONIDAE	76.82	30.66	1.22E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			

FOOTNOTE
* = WHITE IN MICROGRAMS PER LITER
FAV = FINAL PLANT VALUE
FRV = FINAL RESIDUE VALUE
ACR = COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV = FINAL CHRONIC VALUE
SCV = SENSITIVE SPECIES CHRONIC VALUE
F = FAILED TO MEET MINIMUM DATA CRITERIA
** = STATE HAS LESS THAN 3 PERMANENT FAMILIES--NATIONAL VALUE USED
NV = NO INTERVENOUS SALMONID FISH IN STATE
I = HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION (J) TO DETERMINE MINIMUM HARDNESS
MEET CHRONIC CRITERIA

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: CYANIDE

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER GENUS	FRESHWATER FAMILY LOAD VALUE (ug/L)	FRESHWATER ACUTE-CHRONIC RATIO	FRESHWATER AQUATIC LIFE CRITERIA ACUTE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA CHRONIC (ug/L)
TENNESSEE	7	SALMONIDAE	97.00	30.66	1.67E	ACR
		DAPHNIIDAE	114.00			
		CERATOPSYCHIDAE	150.00			
TEXAS	5	DAPHNIIDAE	114.00	19.74	5.67E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
UTAH	3	SALMONIDAE	76.82	30.66	2.51E	ACR
		DAPHNIIDAE	114.00			
		CERATOPSYCHIDAE	150.00			
VERMONT	7	SALMONIDAE	76.82	30.66	2.50E	ACR
		DAPHNIIDAE	114.00			
		CERATOPSYCHIDAE	150.00			
VIRGINIA	4	SALMONIDAE	76.82	30.66	2.50E	ACR
		CERATOPSYCHIDAE	150.00			
		PERLIDAE	197.21			
WASHINGTON	4	SALMONIDAE	76.82	30.66	2.50E	ACR
		DAPHNIIDAE	114.00			
		CERATOPSYCHIDAE	150.00			
WEST VIRGINIA	5	SALMONIDAE	76.82	30.66	2.77E	ACR
		DAPHNIIDAE	114.00			
		CERATOPSYCHIDAE	150.00			
WISCONSIN	4	CERATOPSYCHIDAE	150.00	30.66	2.50E	ACR
		PERLIDAE	197.21			
		SIMULIIDAE	216.00			
WYOMING	4	SALMONIDAE	76.82	30.66	2.50E	ACR
		DAPHNIIDAE	114.00			
		PERLIDAE	197.21			

TOXICANT: DDT

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER GENUS	FRESHWATER FAMILY LOAD VALUE (ug/L)	FRESHWATER ACUTE-CHRONIC RATIO	FRESHWATER AQUATIC LIFE CRITERIA ACUTE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA CHRONIC (ug/L)
NATIONAL	20	DAPHNIIDAE	1.00	0.00	0.01E	FRV
		MYSIDAE	1.00			
		SIMULIIDAE	2.00			
ILLINOIS	8	SIMULIIDAE	2.00	0.00	0.00E	FRV
		CHIRONOMIDAE	2.00			
		PLATYGASTRIDAE	2.00			
MISSOURI	11	CHIRONOMIDAE	2.00	0.00	0.00E	FRV
		PLATYGASTRIDAE	2.00			
		SIMULIIDAE	2.00			
NEBRASKA	8	DAPHNIIDAE	2.00	0.00	0.00E	FRV
		MYSTICIDAE	2.00			
		SIMULIIDAE	2.00			
CALIFORNIA	10	SALMONIDAE	2.00	0.00	0.00E	FRV
		DAPHNIIDAE	2.00			
		CHIRONOMIDAE	2.00			
COLORADO	10	SALMONIDAE	2.00	0.00	0.00E	FRV
		DAPHNIIDAE	2.00			
		CHIRONOMIDAE	2.00			
CONNECTICUT	7	SALMONIDAE	2.00	0.00	0.00E	FRV
		PERLIDAE	2.00			
		CHIRONOMIDAE	2.00			
DELAWARE	5	SALMONIDAE	2.00	0.00	0.00E	FRV
		PERLIDAE	2.00			
		CHIRONOMIDAE	2.00			
FLORIDA	7	SALMONIDAE	2.00	0.00	0.00E	FRV
		MYSTICIDAE	2.00			
		CHIRONOMIDAE	2.00			
GEORGIA	7	SALMONIDAE	2.00	0.00	0.00E	FRV
		PERLIDAE	2.00			
		CHIRONOMIDAE	2.00			
IDAHO	11	SALMONIDAE	2.00	0.00	0.00E	FRV
		DAPHNIIDAE	2.00			
		CHIRONOMIDAE	2.00			
ILLINOIS	10	SALMONIDAE	2.00	0.00	0.00E	FRV
		PERLIDAE	2.00			
		CHIRONOMIDAE	2.00			
INDIANA	10	SALMONIDAE	2.00	0.00	0.00E	FRV
		PERLIDAE	2.00			
		CHIRONOMIDAE	2.00			
IOWA	10	SALMONIDAE	2.00	0.00	0.00E	FRV
		PERLIDAE	2.00			
		CHIRONOMIDAE	2.00			
KANSAS	7	SALMONIDAE	2.00	0.00	0.00E	FRV
		MYSTICIDAE	2.00			
		CHIRONOMIDAE	2.00			
KENTUCKY	9	SALMONIDAE	2.00	0.00	0.00E	FRV
		PERLIDAE	2.00			
		CHIRONOMIDAE	2.00			
LOUISIANA	9	SALMONIDAE	2.00	0.00	0.00E	FRV
		PERLIDAE	2.00			
		CHIRONOMIDAE	2.00			
MAINE	9	SALMONIDAE	2.00	0.00	0.00E	FRV
		PERLIDAE	2.00			
		CHIRONOMIDAE	2.00			
MARYLAND	10	SALMONIDAE	2.00	0.00	0.00E	FRV
		PERLIDAE	2.00			
		CHIRONOMIDAE	2.00			
MASSACHUSETTS	11	SALMONIDAE	2.00	0.00	0.00E	FRV
		PERLIDAE	2.00			
		CHIRONOMIDAE	2.00			

FOOTNOTE
* = WHITE IN MICROGRAMS PER LITER
FAV = FINAL PLANT VALUE
FRV = FINAL RESIDUE VALUE
ACR = COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV = FINAL CHRONIC VALUE
SCV = SENSITIVE SPECIES CHRONIC VALUE
F = FAILED TO MEET MINIMUM DATA CRITERIA
** = STATE HAS LESS THAN 3 PERMANENT FAMILIES--NATIONAL VALUE USED
NV = NO INTERVENOUS SALMONID FISH IN STATE
I = HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION (J) TO DETERMINE MINIMUM HARDNESS
MEET CHRONIC CRITERIA

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: DDT

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	MOST SENSITIVE RESIDENT FAMILY LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: SUSTAINED (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 24-HOUR AVERAGE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (ug/L)
MICHIGAN	12	SALMONIDS	0.65	0.416 *	0.0010	FR*
		SALMONIDS	1.00			
		SALMONIDS	0.65			
MINNESOTA	10	SALMONIDS	0.65	0.65 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
* MISSISSIPPI	10	CYPRINIDS	0.65	0.65 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
MISSOURI	10	SALMONIDS	0.65	0.65 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
MONTANA	10	SALMONIDS	0.65	0.65 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
NEBRASKA	9	SALMONIDS	0.65	0.65 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
NEVADA	11	SALMONIDS	0.65	0.65 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
NEW HAMPSHIRE	8	SALMONIDS	0.65	0.65 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
NEW JERSEY	9	SALMONIDS	0.65	0.341 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
NEW MEXICO	10	SALMONIDS	0.65	0.65 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
NEW YORK	10	SALMONIDS	0.65	0.65 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
NORTH CAROLINA	9	SALMONIDS	0.65	0.341 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
NORTH DAKOTA	10	SALMONIDS	0.65	0.65 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
OHIO	10	SALMONIDS	0.65	0.671 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
OKLAHOMA	9	SALMONIDS	0.65	0.317 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
OREGON	11	SALMONIDS	0.65	0.65 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
PENNSYLVANIA	10	SALMONIDS	0.65	0.65 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
RHODE ISLAND	8	SALMONIDS	0.65	0.31 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
SOUTH CAROLINA	9	SALMONIDS	0.65	0.306 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			
SOUTH DAKOTA	11	SALMONIDS	0.65	0.65 *	0.0016	FR*
		SALMONIDS	0.65			
		SALMONIDS	0.65			

TOXICANT: DDT

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	MOST SENSITIVE RESIDENT FAMILY LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: SUSTAINED (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 24-HOUR AVERAGE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (ug/L)
TENNESSEE	9	SALMONIDS	0.65	0.334 *	0.0010	FR*
		ARCHOIDS	0.65			
		PALAEMONIDS	0.65			
* TEXAS	10	SALMONIDS	0.65	0.65 *	0.0016	FR*
		CENTRARCHIDS	1.00			
		PERLIDS	1.00			
UTAH	12	SALMONIDS	0.65	0.65 *	0.0016	FR*
		CENTRARCHIDS	1.00			
		CHIRONOMIDS	1.00			
VERMONT	8	SALMONIDS	0.65	0.341 *	0.0016	FR*
		PERLIDS	1.00			
		CHIRONOMIDS	1.00			
VIRGINIA	8	SALMONIDS	0.65	0.65 *	0.0016	FR*
		PERLIDS	1.00			
		CHIRONOMIDS	1.00			
WASHINGTON	11	SALMONIDS	0.65	0.416 *	0.0016	FR*
		PERLIDS	1.00			
		CENTRARCHIDS	1.00			
WEST VIRGINIA	6	SALMONIDS	0.65	0.310 *	0.0016	FR*
		CENTRARCHIDS	1.00			
		CHIRONOMIDS	1.00			
WISCONSIN	10	SALMONIDS	0.65	0.65 *	0.0016	FR*
		PERLIDS	1.00			
		CHIRONOMIDS	1.00			
WYOMING	10	SALMONIDS	0.65	0.65 *	0.0016	FR*
		PERLIDS	1.00			
		CHIRONOMIDS	1.00			

FOOTNOTE
- * — UNITS IN MICROGRAMS PER LITER
- - - FRV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- L — FAILED TO MEET MINIMUM DATA CRITERIA
- ** — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- # — NO MONOMICTIC SALMONID FISH IN STATE
- I — HARDNESS EFFECT INTERCEPT VALUE
  APPLY EQUATION 2.7 TO DETERMINE MAXIMUM HARDNESS 24-DAY AVERAGE CRITERIA

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: DIELDRIN

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	MOST SENSITIVE RESIDENT FAMILY LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: SUSTAINED (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 24-HOUR AVERAGE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (ug/L)
NATIONAL	12	PERCIDAE	1.200	1.200 *	0.0019	FR#
		ASELLIDAE	3.400			
		SALMONIDAE	3.600			
ALABAMA	9	SALMONIDAE	3.600	3.600 *	0.0019	FR#
		PALAEMONIDAE	5.400			
		CENTRARCHIDAE	6.211			
ARIZONA	3	CYPRINIDAE	24.000	3.700 *	0.0019	FR#
		SALMONIDAE	3.600			
		CYPRINIDAE	24.000			
ARKANSAS	5	PALAEMONIDAE	5.400	1.201 *	0.0019	FR#
		CENTRARCHIDAE	6.211			
		ASELLIDAE	3.400			
CALIFORNIA	5	CYPRINIDAE	24.000	1.314 *	0.0019	FR#
		PERCIDAE	1.200			
		SALMONIDAE	3.600			
COLORADO	6	SALMONIDAE	3.600	3.600 *	0.0019	FR#
		CENTRARCHIDAE	6.211			
		PALAEMONIDAE	5.400			
CONNECTICUT	5	PERCIDAE	1.200	0.471 *	0.0019	FR#
		CYPRINIDAE	24.000			
		CENTRARCHIDAE	6.211			
DELAWARE	6	SALMONIDAE	3.600	3.600 *	0.0019	FR#
		CENTRARCHIDAE	6.211			
		PERCIDAE	1.200			
* FLORIDA	7	PERCIDAE	1.200	1.201 *	0.0019	FR#
		CYPRINIDAE	24.000			
		CENTRARCHIDAE	6.211			
GEORGIA	6	SALMONIDAE	3.600	3.600 *	0.0019	FR#
		PALAEMONIDAE	5.400			
		CYPRINIDAE	24.000			
IDAHO	5	CYPRINIDAE	24.000	1.201 *	0.0019	FR#
		CENTRARCHIDAE	6.211			
		PERCIDAE	1.200			
ILLINOIS	7	ASELLIDAE	3.400	1.100 *	0.0019	FR#
		SALMONIDAE	3.600			
		CENTRARCHIDAE	6.211			
INDIANA	6	PALAEMONIDAE	5.400	3.601 *	0.0019	FR#
		CENTRARCHIDAE	6.211			
		CYPRINIDAE	24.000			
IOWA	6	CENTRARCHIDAE	6.211	3.600 *	0.0019	FR#
		PALAEMONIDAE	5.400			
		CYPRINIDAE	24.000			
* KANSAS	7	CENTRARCHIDAE	6.211	3.600 *	0.0019	FR#
		SALMONIDAE	3.600			
		CYPRINIDAE	24.000			
KENTUCKY	6	SALMONIDAE	3.600	3.600 *	0.0019	FR#
		ASELLIDAE	3.400			
		CENTRARCHIDAE	6.211			
LOUISIANA	6	SALMONIDAE	3.600	3.600 *	0.0019	FR#
		PALAEMONIDAE	5.400			
		CYPRINIDAE	24.000			
MAINE	5	SALMONIDAE	3.600	3.600 *	0.0019	FR#
		SALMONIDAE	3.600			
		CYPRINIDAE	24.000			
MARYLAND	6	SALMONIDAE	3.600	1.201 *	0.0019	FR#
		SALMONIDAE	3.600			
		CYPRINIDAE	24.000			
MASSACHUSETTS	6	SALMONIDAE	3.600	0.471 *	0.0019	FR#
		CENTRARCHIDAE	6.211			
		CYPRINIDAE	24.000			

TOXICANT: DIELDRIN

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	MOST SENSITIVE RESIDENT FAMILY LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: SUSTAINED (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 24-HOUR AVERAGE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (ug/L)
MICHIGAN	7	SALMONIDAE	3.600	1.152 *	0.0019	FR#
		SPHAERIIDAE	3.600			
		CENTRARCHIDAE	6.211			
MINNESOTA	8	SALMONIDAE	3.600	3.211 *	0.0019	FR#
		SALMONIDAE	3.600			
		CENTRARCHIDAE	6.211			
* MISSISSIPPI	8	CYPRINIDAE	24.000	1.110 *	0.0019	FR#
		ASELLIDAE	3.400			
		PALAEMONIDAE	5.400			
MISSOURI	5	CENTRARCHIDAE	6.211	3.600 *	0.0019	FR#
		PALAEMONIDAE	5.400			
		CYPRINIDAE	24.000			
MONTANA	5	SALMONIDAE	3.600	1.201 *	0.0019	FR#
		SPHAERIIDAE	3.600			
		PERLIDAE	1.200			
NEBRASKA	6	SALMONIDAE	3.600	3.121 *	0.0019	FR#
		CENTRARCHIDAE	6.211			
		CYPRINIDAE	24.000			
NEVADA	5	SALMONIDAE	3.600	3.110 *	0.0019	FR#
		SALMONIDAE	3.600			
		SPHAERIIDAE	3.600			
NEW HAMPSHIRE	6	SALMONIDAE	3.600	3.600 *	0.0019	FR#
		SALMONIDAE	3.600			
		CENTRARCHIDAE	6.211			
NEW JERSEY	6	SALMONIDAE	3.600	3.600 *	0.0019	FR#
		SPHAERIIDAE	3.600			
		CENTRARCHIDAE	6.211			
NEW MEXICO	7	SALMONIDAE	3.600	3.600 *	0.0019	FR#
		SALMONIDAE	3.600			
		SPHAERIIDAE	3.600			
NEW YORK	7	PERLIDAE	1.200	1.200 *	0.0019	FR#
		SPHAERIIDAE	3.600			
		CENTRARCHIDAE	6.211			
NORTH CAROLINA	6	SALMONIDAE	3.600	3.600 *	0.0019	FR#
		SPHAERIIDAE	3.600			
		CENTRARCHIDAE	6.211			
NORTH DAKOTA	5	CYPRINIDAE	24.000	3.121 *	0.0019	FR#
		CENTRARCHIDAE	6.211			
		CYPRINIDAE	24.000			
OHIO	6	SALMONIDAE	3.600	3.600 *	0.0019	FR#
		CENTRARCHIDAE	6.211			
		PALAEMONIDAE	5.400			
OKLAHOMA	7	SALMONIDAE	3.600	3.201 *	0.0019	FR#
		SALMONIDAE	3.600			
		PALAEMONIDAE	5.400			
OREGON	7	SALMONIDAE	3.600	1.205 *	0.0019	FR#
		SALMONIDAE	3.600			
		ASELLIDAE	3.400			
PENNSYLVANIA	7	SALMONIDAE	3.600	3.600 *	0.0019	FR#
		CENTRARCHIDAE	6.211			
		CYPRINIDAE	24.000			
RHODE ISLAND	5	SALMONIDAE	3.600	3.211 *	0.0019	FR#
		SPHAERIIDAE	3.600			
		CYPRINIDAE	24.000			
SOUTH CAROLINA	6	SALMONIDAE	3.600	3.306 *	0.0019	FR#
		SPHAERIIDAE	3.600			
		CYPRINIDAE	24.000			
SOUTH DAKOTA	8	SALMONIDAE	3.600	3.600 *	0.0019	FR#
		CENTRARCHIDAE	6.211			
		PERLIDAE	1.200			
		CYPRINIDAE	24.000			

FOOTNOTE
- * — UNITS IN MICROGRAMS PER LITER
- - - FRV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- L — FAILED TO MEET MINIMUM DATA CRITERIA
- ** — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- # — NO MONOMICTIC SALMONID FISH IN STATE
- I — HARDNESS EFFECT INTERCEPT VALUE
  APPLY EQUATION 2.7 TO DETERMINE MAXIMUM HARDNESS 24-DAY AVERAGE CRITERIA

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TENNESSEE	5	SALMONIDAE	0.460	0.230	0.104
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		PERCIDAE	2.010		
* TEXAS	5	SALMONIDAE	1.020	0.127	0.0911
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		PERCIDAE	2.010		
UTAH	5	SALMONIDAE	0.460	0.230	0.104
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		PERCIDAE	2.010		
VERMONT	5	SALMONIDAE	0.460	0.230	0.104
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		PERCIDAE	2.010		
VIRGINIA	5	SALMONIDAE	0.460	0.230	0.104
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		PERCIDAE	2.010		
WASHINGTON	5	SALMONIDAE	0.460	0.230	0.104
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		PERCIDAE	2.010		
WEST VIRGINIA	5	SALMONIDAE	0.460	0.230	0.104
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		PERCIDAE	2.010		
WISCONSIN	5	SALMONIDAE	0.460	0.230	0.104
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		PERCIDAE	2.010		
WYOMING	5	SALMONIDAE	0.460	0.230	0.104
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		PERCIDAE	2.010		

TOXICANT: ENDOSULFAN

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
NATIONAL	9	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
ALABAMA	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CENTRARCHIDAE	2.011		
ARIZONA	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CENTRARCHIDAE	2.011		
ARKANSAS	4	PERCIDAE	2.010	0.050	0.0224
		CENTRARCHIDAE	2.011		
		ICTALURIDAE	2.040		
		CYPRINODONTIDAE (HERBIVOROUS)	87.390		
CALIFORNIA	7	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
		CYPRINODONTIDAE (HERBIVOROUS)	87.390		
COLORADO	6	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
		ICTALURIDAE	2.040		
CONNECTICUT	6	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
		ICTALURIDAE	2.040		
DELAWARE	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
		ICTALURIDAE	2.040		
* FLORIDA	5	PERCIDAE	2.010	0.050 **	0.0224
		CENTRARCHIDAE	2.011		
		CYPRINODONTIDAE (HERBIVOROUS)	87.390		
GEORGIA	4	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CENTRARCHIDAE	2.011		
		CYPRINODONTIDAE (HERBIVOROUS)	87.390		
IDAHO	7	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
		ICTALURIDAE	2.040		
		CYPRINODONTIDAE (HERBIVOROUS)	87.390		
ILLINOIS	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
		ICTALURIDAE	2.040		
INDIANA	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
		ICTALURIDAE	2.040		
IOWA	6	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
		ICTALURIDAE	2.040		
* KANSAS	4	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
		CYPRINODONTIDAE (HERBIVOROUS)	87.390		
KENTUCKY	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
		ICTALURIDAE	2.040		
LOUISIANA	5	PERCIDAE	2.010	0.050 **	0.0224
		CENTRARCHIDAE	2.011		
		CYPRINODONTIDAE (HERBIVOROUS)	87.390		
MAINE	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
		ICTALURIDAE	2.040		
MARYLAND	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
		CYPRINODONTIDAE (HERBIVOROUS)	87.390		
MASSACHUSETTS	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		

FOOTNOTE
* — UNITS IN MICROGRAMS PER LITER
FPV — FINAL PLANT VALUE
FRV — FINAL RESIDUE VALUE
ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV — FINAL CHRONIC VALUE
SCV — SENSITIVE SPECIES CHRONIC VALUE
** — FAILED TO MEET MINIMUM DATA CRITERIA
*** — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
# — NO INDIGENOUS SALMONID FISH IN STATE
# — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 2.7 TO DETERMINE HARDNESS ANSWER
30-DAY AVERAGE CRITERIA

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: ENDOSULFAN

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MICHIGAN	6	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		CENTRARCHIDAE	2.011		
MINNESOTA	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		CENTRARCHIDAE	2.011		
* MISSISSIPPI	2	CYPRINIDAE	1.270	0.255 ##	0.1123
		CENTRARCHIDAE	2.011		
		CYPRINODONTIDAE (HERBIVOROUS)	87.390		
MISSOURI	4	CYPRINIDAE	1.270	0.255	0.1123
		CENTRARCHIDAE	2.011		
		ICTALURIDAE	2.040		
		CYPRINODONTIDAE (HERBIVOROUS)	87.390		
MONTANA	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		PERCIDAE	2.010		
NEBRASKA	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		CENTRARCHIDAE	2.011		
NEVADA	5	SALMONIDAE	0.054	0.027	0.0119
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
NEW HAMPSHIRE	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		CENTRARCHIDAE	2.011		
NEW JERSEY	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		CENTRARCHIDAE	2.011		
NEW MEXICO	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
NEW YORK	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		CENTRARCHIDAE	2.011		
NORTH CAROLINA	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		CENTRARCHIDAE	2.011		
NORTH DAKOTA	7	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
OHIO	5	CENTRARCHIDAE	2.011	0.027	0.0119
		SALMONIDAE	0.054		
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
OKLAHOMA	5	CENTRARCHIDAE	2.011	0.027	0.0119
		SALMONIDAE	0.054		
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
OREGON	5	CENTRARCHIDAE	2.011	0.027	0.0119
		SALMONIDAE	0.054		
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
PENNSYLVANIA	5	CENTRARCHIDAE	2.011	0.027	0.0119
		SALMONIDAE	0.054		
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
RHODE ISLAND	5	CENTRARCHIDAE	2.011	0.027	0.0119
		SALMONIDAE	0.054		
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
SOUTH CAROLINA	7	CENTRARCHIDAE	2.011	0.027	0.0119
		SALMONIDAE	0.054		
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
SOUTH DAKOTA	7	CENTRARCHIDAE	2.011	0.027	0.0119
		SALMONIDAE	0.054		
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		CENTRARCHIDAE	2.011		

TOXICANT: ENDOSULFAN

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TENNESSEE	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		CENTRARCHIDAE	2.011		
* TEXAS	5	CYPRINIDAE	1.270	0.255	0.1123
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		
UTAH	5	CYPRINODONTIDAE (HERBIVOROUS)	87.390		
		SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
VERMONT	5	PERCIDAE	2.010		
		SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
VIRGINIA	5	CENTRARCHIDAE	2.011	0.027	0.0119
		SALMONIDAE	0.054		
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
WASHINGTON	5	PERCIDAE	2.010	0.027	0.0119
		SALMONIDAE	0.054		
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
WEST VIRGINIA	5	SALMONIDAE	0.054	0.027	0.0119
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
WISCONSIN	6	CENTRARCHIDAE	2.011	0.027	0.0119
		SALMONIDAE	0.054		
		CYPRINIDAE	1.270		
		CATOSTOMIDAE	1.540		
		PERCIDAE	2.010		
		CENTRARCHIDAE	2.011		

FOOTNOTE
* — UNITS IN MICROGRAMS PER LITER
FPV — FINAL PLANT VALUE
FRV — FINAL RESIDUE VALUE
ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV — FINAL CHRONIC VALUE
SCV — SENSITIVE SPECIES CHRONIC VALUE
** — FAILED TO MEET MINIMUM DATA CRITERIA
*** — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
# — NO INDIGENOUS SALMONID FISH IN STATE
# — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 2.7 TO DETERMINE HARDNESS ANSWER
30-DAY AVERAGE CRITERIA

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: DIELDRIN

STATE	NUMBER OF PUBLISHED TAXONS	MOST SENSITIVE RESIDENT FAMILY MEMBER	FAMILY LOWEST VALUE (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA: CHRONIC (µg/L)
NATIONAL	17	[illegible]	[illegible]	0.24 *	0.056	FAV
ALABAMA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
ARIZONA	10	[illegible]	[illegible]	0.24 *	0.056	FAV
ARKANSAS	8	[illegible]	[illegible]	0.24 *	0.056	FAV
CALIFORNIA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
COLORADO	8	[illegible]	[illegible]	0.24 *	0.056	FAV
CONNECTICUT	8	[illegible]	[illegible]	0.24 *	0.056	FAV
DELAWARE	10	[illegible]	[illegible]	0.24 *	0.056	FAV
* FLORIDA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
GEORGIA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
IDAHO	10	[illegible]	[illegible]	0.24 *	0.056	FAV
ILLINOIS	11	[illegible]	[illegible]	0.24 *	0.056	FAV
INDIANA	7	[illegible]	[illegible]	0.24 *	0.056	FAV
IOWA	7	[illegible]	[illegible]	0.24 *	0.056	FAV
KANSAS	8	[illegible]	[illegible]	0.24 *	0.056	FAV
KENTUCKY	8	[illegible]	[illegible]	0.24 *	0.056	FAV
LOUISIANA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
MAINE	11	[illegible]	[illegible]	0.24 *	0.056	FAV
MARYLAND	11	[illegible]	[illegible]	0.24 *	0.056	FAV
MASSACHUSETTS	8	[illegible]	[illegible]	0.24 *	0.056	FAV
MICHIGAN	10	[illegible]	[illegible]	0.24 *	0.056	FAV
MINNESOTA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
MISSISSIPPI	8	[illegible]	[illegible]	0.24 *	0.056	FAV
MISSOURI	8	[illegible]	[illegible]	0.24 *	0.056	FAV
MONTANA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
NEBRASKA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
NEVADA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
NEW HAMPSHIRE	8	[illegible]	[illegible]	0.24 *	0.056	FAV
NEW JERSEY	10	[illegible]	[illegible]	0.24 *	0.056	FAV
NEW MEXICO	8	[illegible]	[illegible]	0.24 *	0.056	FAV
NEW YORK	11	[illegible]	[illegible]	0.24 *	0.056	FAV
NORTH CAROLINA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
NORTH DAKOTA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
OHIO	8	[illegible]	[illegible]	0.24 *	0.056	FAV
OKLAHOMA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
OREGON	10	[illegible]	[illegible]	0.24 *	0.056	FAV
PENNSYLVANIA	10	[illegible]	[illegible]	0.24 *	0.056	FAV
RHODE ISLAND	8	[illegible]	[illegible]	0.24 *	0.056	FAV
SOUTH CAROLINA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
SOUTH DAKOTA	7	[illegible]	[illegible]	0.24 *	0.056	FAV
TENNESSEE	8	[illegible]	[illegible]	0.24 *	0.056	FAV
TEXAS	8	[illegible]	[illegible]	0.24 *	0.056	FAV
UTAH	8	[illegible]	[illegible]	0.24 *	0.056	FAV
VERMONT	8	[illegible]	[illegible]	0.24 *	0.056	FAV
VIRGINIA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
WASHINGTON	10	[illegible]	[illegible]	0.24 *	0.056	FAV
WEST VIRGINIA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
WISCONSIN	8	[illegible]	[illegible]	0.24 *	0.056	FAV
WYOMING	8	[illegible]	[illegible]	0.24 *	0.056	FAV

FOOTNOTE:
* = UNITS IN MICROGRAMS PER LITER
** = FAV = FINAL PLANT VALUE
RDV = FINAL REDUCE VALUE
ACR = COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV = FINAL CHRONIC VALUE
SCV = SENSITIVE SPECIES CHRONIC VALUE
A = FAILED TO MEET MINIMUM DATA CRITERIA
B = STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
C = NO INDIGENOUS SALMONID FISH IN STATE
D = HARDNESS EFFECT WORKSHEET VALUE APPLY EQUATION 2.7 TO DETERMINE SALMONID HARDNESS AVERAGE CRITERIA

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: DIELDRIN

STATE	NUMBER OF PUBLISHED TAXONS	MOST SENSITIVE RESIDENT FAMILY MEMBER	FAMILY LOWEST VALUE (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA: CHRONIC (µg/L)
TENNESSEE	8	[illegible]	[illegible]	0.24 *	0.056	FAV
TEXAS	8	[illegible]	[illegible]	0.24 *	0.056	FAV
UTAH	8	[illegible]	[illegible]	0.24 *	0.056	FAV
VERMONT	8	[illegible]	[illegible]	0.24 *	0.056	FAV
VIRGINIA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
WASHINGTON	10	[illegible]	[illegible]	0.24 *	0.056	FAV
WEST VIRGINIA	8	[illegible]	[illegible]	0.24 *	0.056	FAV
WISCONSIN	8	[illegible]	[illegible]	0.24 *	0.056	FAV
WYOMING	8	[illegible]	[illegible]	0.24 *	0.056	FAV

TOXICANT: HEPTACHLOR

STATE	NUMBER OF PUBLISHED TAXONS	MOST SENSITIVE RESIDENT FAMILY MEMBER	FAMILY LOWEST VALUE (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA: CHRONIC (µg/L)
NATIONAL	18	[illegible]	[illegible]	0.01 *	0.004	FAV
ALABAMA	8	[illegible]	[illegible]	0.01 *	0.004	FAV
ARIZONA	8	[illegible]	[illegible]	0.01 *	0.004	FAV
ARKANSAS	8	[illegible]	[illegible]	0.01 *	0.004	FAV
CALIFORNIA	7	[illegible]	[illegible]	0.01 *	0.004	FAV
COLORADO	7	[illegible]	[illegible]	0.01 *	0.004	FAV
CONNECTICUT	8	[illegible]	[illegible]	0.01 *	0.004	FAV
DELAWARE	8	[illegible]	[illegible]	0.01 *	0.004	FAV
* FLORIDA	8	[illegible]	[illegible]	0.01 *	0.004	FAV
GEORGIA	8	[illegible]	[illegible]	0.01 *	0.004	FAV
IDAHO	8	[illegible]	[illegible]	0.01 *	0.004	FAV
ILLINOIS	8	[illegible]	[illegible]	0.01 *	0.004	FAV
INDIANA	8	[illegible]	[illegible]	0.01 *	0.004	FAV
IOWA	8	[illegible]	[illegible]	0.01 *	0.004	FAV
KANSAS	8	[illegible]	[illegible]	0.01 *	0.004	FAV
KENTUCKY	8	[illegible]	[illegible]	0.01 *	0.004	FAV
LOUISIANA	8	[illegible]	[illegible]	0.01 *	0.004	FAV
MAINE	8	[illegible]	[illegible]	0.01 *	0.004	FAV
MARYLAND	8	[illegible]	[illegible]	0.01 *	0.004	FAV
MASSACHUSETTS	8	[illegible]	[illegible]	0.01 *	0.004	FAV

FOOTNOTE:
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ACR = COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV = FINAL CHRONIC VALUE
SCV = SENSITIVE SPECIES CHRONIC VALUE
A = FAILED TO MEET MINIMUM DATA CRITERIA
B = STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
C = NO INDIGENOUS SALMONID FISH IN STATE
D = HARDNESS EFFECT WORKSHEET VALUE APPLY EQUATION 2.7 TO DETERMINE SALMONID HARDNESS AVERAGE CRITERIA

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: HEPTACHLOR

State	Number of Families Tested	Most Sensitive Resident Family Genus Name	Most Sensitive Resident Family Last Value [1]	Freshwater Aquatic Life Criteria Numbers [1]	Freshwater Aquatic Life Criteria Basis [1]	Freshwater Aquatic Life Criteria Reference [1]
MICHIGAN	6	PALAEMONIDAE	1.80	0.004	• 0.0038	FW
MINNESOTA	6	PALAEMONIDAE	0.374	0.004	• 0.0038	FW
* MISSISSIPPI	6	PALAEMONIDAE	0.748	0.004	• 0.0038	FW
MISSOURI	6	PALAEMONIDAE	0.252	0.004	• 0.0038	FW
MONTANA	7	PALAEMONIDAE	0.191	0.004	• 0.0038	FW
NEBRASKA	6	PALAEMONIDAE	1.440	0.004	• 0.0038	FW
NEVADA	7	PALAEMONIDAE	0.702	0.004	• 0.0038	FW
NEW HAMPSHIRE	6	PALAEMONIDAE	0.265	0.004	• 0.0038	FW
NEW JERSEY	6	PALAEMONIDAE	0.521	0.004	• 0.0038	FW
NEW MEXICO	7	PALAEMONIDAE	0.180	0.004	• 0.0038	FW
NEW YORK	6	PALAEMONIDAE	0.252	0.004	• 0.0038	FW
NORTH CAROLINA	6	PALAEMONIDAE	0.144	0.004	• 0.0038	FW
NORTH DAKOTA	6	PALAEMONIDAE	0.252	0.004	• 0.0038	FW
OHIO	6	PALAEMONIDAE	0.252	0.004	• 0.0038	FW
OKLAHOMA	7	PALAEMONIDAE	0.252	0.004	• 0.0038	FW
OREGON	6	PALAEMONIDAE	0.180	0.004	• 0.0038	FW
PENNSYLVANIA	6	PALAEMONIDAE	0.252	0.004	• 0.0038	FW
RHODE ISLAND	6	PALAEMONIDAE	0.201	0.004	• 0.0038	FW
SOUTH CAROLINA	6	PALAEMONIDAE	0.207	0.004	• 0.0038	FW
SOUTH DAKOTA	6	PALAEMONIDAE	0.252	0.004	• 0.0038	FW
TENNESSEE	6	PALAEMONIDAE	0.180	0.004	• 0.0038	FW
* TEXAS	6	PALAEMONIDAE	0.252	0.004	• 0.0038	FW
UTAH	7	PALAEMONIDAE	0.702	0.004	• 0.0038	FW
VERMONT	6	PALAEMONIDAE	0.252	0.004	• 0.0038	FW
VIRGINIA	6	PALAEMONIDAE	0.252	0.004	• 0.0038	FW
WASHINGTON	7	PALAEMONIDAE	0.112	0.004	• 0.0038	FW
WEST VIRGINIA	6	PALAEMONIDAE	1.440	0.004	• 0.0038	FW
WISCONSIN	6	PALAEMONIDAE	0.201	0.004	• 0.0038	FW
WYOMING	7	PALAEMONIDAE	0.180	0.004	• 0.0038	FW

FOOTNOTE

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ACR	= CONVERTION OF ACUTE TO CHRONIC RATIO METHOD
FCV	= FINAL CHRONIC VALUE
SCV	= SENSITIVE SPECIES CHRONIC VALUE
*	= FAILED TO MEET MINIMUM DATA CRITERIA
**	= STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
#	= NO AMMONIUM SALMONID FISH IN STATE
	= HARDNESS EFFECT INTERCEPT VALUE
	= APPLY EQUATION (1) TO DETERMINE SHANNON ANDER 30-DAY CHRONIC CRITERIA

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: LEAD

State	Number of Families Tested	Most Sensitive Resident Family Genus Name	Most Sensitive Resident Family Last Value [1]	Freshwater Aquatic Life Criteria Numbers [1]	Freshwater Aquatic Life Criteria Basis [1]	Freshwater Aquatic Life Criteria Reference [1]
NATIONAL	7	SALMONIDAE	1.30	0.007	• 0.0054	FCV
ALABAMA	6	SALMONIDAE	37.20	0.007	• 0.0054	FCV
ARIZONA	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
ARKANSAS	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
CALIFORNIA	6	SALMONIDAE	4.06	0.007	• 0.0054	FCV
COLORADO	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
CONNECTICUT	6	SALMONIDAE	12.80	0.007	• 0.0054	FCV
DELAWARE	6	SALMONIDAE	30.20	0.007	• 0.0054	FCV
* FLORIDA	6	SALMONIDAE	68.20	0.007	• 0.0054	ACR
GEORGIA	6	SALMONIDAE	14.20	0.007	• 0.0054	FCV
IDAHO	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
ILLINOIS	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
INDIANA	6	SALMONIDAE	37.20	0.007	• 0.0054	FCV
IOWA	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
* KANSAS	6	SALMONIDAE	3.25 **	0.007	• 0.0054	FCV
KENTUCKY	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
LOUISIANA	6	SALMONIDAE	3.25 **	0.007	• 0.0054	FCV
MAINE	6	SALMONIDAE	3.25 **	0.007	• 0.0054	FCV
MARYLAND	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
MASSACHUSETTS	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
MICHIGAN	6	SALMONIDAE	1.30	0.007	• 0.0054	FCV
MINNESOTA	6	SALMONIDAE	14.20	0.007	• 0.0054	FCV
* MISSISSIPPI	6	SALMONIDAE	3.25	0.007	• 0.0054	ACR
MISSOURI	6	SALMONIDAE	3.25 **	0.007	• 0.0054	FCV
MONTANA	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
NEBRASKA	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
NEVADA	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
NEW HAMPSHIRE	6	SALMONIDAE	30.20	0.007	• 0.0054	FCV
NEW JERSEY	6	SALMONIDAE	14.20	0.007	• 0.0054	FCV
NEW MEXICO	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
NEW YORK	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
NORTH CAROLINA	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
NORTH DAKOTA	6	SALMONIDAE	37.20	0.007	• 0.0054	FCV
OHIO	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
* OKLAHOMA	6	SALMONIDAE	3.25 **	0.007	• 0.0054	FCV
OREGON	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
PENNSYLVANIA	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
RHODE ISLAND	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
SOUTH CAROLINA	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV
SOUTH DAKOTA	6	SALMONIDAE	3.25	0.007	• 0.0054	FCV

FOOTNOTE

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ACR	= CONVERTION OF ACUTE TO CHRONIC RATIO METHOD
FCV	= FINAL CHRONIC VALUE
SCV	= SENSITIVE SPECIES CHRONIC VALUE
*	= FAILED TO MEET MINIMUM DATA CRITERIA
**	= STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
#	= NO AMMONIUM SALMONID FISH IN STATE
	= HARDNESS EFFECT INTERCEPT VALUE
	= APPLY EQUATION (1) TO DETERMINE SHANNON ANDER 30-DAY CHRONIC CRITERIA

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: LEAD

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY	FRESHWATER FAMILY LOGV VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA (ug/L)		
				BASED ON [*]	30-DAY [**]	INTERVAL [***]
TENNESSEE	5	[redacted]	1.161	0.025 *	0.0254	FCV
TEXAS	4	[redacted]	13.977 *	0.343	0.343	ACR
UTAH	4	[redacted]	5.287 *	0.0930	0.0930	FCV
VERMONT	4	[redacted]	16.742 *	0.0954	0.0954	FCV
VIRGINIA	4	[redacted]	14.800 *	0.0950	0.0950	FCV
WASHINGTON	5	[redacted]	9.216 *	0.0930	0.0930	FCV
WEST VIRGINIA	4	[redacted]	14.800 *	0.0954	0.0954	FCV
WISCONSIN	5	[redacted]	9.216 *	0.0930	0.0930	FCV
WYOMING	4	[redacted]	5.287 *	0.0930	0.0930	FCV

TOXICANT: LINDANE

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY	FRESHWATER FAMILY LOGV VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA (ug/L)		
				BASED ON [*]	30-DAY [**]	INTERVAL [***]
NATIONAL	32	ARTHROPODA	31.500	0.276 *	0.0374	ACR
ALABAMA	6	[redacted]	31.500	0.0374	0.0374	ACR
ARIZONA	5	[redacted]	31.500	0.0374	0.0374	ACR
ARKANSAS	5	[redacted]	31.500	0.0374	0.0374	ACR
CALIFORNIA	7	[redacted]	31.500	0.0374	0.0374	ACR
COLORADO	7	[redacted]	31.500	0.0374	0.0374	ACR
CONNECTICUT	5	[redacted]	31.500	0.0374	0.0374	ACR
DELAWARE	7	[redacted]	31.500	0.0374	0.0374	ACR
FLORIDA	6	[redacted]	31.500	0.0374	0.0374	ACR
GEORGIA	5	[redacted]	31.500	0.0374	0.0374	ACR
IDAHO	6	[redacted]	31.500	0.0374	0.0374	ACR
ILLINOIS	6	[redacted]	31.500	0.0374	0.0374	ACR
INDIANA	5	[redacted]	31.500	0.0374	0.0374	ACR
IOWA	6	[redacted]	31.500	0.0374	0.0374	ACR
KANSAS	5	[redacted]	31.500	0.0374	0.0374	ACR
KENTUCKY	6	[redacted]	31.500	0.0374	0.0374	ACR
LOUISIANA	5	[redacted]	31.500	0.0374	0.0374	ACR
MAINE	6	[redacted]	31.500	0.0374	0.0374	ACR
MARYLAND	7	[redacted]	31.500	0.0374	0.0374	ACR
MASSACHUSETTS	7	[redacted]	31.500	0.0374	0.0374	ACR

FOOTNOTE
* - UNITS IN MICROGRAMS PER LITER
*** - FINAL PLANT VALUE
FRV - FINAL RESIDUE VALUE
ACR - COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV - FINAL CHRONIC VALUE
SCV - SENSITIVE SPECIES CHRONIC VALUE
* - FAILED TO MEET MINIMUM DATA CRITERIA
** - STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
# - NO INDIGENOUS SALMONID FISH IN STATE
I - HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 2.7 TO DETERMINE MAXIMUM HARDN
30-DAY AVERAGE CRITERIA

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: LINDANE

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY	FRESHWATER FAMILY LOGV VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA (ug/L)		
				BASED ON [*]	30-DAY [**]	INTERVAL [***]
MICHIGAN	6	[redacted]	31.500	0.261 *	0.0261	ACR
MINNESOTA	6	[redacted]	45.257	0.419 *	0.444	ACR
MISSISSIPPI	6	[redacted]	45.257	0.171 *	0.178	ACR
MISSOURI	6	[redacted]	45.257	0.261 *	0.0261	ACR
MONTANA	6	[redacted]	45.257	7.341 *	0.0873	ACR
NEBRASKA	6	[redacted]	45.257	4.164 *	0.0261	ACR
NEVADA	6	[redacted]	45.257	0.261 *	0.0472	ACR
NEW HAMPSHIRE	6	[redacted]	45.257	4.200 *	0.0261	ACR
NEW JERSEY	7	[redacted]	45.257	2.421 *	0.189	ACR
NEW MEXICO	7	[redacted]	45.257	4.164 *	0.0261	ACR
NEW YORK	7	[redacted]	45.257	0.261 *	0.0261	ACR
NORTH CAROLINA	7	[redacted]	45.257	1.000 *	0.189	SCV
NORTH DAKOTA	6	[redacted]	45.257	CLIFF *	1.189	ACR
OHIO	6	[redacted]	45.257	0.261 *	0.0913	ANC
OKLAHOMA	6	[redacted]	45.257	10.400 *	1.870	ACR
OREGON	7	[redacted]	45.257	7.700 *	0.0700	ACR
PENNSYLVANIA	7	[redacted]	45.257	2.000 *	0.189	ACR
RHODE ISLAND	6	[redacted]	45.257	1.000 *	0.0700	ACR
SOUTH CAROLINA	6	[redacted]	45.257	10.000 *	0.0000	ACR
SOUTH DAKOTA	7	[redacted]	45.257	2.000 *	0.189	ACR

FOOTNOTE
* - UNITS IN MICROGRAMS PER LITER
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FRV - FINAL RESIDUE VALUE
ACR - COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV - FINAL CHRONIC VALUE
SCV - SENSITIVE SPECIES CHRONIC VALUE
* - FAILED TO MEET MINIMUM DATA CRITERIA
** - STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
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APPLY EQUATION 2.7 TO DETERMINE MAXIMUM HARDN
30-DAY AVERAGE CRITERIA

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: MERCURY

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY: NAME	MOST SENSITIVE RESIDENT FAMILY: LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: ENTERED (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: FLAST (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: APPLIED (ug/L)
NATIONAL	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
ALABAMA	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
ARIZONA	5	SALMONIDAE	0.591	0.191 *	0.0971	ACR
ARKANSAS	4	SALMONIDAE	0.591	0.176 *	0.1135	ACR
CALIFORNIA	5	SALMONIDAE	0.591	0.191 *	0.0974	ACR
COLORADO	5	SALMONIDAE	0.591	0.191 *	0.0971	ACR
CONNECTICUT	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
DELAWARE	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
* FLORIDA	5	SALMONIDAE	0.591	0.012 * **	0.91	FRV
GEORGIA	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
IDAHO	5	SALMONIDAE	0.591	0.191 *	0.0971	ACR
ILLINOIS	5	SALMONIDAE	0.591	1.06 *	0.91	FRV
INDIANA	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
IOWA	5	SALMONIDAE	0.591	0.012 * **	0.91	FRV
* KANSAS	5	SALMONIDAE	0.591	0.012 * **	0.91	FRV
KENTUCKY	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
LOUISIANA	5	SALMONIDAE	0.591	1.06 *	0.91	FRV
MAINE	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
MARYLAND	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
MASSACHUSETTS	5	SALMONIDAE	0.591	0.012 *	0.91	FRV

TOXICANT: MERCURY

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY: NAME	MOST SENSITIVE RESIDENT FAMILY: LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: ENTERED (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: FLAST (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: APPLIED (ug/L)
MICHIGAN	7	SALMONIDAE	0.591	1.06 *	0.91	FRV
MINNESOTA	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
* MISSISSIPPI	5	SALMONIDAE	0.591	0.176 * **	0.1135	ACR
MISSOURI	5	SALMONIDAE	0.591	0.012 * **	0.91	FRV
MONTANA	5	SALMONIDAE	0.591	0.191 *	0.0974	ACR
NEBRASKA	5	SALMONIDAE	0.591	0.012 *	0.1135	ACR
NEVADA	5	SALMONIDAE	0.591	0.191 *	0.0971	ACR
NEW HAMPSHIRE	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
NEW JERSEY	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
NEW MEXICO	5	SALMONIDAE	0.591	0.191 *	0.0971	ACR
NEW YORK	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
NORTH CAROLINA	5	SALMONIDAE	0.591	1.06 *	0.91	FRV
NORTH DAKOTA	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
OHIO	5	SALMONIDAE	0.591	0.012 * **	0.91	FRV
OKLAHOMA	5	SALMONIDAE	0.591	0.012 * **	0.91	FRV
OREGON	5	SALMONIDAE	0.591	0.191 *	0.0974	ACR
PENNSYLVANIA	7	SALMONIDAE	0.591	0.012 *	0.91	FRV
RHODE ISLAND	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
SOUTH CAROLINA	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
SOUTH DAKOTA	5	SALMONIDAE	0.591	0.191 *	0.0971	ACR

FOOTNOTE
* -- UNITS IN MICROGRAMS PER LITER
FRV -- FINAL PLAST VALUE
FRV -- FINAL RESIDUE VALUE
ACR -- COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV -- FINAL CHRONIC VALUE
SCV -- SENSITIVE SPECIES CHRONIC VALUE
** -- FAILED TO MEET MINIMUM DATA CRITERIA
** -- STATE HAS LESS THAN 4 RESIDENT FAMILIES--NATIONAL VALUE USED
# -- NO FRESHWATER SALMONID FISH IN STATE
$ -- HUMAN HEALTH 3.1 TO DETERMINE SALMONID ANSWER
SMAV AVERAGE CRITERIA

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: MERCURY

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY: NAME	MOST SENSITIVE RESIDENT FAMILY: LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: ENTERED (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: FLAST (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: APPLIED (ug/L)
TENNESSEE	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
* TEXAS	5	ATHERINIDAE	0.591	0.176 * **	0.1135	ACR
UTAH	5	SALMONIDAE	0.591	0.191 *	0.0971	ACR
VERMONT	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
VIRGINIA	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
WASHINGTON	5	SALMONIDAE	0.591	0.191 *	0.0974	ACR
WEST VIRGINIA	5	SALMONIDAE	0.591	0.012 *	0.91	FRV
WISCONSIN	7	SALMONIDAE	0.591	1.06 *	0.91	FRV
WYOMING	5	SALMONIDAE	0.591	0.191 *	0.0971	ACR

TOXICANT: NICKEL

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY: NAME	MOST SENSITIVE RESIDENT FAMILY: LC50 VALUE (ug/L) ($)	FRESHWATER AQUATIC LIFE CRITERIA: ENTERED (ug/L) ($)	FRESHWATER AQUATIC LIFE CRITERIA: FLAST (ug/L) (***) ($)	FRESHWATER AQUATIC LIFE CRITERIA: APPLIED (ug/L) ($)
NATIONAL	12	SALMONIDAE	45.57	30.04 *	3.991	ACR
ALABAMA	11	SALMONIDAE	45.57	51.66 *	5.266	ACR
ARIZONA	10	SALMONIDAE	45.57	34.89 *	3.445	ACR
ARKANSAS	10	SALMONIDAE	45.57	39.84 *	3.915	ACR
CALIFORNIA	10	SALMONIDAE	45.57	25.89 *	2.982	ACR
COLORADO	7	SALMONIDAE	45.57	27.39 *	2.995	ACR
CONNECTICUT	12	SALMONIDAE	45.57	32.69 *	3.745	ACR
DELAWARE	12	SALMONIDAE	45.57	32.69 *	3.745	ACR
* FLORIDA	11	SALMONIDAE	45.57	32.69 *	3.745	ACR
GEORGIA	10	SALMONIDAE	45.57	25.89 *	2.982	ACR
IDAHO	8	SALMONIDAE	45.57	25.87 *	2.967	ACR
ILLINOIS	10	SALMONIDAE	45.57	34.89 *	3.445	ACR
INDIANA	10	SALMONIDAE	45.57	34.89 *	3.445	ACR
IOWA	10	SALMONIDAE	45.57	34.89 *	3.445	ACR
* KANSAS	10	SALMONIDAE	45.57	34.89 *	3.445	ACR
KENTUCKY	11	SALMONIDAE	45.57	34.89 *	3.445	ACR
LOUISIANA	10	SALMONIDAE	45.57	34.89 *	3.445	ACR
MAINE	10	SALMONIDAE	45.57	25.89 *	2.982	ACR
MARYLAND	10	SALMONIDAE	45.57	25.89 *	2.982	ACR
MASSACHUSETTS	10	SALMONIDAE	45.57	25.89 *	2.982	ACR

FOOTNOTE
* -- UNITS IN MICROGRAMS PER LITER
** -- STATE HAS LESS THAN 4 RESIDENT FAMILIES--NATIONAL VALUE USED
# -- NO FRESHWATER SALMONID FISH IN STATE
$ -- HUMAN HEALTH 3.1 TO DETERMINE SALMONID ANSWER
SMAV AVERAGE CRITERIA
FRV -- FINAL RESIDUE VALUE
ACR -- COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV -- FINAL CHRONIC VALUE
SCV -- SENSITIVE SPECIES CHRONIC VALUE
** -- FAILED TO MEET MINIMUM DATA CRITERIA
*** -- APPLY EQUATION 3.1 TO DETERMINE SALMONID ANSWER

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: NICKEL

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: PCB0

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY: NAME	MOST SENSITIVE FRESHWATER FAMILY: LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 24-HOUR AVERAGE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 30-DAY AVERAGE (ug/L)
TENNESSEE	3	SALMONIDAE CENTRARCHIDAE CYPRINIDAE	2.200 5.811 10.201	0.144 *	0.014	FAV
TEXAS	3	SALMONIDAE CENTRARCHIDAE CYPRINIDAE	2.200 5.811 10.201	0.107 * ** **	0.014	FAV
UTAH	2	SALMONIDAE CENTRARCHIDAE CYPRINIDAE	2.200 5.811 10.201	0.107 * **	0.014	FAV
VERMONT	3	SALMONIDAE CENTRARCHIDAE CYPRINIDAE	2.200 5.811 10.201	0.666 *	0.014	FAV
VIRGINIA	3	SALMONIDAE CENTRARCHIDAE CYPRINIDAE	2.200 5.811 10.201	0.123 *	0.014	FAV
WASHINGTON	2	SALMONIDAE CENTRARCHIDAE	2.200 5.811	0.107 * **	0.014	FAV
WEST VIRGINIA	3	SALMONIDAE CENTRARCHIDAE CYPRINIDAE	2.200 5.811 10.201	0.021 *	0.014	FAV
WISCONSIN	3	SALMONIDAE CENTRARCHIDAE CYPRINIDAE	2.200 5.811 10.201	0.000 *	0.014	FAV
WYOMING	3	SALMONIDAE CENTRARCHIDAE CYPRINIDAE	2.200 5.811 10.201	0.107 * **	0.014	FAV

TOXICANT: SELENIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY: NAME	MOST SENSITIVE FRESHWATER FAMILY: LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 24-HOUR AVERAGE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 30-DAY AVERAGE (ug/L)
NATIONAL	10	ATHALIDAE (TALITRIDAE) SALMONIDAE CHIRONOMIDAE	230.000 [illegible] [illegible]	18.446 *	5.0000	ACR
ALABAMA	5	ATHALIDAE (TALITRIDAE) SALMONIDAE	230.000 [illegible]	71.107 **	18.7504	ACR
ARIZONA	6	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	59.135 **	15.5451	ACR
ARKANSAS	7	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	54.004 **	15.1011	ACR
CALIFORNIA	9	FOXCHUKAR ATHALIDAE (TALITRIDAE) SALMONIDAE	[illegible] 230.000 [illegible]	26.106 **	15.5451	ACR
COLORADO	7	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	54.004 **	14.2551	ACR
CONNECTICUT	6	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	54.004 **	14.1747	ACR
DELAWARE	3	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	97.479 *	17.2252	ACR
FLORIDA	3	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	97.205 *	18.0016	ACR
GEORGIA	3	ATHALIDAE (TALITRIDAE) SALMONIDAE FOXCHUKAR	230.000 [illegible] [illegible]	53.205 *	17.5105	ACR
IDAHO	7	ATHALIDAE (TALITRIDAE) SALMONIDAE FOXCHUKAR	230.000 [illegible] [illegible]	55.135 *	13.5016	ACR
ILLINOIS	5	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	74.106 *	18.7504	ACR
INDIANA	7	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	54.004 *	17.2265	ACR
IOWA	5	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	26.106 *	17.2265	ACR
KANSAS	7	ATHALIDAE (TALITRIDAE) SALMONIDAE FOXCHUKAR	230.000 [illegible] [illegible]	59.004 *	15.1011	ACR
KENTUCKY	5	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	74.106 *	18.7504	ACR
LOUISIANA	7	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	58.004 *	15.1011	ACR
MAINE	5	FOXCHUKAR ATHALIDAE (TALITRIDAE) CYPRINIDAE	[illegible] 230.000 [illegible]	45.216 *	12.4256	ACR
MARYLAND	7	SALMONIDAE ATHALIDAE (TALITRIDAE) SALMONIDAE	[illegible] 230.000 [illegible]	55.201 *	15.7408	ACR
MASSACHUSETTS	7	CYPRINIDAE ATHALIDAE (TALITRIDAE) SALMONIDAE FOXCHUKAR	[illegible] 230.000 [illegible] [illegible]	59.201 *	15.7408	ACR
		ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]			

FOOTNOTE

- * — UNITS IN MICROGRAMS PER LITER
- ' ' — FPV: FINAL PLANT VALUE
- FRV: FINAL RESIDUE VALUE
- ACR: COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV: FINAL CHRONIC VALUE
- SCV: SENSITIVE SPECIES CHRONIC VALUE

- ! — FAILED TO MEET MINIMUM DATA CRITERIA
- ** — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- # — NO HUMMINGBIRD SALMOND FISH IN STATE
- $ — HUMMINGBIRD EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM HARDNESS 30-DAY AVERAGE CRITERIA

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: SELENIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY: NAME	MOST SENSITIVE FRESHWATER FAMILY: LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 24-HOUR AVERAGE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 30-DAY AVERAGE (ug/L)
MICHIGAN	8	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	73.917 *	18.2544	ACR
MINNESOTA	8	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	61.204 *	21.4251	ACR
MISSISSIPPI	7	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	59.004 *	15.1011	ACR
MISSOURI	7	FOXCHUKAR ATHALIDAE (TALITRIDAE) SALMONIDAE	[illegible] 230.000 [illegible]	55.004 *	15.1011	ACR
MONTANA	7	FOXCHUKAR ATHALIDAE (TALITRIDAE) SALMONIDAE	[illegible] 230.000 [illegible]	55.201 *	13.5016	ACR
NEBRASKA	7	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	55.201 *	13.5016	ACR
NEVADA	5	ATHALIDAE (TALITRIDAE) SALMONIDAE SALMONIDAE	230.000 [illegible] [illegible]	54.141 *	14.4256	ACR
NEW HAMPSHIRE	2	ATHALIDAE (TALITRIDAE) CYPRINIDAE SALMONIDAE	230.000 [illegible] [illegible]	53.701 *	15.2548	ACR
NEW JERSEY	6	ATHALIDAE (TALITRIDAE) SALMONIDAE FOXCHUKAR	230.000 [illegible] [illegible]	53.201 *	11.4750	ACR
NEW MEXICO	6	ATHALIDAE (TALITRIDAE) SALMONIDAE SALMONIDAE	230.000 [illegible] [illegible]	55.140 *	15.4147	ACR
NEW YORK	8	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	73.917 *	18.2544	ACR
NORTH CAROLINA	7	ATHALIDAE (TALITRIDAE) SALMONIDAE SALMONIDAE	230.000 [illegible] [illegible]	57.282 *	16.2255	ACR
NORTH DAKOTA	7	ATHALIDAE (TALITRIDAE) SALMONIDAE FOXCHUKAR	230.000 [illegible] [illegible]	54.007 *	14.2254	ACR
OHIO	8	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	61.204 *	21.4251	ACR
OKLAHOMA	8	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	64.000 *	20.4000	ACR
OREGON	6	ATHALIDAE (TALITRIDAE) SALMONIDAE SALMONIDAE	230.000 [illegible] [illegible]	55.000 *	7.2001	ACR
PENNSYLVANIA	7	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	55.201 *	15.7408	ACR
RHODE ISLAND	5	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	54.004 *	15.2712	ACR
SOUTH CAROLINA	7	ATHALIDAE (TALITRIDAE) SALMONIDAE SALMONIDAE	230.000 [illegible] [illegible]	57.282 *	16.2255	ACR
SOUTH DAKOTA	7	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	54.007 *	14.2254	ACR

TOXICANT: SELENIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY: NAME	MOST SENSITIVE FRESHWATER FAMILY: LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 24-HOUR AVERAGE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: 30-DAY AVERAGE (ug/L)
TENNESSEE	5	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	74.106 *	18.7504	ACR
TEXAS	3	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	59.740 *	17.0000	ACR
UTAH	7	FOXCHUKAR ATHALIDAE (TALITRIDAE) SALMONIDAE	[illegible] 230.000 [illegible]	55.201 *	15.8000	ACR
VERMONT	5	CYPRINIDAE ATHALIDAE (TALITRIDAE) CYPRINIDAE	[illegible] 230.000 [illegible]	62.741 *	15.8000	ACR
VIRGINIA	5	SALMONIDAE ATHALIDAE (TALITRIDAE) SALMONIDAE	[illegible] 230.000 [illegible]	54.000 *	14.2412	ACR
WASHINGTON	5	CYPRINIDAE ATHALIDAE (TALITRIDAE) SALMONIDAE	[illegible] 230.000 [illegible]	55.000 *	7.2001	ACR
WEST VIRGINIA	7	CYPRINIDAE ATHALIDAE (TALITRIDAE) SALMONIDAE	[illegible] 230.000 [illegible]	55.201 *	15.7408	ACR
WISCONSIN	7	CYPRINIDAE ATHALIDAE (TALITRIDAE) SALMONIDAE	[illegible] 230.000 [illegible]	55.201 *	15.8044	ACR
WYOMING	7	ATHALIDAE (TALITRIDAE) SALMONIDAE CYPRINIDAE	230.000 [illegible] [illegible]	55.201 *	15.8044	ACR

FOOTNOTE

- * — UNITS IN MICROGRAMS PER LITER
- ' ' — FPV: FINAL PLANT VALUE
- FRV: FINAL RESIDUE VALUE
- ACR: COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV: FINAL CHRONIC VALUE
- SCV: SENSITIVE SPECIES CHRONIC VALUE

- ! — FAILED TO MEET MINIMUM DATA CRITERIA
- ** — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- # — NO HUMMINGBIRD SALMOND FISH IN STATE
- $ — HUMMINGBIRD EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM HARDNESS 30-DAY AVERAGE CRITERIA

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: SILVER

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY (A)	LC50 OR EC50 (ug/L) (B)	FRESHWATER AQUATIC LIFE CRITERIA: FINAL (ug/L) (C)		ACUTE-CHRONIC RATIO (D)	
						(+)	(++)
NATIONAL	3	DAPHNIDAE	1.65	0.0082	*		
		CYPRINIDAE	1.65				
		CENTRARCHIDAE	1.65				
ALABAMA	1	COTTIDAE	1.65	0.0082	*		
		CYPRINIDAE	1.65				
		SALMONIDAE	1.65				
ARIZONA	1	CENTRARCHIDAE	1.10	0.0041	*		
		CYPRINIDAE	1.65				
		SALMONIDAE	1.65				
ARKANSAS	1	CENTRARCHIDAE	1.10	0.0055	*		
		COTTIDAE	1.65				
		CYPRINIDAE	1.65				
CALIFORNIA	3	CENTRARCHIDAE	1.10	0.0041	*		
		PHOXINIDAE	1.65				
		SALMONIDAE	1.65				
COLORADO	3	CENTRARCHIDAE	1.10	0.0055	*		
		COTTIDAE	1.65				
		CYPRINIDAE	1.65				
CONNECTICUT	1	CYPRINIDAE	1.65	0.0082	*		
		SALMONIDAE	1.65				
DELAWARE	2	SALMONIDAE	1.65	0.0041	*		
		CENTRARCHIDAE	1.10				
		PHOXINIDAE	1.65				
FLORIDA	3	CYPRINODONTIDAE	1.65	0.0082	*		
		CENTRARCHIDAE	1.10				
		PHOXINIDAE	1.65				
GEORGIA	1	COTTIDAE	1.65	0.0055	*		
		SALMONIDAE	1.65				
		CENTRARCHIDAE	1.10				
IDAHO	3	PHOXINIDAE	1.65	0.0055	*		
		CYPRINIDAE	1.65				
		COTTIDAE	1.65				
ILLINOIS	3	SALMONIDAE	1.65	0.0041	*		
		COTTIDAE	1.65				
		SALMONIDAE	1.65				
INDIANA	3	CENTRARCHIDAE	1.10	0.0055	*		
		COTTIDAE	1.65				
		CYPRINIDAE	1.65				
IOWA	3	SALMONIDAE	1.65	0.0041	*		
		CENTRARCHIDAE	1.10				
		CYPRINIDAE	1.65				
KANSAS	1	CENTRARCHIDAE	1.10	0.0055	*		
		PHOXINIDAE	1.65				
		CYPRINIDAE	1.65				
KENTUCKY	3	COTTIDAE	1.65	0.0041	*		
		CYPRINIDAE	1.65				
		SALMONIDAE	1.65				
LOUISIANA	1	CENTRARCHIDAE	1.10	0.0055	*		
		COTTIDAE	1.65				
		CENTRARCHIDAE	1.10				
MAINE	3	CYPRINIDAE	1.65	0.0055	*		
		PHOXINIDAE	1.65				
		COTTIDAE	1.65				
MARYLAND	3	CYPRINIDAE	1.65	0.0055	*		
		SALMONIDAE	1.65				
		CENTRARCHIDAE	1.10				
MASSACHUSETTS	4	CYPRINIDAE	1.65	0.0041	*		
		SALMONIDAE	1.65				
		CENTRARCHIDAE	1.65				
		PHOXINIDAE	1.65				

TOXICANT: SILVER

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY (A)	LC50 OR EC50 (ug/L) (B)	FRESHWATER AQUATIC LIFE CRITERIA: FINAL (ug/L) (C)		ACUTE-CHRONIC RATIO (D)	
						(+)	(++)
MICHIGAN	3	COTTIDAE	1.65	0.0041	*		
		CYPRINIDAE	1.65				
		SALMONIDAE	1.65				
MINNESOTA	3	SALMONIDAE	1.65	0.0041	*		
		CYPRINIDAE	1.65				
		CENTRARCHIDAE	1.10				
MISSISSIPPI	3	COTTIDAE	1.65	0.0055	*		
		PHOXINIDAE	1.65				
		CYPRINIDAE	1.65				
MISSOURI	4	PHOXINIDAE	1.65	0.0055	*		
		CYPRINIDAE	1.65				
		SALMONIDAE	1.65				
MONTANA	3	CYPRINIDAE	1.65	0.0055	*		
		SALMONIDAE	1.65				
		CENTRARCHIDAE	1.10				
NEBRASKA	3	CYPRINIDAE	1.65	0.0055	*		
		SALMONIDAE	1.65				
		CENTRARCHIDAE	1.10				
NEVADA	3	CYPRINIDAE	1.65	0.0055	*		
		SALMONIDAE	1.65				
		CENTRARCHIDAE	1.10				
NEW HAMPSHIRE	1	CYPRINIDAE	1.65	0.0041	*		
		SALMONIDAE	1.65				
		PHOXINIDAE	1.65				
NEW JERSEY	3	CYPRINIDAE	1.65	0.0041	*		
		SALMONIDAE	1.65				
		CENTRARCHIDAE	1.10				
NEW MEXICO	3	CYPRINIDAE	1.65	0.0055	*		
		COTTIDAE	1.65				
		SALMONIDAE	1.65				
NEW YORK	3	SALMONIDAE	1.65	0.0041	*		
		COTTIDAE	1.65				
		CYPRINIDAE	1.65				
NORTH CAROLINA	3	CENTRARCHIDAE	1.10	0.0055	*		
		SALMONIDAE	1.65				
		PHOXINIDAE	1.65				
NORTH DAKOTA	3	CYPRINIDAE	1.65	0.0055	*		
		SALMONIDAE	1.65				
		CENTRARCHIDAE	1.10				
OHIO	3	CENTRARCHIDAE	1.10	0.0055	*		
		COTTIDAE	1.65				
		CYPRINIDAE	1.65				
OKLAHOMA	3	SALMONIDAE	1.65	0.0055	*		
		CENTRARCHIDAE	1.10				
		PHOXINIDAE	1.65				
OREGON	3	CENTRARCHIDAE	1.10	0.0055	*		
		CYPRINIDAE	1.65				
		COTTIDAE	1.65				
PENNSYLVANIA	3	SALMONIDAE	1.65	0.0055	*		
		CYPRINIDAE	1.65				
		CENTRARCHIDAE	1.10				
RHODE ISLAND	1	CENTRARCHIDAE	1.10	0.0055	*		
		SALMONIDAE	1.65				
		CYPRINIDAE	1.65				
SOUTH CAROLINA	3	SALMONIDAE	1.65	0.0055	*		
		CENTRARCHIDAE	1.10				
		PHOXINIDAE	1.65				
SOUTH DAKOTA	3	SALMONIDAE	1.65	0.0055	*		
		SALMONIDAE	1.65				
		CENTRARCHIDAE	1.10				

FOOTNOTE
- * - UNITS IN MICROGRAMS PER LITER
- ** - STATE HAS LESS THAN 3 RESIDENT FAMILIES--NATIONAL VALUE USED
- FRV - FINAL PLANT VALUE
- FRV - FINAL RESIDUE VALUE
- ACR - COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV - FINAL CHRONIC VALUE
- SCV - SENSITIVE SPECIES CHRONIC VALUE
- + - FAILED TO MEET MINIMUM DATA CRITERIA
- ++ - STATE HAS LESS THAN 4 RESIDENT FAMILIES--NATIONAL VALUE USED
- # - NO ANDROMOUS SALMONID FISH IN STATE
- \$ - HARDNESS EFFECT INTERCEPT VALUE
  APPLY EQUATION 2.1 TO DETERMINE MAXIMUM ANSWER 30-DAY AVERAGE CRITERIA

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: SILVER

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY (A)	LC50 OR EC50 (ug/L) (B)	FRESHWATER AQUATIC LIFE CRITERIA: FINAL (ug/L) (C)		ACUTE-CHRONIC RATIO (D)	
						(+)	(++)
TENNESSEE	3	COTTIDAE	1.65	0.0041	*		
		CYPRINIDAE	1.65				
		SALMONIDAE	1.65				
TEXAS	3	CYPRINIDAE	1.65	0.0041	*		
		CENTRARCHIDAE	1.10				
		PHOXINIDAE	1.65				
UTAH	3	CENTRARCHIDAE	1.10	0.0055	*		
		COTTIDAE	1.65				
		CYPRINIDAE	1.65				
VERMONT	1	CYPRINIDAE	1.65	0.0055	*		
		SALMONIDAE	1.65				
		CENTRARCHIDAE	1.10				
VIRGINIA	3	PHOXINIDAE	1.65	0.0055	*		
		CYPRINIDAE	1.65				
		SALMONIDAE	1.65				
		CENTRARCHIDAE	1.10				
WASHINGTON	3	PHOXINIDAE	1.65	0.0055	*		
		CYPRINIDAE	1.65				
		COTTIDAE	1.65				
WEST VIRGINIA	3	COTTIDAE	1.65	0.0055	*		
		CYPRINIDAE	1.65				
		SALMONIDAE	1.65				
WISCONSIN	4	SALMONIDAE	1.65	0.0041	*		
		COTTIDAE	1.65				
		CYPRINIDAE	1.65				
WYOMING	3	SALMONIDAE	1.65	0.0055	*		
		CENTRARCHIDAE	1.10				
		PHOXINIDAE	1.65				
		SALMONIDAE	1.65				

TOXICANT: TOXAPHENE

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY (A)	LC50 OR EC50 (ug/L) (B)	FRESHWATER AQUATIC LIFE CRITERIA: FINAL (ug/L) (C)		ACUTE-CHRONIC RATIO (D)	
						(+)	(++)
NATIONAL	12	PERLIDAE	1.65	0.005	*	0.005	NCR
		PTERONARCIDAE	2.61				
		ETHELIDAE	3.47				
ALABAMA	7	CENTRARCHIDAE	4.79	1.16	*	0.0165	ACR
		ETHELIDAE	5.47				
		CENTRARCHIDAE	6.79				
ARIZONA	11	CYPRINIDAE	8.63	0.005	*	0.0051	ACR
		SALMONIDAE	9.63				
		PERLIDAE	10.00				
ARKANSAS	8	PTERONARCIDAE	10.00	0.0141	*	0.0102	ACR
		ETHELIDAE	10.00				
		SALMONIDAE	10.00				
CALIFORNIA	8	CENTRARCHIDAE	10.00	0.005	*	0.005	NCR
		ETHELIDAE	10.00				
		PERLIDAE	10.00				
COLORADO	6	CENTRARCHIDAE	10.00	0.005	*	0.005	NCR
		PTERONARCIDAE	10.00				
		CENTRARCHIDAE	10.00				
CONNECTICUT	7	ETHELIDAE	10.00	0.005	*	0.005	NCR
		CENTRARCHIDAE	10.00				
		PERLIDAE	10.00				
DELAWARE	9	CENTRARCHIDAE	10.00	1.65	*	0.0165	NCR
		ETHELIDAE	10.00				
		PERLIDAE	10.00				
FLORIDA	6	ETHELIDAE	10.00	0.005	*	0.005	NCR
		CENTRARCHIDAE	10.00				
		PERLIDAE	10.00				
GEORGIA	6	CENTRARCHIDAE	10.00	1.65	*	0.0113	NCR
		ETHELIDAE	10.00				
		SALMONIDAE	10.00				
IDAHO	10	PTERONARCIDAE	10.00	0.005	*	0.005	NCR
		CENTRARCHIDAE	10.00				
		SALMONIDAE	10.00				
ILLINOIS	5	ETHELIDAE	10.00	1.65	*	0.0074	NCR
		SALMONIDAE	10.00				
		CYPRINIDAE	10.00				
INDIANA	6	ETHELIDAE	10.00	1.65	*	0.005	NCR
		CENTRARCHIDAE	10.00				
		SALMONIDAE	10.00				
IOWA	9	CENTRARCHIDAE	10.00	0.705	*	0.705	NCR
		ETHELIDAE	10.00				
		CYPRINIDAE	10.00				
KANSAS	5	CENTRARCHIDAE	10.00	0.05	*	0.005	NCR
		ETHELIDAE	10.00				
		PERLIDAE	10.00				
KENTUCKY	7	PERLIDAE	10.00	1.65	*	0.005	NCR
		CENTRARCHIDAE	10.00				
		ETHELIDAE	10.00				
LOUISIANA	7	CYPRINIDAE	10.00	1.65	*	0.0165	NCR
		ETHELIDAE	10.00				
		CENTRARCHIDAE	10.00				
MAINE	7	CYPRINIDAE	10.00	0.021	*	0.0054	NCR
		CENTRARCHIDAE	10.00				
		SALMONIDAE	10.00				
MARYLAND	9	CENTRARCHIDAE	10.00	0.73	*	0.0725	NCR
		PERLIDAE	10.00				
		ETHELIDAE	10.00				
MASSACHUSETTS	9	CENTRARCHIDAE	10.00	0.715	*	0.0143	NCR
		ETHELIDAE	10.00				
		SALMONIDAE	10.00				
		CYPRINIDAE	10.00				

FOOTNOTE
- * - UNITS IN MICROGRAMS PER LITER
- ** - STATE HAS LESS THAN 3 RESIDENT FAMILIES--NATIONAL VALUE USED
- FRV - FINAL PLANT VALUE
- FRV - FINAL RESIDUE VALUE
- ACR - COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV - FINAL CHRONIC VALUE
- SCV - SENSITIVE SPECIES CHRONIC VALUE
- + - FAILED TO MEET MINIMUM DATA CRITERIA
- ++ - STATE HAS LESS THAN 4 RESIDENT FAMILIES--NATIONAL VALUE USED
- # - NO ANDROMOUS SALMONID FISH IN STATE
- \$ - HARDNESS EFFECT INTERCEPT VALUE
  APPLY EQUATION 2.1 TO DETERMINE MAXIMUM ANSWER 30-DAY AVERAGE CRITERIA

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: TOLAPHENE

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY (LOWEST TO LOW)		PROMULGATED AQUATIC LIFE CRITERIA (µg/L)		
		NAME	LC50 VALUE (µg/L)	FRESHWATER	ACUTE-CHRONIC RATIO	SALTWATER
MICHIGAN	9			0.49 *	0.4765	ACR
MINNESOTA	9			0.007 *	0.0147	ACR
MISSISSIPPI	9			0.007 *	0.0147	ACR
MISSOURI	9			0.007 *	0.0147	ACR
MONTANA	10			0.045 *	0.0446	ACR
NEBRASKA	9			0.021 *	0.0412	ACR
NEVADA	10			0.014 *	0.0136	ACR
NEW HAMPSHIRE	9			0.005 *	0.0104	ACR
NEW JERSEY	9			1.06 *	0.4190	ACR
NEW MEXICO	10			0.005 *	0.0095	ACR
NEW YORK	9			1.04 *	0.4017	ACR
NORTH CAROLINA	9			1.06 *	0.4177	ACR
NORTH DAKOTA	9			0.006 *	0.0101	ACR
OHIO	9			1.05 *	0.4068	ACR
OKLAHOMA	9			1.06 *	0.4156	ACR
OREGON	9			0.005 *	0.0105	ACR
PENNSYLVANIA	9			1.06 *	0.4204	ACR
RHODE ISLAND	7			0.015 *	0.0142	ACR
SOUTH CAROLINA	9			1.06 *	0.4201	ACR
SOUTH DAKOTA	9			0.04 *	0.0085	ACR

TOXICANT: TOLAPHENE

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY (LOWEST TO LOW)		PROMULGATED AQUATIC LIFE CRITERIA (µg/L)		
		NAME	LC50 VALUE (µg/L)	FRESHWATER	ACUTE-CHRONIC RATIO	SALTWATER
TENNESSEE	9			1.06 *	0.4216	ACR
* TEXAS	9			1.065 *	0.4172	ACR
UTAH	10			0.045 *	0.0455	ACR
VERMONT	7			0.005 *	0.0104	ACR
VIRGINIA	7			1.045 *	0.4097	ACR
WASHINGTON	10			0.004 *	0.0085	ACR
WEST VIRGINIA	9			0.015 *	0.0105	ACR
WISCONSIN	9			0.015 *	0.0105	ACR
WYOMING	10			0.045 *	0.0455	ACR

FOOTNOTE:

* - WHITE PI ACID EQUIVALENTS PER LITER

* * - STATE HAS LESS THAN 4 HERBICIDE FAMILIES

PFV - FINAL PLANT VALUE

FRV - FINAL RESIDUE VALUE

ACR - CONVERTED BY ACUTE TO CHRONIC RATIO METHOD

FCV - FINAL CHRONIC VALUE

SCV - SENSITIVE SPECIES CHRONIC VALUE

\# - -- FAILED TO MEET MINIMUM DATA CRITERIA

\#\# - -- STATE HAS LESS THAN 4 HERBICIDE FAMILIES--NATIONAL VALUE USED

\$ - -- NO ANADROMOUS SALMONID FISH IN STATE

\$\$ - -- HARDNESS EFFECT INTERCEPT VALUE

APPLY EQUATION 3.7 TO DETERMINE HARDNESS AMOUNT

MEAN AVERAGE CRITERIA

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: ZINC

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY (LOWEST TO LOW)		PROMULGATED AQUATIC LIFE CRITERIA (µg/L)		
		NAME	LC50 VALUE (µg/L)	FRESHWATER	ACUTE-CHRONIC RATIO	SALTWATER
NATIONAL	19					
ALABAMA	10					
ARIZONA	11					
ARKANSAS	10					
CALIFORNIA	11					
COLORADO	10					
CONNECTICUT	10					
DELAWARE	10					
* FLORIDA	10					
GEORGIA	11					
HAWAII	9					
IDAHO	10					
ILLINOIS	10					
INDIANA	10					
IOWA	11					
KANSAS	10					
KENTUCKY	10					
LOUISIANA	11					
MAINE	10					
MARYLAND	10					
MASSACHUSETTS	10					

TOXICANT: ZINC

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY (LOWEST TO LOW)		PROMULGATED AQUATIC LIFE CRITERIA (µg/L)		
		NAME	LC50 VALUE (µg/L)	FRESHWATER	ACUTE-CHRONIC RATIO	SALTWATER
MICHIGAN	10					
MINNESOTA	10					
* MISSISSIPPI	11					
MISSOURI	11					
MONTANA	10					
NEBRASKA	11					
NEVADA	10					
NEW HAMPSHIRE	10					
NEW JERSEY	10					
NEW MEXICO	10					
NEW YORK	10					
NORTH CAROLINA	10					
NORTH DAKOTA	11					
OHIO	10					
OKLAHOMA	10					
OREGON	10					
PENNSYLVANIA	10					
RHODE ISLAND	10					
SOUTH CAROLINA	10					
SOUTH DAKOTA	10					

FOOTNOTE:

* - WHITE AN ANCHORAMINE PER LITER

* * - STATE HAS LESS THAN 4 HERBICIDE FAMILIES--NATIONAL VALUE USED

PFV - FINAL PLANT VALUE

FRV - FINAL RESIDUE VALUE

ACR - CONVERTED BY ACUTE TO CHRONIC RATIO METHOD

FCV - FINAL CHRONIC VALUE

SCV - SENSITIVE SPECIES CHRONIC VALUE

\# - -- FAILED TO MEET MINIMUM DATA CRITERIA

\#\# - -- STATE HAS LESS THAN 4 HERBICIDE FAMILIES--NATIONAL VALUE USED

\$ - -- NO ANADROMOUS SALMONID FISH IN STATE

\$\$ - -- HARDNESS EFFECT INTERCEPT VALUE

APPLY EQUATION 3.7 TO DETERMINE HARDNESS AMOUNT

MEAN AVERAGE CRITERIA

APPENDIX C
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: ZINC

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY	FRESHWATER AQUATIC LIFE CRITERIA		
		GENUS	LOEC VALUE (ug/L)	BACKGROUND (ug/L)	ACUTE (ug/L)	CHRONIC (ug/L)
TENNESSEE	12	DAPHNIDAE	31.000	0.000	47.0000	SCV
		SALMONIDAE	31.000			
		RIVERS	31.000			
		PERCIDAE	31.000			
TEXAS	11	DAPHNIDAE	31.000	7.000	47.0000	SCV
		PHYSIDAE	31.000			
		PERCENTHYDRAE	31.000			
		PHILOMINIDAE	31.000			
UTAH	14	DAPHNIDAE	31.000	4.100	47.0000	SCV
		PERCENTHYDRAE	31.000			
		SALMONIDAE	31.000			
		PHILOMINIDAE	31.000			
VERMONT	14	DAPHNIDAE	31.000	0.41+	47.0000	SCV
		RIVERS	31.000			
		SALMONIDAE	31.000			
		PHILOMINIDAE	31.000			
VIRGINIA	15	DAPHNIDAE	31.000	0.00	47.0000	SCV
		RIVERS	31.000			
		SALMONIDAE	31.000			
		PHILOMINIDAE	31.000			
WASHINGTON	14	DAPHNIDAE	31.000	0.00	47.0000	SCV
		SALMONIDAE	31.000			
		PHILOMINIDAE	31.000			
		PERCENTHYDRAE	31.000			
WEST VIRGINIA	11	DAPHNIDAE	31.000	7.000	47.0000	SCV
		RIVERS	31.000			
		SALMONIDAE	31.000			
		PHILOMINIDAE	31.000			
WISCONSIN	12	DAPHNIDAE	31.000	1.001	47.0000	SCV
		RIVERS	31.000			
		SALMONIDAE	31.000			
		PHILOMINIDAE	31.000			
WYOMING	10	DAPHNIDAE	31.000	4.00	47.0000	SCV
		RIVERS	31.000			
		SALMONIDAE	31.000			
		PHILOMINIDAE	31.000			

FOOTNOTE:
- ug/L — UNITS IN MICROGRAMS PER LITER
- FPV — FINAL PLANT VALUE
- FRV — FINAL RESCUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- + — FAILED TO MEET MINIMUM DATA CRITERIA
- ++ — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- # — NO HARDNESS SALMONID PEN IN STATE
- $ — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 3.7 TO DETERMINE HARDNESS AMENDED CRITERIA
- BCAV AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: ALABAMA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY		FRESHWATER AQUATIC LIFE CRITERIA		
			GENUS	LOEC VALUE (ug/L)	BACKGROUND (ug/L)	ACUTE (ug/L)	CHRONIC (ug/L)
ALDRIN	NATIONAL	14	CERATOPSYCHIDAE	7.45+	0.000	+	
			AMELURIDAE	0.000			
			EPHEMERELLIDAE	0.000			
			SALMONIDAE	19.000			
	STATE	7	SALMONIDAE	4.000	1.400	+	
			CERATOPSYCHIDAE	7.451			
			PERCENTHYDRAE	19.000			
ARSENIC	NATIONAL	27	DAPHNIDAE	874.000	110.000	+	
			AMELURIDAE	1000.000			
			SALMONIDAE	1000.000			
			ICTALURIDAE	1000.000			
	STATE	2	DAPHNIDAE	1000.000	111.010	+	
			SALMONIDAE	1000.000			
			ICTALURIDAE	1000.000			
CADMIUM	NATIONAL	18	CERATOPSYCHIDAE	0.000	0.007	0.0004	ACR
			SALMONIDAE	0.000			
			SIMULIIDAE	0.000			
			PHYSIDAE	0.000			
	STATE	14	SALMONIDAE	0.000	0.010	0.0000	ACR
			PERCENTHYDRAE	0.000			
			DAPHNIDAE	0.000			
			BASSARIDAE	0.147			
CHLORDANE	NATIONAL	9	PHILOMINIDAE	0.000	1.071	+	0.0043
			PERCENTHYDRAE	19.000			
			CYPRINIDAE	19.000			
	STATE	4	BASSARIDAE	19.000	1.300	+	0.0043
			CYPRINIDAE	19.000			
			SALMONIDAE	19.000			
CHROMIUM	NATIONAL	18	CERATOPSYCHIDAE	0.711			
			BASSARIDAE	97.000	10.184		0.2915
			DAPHNIDAE	3000.000			
			PHILOMINIDAE	3000.000			
	STATE	4	PHYSIDAE	3000.000	1000.000	+	0.0
			PHYSIDAE	3000.000			
			PERCENTHYDRAE	3000.000			
COPPER	NATIONAL	30	DAPHNIDAE	6.000	0.100		0.0078
			DAPHNIDAE	6.000			
			CYPRINIDAE	6.000			
			PHYSIDAE	6.000			
	STATE	11	DAPHNIDAE	6.000	0.100		0.0045
			DAPHNIDAE	6.000			
			PHYSIDAE	6.000			
CYANIDE	NATIONAL	18	SALMONIDAE	1.000	51.000	+	4.3570
			SALMONIDAE	19.000			
			CERATOPSYCHIDAE	114.000			
	STATE	5	PERCIDAE	100.101	10.000	+	2.0000
			SALMONIDAE	37.000			
			SALMONIDAE	19.000			
			CERATOPSYCHIDAE	114.000			
DDT	NATIONAL	20	CYPRINIDAE	197.000	0.000		0.0010
			SALMONIDAE	1.000			
			PERCIDAE	1.000			
			CYPRINIDAE	1.000			
	STATE	5	BASSARIDAE	3.000	0.041	+	0.0010
			DAPHNIDAE	3.000			
			SALMONIDAE	3.000			
			PHILOMINIDAE	3.000			
DIELDRIN	NATIONAL	12	CERATOPSYCHIDAE	1.000			
			PERCIDAE	1.000	1.000	+	0.0019
			AMELURIDAE	1.000			
			SALMONIDAE	1.000			
			EPHEMERELLIDAE	1.000			
	STATE	7	SALMONIDAE	1.000	0.400	+	0.0019
			CERATOPSYCHIDAE	19.011			
			PHILOMINIDAE	19.000			
ENDOSULFAN	NATIONAL	9	CYPRINIDAE	0.000			
			SALMONIDAE	0.001	0.000	+	0.0004
			CERATOPSYCHIDAE	0.000			
			PTERONARCIDAE	0.000			
			CAYOSTOMIDAE	0.000			
	STATE	5	SALMONIDAE	0.000	0.127	+	0.0001
			CYPRINIDAE	1.270			
			CAYOSTOMIDAE	1.270			
			CERATOPSYCHIDAE	0.011			

STATE: ALABAMA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY		FRESHWATER AQUATIC LIFE CRITERIA		
			GENUS	LOEC VALUE (ug/L)	BACKGROUND (ug/L)	ACUTE (ug/L)	CHRONIC (ug/L)
ENDRIN	NATIONAL	17	SIMULIIDAE	0.000	0.001	+	0.0002
			SALMONIDAE	0.000			
			PERLIDAE	0.000			
			PERCENTHYDRAE	0.000			
	STATE	8	SALMONIDAE	0.001	0.000	+	0.0002
			CERATOPSYCHIDAE	0.000			
			PERCIDAE	0.700			
HEPTACHLOR	NATIONAL	11	CERATOPSYCHIDAE	1.011			
			PERCENTHYDRAE	1.000	0.001	+	0.0000
			SALMONIDAE	1.000			
			PERLIDAE	1.000			
	STATE	5	SALMONIDAE	1.000	0.000	+	0.0000
			SALMONIDAE	1.000			
			CERATOPSYCHIDAE	19.711			
LEAD	NATIONAL	1	DAPHNIDAE	19.000	0.007	+	0.0000
			SALMONIDAE	1.101			
			CYPRINIDAE	1.000			
	STATE	4	SALMONIDAE	1.000	0.000	+	0.0004
			CYPRINIDAE	1.000			
			CERATOPSYCHIDAE	19.711			
LINDANE	NATIONAL	19	HOSE LINAE	19.000	0.010	+	0.0014
			SALMONIDAE	1.000			
			CERATOPSYCHIDAE	19.711			
	STATE	8	CERATOPSYCHIDAE	19.011	0.701	+	0.1000
			CERATOPSYCHIDAE	19.011			
			ICTALURIDAE	19.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.000	+	0.00
			DAPHNIDAE	0.000			
			MYSTACIDAE	71.000			
	STATE	4	SALMONIDAE	344.000	0.047	+	0.00
			SALMONIDAE	19.000			
			SALMONIDAE	344.000			
NICKEL	NATIONAL	19	DAPHNIDAE	19.000	19.000	+	1.0001
			DAPHNIDAE	19.000			
			CERATOPSYCHIDAE	114.000			
	STATE	11	PHILOMINIDAE	471.217	11.010	+	2.0000
			PHILOMINIDAE	19.000			
			PERCENTHYDRAE	251.010			
			CERATOPSYCHIDAE	344.000			
			PHILOMINIDAE	471.217			
PCB	NATIONAL	9	SALMONIDAE	0.000	0.127	+	0.014
			CERATOPSYCHIDAE	0.011			
			CYPRINIDAE	0.000			
	STATE	4	SASSARIDAE	0.000	0.004	+	0.014
			SALMONIDAE	0.000			
			CERATOPSYCHIDAE	0.011			
			CYPRINIDAE	0.000			
SELENIUM	NATIONAL	19	PERCENTHYDRAE (HYPENTELIUM)	260.000			
			HYALELLIDAE FALLFISH	260.000	0.000	+	0.0000
			CYPRINIDAE	260.000			
			CYPRINIDAE	1000.000			
	STATE	3	SALMONIDAE	1000.000	0.000	+	0.7000
			HYALELLIDAE FALLFISH	260.000			
			DAPHNIDAE	1000.000			
			SALMONIDAE	1000.000			
			CYPRINIDAE	1000.000			
SILVER	NATIONAL	8	DAPHNIDAE	0.000	0.00000	+	
			COTTIDAE	0.000			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.000			
	STATE	2	COTTIDAE	0.000	0.00000	+	
			CYPRINIDAE	0.000			
			SALMONIDAE	0.001			
			SALMONIDAE	19.000			
TOXAPHENE	NATIONAL	12	CYPRINIDAE	0.000	0.000	+	0.0001
			PERCIDAE	0.000			
			ICTALURIDAE	1.000			
	STATE	7	CERATOPSYCHIDAE	0.000	1.100	+	0.0000
			CERATOPSYCHIDAE	0.000			
			CYPRINIDAE	0.000			
			SALMONIDAE	0.000			

FOOTNOTE:
- ug/L — UNITS IN MICROGRAMS PER LITER
- FPV — FINAL PLANT VALUE
- FRV — FINAL RESCUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- + — FAILED TO MEET MINIMUM DATA REQUIREMENT
- ++ — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- $ — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 3.7 TO DETERMINE HARDNESS CRITERIA
- BCAV AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: ALABAMA

TOXICANT	NUMBER OF FAMILIES TESTED	MOST SENSITIVE TREMONT FAMILY: NAME	MOST SENSITIVE TREMONT FAMILY: LC50 VALUE (*)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM	FRESHWATER AQUATIC LIFE CRITERIA: 24-HOUR	FRESHWATER AQUATIC LIFE CRITERIA: AVERAGE
2. ZINC	NATIONAL	16 DAPHNIDAE	12.737	0.145	47.0566	SCV
		PHYSIDAE	41.000			
		SALMONIDAE	42.811			
		PHILOPOTAMIDAE	52.752			
	STATE	13 DAPHNIDAE	31.000	0.380	47.0566	SCV
		SALMONIDAE	35.343			
		PHYSIDAE	41.000			
		PERICHAETHYDAE	44.564			

STATE: ARIZONA

TOXICANT	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY: NAME	MOST SENSITIVE FRESHWATER FAMILY: LC50 VALUE (*)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM	FRESHWATER AQUATIC LIFE CRITERIA: 24-HOUR	FRESHWATER AQUATIC LIFE CRITERIA: AVERAGE
ALDRIN	NATIONAL	11 CENTRARCHIDAE	7.45	3.000	*	
		GRILLIDAE	8.68			
		SPHAERIIDAE	9.68			
		GAMMARIDAE	10.00			
	STATE	10 SALMONIDAE	1.00	1.300	*	
		CENTRARCHIDAE	7.45			
		SPHAERIIDAE	9.68			
ARSENIC	NATIONAL	2 SPHAERIIDAE	360.00	113.360	*	
		GAMMARIDAE	1,000.00			
	STATE	2 SALMONIDAE	1,000.00	497.800	*	
		GAMMARIDAE	1,000.00			
AT CADMIUM	NATIONAL	16 SALMONIDAE	0.40		0.0055	ACR
		GAMMARIDAE	0.43			
		PHILOPOTAMIDAE	1.01			
	STATE	12 SALMONIDAE	0.40	0.000		ACR
		PERICHAETHYDAE	0.100			
		GAMMARIDAE	1.01			
CHLORDANE	NATIONAL	8 PLEUROCERIDAE	0.01	1.241	*	0.0043 FRV
		CENTRARCHIDAE	0.0043			
		GAMMARIDAE	0.0043			
	STATE	7 PTERONARCIDAE	0.0043	0.771	*	0.0043 FRV
		CENTRARCHIDAE	0.0043			
		GAMMARIDAE	0.0043			
CHROMIUM	NATIONAL	16 SALMONIDAE	0.00	12.164		0.025 ACR
		GAMMARIDAE	81.00			
		PHILOPOTAMIDAE	1,000.00			
	STATE	7 CENTRARCHIDAE	1,000.00	1,164.847	*	16.0 FRV
		PHYSIDAE	1,000.00			
		PERICHAETHYDAE	1,000.00			
3. COPPER	NATIONAL	20 PHYSIDAE	0.00	0.164		0.0018 FCV
		GAMMARIDAE	0.00			
		PHYSIDAE	0.00			
	STATE	12 SALMONIDAE	0.00	0.145		2.7766 FCV
		GAMMARIDAE	0.00			
		PLANORBIDAE	1.00			
CYANIDE	NATIONAL	18 SALMONIDAE	7.00	21.400	*	0.2470 ACR
		GAMMARIDAE	7.00			
		PHILOPOTAMIDAE	7.00			
	STATE	9 SALMONIDAE	7.00	25.000	*	0.2800 ACR
		GAMMARIDAE	7.00			
		CENTRARCHIDAE	7.00			
DDT	NATIONAL	20 CHIRONOMIDAE	1.00	0.000		0.0010 FRV
		SPHAERIIDAE	1.00			
		GAMMARIDAE	1.00			
	STATE	11 SALMONIDAE	1.00	0.470		0.0010 FRV
		GAMMARIDAE	1.00			
		PHILOPOTAMIDAE	1.00			
DIELDRIN	NATIONAL	16 GRILLIDAE	0.00	1.000	*	0.0019 FRV
		GAMMARIDAE	0.00			
		PHILOPOTAMIDAE	0.00			
	STATE	8 PLEUROCERIDAE	0.00	0.700	*	0.0019 FRV
		GAMMARIDAE	0.00			
		PHILOPOTAMIDAE	0.00			
ENDOSULFAN	NATIONAL	8 CHIRONOMIDAE	0.011	0.000	*	0.100 ACR
		GAMMARIDAE	0.011			
		CENTRARCHIDAE	0.011			
	STATE	6 GAMMARIDAE	0.011	0.154	*	0.0004 ACR
		CENTRARCHIDAE	0.011			
		PERLODIDAE	0.011			

FOOTNOTE	
*	= VALUES IN MICROGRAMS PER LITER
**	= FAILED TO MEET MINIMUM DATA REQUIREMENT
***	= STATE HAS LESS THAN 4 RECENT FAMILIES—NATIONAL VALUE USED
FRV	= FINAL RESIDUE VALUE
FCV	= FINAL CHRONIC VALUE
ACR	= COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
SCV	= SENSITIVE SPECIES CHRONIC VALUE
$	= HARDNESS EFFECT INTERCEPT VALUE
	APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
	AND
	24-HOUR AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: ARIZONA

TOXICANT	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY: NAME	MOST SENSITIVE FRESHWATER FAMILY: LC50 VALUE (*)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM	FRESHWATER AQUATIC LIFE CRITERIA: 24-HOUR	FRESHWATER AQUATIC LIFE CRITERIA: AVERAGE
ENDRIN	NATIONAL	17 GASTROPODTIDAE	0.43	0.004	*	0.0002 FRV
		SALMONIDAE	0.43			
		PERLIDAE	0.43			
	STATE	11 PTERONARCIDAE	0.43	0.130	*	0.0002 FRV
		SALMONIDAE	0.43			
		PERLIDAE	0.43			
HEPTACHLOR	NATIONAL	16 PTERONARCIDAE	0.00	0.01	*	0.0038 FRV
		PHILOPOTAMIDAE	1.00			
		PERLIDAE	1.00			
	STATE	5 PTERONARCIDAE	1.00	0.140	*	0.0038 FRV
		PERLIDAE	1.00			
		SALMONIDAE	1.00			
49. LEAD	NATIONAL	1 CENTRARCHIDAE	54.00	0.07	*	0.0028 FCV
		GAMMARIDAE	1.01			
		DAPHNIDAE	1.00			
	STATE	3 CENTRARCHIDAE	65,750	0.354	*	0.0028 FCV
		DAPHNIDAE	65,750			
		SALMONIDAE	65,750			
LINDANE	NATIONAL	15 CENTRARCHIDAE	14.00	0.210	*	0.0224 ACR
		GRILLIDAE	14.00			
		SALMONIDAE	14.00			
	STATE	9 SALMONIDAE	14.00	0.110	*	0.4000 ACR
		CENTRARCHIDAE	14.00			
		GAMMARIDAE	49.00			
MERCURY	NATIONAL	2 DAPHNIDAE	0.00	0.00	*	0.00 FRV
		GAMMARIDAE	0.00			
	STATE	2 DAPHNIDAE	0.00	0.00	*	0.0021 ACR
		GAMMARIDAE	0.00			
48. NICKEL	NATIONAL	19 SALMONIDAE	89.00	80.914	*	0.000 ACR
		SPHAERIIDAE	89.00			
		PHILOPOTAMIDAE	89.00			
	STATE	11 SALMONIDAE	89.00	21.616	*	2.0000 ACR
		PERICHAETHYDAE	89.00			
		CENTRARCHIDAE	89.00			
PCB	NATIONAL	5 SALMONIDAE	0.00	0.00	*	0.014 FRV
		CENTRARCHIDAE	0.00			
		PHYSIDAE	0.00			
	STATE	4 SALMONIDAE	0.00	0.004	*	0.014 FRV
		CENTRARCHIDAE	0.00			
		PHYSIDAE	0.00			
SELENIUM	NATIONAL	10 ATHERURIDAE (FAMILY)	0.00	0.00	*	0.000 ACR
		DAPHNIDAE	0.00			
		CENTRARCHIDAE	0.00			
	STATE	5 ATHERURIDAE (FAMILY)	0.00	71.43	*	10.709 ACR
		DAPHNIDAE	0.00			
		SALMONIDAE	0.00			
2. SILVER	NATIONAL	5 DAPHNIDAE	0.00	0.00000	*	
		CYPRINIDAE	0.00			
	STATE	3 CENTRARCHIDAE	0.00			
		CYPRINIDAE	0.00			
		SALMONIDAE	0.00			
TOXAPHENE	NATIONAL	12 CENTRARCHIDAE	0.12	0.00	*	0.0007 ACR
		PERLIDAE	1.00			
		PTERONARCIDAE	1.00			
	STATE	7 ICTALURIDAE	1.00			
		CENTRARCHIDAE	1.00	1.100	*	0.0165 ACR
		QUIVIRIDAE	4.00			
		CYPRINIDAE	4.00			
		SALMONIDAE	5.00			

FOOTNOTE	
*	= VALUES IN MICROGRAMS PER LITER
**	= FAILED TO MEET MINIMUM DATA REQUIREMENT
***	= STATE HAS LESS THAN 4 RECENT FAMILIES—NATIONAL VALUE USED
FRV	= FINAL RESIDUE VALUE
FCV	= FINAL CHRONIC VALUE
ACR	= COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
SCV	= SENSITIVE SPECIES CHRONIC VALUE
$	= HARDNESS EFFECT INTERCEPT VALUE
	APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
	AND
	24-HOUR AVERAGE CRITERIA

STATE: ARIZONA

TOXICANT	NUMBER OF FAMILIES TESTED	MOST SENSITIVE FRESHWATER FAMILY: NAME	MOST SENSITIVE FRESHWATER FAMILY: LC50 VALUE (*)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM	FRESHWATER AQUATIC LIFE CRITERIA: 24-HOUR	FRESHWATER AQUATIC LIFE CRITERIA: AVERAGE
2. ZINC	NATIONAL	16 DAPHNIDAE	12.737	0.145	47.0566	SCV
		PHYSIDAE	41.000			
		SALMONIDAE	42.811			
		PHILOPOTAMIDAE	52.752			
	STATE	13 DAPHNIDAE	31.000	0.380	47.0566	SCV
		SALMONIDAE	35.343			
		PHYSIDAE	41.000			
		PERICHAETHYDAE	44.564			

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: ARKANSAS

PERMANENT	NUMBER OF FAMILIES TESTED		GENUS OR SPECIES NAME	FAMILY LC50 VALUE (++)	PRESENTATION ACUTE LIFE CRITERIA: NUMERICAL (++)	SLOPE (++)	CHRONIC LIFE CRITERIA: APPLICABLE (+++)
ALDRIN	NATIONAL	14	OSMYNUS/HOMOAS	7.41	3.00	*	
			ABELLIDAE	8.00			
			BRACHYURA/LEAE	8.00			
			SALMONIDAE	8.00			
	STATE	8	OSMYNUS/HOMOAS	7.41	2.10	*	
			ABELLIDAE	8.00			
			AMBOLLIDAE	8.00			
			CYPRINIDAE	8.30			
ARSENIC	NATIONAL	8	BAMANIDAE	970.00	113.00	*	
			DAPHNIDAE	1,700.00			
			SALMONIDAE	1,110.00			
			ICTALURIDAE	1,840.00			
	STATE	4	BAMANIDAE	970.00	45.97	*	
			DAPHNIDAE	994.10			
			CITALURIDAE	1,840.00			
			CYPRINODONTIDAE	2,000.00			
BY CADMIUM	NATIONAL	16	SALMONIDAE	0.00	0.00	0.00	ACR
			BAMANIDAE	0.00			
			AMBOLLIDAE	1.10			
			PHYSIDAE	2.00			
	STATE	12	DAPHNIDAE	0.00	0.01	0.00	ACR
			BAMANIDAE	1.41			
			PHYSIDAE	2.00			
CHLORDANE	NATIONAL	5	PHILOMIDAE	0.00	1.24	0.00	FAV
			PTERONARCIDAE	0.00			
			CYPRINIDAE	0.00			
	STATE	3	BAMANIDAE	0.00	1.14	0.00	FAV
			LYMNAEIDAE	0.00			
			TRITOMURIDAE	0.71			
CHROMIUM	NATIONAL	16	BAMANIDAE	47.00	12.00	0.00	ACR
			DAPHNIDAE	0.00			
			PHILOMIDAE	0.00			
	STATE	8	BAMANIDAE	47.00	0.00	0.00	ACR
			PHYSIDAE	0.00			
COPPER	NATIONAL	30	DAPHNIDAE	0.00	0.00	0.00	FCV
			BAMANIDAE	0.00			
			PHYSIDAE	0.00			
	STATE	18	DAPHNIDAE	0.00	0.01	0.00	FCV
			CHIRONOMIDAE	0.00			
			TUBIFICIDAE	0.00			
CYANIDE	NATIONAL	16	SALMONIDAE	0.00	21.00	0.00	ACR
			DAPHNIDAE	0.00			
			CHIRONOMIDAE	0.00			
	STATE	8	PERCIDAE	0.00	22.00	0.00	ACR
			CENTRARCHIDAE	0.00			
			CYPRINIDAE	0.00			
DDT	NATIONAL	28	DAPHNIDAE	0.00	0.00	0.00	FAV
			BAMANIDAE	0.00			
			BRACHYURA	0.00			
	STATE	8	DAPHNIDAE	0.00	0.00	0.00	FAV
			ASTACIDAE	0.00			
			PHILADELPHIDAE	0.00			
DIELDRIN	NATIONAL	12	PERCIDAE	0.00	1.00	0.00	FAV
			ABELLIDAE	0.00			
			SALMONIDAE	0.00			
	STATE	6	ABELLIDAE	0.00	1.00	0.00	FAV
			PHILADELPHIDAE	0.00			
			CYPRINIDAE	0.00			
ENDOSULFAN	NATIONAL	8	SALMONIDAE	0.00	0.00	0.00	ACR
			CYPRINIDAE	0.00			
			CYPRINODONTIDAE	0.00			
	STATE	4	CATOSTOMIDAE	0.00	0.00	0.00	ACR
			CYPRINIDAE	0.00			
			CENTRARCHIDAE	0.00			
			CENTRARCHIDAE (UNKNOWN)	0.00			

STATE: ARKANSAS

PERMANENT	NUMBER OF FAMILIES TESTED		GENUS OR SPECIES NAME	FAMILY LC50 VALUE (++)	PRESENTATION ACUTE LIFE CRITERIA: NUMERICAL (++)	SLOPE (++)	CHRONIC LIFE CRITERIA: APPLICABLE (+++)
ENDRIN	NATIONAL	17	GASTROSTEIDAE	0.00	0.00	*	
			HELENA	0.00			
			PERCIDAE	0.00			
	STATE	10	CYPRINIDAE	0.70	0.00	*	
			CYPRINIDAE	0.70			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.00	0.01	*	
			PALAEMONIDAE	1.00			
			HELENA	2.00			
	STATE	3	SALMONIDAE	0.00	0.00	*	
			PALAEMONIDAE	1.00			
			ASTACIDAE	1.00			
			CENTRARCHIDAE	31.71			
LEAD	NATIONAL	7	CENTRARCHIDAE	0.00	0.01	*	
			BAMANIDAE	0.00			
	STATE	4	CENTRARCHIDAE	0.00	0.00	*	
			CYPRINIDAE	45.70			
			CENTRARCHIDAE	50.47			
LINDANE	NATIONAL	10	PHILADELPHIDAE	0.00	0.00	*	
			HELENA	0.00			
			SALMONIDAE	0.00			
	STATE	3	CENTRARCHIDAE	0.00	0.00	*	
			CYPRINIDAE	0.00			
			CENTRARCHIDAE	50.47			
MERCURY	NATIONAL	3	BAMANIDAE	0.00	0.00	*	
			BAMANIDAE	0.00			
	STATE	2	BAMANIDAE	0.00	0.00	*	
			PHILADELPHIDAE	0.00			
			PHILADELPHIDAE	50.47			
NICKEL	NATIONAL	16	DAPHNIDAE	0.00	0.00	0.00	FCV
			HELENA	0.00			
			PHILADELPHIDAE	0.00			
	STATE	10	DAPHNIDAE	0.00	0.00	0.00	FCV
			CHIRONOMIDAE	0.00			
			CHIRONOMIDAE	0.00			
PCBS	NATIONAL	5	DAPHNIDAE	0.00	0.00	*	
			BAMANIDAE	0.00			
			CYPRINIDAE	0.00			
	STATE	4	BAMANIDAE	0.00	0.00	*	
			CYPRINIDAE	0.00			
			CYPRINIDAE	0.00			
SELENIUM	NATIONAL	10	ACIPENSERIDAE/POLYODONTIDAE	0.00	0.00	*	
			HALIELLIDAE/PALAEMONIDAE	0.00			
			BAMANIDAE	0.00			
			CYPRINODONTIDAE	0.00			
	STATE	7	HALIELLIDAE/PALAEMONIDAE	0.00	0.00	*	
			BAMANIDAE	0.00			
			BAMANIDAE	0.00			
SILVER	NATIONAL	5	BAMANIDAE	0.00	0.00	*	
			CYPRINIDAE	0.00			
	STATE	3	CYPRINIDAE	0.00	0.00	*	
			CYPRINIDAE	0.00			
			CYPRINIDAE	0.00			
TOXAPHENE	NATIONAL	10	PERCIDAE	0.00	0.00	*	
			HELENA	1.00			
			CYPRINIDAE	0.00			
	STATE	3	SALMONIDAE	0.00	0.00	*	
			CYPRINIDAE	0.00			
			CENTRARCHIDAE	0.00			

FOOTNOTE
- * — UNITS IN MICROGRAMS PER LITER
- ** — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- FAV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- + — FAILED TO MEET MINIMUM DATA REQUIREMENT
- ++ — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- S — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
- M — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: ARKANSAS

PERMANENT	NUMBER OF FAMILIES TESTED		GENUS OR SPECIES NAME	FAMILY LC50 VALUE (++)	PRESENTATION ACUTE LIFE CRITERIA: NUMERICAL (++)	SLOPE (++)	CHRONIC LIFE CRITERIA: APPLICABLE (+++)
X ZINC	NATIONAL	15	GAMMARIDAE	12.70	4.16	47.000	SCV
			PHYSIDAE	21.00			
			SALMONIDAE	45.91			
	STATE	10	PHILOMIDAE	32.70			
			CHIRONIDAE	21.00	4.00	47.000	SCV
			PHYSIDAE	21.00			
			PHILOMIDAE	32.70			
			CHIRONIDAE	205.00			

STATE: CALIFORNIA

PERMANENT	NUMBER OF FAMILIES TESTED		GENUS OR SPECIES NAME	FAMILY LC50 VALUE (++)	PRESENTATION ACUTE LIFE CRITERIA: NUMERICAL (++)	SLOPE (++)	CHRONIC LIFE CRITERIA: APPLICABLE (+++)
ALDRIN	NATIONAL	14	OSMYNUS/HOMOAS	7.41	3.00	*	
			ABELLIDAE	8.00			
			BRACHYURA/LEAE	8.00			
			SALMONIDAE	8.00			
	STATE	8	OSMYNUS/HOMOAS	7.41	2.10	*	
			ABELLIDAE	8.00			
			AMBOLLIDAE	8.00			
			CYPRINIDAE	8.30			
ARSENIC	NATIONAL	8	BAMANIDAE	970.00	113.00	*	
			DAPHNIDAE	1,700.00			
			SALMONIDAE	1,110.00			
			ICTALURIDAE	1,840.00			
	STATE	4	BAMANIDAE	970.00	45.97	*	
			DAPHNIDAE	994.10			
			CITALURIDAE	1,840.00			
			CYPRINODONTIDAE	2,000.00			
BY CADMIUM	NATIONAL	16	SALMONIDAE	0.00	0.00	0.00	ACR
			BAMANIDAE	0.00			
			AMBOLLIDAE	1.10			
			PHYSIDAE	2.00			
	STATE	12	DAPHNIDAE	0.00	0.01	0.00	ACR
			BAMANIDAE	1.41			
			PHYSIDAE	2.00			
CHLORDANE	NATIONAL	5	PHILOMIDAE	0.00	1.24	0.00	FAV
			PTERONARCIDAE	0.00			
			CYPRINIDAE	0.00			
	STATE	3	BAMANIDAE	0.00	1.14	0.00	FAV
			LYMNAEIDAE	0.00			
			TRITOMURIDAE	0.71			
CHROMIUM	NATIONAL	16	BAMANIDAE	47.00	12.00	0.00	ACR
			DAPHNIDAE	0.00			
			PHILOMIDAE	0.00			
	STATE	8	BAMANIDAE	47.00	0.00	0.00	ACR
			PHYSIDAE	0.00			
COPPER	NATIONAL	30	DAPHNIDAE	0.00	0.00	0.00	FCV
			BAMANIDAE	0.00			
			PHYSIDAE	0.00			
	STATE	18	DAPHNIDAE	0.00	0.01	0.00	FCV
			CHIRONOMIDAE	0.00			
			TUBIFICIDAE	0.00			
CYANIDE	NATIONAL	16	SALMONIDAE	0.00	21.00	0.00	ACR
			DAPHNIDAE	0.00			
			CHIRONOMIDAE	0.00			
	STATE	8	PERCIDAE	0.00	22.00	0.00	ACR
			CENTRARCHIDAE	0.00			
			CYPRINIDAE	0.00			
DDT	NATIONAL	28	DAPHNIDAE	0.00	0.00	0.00	FAV
			BAMANIDAE	0.00			
			BRACHYURA	0.00			
	STATE	8	DAPHNIDAE	0.00	0.00	0.00	FAV
			ASTACIDAE	0.00			
			PHILADELPHIDAE	0.00			
DIELDRIN	NATIONAL	12	PERCIDAE	0.00	1.00	0.00	FAV
			ABELLIDAE	0.00			
			SALMONIDAE	0.00			
	STATE	6	ABELLIDAE	0.00	1.00	0.00	FAV
			PHILADELPHIDAE	0.00			
			CYPRINIDAE	0.00			
ENDOSULFAN	NATIONAL	8	SALMONIDAE	0.00	0.00	0.00	ACR
			CYPRINIDAE	0.00			
			CYPRINODONTIDAE	0.00			
	STATE	4	CATOSTOMIDAE	0.00	0.00	0.00	ACR
			CYPRINIDAE	0.00			
			CENTRARCHIDAE	0.00			

FOOTNOTE
- * — UNITS IN MICROGRAMS PER LITER
- ** — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- FAV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- + — FAILED TO MEET MINIMUM DATA REQUIREMENT
- ++ — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- S — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
- M — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

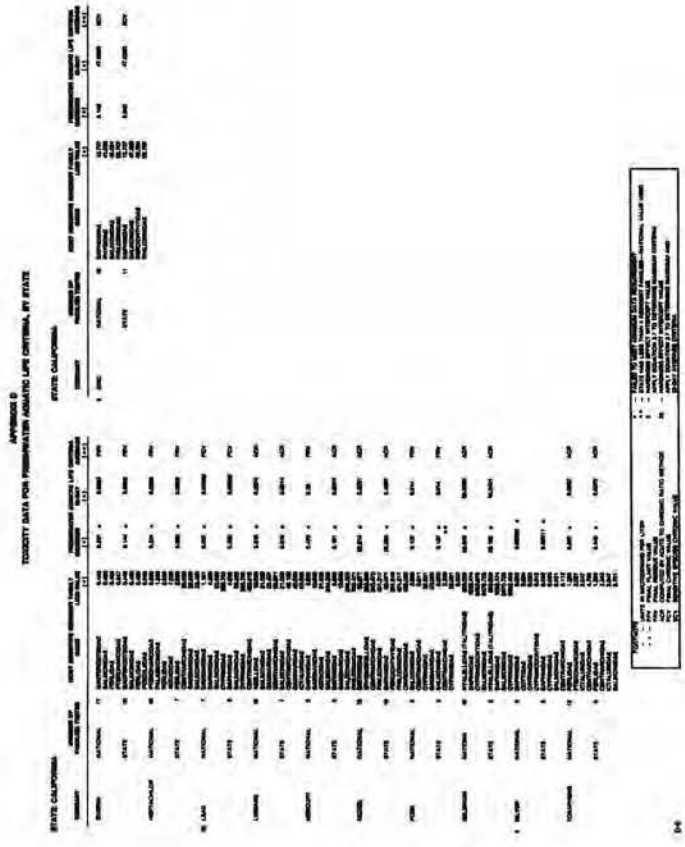
STATE: COLORADO

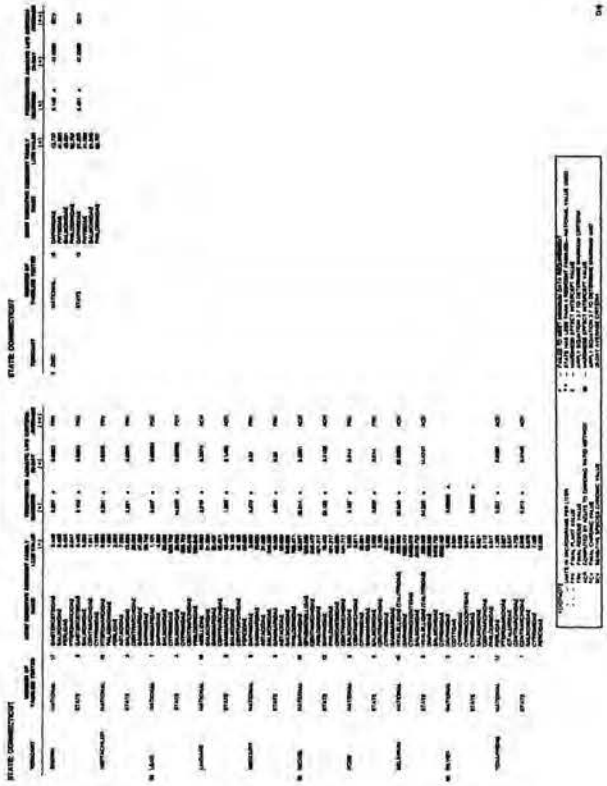
TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY	LC50 VALUE (++)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (++)		30-DAY (++)	AVERAGE (+++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.481	3.000	*		
			ABELLIDAE	9.884				
			EPHEMERELLIDAE	9.000				
			SALMONIDAE	16.000				
	STATE	8	SALMONIDAE	4.300	1.400	*		
			CENTRARCHIDAE	7.481				
			EPHEMERELLIDAE	9.000				
			CYPRINIDAE	16.000				
ARSENIC	NATIONAL	8	DAPHNIIDAE	855.000	110.000	*		
			DAPHNIIDAE	1784.345				
			SALMONIDAE	14100.043				
			ETALLIIDAE	19457.420				
	STATE	6	DAPHNIIDAE	1784.345	457.000	*		
			SALMONIDAE	10000.000				
			ETALLIIDAE	19457.420				
			CENTRARCHIDAE	19494.000				
66 CADMIUM	NATIONAL	16	SALMONIDAE	6.848	3.657	*	5.000N	ACR
			DAPHNIIDAE	9.400				
			SIMULIIDAE	1.147				
			PHYSIDAE	2.000				
	STATE	10	SALMONIDAE	9.841	0.912		6.000E	ACR
			DAPHNIIDAE	9.400				
			SIMULIIDAE	1.147				
			PHYSIDAE	2.000				
CHLORDANE	NATIONAL	9	PALAEMONIDAE	6.000	1.874	*	0.0043	FRV
			PTERONARCIDAE	16.000				
			CYPRINIDAE	83.000				
			SIMULIIDAE	88.340				
	STATE	9	PTERONARCIDAE	16.000	8.000	*	0.0043	FRV
			CYPRINIDAE	83.000				
			SALMONIDAE	88.401				
			SIMULIIDAE	88.340				
CHROMIUM	NATIONAL	16	SIMULIIDAE	57.000	16.104		0.0078	ACR
			DAPHNIIDAE	6666.979				
			PHILOMIDIDAE	6666.979				
			PHYSIDAE	24000.000				
	STATE	6	DAPHNIIDAE	6666.979	791.000	*	16.0	FRV
			PHILOMIDIDAE	6666.979				
			PHYSIDAE	24000.000				
			CYPRINIDAE	67491.672				
6 COPPER	NATIONAL	28	DAPHNIIDAE	6.000	9.164		6.4825N	FCV
			CHIRONOMIDAE	9.750				
			PHYSIDAE	0.000				
			TUBIFICIDAE	1.240				
	STATE	10	DAPHNIIDAE	6.000	5.165		5.6000	FCV
			CHIRONOMIDAE	9.750				
			PHYSIDAE	0.000				
			SALMONIDAE	1.200				
CYANIDE	NATIONAL	10	SALMONIDAE	76.797	31.420	*	4.2472	ACR
			DAPHNIIDAE	83.000				
			CENTRARCHIDAE	114.516				
	STATE	9	PERCIDAE	126.121				
			SALMONIDAE	57.000	16.000	*	2.0000	ACR
			DAPHNIIDAE	83.000				
			CENTRARCHIDAE	114.516				
DDT	NATIONAL	30	CYPRINIDAE	307.000				
			DAPHNIIDAE	1.200	0.000		0.0010	FRV
			PERCIDAE	1.600				
			ISOCIDAE	1.700				
			GAMMARIDAE	3.231				
	STATE	10	DAPHNIIDAE	1.200	0.510	*	0.0010	FRV
			GAMMARIDAE	3.000				
			CENTRARCHIDAE	3.000				
			SALMONIDAE	4.570				
DIELDRIN	NATIONAL	12	YOSOCJIDAE	4.000	1.000	*	0.0019	FRV
			ABELLIDAE	5.000				
			SALMONIDAE	8.400				
			EPHEMERELLIDAE	9.000				
	STATE	9	SALMONIDAE	2.400	0.002	*	0.0019	FRV
			EPHEMERELLIDAE	9.000				
			CENTRARCHIDAE	10.611				
			PERLIDAE	34.000				
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.854	0.200	*	0.1804	ACR
			CYPRINIDAE	1.270				
			PTERONARCIDAE	2.300				
			CATOSTOMIDAE	3.340				
	STATE	5	SALMONIDAE	0.854	0.100	*	0.1002	ACR
			CYPRINIDAE	1.270				
			PTERONARCIDAE	2.300				
			CATOSTOMIDAE	3.340				

STATE: COLORADO

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY	LC50 VALUE (++)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (++)		30-DAY (++)	AVERAGE (+++)
ENDRIN	NATIONAL	17	GASTEROSTEIDAE	0.440	0.091	*	0.0023	FRV
			SALMONIDAE	0.450				
			PERLIDAE	0.450				
			PTERONARCIDAE	0.847				
	STATE	9	SALMONIDAE	0.300	0.112	*	0.0023	FRV
			PERLIDAE	0.847				
			PTERONARCIDAE	0.847				
			CENTRARCHIDAE	1.011				
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.351	*	0.0038	FRV
			PALAEMONIDAE	1.000				
			PERLIDAE	1.000				
			ASTACIDAE	7.000				
	STATE	7	PTERONARCIDAE	0.000	0.125	*	0.0038	FRV
			PERLIDAE	1.000				
			SALMONIDAE	13.000				
			CENTRARCHIDAE	30.000				
LEAD	NATIONAL	7	GAMMARIDAE	1.191	0.537	*	0.4658	FCV
			DAPHNIIDAE	1.000				
			SALMONIDAE	35.000				
			CYPRINIDAE	365.792				
	STATE	6	DAPHNIIDAE	1.000	4.300	*	0.0000	FCV
			SALMONIDAE	35.000				
			CYPRINIDAE	365.792				
			CENTRARCHIDAE	365.792				
LINDANE	NATIONAL	16	ABELLIDAE	16.000	3.210	*	0.3074	ACR
			SALMONIDAE	21.000				
			GAMMARIDAE	21.000				
			CENTRARCHIDAE	66.971				
	STATE	7	SALMONIDAE	21.000	2.300	*	0.1600	ACR
			CENTRARCHIDAE	66.971				
			ETALLIIDAE	66.000				
MERCURY	NATIONAL	9	DAPHNIIDAE	0.000	0.470	*	0.20	FRV
			GAMMARIDAE	10.000				
			ASTACIDAE	74.000				
			SALMONIDAE	344.000				
	STATE	5	SALMONIDAE	0.000	0.101	*	0.0027	ACR
			GAMMARIDAE	10.000				
			SALMONIDAE	344.000				
			PHILOMIDIDAE	788.471				
59 NICKEL	NATIONAL	10	DAPHNIIDAE	35.972	35.914	*	3.3001	ACR
			EPHEMERELLIDAE	59.000				
			CENTRARCHIDAE	345.473				
			PHILOMIDIDAE	491.217				
	STATE	6	DAPHNIIDAE	35.972	21.345	*	3.3000	ACR
			PHILOMIDIDAE	491.217				
			CHIRONOMIDAE	500.000				
			CENTRARCHIDAE	668.391				
PCBS	NATIONAL	9	SALMONIDAE	2.000	0.137	*	0.014	FRV
			CENTRARCHIDAE	5.011				
			CYPRINIDAE	32.851				
			GAMMARIDAE	35.000				
	STATE	3	SALMONIDAE	2.000	0.137	*	0.014	FRV
			CENTRARCHIDAE	5.011		**		
			CYPRINIDAE	32.851				
				0.000				
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	260.000	80.845	*	32.0000	ACR
			DAPHNIIDAE	1000.474				
			CYPRINODONTIDAE	1000.000				
			SALMONIDAE	1000.000				
	STATE	7	HYALELLIDAE (TALITRIDAE)	260.000	34.897	*	14.0004	ACR
			DAPHNIIDAE	1000.474				
			SALMONIDAE	1000.000				
			CYPRINIDAE	1000.000				
5 SILVER	NATIONAL	8	DAPHNIIDAE	0.000	0.00000	*		
			COTTIDAE	0.000				
			CYPRINIDAE	0.000				
			CYPRINODONTIDAE	0.012				
	STATE	6	DAPHNIIDAE	0.000	0.40000	*		
			COTTIDAE	0.000				
			CYPRINIDAE	0.000				
			SALMONIDAE	0.000				
TOXAPHENE	NATIONAL	12	PERLIDAE	1.000	0.207	*	0.0037	ACR
			PTERONARCIDAE	2.827				
			ETALLIIDAE	3.547				
			CENTRARCHIDAE	4.730				
	STATE	4	PERLIDAE	1.000	0.000	*	0.0000	ACR
			PTERONARCIDAE	2.827				
			CENTRARCHIDAE	3.000				
			ICTALURIDAE	3.547				

FOOTNOTE
- * — FAILED TO MEET MINIMUM DATA REQUIREMENT
- ** — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- — — UNITS IN MICROGRAMS PER LITER
- FRV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- S — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
- M — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 3.7 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA





APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: COLORADO

TERMINANT	NUMBER OF FAMILIES VERIFIED		GENUS SENSITIVE RESIDENT FAMILY GENUS	FAMILY LEAD VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA DURATION (ug/L)		30-DAY (ug/L)		AVERAGE (ug/L)
ZINC	NATIONAL	16	CAPNIIDAE	13.757	0.145	x	47.0000		SCV
			PHYSIDAE	21.000					
			SALMONIDAE	48.251					
			PHILOPOTAMIDAE	55.757					
	STATE	16	CAPNIIDAE	13.757	0.145	x	47.0000		SCV
			SALMONIDAE	39.9915					
			PHYSIDAE	41.000					
			PHILOPOTAMIDAE	55.757					

STATE: CONNECTICUT

TERMINANT	NUMBER OF FAMILIES VERIFIED		GENUS SENSITIVE RESIDENT FAMILY GENUS	FAMILY LEAD VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA DURATION (ug/L)		30-DAY (ug/L)		AVERAGE (ug/L)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.201	3.000	x			
			ASELLIDAE						
			EPHEMERELLIDAE						
			PHILOPOTAMIDAE						
	STATE	3	SALMONIDAE		1.500	x			
			EPHEMERELLIDAE						
			PHILOPOTAMIDAE						
ARSENIC	NATIONAL	0	ASELLIDAE		116.000	x			
			CAPNIIDAE						
			SALMONIDAE						
	STATE	0	SALMONIDAE		141.000	x			
			CAPNIIDAE						
			PHILOPOTAMIDAE						
29 CADMIUM	NATIONAL	10	SALMONIDAE		0.027	x	0.0004		ACR
			CAPNIIDAE						
			PHYSIDAE						
	STATE	10	SALMONIDAE		0.040		0.0000		ACR
			CAPNIIDAE						
			PHILOPOTAMIDAE						
CHLORDANE	NATIONAL	3	PHILOPOTAMIDAE		1.201	x	0.0043		FCV
			PHYSIDAE						
	STATE	4	ASELLIDAE		7.201	x	0.0043		FCV
			SALMONIDAE						
			CAPNIIDAE						
CHROMIUM	NATIONAL	10	CAPNIIDAE		32.304		0.2575		ACR
			SALMONIDAE						
	STATE	0	PHYSIDAE		1000.000	x	10.0		FPV
			PHYSIDAE						
3 COPPER	NATIONAL	20	CAPNIIDAE		6.104		0.4000		FCV
			PHYSIDAE						
	STATE	15	CAPNIIDAE		5.105		7.4016		FCV
			PHYSIDAE						
CYANIDE	NATIONAL	12	SALMONIDAE		71.420	x	4.3472		ACR
			CAPNIIDAE						
	STATE	3	SALMONIDAE		55.000	x	3.5504		ACR
			CENTRARCHIDAE						
DDT	NATIONAL	20	PHYSIDAE		0.000		0.0010		FPV
			CAPNIIDAE						
	STATE	7	CAPNIIDAE		0.310	x	0.0010		FPV
			PHYSIDAE						
ENDRIN	NATIONAL	10	ASELLIDAE		1.000	x	0.0010		FPV
			CAPNIIDAE						
	STATE	0	EPHEMERELLIDAE		0.471	x	0.0010		FPV
			CENTRARCHIDAE						
			CYPRINIDAE						
ENDOSULFAN	NATIONAL	9	SALMONIDAE		0.200	x	0.1004		ACR
			CYPRINIDAE						
			PERLODIDAE						
	STATE	6	SALMONIDAE		0.140	x	0.0700		ACR
			CYPRINIDAE						
			CENTRARCHIDAE						
			CENTRARCHIDAE						

FOOTNOTE
- — UNITS IN MICROGRAMS PER LITER
FPV — FINAL PLANT VALUE
FRV — FINAL RESIDUE VALUE
ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV — FINAL CHRONIC VALUE
SCV — SENSITIVE SPECIES CHRONIC VALUE

+ — FAILED TO MEET MINIMUM DATA REQUIREMENT
++ — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
I — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
SS — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: DELAWARE

TREATMENT	SOURCE OF FAMILIES TESTED		GENUS GROUPING RECIPIENT FAMILY NAME	FAMILY LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (ug/L)		
ALDRIN	NATIONAL	14	CRUSTACEANS	1,100	3.000	*	
			ARTHROPODS	2,600			
			PLATYHELMINTHES	6,000			
	STATE	3	SALMONIDS	1,800	1.700	*	
			PLATYHELMINTHES	1,800			
			ARTHROPODS	5,100			
ENDRIN	NATIONAL	9	CRUSTACEANS	0.0140	110,000	*	
			SALMONIDS	0.0180			
			PLATYHELMINTHES	0.0200			
	STATE	3	CRUSTACEANS	0.0140	111,000	*	
			SALMONIDS	0.0180			
			PLATYHELMINTHES	0.0200			
M. CADMIUM	NATIONAL	10	CRUSTACEANS	0.0000	0.007	0.0041	ACR
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	17	CRUSTACEANS	0.0000	0.000	0.0041	ACR
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
CHLORIDE	NATIONAL	3	CRUSTACEANS	0.0000	1,974	*	0.0000
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	1	CRUSTACEANS	0.0000	2,100	*	0.0000
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
CHROMIUM	NATIONAL	10	CRUSTACEANS	0.0000	16.04	0.2977	2000
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	2	CRUSTACEANS	0.0000	1,000.00	18.0	PPC
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
M. COPPER	NATIONAL	20	CRUSTACEANS	0.0000	0.760	0.0000	PCH
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	18	CRUSTACEANS	0.0000	0.140	0.0000	PCH
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
CYANIDE	NATIONAL	10	CRUSTACEANS	0.0000	21.000	0.2477	ACR
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	1	CRUSTACEANS	0.0000	21.000	0.2000	ACR
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
DDT	NATIONAL	20	CRUSTACEANS	0.0000	0.000	0.0000	PRI
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	3	CRUSTACEANS	0.0000	0.001	0.0000	PRI
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
DIELDRIN	NATIONAL	10	CRUSTACEANS	0.0000	1.000	0.0000	PRI
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	2	CRUSTACEANS	0.0000	0.000	0.0000	PRI
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
ENDOSULFAN	NATIONAL	5	CRUSTACEANS	0.0000	0.000	0.1000	ACR
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	1	CRUSTACEANS	0.0000	0.141	0.0001	ACR
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			

STATE: DELAWARE

TREATMENT	SOURCE OF FAMILIES TESTED		GENUS GROUPING RECIPIENT FAMILY NAME	FAMILY LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (ug/L)		
ENDRIN	NATIONAL	11	CRUSTACEANS	0.0000	0.007	0.0000	PRI
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	10	CRUSTACEANS	0.0000	0.001	0.0000	PRI
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
HEPTACHLOR	NATIONAL	10	CRUSTACEANS	0.0000	0.001	0.0000	PRI
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	3	CRUSTACEANS	0.0000	0.001	0.0000	PRI
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
M. LEAD	NATIONAL	7	CRUSTACEANS	0.0000	0.007	0.0000	PCH
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	4	CRUSTACEANS	0.0000	25.000	0.0000	PCH
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
LINDANE	NATIONAL	10	CRUSTACEANS	0.0000	0.210	0.0000	ACR
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	7	CRUSTACEANS	0.0000	1.000	0.1100	ACR
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
MERCURY	NATIONAL	9	CRUSTACEANS	0.0000	0.012	0.0000	PRI
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	2	CRUSTACEANS	0.0000	0.000	0.0000	PRI
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
M. NICKEL	NATIONAL	8	CRUSTACEANS	0.0000	0.000	0.0000	PCH
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	10	CRUSTACEANS	0.0000	0.000	0.0000	ACR
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
PCB	NATIONAL	3	CRUSTACEANS	0.0000	0.000	0.0000	PRI
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	1	CRUSTACEANS	0.0000	0.000	0.0000	PRI
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
SELENIUM	NATIONAL	10	CRUSTACEANS	0.0000	0.000	0.0000	PRI
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	4	CRUSTACEANS	0.0000	0.000	0.0000	PRI
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
TOXAPHENE	NATIONAL	10	CRUSTACEANS	0.0000	0.000	0.0000	ACR
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	3	CRUSTACEANS	0.0000	0.000	0.0000	ACR
			SALMONIDS	0.0000			
			PLATYHELMINTHES	0.0000			

FOOTNOTES:

- * = MAY BE INCREASED PER LITER
- ** = FINAL PLANT VALUE
- *** = FINAL RANGE VALUE
- ACR = COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV = FINAL CHRONIC VALUE
- SCV = SENSITIVE SPECIES CHRONIC VALUE

- # = FAILED TO MEET MINIMUM DATA REQUIREMENT
- ## = STATE HAS LESS THAN 3 RECIPIENT FAMILIES—NATIONAL VALUE USED
- H = HARDNESS EFFECT INTERCEPT VALUE
- S = APPLY EQUATION (-)* TO DETERMINE MAXIMUM CRITERIA
- W = HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION (-)* TO DETERMINE MAXIMUM AND 24-HOUR AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: DELAWARE

TREATMENT	SOURCE OF FAMILIES TESTED		GENUS GROUPING RECIPIENT FAMILY NAME	FAMILY LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (ug/L)		
ZINC	NATIONAL	15	DAPHNIDAE	42.737	0.140	17.0000	SCV
			PHYSIDAE	91.000			
			SALMONIDAE	49.991			
			PHILOMENIDAE	28.757			
	STATE	13	DAPHNIDAE	91.000	0.007	41.0000	SCV
			SALMONIDAE	94.000			
			PHYSIDAE	91.000			
			PHILOMENIDAE	28.757			

STATE: FLORIDA

TREATMENT	SOURCE OF FAMILIES TESTED		GENUS GROUPING RECIPIENT FAMILY NAME	FAMILY LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (ug/L)		
ALDRIN	NATIONAL	14	CENTRARCHIDAE	2.80	3.000	*	
			ARELIDAE	3.600			
			SALMONIDAE	4.000			
	STATE	8	SALMONIDAE	3.600	3.000	*	
			DAPHNIDAE	4.000			
			CENTRARCHIDAE	5.000			
			PHYSIDAE	11,210			
			ARELIDAE	16,000			
ENDRIN	NATIONAL	9	DAPHNIDAE	0.0000	110,000	*	
			SALMONIDAE	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	8	DAPHNIDAE	0.0000	111,000	*	
			ETALURIDAE	0.0000			
			CENTRARCHIDAE	0.0000			
			PHYSIDAE	0.0000			
M. CADMIUM	NATIONAL	10	SALMONIDAE	0.0000	0.007	0.0041	ACR
			DAPHNIDAE	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	13	PERCIDAE	0.0000	0.010	0.0041	ACR
			CENTRARCHIDAE	0.0000			
			DAPHNIDAE	0.0000			
CHLORIDE	NATIONAL	3	PHILOMENIDAE	0.0000	1,974	*	0.0000
			PLATYHELMINTHES	0.0000			
			DAPHNIDAE	0.0000			
	STATE	2	SALMONIDAE	0.0000	1,974	*	0.0000
			CENTRARCHIDAE	0.0000	**		
			PUNCLARIIDAE	0.0000			
CHROMIUM	NATIONAL	10	SALMONIDAE	0.0000	16.04		0.2978
			DAPHNIDAE	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	2	PERCIDAE	0.0000	1,000.00	*	18.0
			CENTRARCHIDAE	0.0000			
			PUNCLARIIDAE	0.0000			
M. COPPER	NATIONAL	20	DAPHNIDAE	0.0000	0.760	*	0.0000
			SALMONIDAE	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	18	DAPHNIDAE	0.0000	0.127	*	0.0041
			SALMONIDAE	0.0000			
			PLATYHELMINTHES	0.0000			
CYANIDE	NATIONAL	10	SALMONIDAE	0.0000	21.000	*	1.0000
			DAPHNIDAE	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	1	CENTRARCHIDAE	0.0000	21.000	*	0.0000
			SALMONIDAE	0.0000			
			PLATYHELMINTHES	0.0000			
DDT	NATIONAL	20	SALMONIDAE	0.0000	0.000	*	0.0000
			DAPHNIDAE	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	7	SALMONIDAE	0.0000	0.000	*	0.0000
			ARTHROPODS	0.0000			
			PLATYHELMINTHES	0.0000			
DIELDRIN	NATIONAL	10	ETALURIDAE	0.0000	1.000	*	0.0000
			ARELIDAE	0.0000			
			SALMONIDAE	0.0000			
	STATE	4	PERCIDAE	0.0000	0.001	*	0.0000
			CENTRARCHIDAE	0.0000			
			DAPHNIDAE	0.0000			
ENDOSULFAN	NATIONAL	5	SALMONIDAE	0.0000	0.000	*	0.1000
			DAPHNIDAE	0.0000			
			PLATYHELMINTHES	0.0000			
	STATE	2	PERCIDAE	0.0000	0.000	*	0.1000
			CENTRARCHIDAE	0.0000	**		
			PLATYHELMINTHES	0.0000			
			CHAETOPTERIDAE (APPENDAGE)	0.000			

FOOTNOTES:

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- ** = FINAL PLANT VALUE
- *** = FINAL RANGE VALUE
- ACR = COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV = FINAL CHRONIC VALUE
- SCV = SENSITIVE SPECIES CHRONIC VALUE

- # = FAILED TO MEET MINIMUM DATA REQUIREMENT
- ## = STATE HAS LESS THAN 3 RECIPIENT FAMILIES—NATIONAL VALUE USED
- H = HARDNESS EFFECT INTERCEPT VALUE
- S = APPLY EQUATION (-)* TO DETERMINE MAXIMUM CRITERIA
- W = HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION (-)* TO DETERMINE MAXIMUM AND 24-HOUR AVERAGE CRITERIA

STATE: FLORIDA

POLLUTANT	SOURCE OF FAMILIES TESTED		MOST SENSITIVE HARDNESS (mg/L) SPECIES	FAMILY LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)		
SILVER	NATIONAL	17					
	STATE	5					
HEPTACHLOR	NATIONAL	18					
	STATE	4					
66 LEAD	NATIONAL	17					
	STATE	5					
LINDANE	NATIONAL	16					
	STATE	5					
MERCURY	NATIONAL	9					
	STATE	5					
66 NICKEL	NATIONAL	18					
	STATE	11					
PCBS	NATIONAL	3					
	STATE	1					
SELENIUM	NATIONAL	16					
	STATE	4					
5 SILVER	NATIONAL	5					
	STATE	2					
TOXAPHENE	NATIONAL	12					
	STATE	3					

STATE: FLORIDA

POLLUTANT	SOURCE OF FAMILIES TESTED		MOST SENSITIVE HARDNESS (mg/L) SPECIES	FAMILY LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)		
8 ZINC	NATIONAL	16					
	STATE	12					

FOOTNOTE
- ug/L = UNITS IN MICROGRAMS PER LITER
- FAV = FINAL PLANT VALUE
- FRV = FINAL RESIDUE VALUE
- ACR = COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV = FINAL CHRONIC VALUE
- SCV = SENSITIVE SPECIES CHRONIC VALUE
- * = FAILED TO MEET MINIMUM DATA REQUIREMENT
- ** = STATE HAS LESS THAN 4 RESIDENT FAMILIES--NATIONAL VALUE USED
- S = HARDNESS EFFECT INTERCEPT VALUE
- M = APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
- HDN = HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND 24-HOUR AVERAGE CRITERIA

STATE: GEORGIA

POLLUTANT	SOURCE OF FAMILIES TESTED		MOST SENSITIVE HARDNESS (mg/L) SPECIES	FAMILY LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)		
ENDRIN	NATIONAL	14					
	STATE	3					
HEXACHLOR	NATIONAL	4					
	STATE	3					
M CADMIUM	NATIONAL	18					
	STATE	14					
CHLORDANE	NATIONAL	6					
	STATE	2					
CHROMIUM	NATIONAL	18					
	STATE	5					
5 COPPER	NATIONAL	22					
	STATE	16					
CYANIDE	NATIONAL	16					
	STATE	3					
DDT	NATIONAL	16					
	STATE	7					
DIELDRIN	NATIONAL	12					
	STATE	5					
ENDOSULFAN	NATIONAL	9					
	STATE	4					

STATE: GEORGIA

POLLUTANT	SOURCE OF FAMILIES TESTED		MOST SENSITIVE HARDNESS (mg/L) SPECIES	FAMILY LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)		
ENDRIN	NATIONAL	17					
	STATE	2					
HEPTACHLOR	NATIONAL	18					
	STATE	4					
66 LEAD	NATIONAL	17					
	STATE	4					
LINDANE	NATIONAL	16					
	STATE	5					
MERCURY	NATIONAL	9					
	STATE	5					
66 NICKEL	NATIONAL	18					
	STATE	10					
PCBS	NATIONAL	3					
	STATE	2					
SELENIUM	NATIONAL	16					
	STATE	5					
5 SILVER	NATIONAL	5					
	STATE	1					
TOXAPHENE	NATIONAL	12					
	STATE	5					

FOOTNOTE
- ug/L = UNITS IN MICROGRAMS PER LITER
- FAV = FINAL PLANT VALUE
- FRV = FINAL RESIDUE VALUE
- ACR = COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV = FINAL CHRONIC VALUE
- SCV = SENSITIVE SPECIES CHRONIC VALUE
- * = FAILED TO MEET MINIMUM DATA REQUIREMENT
- ** = STATE HAS LESS THAN 4 RESIDENT FAMILIES--NATIONAL VALUE USED
- S = HARDNESS EFFECT INTERCEPT VALUE
- M = APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
- HDN = HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND 24-HOUR AVERAGE CRITERIA

STATE: IDAHO

TREATMENT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY: NAME	MOST SENSITIVE RESIDENT FAMILY: FINAL LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: CHRONIC (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE-CHRONIC RATIO
SHORT-ACRYLOIC	NATIONAL	17	SALMONIDAE	0.440	0.221	0.0442	FAV
			PERLIDAE	0.442			
			PTERONARCIDAE	0.547			
	STATE	10	SALMONIDAE	0.440	0.191	0.0382	FAV
			PERLIDAE	0.442			
			PTERONARCIDAE	0.547			
			PERLODIDAE	0.790			
	NATIONAL	10	PTERONARCIDAE	0.547	0.201	0.0402	FAV
			PALAEMONIDAE	1.060			
			PERLIDAE	1.060			
	STATE	7	NITOCRIDAE	0.111	0.111	0.0222	FAV
			PTERONARCIDAE	1.060			
			PALAEMONIDAE	1.060			
			CRUSTACEANS	1.060			
M. LEAC	NATIONAL	7	SAHNIDAE	1.121	0.431	0.00862	FOV
			DAPHNIIDAE	1.060			
			SALMONIDAE	2.060			
	STATE	6	DAPHNIIDAE	1.060	0.200	0.00862	FOV
			SALMONIDAE	2.060			
			CRUSTACEANS	2.060			
LINEAR	NATIONAL	10	KOELLEIDAE	2.242	2.242	0.224	ACR
			SALMONIDAE	2.060			
			TRIAENODIDAE	2.060			
	STATE	6	CRUSTACEANS	2.060	0.800	0.0641	ACR
			CRUSTACEANS	2.060			
			DAPHNIIDAE	2.060			
MERCURY	NATIONAL	8	DAPHNIIDAE	2.060	0.470	0.00	FAV
			SAHNIDAE	2.060			
			METACRIDAE	2.060			
	STATE	5	SALMONIDAE	2.060	0.161	0.0021	ACR
			SAHNIDAE	2.060			
			DAPHNIIDAE	2.060			
M. NICKEL	NATIONAL	10	PERLODIDAE	20.814	20.814	2.081	ACR
			SPHAERIIDAE	20.814			
			DAPHNIIDAE	20.814			
	STATE	6	PERLODIDAE	20.814	10.401	1.040	ACR
			SPHAERIIDAE	20.814			
			DAPHNIIDAE	20.814			
ZINC	NATIONAL	8	SALMONIDAE	0.100	0.100	0.010	FAV
			DAPHNIIDAE	0.100			
			CYPRINIDAE	0.100			
	STATE	5	SALMONIDAE	0.100	0.100	0.010	FAV
			DAPHNIIDAE	0.100			
			CYPRINIDAE	0.100			
SELENIUM	NATIONAL	10	HYALELLIDAE/PALAEMONIDAE	32.000	32.000	4.00	ACR
			DAPHNIIDAE	32.000			
			SALMONIDAE	32.000			
	STATE	7	HYALELLIDAE/PALAEMONIDAE	32.001	12.800	1.600	ACR
			DAPHNIIDAE	32.000			
			CYPRINIDAE	32.000			
S. SILVER	NATIONAL	8	DAPHNIIDAE	0.00096			
			CYPRINI	0.00096			
			CYPRINODONTIDAE	0.00096			
	STATE	5	DAPHNIIDAE	0.00096			
			CYPRINI	0.00096			
			CYPRINIDAE	0.00096			
TOLUENE	NATIONAL	10	SALMONIDAE	0.00096	0.097	0.0097	ACR
			PERLIDAE	0.00096			
			PTERONARCIDAE	0.00096			
			PERLODIDAE	0.00096			
	STATE	10	PERLIDAE	0.00096	0.094	0.0081	ACR
			PTERONARCIDAE	0.00096			
			CRUSTACEANS	0.00096			

FOOTNOTE:
- ug/L — MICROGRAMS PER LITER
- FAV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- F — FAILED TO MEET MINIMUM DATA REQUIREMENT
- * — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- ** — HARDNESS EFFECT INTERCEPT VALUE
- AVU — APPLY EQUATION 2.7 TO DETERMINE HARDNESS CRITERIA
- SE — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE HARDNESS AND ACUTE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: IDAHO

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: ILLINOIS

STATE: ILLINOIS

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: ILLINOIS

STATE: INDIANA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: INDIANA

PESTICIDE	SOURCE OF FAMILIES TESTED		SPECIES MEAN ACUTE-CHRONIC RATIO	FINAL ACUTE-CHRONIC RATIO	FRESHWATER AQUATIC LIFE CRITERIA (micrograms per liter)		
					DISSOLVED	SLANT	AVERAGE
ENDRIN	NATIONAL	17			0.004	*	0.0023
	STATE	7			0.197	*	0.0023
HEPTACHLOR	NATIONAL	10			0.001	*	0.0038
	STATE	5			0.44	*	0.0038
M LEAD	NATIONAL	7			0.025	*	0.0028
	STATE	4			17.324	*	0.0028
LINDANE	NATIONAL	12			2.01	*	0.205
	STATE	5			3.65	*	0.145
MERCURY	NATIONAL	9			0.91	*	0.91
	STATE	2			0.82	*	0.91
M NICKEL	NATIONAL	16			52.91	*	5.291
	STATE	10			52.91	*	5.291
PCBS	NATIONAL	5			0.02	*	0.014
	STATE	3			0.02	*	0.014
SELENIUM	NATIONAL	10			20.45	*	20.455
	STATE	7			54.84	*	17.555
S SILVER	NATIONAL	9			0.0058	A	
	STATE	3			0.0058	A	
TOXAPHENE	NATIONAL	10			0.007	*	0.0007
	STATE	4			7.04	*	0.0002

STATE: INDIANA

PESTICIDE	SOURCE OF FAMILIES TESTED		SPECIES MEAN ACUTE-CHRONIC RATIO	FINAL ACUTE-CHRONIC RATIO	FRESHWATER AQUATIC LIFE CRITERIA (micrograms per liter)		
					DISSOLVED	SLANT	AVERAGE
S ZINC	NATIONAL	18			78.707	0.145	17.035
	STATE	12			21.259	0.095	17.035

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: IOWA

PESTICIDE	SOURCE OF FAMILIES TESTED		SPECIES MEAN ACUTE-CHRONIC RATIO	FINAL ACUTE-CHRONIC RATIO	FRESHWATER AQUATIC LIFE CRITERIA (micrograms per liter)		
					DISSOLVED	SLANT	AVERAGE
ALDRIN	NATIONAL	14			3.000	*	
	STATE	7			3.772	*	
ARSENIC	NATIONAL	9			119.856	*	
	STATE	2			42.377	*	
M CADMIUM	NATIONAL	16			0.657	0.004	ACR
	STATE	12			0.217	* 0.001	ACR
CHLORDANE	NATIONAL	5			1.974	* 0.0043	FAV
	STATE	4			1.366	* 0.0043	FAV
CHROMIUM	NATIONAL	16			12.54	0.275	ACR
	STATE	9			3.47	* 0.016	ACR
S COPPER	NATIONAL	20			5.54	0.4816	FCV
	STATE	17			5.143	* 0.0943	FCV
CYANIDE	NATIONAL	16			31.426	* 1.042	ACR
	STATE	9			55.244	* 1.666	ACR
DDT	NATIONAL	20			1.000	* 0.0010	FAV
	STATE	15			1.000	* 0.0010	FAV
DIELDRIN	NATIONAL	15			1.000	* 0.0019	FAV
	STATE	5			0.000	* 0.0019	FAV
ENDOSULFAN	NATIONAL	6			0.000	* 0.1000	ACR
	STATE	3			0.001	* 0.1000	ACR

STATE: IOWA

PESTICIDE	SOURCE OF FAMILIES TESTED		SPECIES MEAN ACUTE-CHRONIC RATIO	FINAL ACUTE-CHRONIC RATIO	FRESHWATER AQUATIC LIFE CRITERIA (micrograms per liter)		
					DISSOLVED	SLANT	AVERAGE
ENDRIN	NATIONAL	17			0.004	*	0.0023
	STATE	7			0.197	*	0.0023
HEPTACHLOR	NATIONAL	10			0.001	*	0.0038
	STATE	5			0.44	*	0.0038
M LEAD	NATIONAL	7			0.025	*	0.0028
	STATE	4			17.324	*	0.0028
LINDANE	NATIONAL	12			2.01	*	0.205
	STATE	5			3.65	*	0.145
MERCURY	NATIONAL	9			0.91	*	0.91
	STATE	2			0.82	*	0.91
M NICKEL	NATIONAL	16			52.91	*	5.291
	STATE	10			52.91	*	5.291
PCBS	NATIONAL	5			0.02	*	0.014
	STATE	3			0.02	*	0.014
SELENIUM	NATIONAL	10			20.45	*	20.455
	STATE	7			54.84	*	17.555
S SILVER	NATIONAL	9			0.0058	A	
	STATE	3			0.0058	A	
TOXAPHENE	NATIONAL	10			0.007	*	0.0007
	STATE	4			7.04	*	0.0002

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: IOWA

TOXICANT	NUMBER OF FAMILIES TESTED	MOST SENSITIVE NEAREST FAMILY		FRESHWATER AQUATIC LIFE CRITERIA		
		NAME	LC50 VALUE (++)	DAILY/MAX	1H-AVG (++)	4H-AVG (+++)
1. ZINC	NATIONAL	10				
		DAPHNIDAE	12,737			
		PHYSIDAE	41,000			
		SALMONIDAE	49,691			
		PHILOPOTAMIDAE	55,757			
	STATE	11				
		DAPHNIDAE	12,737	2,140 *	47,000	SCV
		PHYSIDAE	41,000			
		PHILOPOTAMIDAE	55,757			
		CYPRINIDAE	68,000			

STATE: KANSAS

TOXICANT	NUMBER OF FAMILIES TESTED	MOST SENSITIVE NEAREST FAMILY		FRESHWATER AQUATIC LIFE CRITERIA		
		NAME	LC50 VALUE (++)	DAILY/MAX	1H-AVG (++)	4H-AVG (+++)
ALDRIN	NATIONAL	14				
		GASTROPODIDAE	3,600			
		ASELLIDAE	3,600			
		GRAMMARIDAE	3,600			
		SALMONIDAE	3,600			
		PERLIDAE	3,600			
		PTERONARCIDAE	3,600			
		HYDROPSYCHIDAE	3,600			
	STATE	5				
		GASTROPODIDAE	3,600	3,454 *		
		ASELLIDAE	3,600			
		GRAMMARIDAE	3,600			
		HYDROPSYCHIDAE	3,600			
ARSENIC	NATIONAL	6				
		GRAMMARIDAE	3,600	113,208 *		
		SALMONIDAE	3,600			
		PERLIDAE	3,600			
		ISONYCHIIDAE	3,600			
	STATE	2				
		ISONYCHIIDAE	3,600	169,440 *		
		CYPRINIDAE	72,000			
B. CADMIUM	NATIONAL	45				
		GAMMARIDAE	3,600	3.487	3.0921	ACR
		SALMONIDAE	3,600			
	STATE	10				
		GAMMARIDAE	3,600	3.041 *	3.0909	ACR
		SALMONIDAE	3,600			
CHLORDANE	NATIONAL	5				
		PHILOPOTAMIDAE	3,600	1.204 *	0.0043	TRV
		SALMONIDAE	3,600			
	STATE	2				
		GRAMMARIDAE	3,600	1.204 * **	0.0043	TRV
		CENTRARCHIDAE	7,200			
CHROMIUM	NATIONAL	10				
		GAMMARIDAE	3,600	16.164 *	0.2971	ACR
		PHILOPOTAMIDAE	3,600			
		PERLIDAE	3,600			
	STATE	4				
		PHILOPOTAMIDAE	3,600	1045.264 *	N/A	FAV
		PERLIDAE	3,600			
		HYDROPSYCHIDAE	3,600			
4. COPPER	NATIONAL	20				
		GAMMARIDAE	3,600	5.185	3.8016	FCV
		SALMONIDAE	3,600			
	STATE	14				
		GAMMARIDAE	3,600	5.118 *	3.8004	FCV
		SALMONIDAE	3,600			
CYANIDE	NATIONAL	20				
		GAMMARIDAE	3,600	31.405 *	4.3472	ACR
		SALMONIDAE	3,600			
	STATE	2				
		GAMMARIDAE	3,600	31.745 *	3.8535	ACR
		SALMONIDAE	3,600			
DDT	NATIONAL	30				
		GAMMARIDAE	3,600	3.600	3.0010	TRV
		SALMONIDAE	3,600			
	STATE	7				
		GAMMARIDAE	3,600	3.600 *	3.0010	TRV
		SALMONIDAE	3,600			
DIELDRIN	NATIONAL	10				
		PERLIDAE	3,600	1.800 *	0.0019	FAV
		ASELLIDAE	3,600			
		SALMONIDAE	3,600			
	STATE	4				
		GRAMMARIDAE	3,600	3.400 *	0.0019	FAV
		SALMONIDAE	3,600			
ENDOSULFAN	NATIONAL	11				
		GAMMARIDAE	3,600	0.004 *	0.1561	ACR
		CYPRINIDAE	3,600			
		CATOSTOMIDAE	3,600			
	STATE	4				
		CYPRINIDAE	3,600	0.004 *	0.0156	ACR
		CATOSTOMIDAE	3,600			
		CHLOROMIDAE (MICROPTERUS)	37,000			

FOOTNOTES

*	-- UNITS IN MICROGRAMS PER LITER
FPV	-- FINAL PLANT VALUE
FRV	-- FINAL RESIDUE VALUE
ACR	-- COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV	-- FINAL CHRONIC VALUE
SCV	-- SENSITIVE SPECIES CHRONIC VALUE
**	-- FAILED TO MEET MINIMUM DATA REQUIREMENT
N/A	-- STATE HAS LESS THAN 4 INDIGENOUS FAMILIES—NATIONAL VALUE USED
E	-- HARDNESS EFFECT INTERCEPT VALUE
	APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
M	-- HARDNESS EFFECT INTERCEPT VALUE
	APPLY EQUATION 3.7 TO DETERMINE MAXIMUM AND 96-HOUR AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: KANSAS

TOXICANT	NUMBER OF FAMILIES TESTED	MOST SENSITIVE NEAREST FAMILY		FRESHWATER AQUATIC LIFE CRITERIA		
		NAME	LC50 VALUE (++)	DAILY/MAX	1H-AVG (++)	4H-AVG (+++)
ENDRIN	NATIONAL	17				
		GASTROPODIDAE	3,600	0.001 *	0.0000	FRV
		SALMONIDAE	3,600			
		PERLIDAE	3,600			
		PTERONARCIDAE	3,600			
	STATE	7				
		PTERONARCIDAE	3,600	0.002 *	0.0000	FRV
		PERLIDAE	3,600			
		CENTRARCHIDAE (MICROPTERUS)	7,200			
HEPTACHLOR	NATIONAL	10				
		PTERONARCIDAE	3,600	0.001 *	0.0000	FRV
		PALAEMONIDAE	3,600			
		PERLIDAE	3,600			
		ANTACIDAE	7,200			
	STATE	4				
		ANTACIDAE	7,200	0.004 *	0.0000	FRV
		CENTRARCHIDAE	21,600			
		DAPHNIIDAE	21,600			
HEXACHLOROBENZENE	NATIONAL	1				
		CYPRINIDAE	72,000	0.000 *	0.0000	FCV
	STATE	0				
		CYPRINIDAE	72,000	0.000 * **	0.0000	FCV
		PHILOPOTAMIDAE	3,600			
LINDANE	NATIONAL	19				
		ASELLIDAE	3,600	0.016 *	0.0024	ACR
		SALMONIDAE	3,600			
		GAMMARIDAE	3,600			
	STATE	3				
		CENTRARCHIDAE	7,200	14.091 *	1.1910	ACR
		ICTALURIDAE	7,200			
		PERCIDAE	21,600			
MERCURY	NATIONAL	9				
		CYPRINIDAE	3,600	0.470 *	0.39	FAV
		GAMMARIDAE	3,600			
		ANTACIDAE	7,200			
	STATE	2				
		SALMONIDAE	3,600	0.470 * **	0.39	FAV
		NAIDIDAE	21,600			
M. MIREX	NATIONAL	18				
		GAMMARIDAE	3,600	30.542 *	0.0001	ACR
		SPHAERIIDAE	21,600			
		CENTRARCHIDAE	21,600			
	STATE	10				
		PALAEMONIDAE	21,217	30.542 *	0.0001	ACR
		HEPTAGENIIDAE	21,217			
		CENTRARCHIDAE	21,217			
NICKEL	NATIONAL	5				
		SALMONIDAE	3,600	2.137 *	0.312	FRV
		CENTRARCHIDAE	3,600			
		CYPRINIDAE	3,600			
		GAMMARIDAE	3,600			
	STATE	3				
		CENTRARCHIDAE	3,600	2.137 * **	0.312	FRV
		CYPRINIDAE	3,600			
		OSMERIFORMES (HYPOMESUS)	3,600			
SELENIUM	NATIONAL	16				
		ATYLIDAE (PALAEMON)	3,600			
		GAMMARIDAE	3,600	20.000 *	20.000	ACR
		CYPRINODONTIDAE	3,600			
		CYPRINODONTIDAE	3,600			
		SALMONIDAE	3,600			
	STATE	7				
		ATYLIDAE (PALAEMON)	3,600	65.054 *	15.1211	ACR
		GAMMARIDAE	3,600			
		CENTRARCHIDAE	3,600			
		CYPRINIDAE	3,600			
S. SILVER	NATIONAL	9				
		GAMMARIDAE	3,600	0.00000 *		
		DOTIDAE	3,600			
		CYPRINIDAE	3,600			
	STATE	3				
		CYPRINODONTIDAE	3,600	0.00000 * **		
		CYPRINIDAE	3,600			
		CENTRARCHIDAE	3,600			
		PHILOPOTAMIDAE	3,600			
TOXAPHENE	NATIONAL	12				
		PERLIDAE	3,600	0.000 *	0.0000	ACR
		PTERONARCIDAE	3,600			
		ICTALURIDAE	7,200			
		CENTRARCHIDAE	7,200			
	STATE	3				
		CENTRARCHIDAE	7,200	0.001 *	0.0000	ACR
		ICTALURIDAE	7,200			
		CYPRINIDAE	3,600			
		PERCIDAE	21,600			

STATE: KANSAS

TOXICANT	NUMBER OF FAMILIES TESTED	MOST SENSITIVE NEAREST FAMILY		FRESHWATER AQUATIC LIFE CRITERIA		
		NAME	LC50 VALUE (++)	DAILY/MAX	1H-AVG (++)	4H-AVG (+++)
M. ZINC	NATIONAL	10				
		DAPHNIIDAE	12,737	2,140	47,000	SCV
		PHYSIDAE	41,000			
		SALMONIDAE	49,691			
		PHILOPOTAMIDAE	55,757			
	STATE	10				
		DAPHNIIDAE	21,000	7,000 *	42,000	SCV
		PHYSIDAE	41,000			
		PHILOPOTAMIDAE	55,757			

FOOTNOTES

*	-- UNITS IN MICROGRAMS PER LITER
FPV	-- FINAL PLANT VALUE
FRV	-- FINAL RESIDUE VALUE
ACR	-- COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV	-- FINAL CHRONIC VALUE
SCV	-- SENSITIVE SPECIES CHRONIC VALUE
**	-- FAILED TO MEET MINIMUM DATA REQUIREMENT
N/A	-- STATE HAS LESS THAN 4 INDIGENOUS FAMILIES—NATIONAL VALUE USED
E	-- HARDNESS EFFECT INTERCEPT VALUE
	APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
M	-- HARDNESS EFFECT INTERCEPT VALUE
	APPLY EQUATION 3.7 TO DETERMINE MAXIMUM AND 96-HOUR AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: KENTUCKY

Toxicant	Source of Freshwater Tested		Most Sensitive Resident Family Genus	Freshwater Acute Life Criteria Equation (ug/L)	Freshwater Acute Life Criteria Multiplier (ug/L)	Freshwater Acute Life Criteria Average (ug/L)
ALDRIN	NATIONAL	14	[illegible]	3.00		
	STATE	7	[illegible]	1.74		
ARSENIC	NATIONAL	51	[illegible]	113.80		
	STATE	5	[illegible]	20.14		
W. CADMIUM	NATIONAL	39	[illegible]	0.427	0.0804	ACR
	STATE	14	[illegible]	0.243	0.0558	ACR
CHLORDANE	NATIONAL	5	[illegible]	1.974	0.0043	FAV
	STATE	3	[illegible]	1.974 **	0.0043	FAV
CHROMIUM	NATIONAL	16	[illegible]	12.04	0.2845	ACR
	STATE	7	[illegible]	5.287	0.1405	ACR
4,4'-DDT	NATIONAL	29	[illegible]	0.550	0.0010	FAV
	STATE	9	[illegible]	0.356	0.0010	FAV
DIELDRIN	NATIONAL	12	[illegible]	1.056	0.0019	FAV
	STATE	2	[illegible]	0.345	0.0019	FAV
ENDOSULFAN	NATIONAL	7	[illegible]	0.060	0.0184	ACR
	STATE	3	[illegible]	0.127	0.0051	ACR

STATE: KENTUCKY

Toxicant	Source of Freshwater Tested		Most Sensitive Resident Family Genus	Freshwater Acute Life Criteria Equation (ug/L)	Freshwater Acute Life Criteria Multiplier (ug/L)	Freshwater Acute Life Criteria Average (ug/L)
ENDRIN	NATIONAL	17	[illegible]	0.201	0.0011	FAV
	STATE	9	[illegible]	0.0000	0.0002	FAV
HEPTACHLOR	NATIONAL	28	[illegible]	0.201	0.0005	FAV
	STATE	5	[illegible]	1.254	0.0005	FAV
W. LEAD	NATIONAL	1	[illegible]	0.437	0.0035	FCV
	STATE	0	[illegible]	0.205	0.0035	FCV
LINDANE	NATIONAL	16	[illegible]	0.210	0.0021	ACR
	STATE	6	[illegible]	1.140	0.0052	ACR
MERCURY	NATIONAL	9	[illegible]	0.410	0.01	FAV
	STATE	4	[illegible]	0.000	0.01	FAV
W. NICKEL	NATIONAL	12	[illegible]	12.04	0.2841	ACR
	STATE	11	[illegible]	21.616	0.2855	ACR
PCBS	NATIONAL	5	[illegible]	0.135	0.014	FAV
	STATE	3	[illegible]	0.114	0.014	FAV
SELENIUM	NATIONAL	20	[illegible]	45.845	18.3380	ACR
	STATE	9	[illegible]	71.100	10.1544	ACR
S. SILVER	NATIONAL	5	[illegible]	0.00000		
	STATE	3	[illegible]	0.00001		
TOXAPHENE	NATIONAL	10	[illegible]	0.207	0.0002	ACR
	STATE	7	[illegible]	1.356	0.0006	ACR

Footnote	
*	= UNITS IN MICROGRAMS PER LITER
FAV	= FINAL PLANT VALUE
FRV	= FINAL RESIDUE VALUE
ACR	= COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV	= FINAL CHRONIC VALUE
SCV	= SENSITIVE SPECIES CHRONIC VALUE
**	= FAILURE TO MEET MINIMUM DATA REQUIREMENT
***	= STATE HAS LESS THAN 3 RESIDENT FAMILIES—NATIONAL VALUE USED
I	= HARDNESS EFFECT INTERCEPT VALUE
M	= HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 3.7 TO DETERMINE HARDNESS AND SCALE AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: KENTUCKY

Toxicant	Source of Freshwater Tested		Most Sensitive Resident Family Genus	Freshwater Acute Life Criteria Equation (ug/L)	Freshwater Acute Life Criteria Multiplier (ug/L)	Freshwater Acute Life Criteria Average (ug/L)
2,3,7,8-TCDD	NATIONAL	10	DAPHNIDAE	13.737	0.140	47.9000	SCV
			PHYSIDAE	21.000			
			SALMONIDAE	45.000			
			PHILOMYIDAE	48.737			
	STATE	10	DAPHNIDAE	21.000	0.000	47.9000	SCV
			SALMONIDAE	35.000			
			PHYSIDAE	21.000			
			HEPTAGENIIDAE	35.000			

STATE: LOUISIANA

Toxicant	Source of Freshwater Tested		Most Sensitive Resident Family Genus	Freshwater Acute Life Criteria Equation (ug/L)	Freshwater Acute Life Criteria Multiplier (ug/L)	Freshwater Acute Life Criteria Average (ug/L)
ALDRIN	NATIONAL	14	[illegible]	3.00		
	STATE	7	[illegible]	1.74		
ARSENIC	NATIONAL	51	[illegible]	113.800		
	STATE	5	[illegible]	20.140		
W. CADMIUM	NATIONAL	39	[illegible]	0.427	0.0804	ACR
	STATE	14	[illegible]	0.243	0.0558	ACR
CHLORDANE	NATIONAL	5	[illegible]	1.974	0.0043	FAV
	STATE	3	[illegible]	1.974 **	0.0043	FAV
CHROMIUM	NATIONAL	16	[illegible]	12.04	0.2845	ACR
	STATE	7	[illegible]	5.287	0.1405	ACR
4,4'-DDT	NATIONAL	29	[illegible]	0.550	0.0010	FAV
	STATE	9	[illegible]	0.356	0.0010	FAV
DIELDRIN	NATIONAL	12	[illegible]	1.056	0.0019	FAV
	STATE	2	[illegible]	0.345	0.0019	FAV
ENDOSULFAN	NATIONAL	7	[illegible]	0.060	0.0184	ACR
	STATE	3	[illegible]	0.127	0.0051	ACR

Footnote	
*	= UNITS IN MICROGRAMS PER LITER
FAV	= FINAL PLANT VALUE
FRV	= FINAL RESIDUE VALUE
ACR	= COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV	= FINAL CHRONIC VALUE
SCV	= SENSITIVE SPECIES CHRONIC VALUE
**	= FAILURE TO MEET MINIMUM DATA REQUIREMENT
***	= STATE HAS LESS THAN 3 RESIDENT FAMILIES—NATIONAL VALUE USED
I	= HARDNESS EFFECT INTERCEPT VALUE
M	= HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 3.7 TO DETERMINE HARDNESS AND SCALE AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: MAINE

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY GENUS	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7,401	3.000 *		
			ARELLIDAE	8,000			
			EPHEMERELLIDAE	8,000			
			SALMONIDAE	14,000			
	STATE	8	EPHEMERELLIDAE	8,000	3.210 *		
			CYPRINIDAE	11,720			
			GRISELLIDAE	16,800			
			PERICHTHYIDAE	28,400			
ARSENIC	NATIONAL	9	GAMMARIDAE	362,000	113,000 *		
			DAPHNIDAE	1704,370			
			SALMONIDAE	14130,000			
			ICTALURIDAE	14837,000			
	STATE	3	DAPHNIDAE	362,139	113,000 *		
			SALMONIDAE	14000,000	**		
			CYPRINIDAE	14000,000			
(a) CADMIUM	NATIONAL	16	SALMONIDAE	0.040	0.007	0.0004	ACR
			DAPHNIDAE	0.40			
			GAMMARIDAE	1.17			
			PHYSIDAE	5.80			
	STATE	10	SALMONIDAE	0.033	0.016	0.0002	ACR
			DAPHNIDAE	0.051			
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.600			
CHLORDANE	NATIONAL	5	PALAEMONIDAE	0.090	1.004 *	0.0043	FRV
			PTERONARCIDAE	30.000			
			CYPRINIDAE	88.000			
			GAMMARIDAE	88.000			
	STATE	2	CYPRINIDAE	53.571	1.004 *	0.0043	FRV
			GAMMARIDAE	88.000	**		
			SALMONIDAE	88.000			
CHROMIUM	NATIONAL	10	GAMMARIDAE	47.000	10.104	0.2970	ACR
			DAPHNIDAE	5560.571			
			PHILODROMIDAE	5560.000			
			PHYSIDAE	5560.000			
	STATE	5	PHILODROMIDAE	5560.700	1011.160 *	19.8	FRV
			PHYSIDAE	5560.000			
			PERICHTHYIDAE	5564.700			
			CYPRINIDAE	4000.000			
1 COPPER	NATIONAL	23	DAPHNIDAE	5.400	5.104	5.4870	FCV
			CHIRONOMIDAE	5.700			
			PHYSIDAE	6.800			
			TURBICIDAE	1.240			
	STATE	20	DAPHNIDAE	4.300	6.161	7.0000	FCV
			CHIRONOMIDAE	5.700			
			PHYSIDAE	6.800			
			TURBICIDAE	1.240			
CYANIDE	NATIONAL	16	SALMONIDAE	30.100	31.400 *	4.3470	ACR
			DAPHNIDAE	35.000			
			CENTRARCHIDAE	114.300			
			PERCIDAE	155.121			
	STATE	7	DAPHNIDAE	35.000	30.040 *	4.0570	ACR
			CENTRARCHIDAE	95.000			
			SALMONIDAE	95.007			
			PERCIDAE	155.121			
DDT	NATIONAL	22	DAPHNIDAE	1.200	0.000	0.0010	FRV
			PERCIDAE	1.800			
			INSECTAE	1.700			
			GAMMARIDAE	2.224			
	STATE	9	DAPHNIDAE	0.970	0.334 *	0.0010	FRV
			PERCIDAE	1.800			
			CENTRARCHIDAE	2.200			
			GAMMARIDAE	2.224			
DIELDRIN	NATIONAL	12	PODOLIDAE	0.000	1.000 *	0.0010	FRV
			ARELLIDAE	5.600			
			SALMONIDAE	8.400			
			EPHEMERELLIDAE	8.000			
	STATE	5	EPHEMERELLIDAE	8.000	0.300 *	0.0010	FRV
			SALMONIDAE	10.000			
			CYPRINIDAE	22.100			
			DAPHNIDAE	200.000			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.074	0.250 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.000			
			CATOSTOMIDAE	2.540			
	STATE	4	CYPRINIDAE	1.270	0.043 *	0.0010	ACR
			CATOSTOMIDAE	2.540			
			GAMMARIDAE	5.600			
			COENAGRIONIDAE (HEPTAGENIIDAE)	57.000			

STATE: MAINE

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY GENUS	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ENDRIN	NATIONAL	17	SALMONIDAE	0.440	0.001 *	0.0002	FRV
			PERLIDAE	0.450			
			PTERONARCIDAE	0.947			
	STATE	9	SALMONIDAE	0.440	0.002 *	0.0000	FRV
			CYPRINIDAE	0.950			
			COENAGRIONIDAE (HEPTAGENIIDAE)	1.800			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.900	0.001 *	0.0000	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ISTACIDAE	7.200			
	STATE	4	SALMONIDAE	20.000	7.775 *	0.0000	FRV
			DAPHNIDAE	99.740			
			SALMONIDAE	31.250			
			CYPRINIDAE	450.007			
(a) LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007 *	0.00000	FCV
			DAPHNIDAE	4.000			
			SALMONIDAE	32.000			
	STATE	3	CYPRINIDAE	308.700	0.007 *	0.00000	FCV
			SALMONIDAE	45.000	**		
			CYPRINIDAE	107.501			
			PHILODROMIDAE	2000.000			
LINDANE	NATIONAL	16	ARELLIDAE	0.000	2.210 *	0.0031	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	23.407			
			CENTRARCHIDAE	53.571			
	STATE	6	SALMONIDAE	16.000	4.000 *	0.3004	ACR
			CENTRARCHIDAE	35.000			
			GAMMARIDAE	46.000			
			PERCIDAE	65.000			
MERCURY	NATIONAL	8	DAPHNIDAE	0.000	0.470 *	0.20	FRV
			GAMMARIDAE	16.000			
			ISTACIDAE	21.000			
			SALMONIDAE	341.000			
	STATE	4	SALMONIDAE	10.000	0.787 *	0.20	FRV
			ISTACIDAE	20.000			
			SALMONIDAE	345.000			
			PHILODROMIDAE	1000.071			
(b) NICKEL	NATIONAL	10	DAPHNIDAE	58.277	52.014 *	5.3551	ACR
			PALAEMONIDAE	333.000			
			CENTRARCHIDAE	345.472			
			PHILODROMIDAE	401.217			
	STATE	10	DAPHNIDAE	58.277	52.014 *	5.3551	ACR
			CENTRARCHIDAE	308.000			
			PHILODROMIDAE	401.217			
			CYPRINIDAE	408.000			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.127 *	0.014	FRV
			CENTRARCHIDAE	6.911			
			CYPRINIDAE	30.491			
			GAMMARIDAE	88.000			
	STATE	3	CENTRARCHIDAE	3.200	0.127 *	0.014	FRV
			CYPRINIDAE	30.491	**		
			COENAGRIONIDAE (HEPTAGENIIDAE)	302.240			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITROIDA)	260.000	62.040 *	35.0000	ACR
			DAPHNIDAE	1000.474			
			CYPRINODONTIDAE	5400.000			
			SALMONIDAE	5474.720			
	STATE	5	HYALELLIDAE (TALITROIDA)	260.000	45.216 *	12.4000	ACR
			CYPRINIDAE	2103.140			
			DAPHNIDAE	3000.000			
			SALMONIDAE	10100.073			
3 SILVER	NATIONAL	9	DAPHNIDAE	0.000	0.00000 *		
			COTTIDAE	0.000			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	3	SALMONIDAE	0.011	0.00000 *		
			PHILODROMIDAE	0.017	**		
				0.000			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.200	0.007 *	0.0002	ACR
			PTERONARCIDAE	2.007			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.720			
	STATE	7	CENTRARCHIDAE	2.000	0.001 *	0.0004	ACR
			CYPRINIDAE	6.100			
			SALMONIDAE	6.000			
			PERCIDAE	12.000			

FOOTNOTE

* – FAILED TO MEET MINIMUM DATA REQUIREMENT
** – STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
\+ – UNITS IN MICROGRAMS PER LITER
++ – HARDNESS EFFECT INTERCEPT VALUE
FRV – FINAL PLANT VALUE
FRV – APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
FRV – FINAL RESIDUE VALUE
ACR – COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
(a) – HARDNESS EFFECT INTERCEPT VALUE
FCV – FINAL CHRONIC VALUE
APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND
SCV – SENSITIVE SPECIES CHRONIC VALUE
30-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: LOUISIANA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY GENUS	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ENDRIN	NATIONAL	7	EMPIDIDAE	0.400	0.001 *	0.0000	FRV
			SALMONIDAE	0.400			
			PERLIDAE	0.450			
			PTERONARCIDAE	0.947			
	STATE	2	SALMONIDAE	0.471	0.002 *	0.0000	FRV
			CYPRINIDAE	0.720			
			TOXOLUCHA	0.750			
HEPTACHLOR	NATIONAL	10	CENTRARCHIDAE	1.911	0.001 *	0.0000	FRV
			PTERONARCIDAE	0.900			
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ISTACIDAE	7.200			
	STATE	5	PALAEMONIDAE	1.000	0.000 *	0.0000	FRV
			CENTRARCHIDAE	84.711			
			DAPHNIDAE	89.740			
			SALMONIDAE	45.000			
(a) LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007 *	0.00000	FCV
			DAPHNIDAE	4.000			
			SALMONIDAE	32.000			
	STATE	3	CYPRINIDAE	308.700	0.007 *	0.00000	FCV
			CENTRARCHIDAE	1004.410	**		
			PHILODROMIDAE	2000.000			
LINDANE	NATIONAL	16	ARELLIDAE	0.000	2.210 *	0.0031	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	23.407			
			CENTRARCHIDAE	53.571			
	STATE	6	SALMONIDAE	16.000	4.000 *	0.3004	ACR
			CENTRARCHIDAE	35.000			
			GAMMARIDAE	46.000			
			PERCIDAE	65.000			
MERCURY	NATIONAL	8	DAPHNIDAE	0.000	0.470 *	0.20	FRV
			GAMMARIDAE	16.000			
			ISTACIDAE	21.000			
			SALMONIDAE	341.000			
	STATE	4	ISTACIDAE	20.000	1.004 *	0.20	FRV
			SALMONIDAE	345.000			
			PHILODROMIDAE	1000.071			
(b) NICKEL	NATIONAL	10	DAPHNIDAE	58.277	52.014 *	5.3551	ACR
			EPHEMERELLIDAE	333.000			
			CENTRARCHIDAE	345.472			
			PHILODROMIDAE	401.217			
	STATE	10	DAPHNIDAE	58.277	52.000 *	5.3551	ACR
			PERICHTHYIDAE	304.210			
			PHILODROMIDAE	401.217			
			CHIRONOMIDAE	408.000			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.127 *	0.014	FRV
			CENTRARCHIDAE	6.911			
			CYPRINIDAE	30.491			
			GAMMARIDAE	88.000			
	STATE	3	CENTRARCHIDAE	6.911	0.127 *	0.014	FRV
			CYPRINIDAE	30.491	**		
				0.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITROIDA)	260.000	35.040 *	35.0000	ACR
			DAPHNIDAE	1000.474			
			CYPRINODONTIDAE	5400.000			
			SALMONIDAE	5474.720			
	STATE	7	HYALELLIDAE (TALITROIDA)	260.000	18.254 *	18.1511	ACR
			DAPHNIDAE	3000.000			
			CYPRINIDAE	3000.000			
			TOXOLUCHA	4000.000			
3 SILVER	NATIONAL	9	DAPHNIDAE	0.000	0.00000 *		
			COTTIDAE	0.000			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	3	CYPRINIDAE	0.000	1.00000 *		
			CENTRARCHIDAE	0.110	**		
			PHILODROMIDAE	0.017			
				0.000			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.200	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.007			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.720			
	STATE	7	ICTALURIDAE	3.047	1.167 *	0.0400	ACR
			CENTRARCHIDAE	4.720			
			CYPRINIDAE	6.000			
			SALMONIDAE	6.000			

STATE: LOUISIANA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY GENUS	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
3 ZINC	NATIONAL	18	DAPHNIDAE	13.737	0.140	47.0000	SCV
			TIPULIDAE	41.000			
			SALMONIDAE	45.051			
			PHILODROMIDAE	55.757			
	STATE	11	DAPHNIDAE	21.000	0.130 *	47.0000	SCV
			PHYSIDAE	41.000			
			PERICHTHYIDAE	45.004			
			SALMONIDAE	491.415			

FOOTNOTE

* – FAILED TO MEET MINIMUM DATA REQUIREMENT
** – STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
\+ – UNITS IN MICROGRAMS PER LITER
++ – HARDNESS EFFECT INTERCEPT VALUE
FRV – FINAL PLANT VALUE
FRV – APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
FRV – FINAL RESIDUE VALUE
ACR – COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
(a) – HARDNESS EFFECT INTERCEPT VALUE
FCV – FINAL CHRONIC VALUE
APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND
SCV – SENSITIVE SPECIES CHRONIC VALUE
30-DAY AVERAGE CRITERIA

STATE: MAINE

PESTICIDE	SOURCE OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY GENUS	LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	CHRONIC (ug/L)	AVERAGE (ug/L)
Zinc	NATIONAL	38	DAPHNIDAE	42.57	0.140	47.0000	SCV
			PHYSIDAE	47.00			
			SALMONIDAE	49.61			
			PHILOPOTAMIDAE	49.72			
	STATE	12	DAPHNIDAE	21.00	0.060	47.0000	SCV
			PHYSIDAE	21.00			
			SALMONIDAE	72.01			
			PHILOPOTAMIDAE	96.50			

STATE: MARYLAND

PESTICIDE	SOURCE OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY GENUS	LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	CHRONIC (ug/L)	AVERAGE (ug/L)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	1,491	3.000	*	
			ATHERINIDAE	1,600			
			SPHAERIIDAE	1,600			
			ETHEOSTOMIDAE	1,600			
	STATE	9	CENTRARCHIDAE	1,491	2.700	*	
			ETHEOSTOMIDAE	1,600			
			SALMONIDAE	1,600			
ARSENIC	NATIONAL	5	DAPHNIDAE	1,600	115,000	*	
			CHIRONOMIDAE	1,600			
			CHIRONOMIDAE	1,600			
	STATE	4	CHIRONOMIDAE	1,600	141,000	*	
			CHIRONOMIDAE	1,600			
B. CADMIUM	NATIONAL	16	ETHEOSTOMIDAE	1,600	0.001	0.0004	AUV
			SALMONIDAE	1,600			
	STATE	17	PHYSIDAE	1,600	0.001	0.0006	ACR
			SALMONIDAE	1,600			
CHLORDANE	NATIONAL	8	CHLAMYDOTHECIDAE	1,600	1.200	*	
			PHILOPOTAMIDAE	1,600			
			CHIRONOMIDAE	1,600			
	STATE	4	CHIRONOMIDAE	1,600	2.417	*	
			CHIRONOMIDAE	1,600			
CHROMIUM	NATIONAL	16	CHIRONOMIDAE	1,600	12.100		
			CHIRONOMIDAE	1,600			
	STATE	9	PHILOPOTAMIDAE	1,600	462,000	*	
			CHIRONOMIDAE	1,600			
			CHIRONOMIDAE	1,600			
C. COPPER	NATIONAL	28	CHIRONOMIDAE	1,600	0.100		
			CHIRONOMIDAE	1,600			
	STATE	15	CHIRONOMIDAE	1,600	0.100		
			CHIRONOMIDAE	1,600			
CYANIDE	NATIONAL	15	CHIRONOMIDAE	1,600	21.000	*	
			CHIRONOMIDAE	1,600			
	STATE	3	CHIRONOMIDAE	1,600	20.210	*	
			CHIRONOMIDAE	1,600			
DDT	NATIONAL	20	CHIRONOMIDAE	1,600	0.000	*	
			CHIRONOMIDAE	1,600			
	STATE	10	CHIRONOMIDAE	1,600	0.000	*	
			CHIRONOMIDAE	1,600			
DIELDRIN	NATIONAL	10	CHIRONOMIDAE	1,600	1.250	*	
			CHIRONOMIDAE	1,600			
	STATE	6	CHIRONOMIDAE	1,600	1.250	*	
			CHIRONOMIDAE	1,600			
ENDOSULFAN	NATIONAL	9	CHIRONOMIDAE	1,600	0.200	*	
			CHIRONOMIDAE	1,600			
	STATE	5	CHIRONOMIDAE	1,600	0.120	*	
			CHIRONOMIDAE	1,600			
			CHIRONOMIDAE	1,600			

FOOTNOTE
* = FAILS TO MEET MINIMUM DATA REQUIREMENT
** = STATE HAS LESS THAN 3 RESIDENT FAMILIES—NATIONAL VALUE USED
- = UNITS IN MICROGRAMS PER LITER
FAV = FINAL ACUTE VALUE
FRV = FINAL RESIDUE VALUE
ACR = CONVERTED BY ACUTE TO CHRONIC RATIO METHOD
FCV = FINAL CHRONIC VALUE
SCV = SECRETIVE SPECIES CHRONIC VALUE
S = WATER EFFECT ADJUSTMENT VALUE
APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
W = WATER EFFECT ADJUSTMENT VALUE
APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND
BCV = CHRONIC CRITERIA

STATE: MARYLAND

PESTICIDE	SOURCE OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY GENUS	LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	CHRONIC (ug/L)	AVERAGE (ug/L)
ENDRIN	NATIONAL	17	GAMMARIDAE	0.040	0.091	*	FRV
			SALMONIDAE	0.040			
			PERLIDAE	0.040			
			PERCIDAMORIDAE	0.040			
	STATE	11	GAMMARIDAE	0.040	0.100	*	FRV
			SALMONIDAE	0.040			
			PERCIDAMORIDAE	0.040			
HEPTACHLOR	NATIONAL	18	PTERONARCIDAE	0.051	0.053	*	FRV
			PHILOPOTAMIDAE	0.060			
			PERLIDAE	0.060			
			ARTACIDAE	0.060			
	STATE	9	CENTRARCHIDAE	0.100	0.000	*	FRV
			SALMONIDAE	0.060			
			GAMMARIDAE	0.060			
M. LEAD	NATIONAL	7	GAMMARIDAE	0.067	0.0054	*	FCV
			SALMONIDAE	0.060			
			SALMONIDAE	0.060			
	STATE	4	CYPRINIDAE	0.060	0.0054	*	FCV
			SALMONIDAE	0.060			
			CENTRARCHIDAE	0.060			
LINDANE	NATIONAL	16	MELANIIDAE	0.070	0.0054	*	ACR
			SALMONIDAE	0.060			
			GAMMARIDAE	0.060			
	STATE	7	GAMMARIDAE	0.070	0.1900	*	ACR
			SALMONIDAE	0.060			
			CENTRARCHIDAE	0.060			
MERCURY	NATIONAL	6	ATLANTIDAE	0.070	0.24	*	FRV
			ERYTHRINIDAE	0.060			
			ARTACIDAE	0.060			
	STATE	6	ERYTHRINIDAE	0.061	0.24	*	FRV
			SALMONIDAE	0.060			
			SALMONIDAE	0.060			
M. MONO	NATIONAL	16	SALMONIDAE	20.00	2.000	*	ACR
			PHYSIDAE	20.00			
			CENTRARCHIDAE	20.00			
	STATE	12	SALMONIDAE	20.00	3.000	*	ACR
			CENTRARCHIDAE	20.00			
			CENTRARCHIDAE	20.00			
PCBS	NATIONAL	5	CENTRARCHIDAE	0.100	0.014	*	FRV
			CENTRARCHIDAE	20.00			
	STATE	2	CENTRARCHIDAE	0.000	0.014	*	FRV
			CENTRARCHIDAE	20.00			
SELENIUM	NATIONAL	16	PHYSIDAE	20.00	20.000	*	ACR
			CENTRARCHIDAE	20.00			
	STATE	7	PHYSIDAE	20.00	10.000	*	ACR
			SALMONIDAE	20.00			
			CYPRINIDAE	20.00			
S. SILVER	NATIONAL	8	CYPRINIDAE	0.00000	*		
			CYPRINIDAE	0.00000			
	STATE	2	CYPRINIDAE	0.00000	*		
			CYPRINIDAE	0.00000			
TOXAPHENE	NATIONAL	12	PERLIDAE	0.067	0.0007	*	ACR
			PERCIDAMORIDAE	0.060			
			ETHEOSTOMIDAE	0.060			
	STATE	6	CENTRARCHIDAE	0.070	0.0018	*	ACR
			ETHEOSTOMIDAE	0.060			
			ATHERINIDAE	0.060			
			CYPRINIDAE	0.060			

STATE: MARYLAND

PESTICIDE	SOURCE OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY GENUS	LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	CHRONIC (ug/L)	AVERAGE (ug/L)
Z. (ZINC)	NATIONAL	38	DAPHNIDAE	42.57	0.140	*	47.0000	SCV
			PHYSIDAE	47.00				
			SALMONIDAE	49.61				
			PHILOPOTAMIDAE	49.72				
	STATE	12	DAPHNIDAE	21.00	0.060		47.0000	SCV
			PHYSIDAE	21.00				
			SALMONIDAE	72.01				
			PHILOPOTAMIDAE	96.50				

FOOTNOTE
* = FAILS TO MEET MINIMUM DATA REQUIREMENT
** = STATE HAS LESS THAN 3 RESIDENT FAMILIES—NATIONAL VALUE USED
- = UNITS IN MICROGRAMS PER LITER
FAV = FINAL ACUTE VALUE
FRV = FINAL RESIDUE VALUE
ACR = CONVERTED BY ACUTE TO CHRONIC RATIO METHOD
FCV = FINAL CHRONIC VALUE
SCV = SECRETIVE SPECIES CHRONIC VALUE
S = WATER EFFECT ADJUSTMENT VALUE
APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
W = WATER EFFECT ADJUSTMENT VALUE
APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND
BCV = CHRONIC CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: MASSACHUSETTS

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY: NAME	MOST SENSITIVE RESIDENT FAMILY: LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (+)	FRESHWATER AQUATIC LIFE CRITERIA: 30-DAY (+)	FRESHWATER AQUATIC LIFE CRITERIA: AVERAGE (+++)
ALDRIN	NATIONAL	13	CENTRARCHIDAE	1,401	3.000		
			ASELLIDAE	3,000			
			SPHAEROLLIDAE	6,600			
	STATE	9	SALMONIDAE	1,500	1.500		
			CENTRARCHIDAE	1,401			
			SPHAEROLLIDAE	6,600			
ARSENIC	NATIONAL	5	SALMONIDAE	914,200	113,500		
			DAPHNIIDAE	1,543,000			
			SALMONIDAE	14,100,000			
			ICTALURIDAE	16,607,400			
	STATE	3	DAPHNIIDAE	1,543,000	171,000		
			SALMONIDAE	14,100,000			
			ICTALURIDAE	16,607,400			
CADMIUM	NATIONAL	10	CENTRARCHIDAE	24,000,000	0.007	0.0004	ACR
			SALMONIDAE	0.04			
			DAPHNIIDAE	0.183			
			SALMONIDAE	1.07			
	STATE	10	PHYSIDAE	0.242	0.010	0.0005	ACR
			SALMONIDAE	0.04			
			DAPHNIIDAE	0.183			
			CENTRARCHIDAE	1.07			
CHLORDANE	NATIONAL	3	PALAEMONIDAE	1.800	1.2*1	0.0043	FRA
			PTERONARCIDAE	90.000			
			CYPRINIDAE	93.200			
	STATE	4	CENTRARCHIDAE	93.200	7.970	0.0043	FRA
			GAMMARIDAE	93.000			
			SIMULIIDAE	93.000			
CHROMIUM	NATIONAL	16	CENTRARCHIDAE	94.711	12.164	0.275	ACR
			GAMMARIDAE	97.000			
			SIMULIIDAE	3000.000			
			PHILOMYZIDAE	3000.000			
	STATE	3	PHYSIDAE	3000.000	1000.000	16.0	FRA
			PHILOMYZIDAE	3000.000			
			PHYSIDAE	3000.000			
COPPER	NATIONAL	20	CYPRINIDAE	2.700		0.00016	FCT
			DAPHNIIDAE	6.700			
			PHYSIDAE	1.000			
			TUBIFICIDAE	1.040			
	STATE	15	DAPHNIIDAE	6.700	5.140	0.4711	FCH
			CHIRONOMIDAE	6.700			
			PHYSIDAE	1.000			
			TUBIFICIDAE	1.040			
CYANIDE	NATIONAL	10	SALMONIDAE	76.797	31.400	1.2972	ACR
			DAPHNIIDAE	84.000			
			CENTRARCHIDAE	114.210			
			CYPRINIDAE	114.210			
	STATE	7	SALMONIDAE	76.797	30.000	3.2007	ACR
			DAPHNIIDAE	84.000			
			CENTRARCHIDAE	114.210			
DDT	NATIONAL	28	PERCIDAE	106.121	0.550	0.0010	FRA
			DAPHNIIDAE	0.900			
			PERCIDAE	1.000			
			BIVALVIA	1.700			
			GAMMARIDAE	2.200			
	STATE	11	DAPHNIIDAE	0.900	0.270	0.0010	FRA
			PERCIDAE	1.000			
			GAMMARIDAE	1.004			
			HYALELLIDAE	2.200			
DIELDRIN	NATIONAL	12	PERCIDAE	1.000	1.000	0.0019	FRA
			ASELLIDAE	5.600			
			SALMONIDAE	14.000			
	STATE	9	SALMONIDAE	14.000	0.471	0.0019	FRA
			SPHAEROLLIDAE	24.000			
			CENTRARCHIDAE	24.000			
ENDOSULFAN	NATIONAL	9	CYPRINIDAE	30.000	0.220	0.1560	ACR
			SALMONIDAE	0.291			
			CYPRINIDAE	1.870			
			PTERONARCIDAE	1.700			
	STATE	5	CENTRARCHIDAE	3.040	0.140	0.0030	ACR
			SALMONIDAE	0.291			
			CYPRINIDAE	1.870			
			CATOSTOMIDAE	3.040			
			CENTRARCHIDAE	3.811			

STATE: MASSACHUSETTS

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY: NAME	MOST SENSITIVE RESIDENT FAMILY: LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (+)	FRESHWATER AQUATIC LIFE CRITERIA: 30-DAY (+)	FRESHWATER AQUATIC LIFE CRITERIA: AVERAGE (+++)
MERCURY	NATIONAL	17	SALMONIDAE	0.400	0.001		
			PHOXINUS	0.400			
			PHILOMYZIDAE	0.400			
	STATE	8	SALMONIDAE	0.400	0.100	0.0000	FRA
			PHILOMYZIDAE	0.400			
			CENTRARCHIDAE	1.001			
NONYLPHENOL	NATIONAL	10	PTERONARCIDAE	1.000	0.001	0.0000	FRA
			PHILOMYZIDAE	1.000			
			PERLIDAE	2.000			
	STATE	5	CENTRARCHIDAE	30.000	0.001	0.0000	FRA
			GAMMARIDAE	47.000			
			PERLIDAE	2.000			
LEAD	NATIONAL	7	GAMMARIDAE	45.700	0.007	0.0006	FCV
			SALMONIDAE	1.000			
			SALMONIDAE	4.000			
	STATE	4	CRYPHOPHIDAE	45.700	14.000	0.0004	FCV
			CRYPHOPHIDAE	45.700			
			SALMONIDAE	4.000			
			CRYPHOPHIDAE	45.700			
LINDANE	NATIONAL	12	ASELLIDAE	45.000	3.210	0.0004	ACR
			SALMONIDAE	45.000			
			SALMONIDAE	45.000			
	STATE	7	CRYPHOPHIDAE	45.000	2.340	0.1700	ACR
			GAMMARIDAE	45.000			
			CENTRARCHIDAE	45.000			
MERCURY	NATIONAL	9	SALMONIDAE	0.600	0.470	0.30	FRA
			GAMMARIDAE	1.100			
			HEPTAGENIIDAE	2.000			
	STATE	5	SALMONIDAE	0.600	0.500	0.34	FRA
			PHILOMYZIDAE	0.600			
			PHYSIDAE	0.600			
NICKEL	NATIONAL	16	SALMONIDAE	0.000	0.474	0.274	ACR
			GAMMARIDAE	0.000			
			CRYPHOPHIDAE	0.000			
			CENTRARCHIDAE	0.000			
	STATE	12	CENTRARCHIDAE	0.000	0.000	0.000	FCH
			GAMMARIDAE	0.000			
			CRYPHOPHIDAE	0.000			
			SALMONIDAE	0.000			
PCBS	NATIONAL	6	SALMONIDAE	0.000	0.147	0.014	FRA
			CRYPHOPHIDAE	0.000			
			CYPRINIDAE	0.000			
	STATE	5	SALMONIDAE	0.000	0.000	0.014	FRA
			CRYPHOPHIDAE	0.000			
			CYPRINIDAE	0.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	0.000	0.000	0.000	ACR
			CYPRINIDAE	0.000			
			SALMONIDAE	0.000			
	STATE	7	HYALELLIDAE (TALITRIDAE)	0.000	0.000	0.000	ACR
			SALMONIDAE	0.000			
SILVER	NATIONAL	9	DAPHNIIDAE	0.000	0.000	0.000	
			SALMONIDAE	0.000			
			CYPRINIDAE	0.000			
	STATE	5	SALMONIDAE	0.000	0.000	0.000	
			SALMONIDAE	0.000			
TOXAPHENE	NATIONAL	10	PERLIDAE	0.000	0.000	0.000	ACR
			PERLIDAE	0.000			
			PTERONARCIDAE	0.000			
	STATE	5	ICTALURIDAE	0.000	0.000	0.000	ACR
			CENTRARCHIDAE	0.000			
			SALMONIDAE	0.000			
			ICTALURIDAE	0.000			
			SALMONIDAE	0.000			
			CYPRINIDAE	0.000			

FOOTNOTES:

- ug/L — UNITS IN MICROGRAMS PER LITER
- FPV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- * — FAILED TO MEET MINIMUM DATA REQUIREMENT
- ** — STATE HAS LESS THAN A RESIDENT FAMILY—NATIONAL VALUE USED
- S — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
- M — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: MASSACHUSETTS

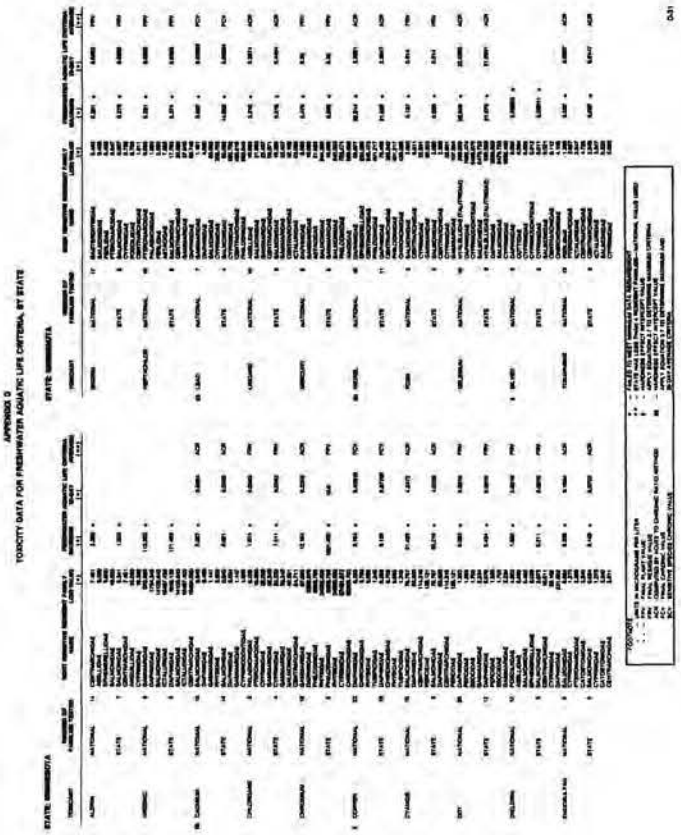
TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY: NAME	MOST SENSITIVE RESIDENT FAMILY: LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (+)	FRESHWATER AQUATIC LIFE CRITERIA: 30-DAY (+)	FRESHWATER AQUATIC LIFE CRITERIA: AVERAGE (+++)
ZINC	NATIONAL	19	DAPHNIIDAE	45.737	0.140	47.2000	ECV
			PHYSIDAE	71.000			
			SALMONIDAE	49.261			
			PHALACRIDAE	50.752			
	STATE	13	DAPHNIIDAE	31.000	0.401	47.2000	ECV
			PHYSIDAE	71.000			
			PHYSIDAE	50.752			

STATE: MICHIGAN

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY: NAME	MOST SENSITIVE RESIDENT FAMILY: LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (+)	FRESHWATER AQUATIC LIFE CRITERIA: 30-DAY (+)	FRESHWATER AQUATIC LIFE CRITERIA: AVERAGE (+++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	1,401	3.000		
			ASELLIDAE	3,000			
			SPHAEROLLIDAE	6,600			
	STATE	9	SALMONIDAE	1,500	3.00		
			CENTRARCHIDAE	1,401			
			SPHAEROLLIDAE	6,600			
ARSENIC	NATIONAL	5	SALMONIDAE	914,200	113,500		
			DAPHNIIDAE	1,543,000			
			SALMONIDAE	14,100,000			
			ICTALURIDAE	16,607,400			
	STATE	3	DAPHNIIDAE	1,543,000	39,000		
			SALMONIDAE	14,100,000			
			ICTALURIDAE	16,607,400			
CADMIUM	NATIONAL	10	SALMONIDAE	24,000,000	0.007	0.0004	ACR
			SALMONIDAE	0.04			
			DAPHNIIDAE	0.183			
			SALMONIDAE	1.07			
	STATE	10	PHYSIDAE	0.242	0.020	0.0005	ACR
			SALMONIDAE	0.04			
			DAPHNIIDAE	0.183			
			CENTRARCHIDAE	1.07			
CHLORDANE	NATIONAL	3	PALAEMONIDAE	1.800	1.2*1	0.0043	FRA
			PTERONARCIDAE	90.000			
			CYPRINIDAE	93.200			
	STATE	4	CENTRARCHIDAE	93.200	1.2*1	0.0043	FRA
			GAMMARIDAE	93.000			
			SIMULIIDAE	93.000			
			PHILOMYZIDAE	3000.000			
CHROMIUM	NATIONAL	16	CENTRARCHIDAE	94.711	42.164	0.275	ACR
			GAMMARIDAE	97.000			
			SIMULIIDAE	3000.000			
			PHILOMYZIDAE	3000.000			
	STATE	3	PHYSIDAE	3000.000	0.47	0.0016	ACR
			PHILOMYZIDAE	3000.000			
			PHYSIDAE	3000.000			
COPPER	NATIONAL	20	CYPRINIDAE	2.700	0.74	0.00016	FCH
			GAMMARIDAE	6.700			
			PHYSIDAE	1.000			
			TUBIFICIDAE	1.040			
	STATE	15	GAMMARIDAE	6.700	0.48	0.7000	FCH
			PHYSIDAE	1.000			
			TUBIFICIDAE	1.040			
CYANIDE	NATIONAL	10	SALMONIDAE	76.797	31.400	4.3972	ACR
			DAPHNIIDAE	84.000			
			CENTRARCHIDAE	114.210			
			CYPRINIDAE	114.210			
	STATE	5	SALMONIDAE	76.797	22.210	4.3000	ACR
			CENTRARCHIDAE	114.210			
			CYPRINIDAE	114.210			
DDT	NATIONAL	28	DAPHNIIDAE	106.121	0.550	0.0010	FRA
			PERCIDAE	0.900			
			BIVALVIA	1.000			
			GAMMARIDAE	1.700			
			SALMONIDAE	2.200			
	STATE	11	DAPHNIIDAE	0.900	0.210	0.0010	FRA
			PERCIDAE	1.000			
			GAMMARIDAE	1.004			
			HYALELLIDAE	2.200			
DIELDRIN	NATIONAL	12	DAPHNIIDAE	1.000	1.000	0.0019	FRA
			ASELLIDAE	5.600			
			SALMONIDAE	14.000			
	STATE	9	SALMONIDAE	14.000	1.000	0.0019	FRA
			SPHAEROLLIDAE	24.000			
			CENTRARCHIDAE	24.000			
ENDOSULFAN	NATIONAL	9	PALAEMONIDAE	30.000	0.220	0.1560	ACR
			CYPRINIDAE	1.870			
			PTERONARCIDAE	1.700			
	STATE	5	CENTRARCHIDAE	3.040	0.140	0.0030	ACR
			SALMONIDAE	0.291			
			CYPRINIDAE	1.870			
			CATOSTOMIDAE	3.040			
			CENTRARCHIDAE	3.811			

FOOTNOTES:

- ug/L — UNITS IN MICROGRAMS PER LITER
- FPV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- * — FAILED TO MEET MINIMUM DATA REQUIREMENT
- ** — STATE HAS LESS THAN A RESIDENT FAMILY—NATIONAL VALUE USED
- S — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
- M — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA



APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: MICHIGAN

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA		
					DISSOLVED (+)	30-DAY (+)	AVERAGE (++)
ENDRIN	NATIONAL	17	SALMONIDAE	0.29	0.291	0.0023	FRV
	STATE	10	SALMONIDAE	0.29	0.295	0.0023	FRV
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.231	0.231	0.0038	FRV
	STATE	2	PALAEMONIDAE	2.69	0.231	0.0038	FRV
LEAD	NATIONAL	7	SALMONIDAE	1.91	0.457	0.00025	FCV
	STATE	5	SALMONIDAE	1.91	0.454	0.00024	FCV
LINDANE	NATIONAL	16	ISOPERLIDAE	2.76	2.76	0.2274	ACR
	STATE	5	SALMONIDAE	3.49	3.491	0.0001	ACR
MERCURY	NATIONAL	8	SALMONIDAE	2.478	2.48	0.91	FRV
	STATE	7	SALMONIDAE	1.855	1.855	0.93	FRV
NICKEL	NATIONAL	16	DAPHNIDAE	68.871	68.214	3.3591	ACR
	STATE	13	DAPHNIDAE	70.439	70.439	3.4259	ACR
PCBS	NATIONAL	5	SALMONIDAE	0.157	0.157	0.014	FRV
	STATE	5	SALMONIDAE	0.159	0.159	0.014	FRV
SELENIUM	NATIONAL	16	HYALELLIDAE (TAU/TRIDAE)	20.048	20.048	5.0005	ACR
	STATE	5	HYALELLIDAE (TAU/TRIDAE)	75.917	75.917	18.9344	ACR
SILVER	NATIONAL	5	DAPHNIDAE	0.0000	0.00000		
	STATE	5	DOTTIDAE	0.0041	0.00041		
TOXAPHENE	NATIONAL	12	PERLIDAE	1.29	0.837	0.0037	ACR
	STATE	5	CENTRARCHIDAE	2.849	0.843	0.0168	ACR

STATE: MICHIGAN

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA		
					DISSOLVED (+)	30-DAY (+)	AVERAGE (++)
ZINC	NATIONAL	16	EMPIDIDAE	13.727	0.149	47.9268	SCV
	STATE	12	CORYDORIDAE	21.265	7.491	47.9268	SCV

FOOTNOTE
- \+ — UNITS IN MICROGRAMS PER LITER
- * * * — FRV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- * — FAILED TO MEET MINIMUM DATA REQUIREMENT
- ** — STATE HAS LESS THAN 5 RESIDENT FAMILIES—NATIONAL VALUE USED
- † — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERION
- ‡‡ — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE:

TREATMENT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE ANIMAL FAMILY	LOWEST VALUE (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA (µg/L)		
					MAXIMUM	30-DAY	AVERAGE
1 ZINC	NATIONAL	42	DAPHNIDAE	19.737	0.148	47.0000	ECV
			PHYSIDAE	41.000			
			SALMONIDAE	42.001			
			PHILOPOTAMIDAE	50.797			
	STATE	12	DAPHNIDAE	21.200	7.548	47.0000	ECV
			SALMONIDAE	33.972			
			PHYSIDAE	41.000			
			PHILOPOTAMIDAE	50.797			

STATE:

TREATMENT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE ANIMAL FAMILY	LOWEST VALUE (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA (µg/L)		
					MAXIMUM	30-DAY	AVERAGE
ALDRIN	NATIONAL	14	OSMERIDAE	1.01	0.288		
			ABELLIDAE	2.000			
			SPHAERIIDAE	5.000			
			SALMONIDAE	6.000			
	STATE	7	SALMONIDAE	1.01	0.250		
			ABELLIDAE	2.000			
			PERCICHTHYIDAE	4.000			
ARSENIC	NATIONAL	2	SALMONIDAE	190.000	110.000		
			SCIAENIDAE	1700.000			
	STATE	2	SALMONIDAE	190.000	46.977		
			SCIAENIDAE	1700.000			
BARIUM	NATIONAL	10	CERATOPOGONIDAE	5000.000	0.000	0.0000	AOR
			DAPHNIIDAE	5.000			
	STATE	10	DAPHNIIDAE	5.000	0.000	0.0000	AOR
			SALMONIDAE	5.000			
CHLORIDANE	NATIONAL	5	PLANORBIDAE	1.000	1.204	0.0043	FRV
			PERCICHTHYIDAE	2.000			
			PHYSIDAE	2.000			
	STATE	2	PLANORBIDAE	1.000	1.204	0.0043	FRV
			CENTRARCHIDAE	2.000			
			CENTRARCHIDAE	2.000			
CHROMIUM	NATIONAL	10	DAPHNIIDAE	5.000	10.100	0.2000	AOR
			PHILOPOTAMIDAE	5.000			
	STATE	8	DAPHNIIDAE	5.000	4.100	0.1141	AOR
			PHILOPOTAMIDAE	5.000			
2 COPPER	NATIONAL	20	DAPHNIIDAE	5.000	6.104	0.4000	FCV
			SALMONIDAE	5.000			
	STATE	10	DAPHNIIDAE	5.000	6.107	0.4015	FCV
			SALMONIDAE	5.000			
CYANIDE	NATIONAL	10	DAPHNIIDAE	5.000	21.400	4.2000	AOR
			SALMONIDAE	5.000			
	STATE	8	DAPHNIIDAE	5.000	37.007	4.7370	AOR
			SALMONIDAE	5.000			
DDT	NATIONAL	20	DAPHNIIDAE	5.000	0.000	0.0010	FRV
			SALMONIDAE	5.000			
	STATE	10	DAPHNIIDAE	5.000	0.000	0.0000	FRV
			SALMONIDAE	5.000			
DIELDRIN	NATIONAL	10	ABELLIDAE	5.000	1.000	0.0000	FRV
			SALMONIDAE	5.000			
	STATE	7	ABELLIDAE	5.000	1.110	0.0000	FRV
			SALMONIDAE	5.000			
ENDOSULFAN	NATIONAL	2	CYPRINIDAE	5.000	0.000	0.1000	AOR
			SALMONIDAE	5.000			
	STATE	3	CYPRINIDAE	5.000	0.000	0.1000	AOR
			SALMONIDAE	5.000			
			CENTRARCHIDAE (HYBRIDS)	5.000			

FOOTNOTE	
µg/L	micrograms per liter
FAV	final plant value
FRV	final residue value
ACR	computed by acute to chronic ratio method
FCV	final chronic value
ECV	sensitive species chronic value
F	failed to meet minimum data requirement
P	state has less than 4 resident families—national value used
E	hardness effect intercept value
	apply equation 2.7 to determine maximum criteria
M	hardness effect intercept value
	apply equation 2.7 to determine maximum and 30-day average criteria

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

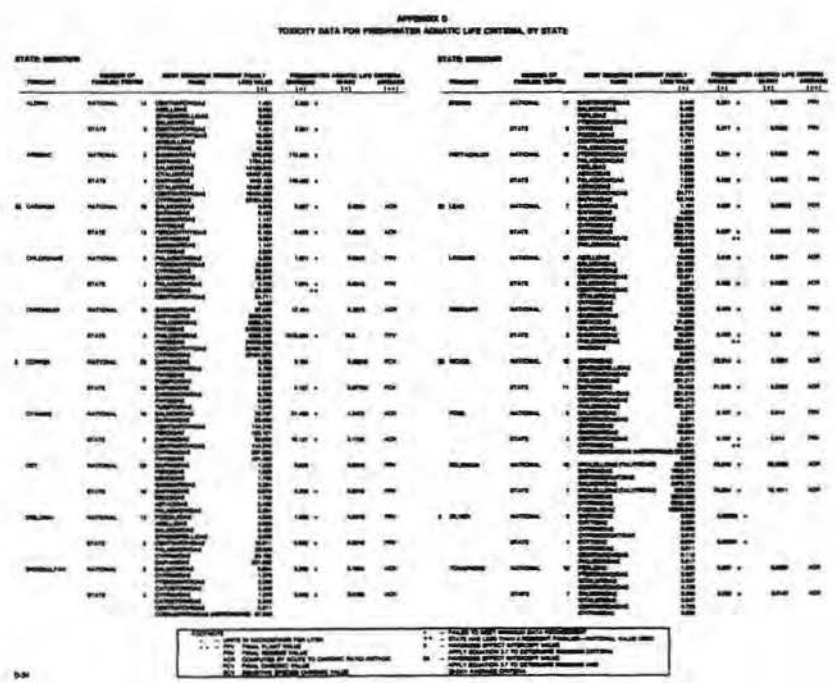
STATE:

TREATMENT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE ANIMAL FAMILY	LOWEST VALUE (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA (µg/L)		
					MAXIMUM	30-DAY	AVERAGE
DIAZINON	NATIONAL	17	EASTERCOTOMIDAE	0.449	0.081	0.0000	FRV
			SALMONIDAE	0.000			
			PERLIDAE	0.400			
			PTERONARCIDAE	0.547			
	STATE	9	CYPRINIDAE	0.710	0.277	0.0000	FRV
			PERCICHTHYIDAE	1.000			
			SALMONIDAE	1.011			
DIELDRIN	NATIONAL	10	PTERONARCIDAE	0.000	0.001	0.0000	FRV
			PHILANTHIDAE	1.000			
			PERLIDAE	1.000			
	STATE	4	PHILANTHIDAE	1.000	0.110	0.0000	FRV
			CENTRARCHIDAE	21.71			
			DAPHNIIDAE	53.74			
30 LEAD	NATIONAL	7	CYPRINIDAE	110.000	0.000	0.0000	FCV
			SALMONIDAE	0.000			
			DAPHNIIDAE	0.000			
	STATE	4	CYPRINIDAE	0.000	0.000	0.0010	ACR
			SALMONIDAE	0.000			
			CENTRARCHIDAE	0.000			
LINDANE	NATIONAL	10	PHILANTHIDAE	0.000	0.210	0.0014	ACR
			ABELLIDAE	0.000			
			SALMONIDAE	0.000			
	STATE	2	SALMONIDAE	0.000	0.174	0.1700	ACR
			CENTRARCHIDAE	0.000			
			ETHELURIDAE	0.000			
MERCURY	NATIONAL	3	CYPRINIDAE	0.000	0.470	0.00	FRV
			SALMONIDAE	0.000			
			HEPTAGENIIDAE	21.000			
	STATE	3	SALMONIDAE	0.000	0.710	0.1120	ACR
			SALMONIDAE	0.000			
			PHYSIDAE	0.000			
30 NICKEL	NATIONAL	10	DAPHNIIDAE	0.000	30.844	0.3961	ACR
			BRACHYCENTRIDAE	0.000			
			CENTRARCHIDAE	0.000			
	STATE	11	DAPHNIIDAE	21.211	21.810	0.3960	ACR
			HERICHTHYIDAE	21.211			
			CENTRARCHIDAE	21.211			
PCBs	NATIONAL	2	SALMONIDAE	0.000	0.127	0.014	FRV
			CENTRARCHIDAE	0.011			
			CYPRINIDAE	0.020			
	STATE	3	SALMONIDAE	0.000	0.000	0.014	FRV
			CENTRARCHIDAE	0.011			
			CYPRINIDAE	0.020			
			CORBICULIDAE (HYBRIDS)	0.000			
SELENIUM	NATIONAL	16	HYALELLIDAE (ITALYRIDAE)	260.000	35.000	12.0000	AOR
			DAPHNIIDAE	260.000			
			CHIRONOMIDAE	260.000			
	STATE	7	SALMONIDAE	0.000	30.000	10.1611	AOR
			HYALELLIDAE (ITALYRIDAE)	260.000			
			DAPHNIIDAE	260.000			
			CYPRINIDAE	260.000			
2 SILVER	NATIONAL	8	PERCIDAE	0.000			
			COTTIDAE	0.000	0.00000		
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.000			
	STATE	8	COTTIDAE	0.000	0.00000		
			PERCIDAE	0.000			
			CENTRARCHIDAE	0.000			
TOXAPHENE	NATIONAL	12	PHILANTHIDAE	0.011			
			PERLIDAE	0.000	0.007	0.0000	AOR
			PTERONARCIDAE	0.000			
			ETHELURIDAE	0.000			
	STATE	7	CENTRARCHIDAE	0.000	0.007	0.0147	AOR
			ETHELURIDAE	0.000			
			CENTRARCHIDAE	0.000			
			DAPHNIIDAE	0.000			

STATE:

TREATMENT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE ANIMAL FAMILY	LOWEST VALUE (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA (µg/L)		
					MAXIMUM	30-DAY	AVERAGE
1 ZINC	NATIONAL	18	DAPHNIIDAE	19.737	0.148	47.0000	ECV
			PHYSIDAE	41.000			
			SALMONIDAE	42.001			
			PHILOPOTAMIDAE	50.797			
	STATE	11	DAPHNIIDAE	21.200	7.554	47.0000	ECV
			SALMONIDAE	33.972			
			PHYSIDAE	41.000			
			PHILOPOTAMIDAE	50.797			
			PHILOMEDIDAE	50.797			

FOOTNOTE	
µg/L	micrograms per liter
FAV	final plant value
FRV	final residue value
ACR	computed by acute to chronic ratio method
FCV	final chronic value
ECV	sensitive species chronic value
F	failed to meet minimum data requirement
P	state has less than 4 resident families—national value used
E	hardness effect intercept value
	apply equation 2.7 to determine maximum criteria
M	hardness effect intercept value
	apply equation 2.7 to determine maximum and 30-day average criteria



APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

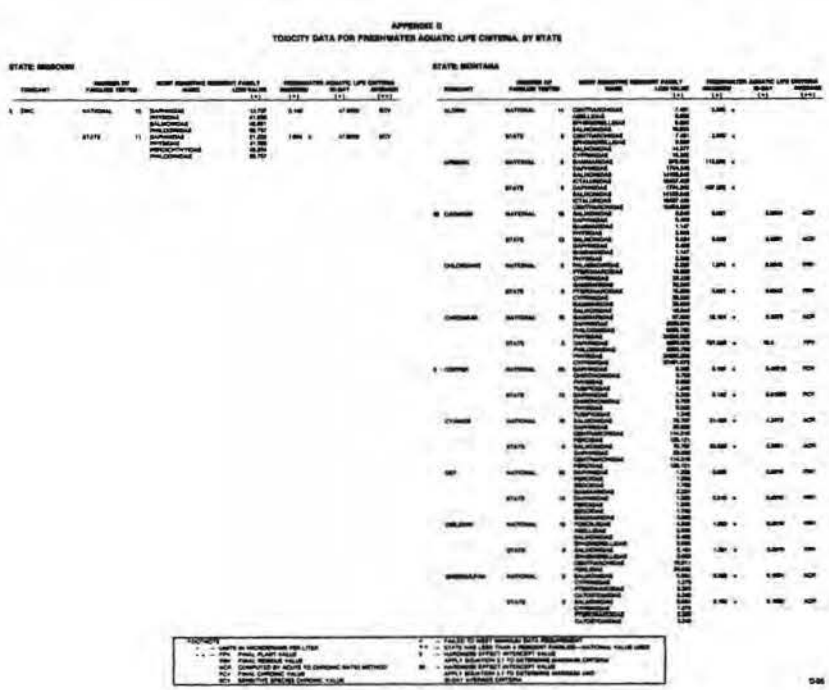
STATE: MINNESOTA

POLLUTANT	SOURCE OF FAMILIAR TAXA	No.	MOST SENSITIVE FAMILIAR TAXA	MOST SENSITIVE FAMILIAR GENUS	FAMILY LOWE VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA 30-DAY (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (ug/L)	
ALDRIN	NATIONAL	12	ORTHOPTERANS		1,400	3,000	*		
			AMELLIDAE		2,800				
			BALAENOPTERIDAE		2,800				
	STATE	2	BALAENOPTERIDAE		1,400	2,821	*		
			PERCIDAE		2,800				
ARSENIC	NATIONAL	3	SALMONIDAE		2,800				
			SALMONIDAE		174,400	72,000	*		
			CYPRINIDAE		2,800				
	STATE	4	CYPRINIDAE		174,400	116,400	*		
			CENTRARCHIDAE		2,800				
B. CADMIUM	NATIONAL	16	SALMONIDAE		2,800	3,201	*	0.003	ACR
			SALMONIDAE		2,800				
	STATE	13	CENTRARCHIDAE		2,800	0.003	ACR	0.0003	ACR
			PERCIDAE		2,800				
CHLORDANE	NATIONAL	5	PLANORBIDAE		2,800	1,201	*	0.004	ACR
			PLANORBIDAE		2,800				
	STATE	7	CYPRINIDAE		2,800	1,201	*	0.004	ACR
			CENTRARCHIDAE		2,800		**		
CHROMIUM	NATIONAL	16	SALMONIDAE		17,400	0.003	ACR	0.00	TRV
			PLANORBIDAE		2,800				
	STATE	2	PLANORBIDAE		174,400	N.A.	TRV	0.00	TRV
			CYPRINIDAE		2,800				
C. COPPER	NATIONAL	29	SALMONIDAE		2,800	0.00	0.0000	ACR	
			SALMONIDAE		2,800				
	STATE	16	SALMONIDAE		2,800	0.00	0.0000	ACR	
			PLANORBIDAE		2,800				
CYANIDE	NATIONAL	16	SALMONIDAE		2,800	21,400	1,000	ACR	
			SALMONIDAE		2,800				
	STATE	2	SALMONIDAE		2,800	10,400	0.700	ACR	
			CENTRARCHIDAE		2,800		**		
DDT	NATIONAL	16	SALMONIDAE		2,800	0.000	0.000	FAV	
			SALMONIDAE		2,800				
	STATE	16	SALMONIDAE		2,800	0.000	0.000	FAV	
			SALMONIDAE		2,800				
DIELDRIN	NATIONAL	12	SALMONIDAE		2,800	1,000	0.000	FAV	
			SALMONIDAE		2,800				
	STATE	2	SALMONIDAE		2,800	0.000	0.000	FAV	
			CYPRINIDAE		2,800				
ENDOSULFAN	NATIONAL	3	SALMONIDAE		2,800	0.000	0.000	ACR	
			CYPRINIDAE		2,800				
	STATE	3	CYPRINIDAE		2,800	0.000	0.000	ACR	
			CENTRARCHIDAE		2,800				

STATE: OREGON

POLLUTANT	SOURCE OF FAMILIAR TAXA	No.	MOST SENSITIVE FAMILIAR TAXA	MOST SENSITIVE FAMILIAR GENUS	FAMILY LOWE VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA 30-DAY (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (ug/L)	
ENDRIN	NATIONAL	17	SALMONIDAE		2,800	0.004	*	0.000	FAV
			SALMONIDAE		2,800				
	STATE	6	PERCIDAE		2,800	0.017	*	0.000	FAV
			SALMONIDAE		2,800				
METHOXYCLOR	NATIONAL	16	PERCIDAE		2,800	0.03	*	0.000	FAV
			SALMONIDAE		2,800				
	STATE	3	SALMONIDAE		2,800	0.03	*	0.000	FAV
			CENTRARCHIDAE		2,800				
M. LEAD	NATIONAL	7	SALMONIDAE		2,800	0.00	*	0.0000	FAV
			SALMONIDAE		2,800				
	STATE	3	SALMONIDAE		2,800	0.00	*	0.0000	FAV
			CENTRARCHIDAE		2,800		**		
LINDANE	NATIONAL	16	SALMONIDAE		2,800	0.00	*	0.004	ACR
			SALMONIDAE		2,800				
	STATE	6	SALMONIDAE		2,800	0.00	*	0.000	ACR
			CENTRARCHIDAE		2,800				
MERCURY	NATIONAL	5	SALMONIDAE		2,800	0.00	*	0.000	FAV
			SALMONIDAE		2,800				
	STATE	3	SALMONIDAE		2,800	0.00	*	0.000	FAV
			CENTRARCHIDAE		2,800				
M. NICKEL	NATIONAL	16	SALMONIDAE		2,800	0.000	*	0.000	ACR
			SALMONIDAE		2,800				
	STATE	11	SALMONIDAE		2,800	0.000	*	0.000	ACR
			CENTRARCHIDAE		2,800				
PCBS	NATIONAL	5	SALMONIDAE		2,800	0.00	*	0.014	FAV
			SALMONIDAE		2,800				
	STATE	2	SALMONIDAE		2,800	0.00	*	0.014	FAV
			CENTRARCHIDAE		2,800		**		
SELENIUM	NATIONAL	16	SALMONIDAE		2,800	0.000	*	0.000	ACR
			SALMONIDAE		2,800				
	STATE	4	SALMONIDAE		2,800	0.000	*	0.000	ACR
			CENTRARCHIDAE		2,800				
S. SILVER	NATIONAL	6	SALMONIDAE		2,800	0.000	*		
			SALMONIDAE		2,800				
	STATE	4	SALMONIDAE		2,800	0.000	*		
			CENTRARCHIDAE		2,800				
TOXAPHENE	NATIONAL	16	SALMONIDAE		2,800	0.000	*	0.000	ACR
			SALMONIDAE		2,800				
	STATE	7	SALMONIDAE		2,800	0.000	*	0.000	ACR
			CENTRARCHIDAE		2,800				

FOOTNOTE:
- * - LIMITS IN MICROGRAMS PER LITER
- FAV - FINAL PLANT VALUE
- FRV - FINAL RESIDUE VALUE
- ACR - COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV - FINAL CHRONIC VALUE
- SCV - SENSITIVE SPECIES CHRONIC VALUE
- ** - FAILED TO MEET MINIMUM DATA REQUIREMENT
- *** - STATE HAS LESS THAN 4 REMOVAL FAMILIES—NATIONAL VALUE USED
- N.A. - NARCOSIS EFFECT INTERCEPT VALUE
- TRV - APPLY EQUATION 2.1 TO DETERMINE MINIMUM AND 0.001 AVERAGE CRITERIA
- M - HARDNESS EFFECT INTERCEPT VALUE



APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: MISSOURI

POLLUTANT	SOURCE OF FAMILIAR TAXA	No.	MOST SENSITIVE FAMILIAR TAXA	MOST SENSITIVE FAMILIAR GENUS	FAMILY LOWE VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA 30-DAY (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (ug/L)	
1. ZINC	NATIONAL	15	DAPHNIIDAE		13,700	0.140	47.000	SCV	
			HYDRIDAE		41,000				
			SALMONIDAE		49,971				
			PHILODINIDAE		69,747				
	STATE	11	DAPHNIIDAE		17,000	0.000	*	47.000	SCV
			HYDRIDAE		41,000				
			PERCENTYPIDAE		69,979				
			PHILODINIDAE		69,747				

STATE: MONTANA

POLLUTANT	SOURCE OF FAMILIAR TAXA	No.	MOST SENSITIVE FAMILIAR TAXA	MOST SENSITIVE FAMILIAR GENUS	FAMILY LOWE VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA 30-DAY (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (ug/L)	
ALDRIN	NATIONAL	11	CHIRONOMIDAE		2,800	3,000	*		
			ASELLIDAE		5,600				
			BRANCHIURIDAE		5,600				
	STATE	2	CHIRONOMIDAE		2,800	2,000	*		
			CENTRARCHIDAE		5,600				
ARSENIC	NATIONAL	3	DAPHNIIDAE		174,400	112,000	*		
			SALMONIDAE		174,400				
			CYPRINIDAE		174,400				
	STATE	3	DAPHNIIDAE		174,400	167,200	*		
			SALMONIDAE		174,400				
			CYPRINIDAE		174,400				
B. CADMIUM	NATIONAL	16	SALMONIDAE		5,600	0.001		0.000	ACR
			SALMONIDAE		5,600				
	STATE	13	SALMONIDAE		5,600	0.000		0.000	ACR
			CENTRARCHIDAE		5,600				
CHLORDANE	NATIONAL	5	PLANORBIDAE		5,600	1,201	*	0.004	FAV
			PLANORBIDAE		5,600				
	STATE	3	CYPRINIDAE		5,600	1,201	*	0.004	FAV
			CENTRARCHIDAE		5,600				
CHROMIUM	NATIONAL	16	SALMONIDAE		5,600	16,000	*	0.000	ACR
			SALMONIDAE		5,600				
	STATE	2	SALMONIDAE		5,600	181,000	*	N.A.	TRV
			CYPRINIDAE		5,600				
C. COPPER	NATIONAL	29	CYPRINIDAE		5,600	0.000	*	0.000	FCV
			SALMONIDAE		5,600				
	STATE	16	SALMONIDAE		5,600	0.000	*	0.000	FCV
			CENTRARCHIDAE		5,600				
CYANIDE	NATIONAL	16	SALMONIDAE		5,600	21,400	*	1,000	ACR
			SALMONIDAE		5,600				
	STATE	4	SALMONIDAE		5,600	10,400	*	0.700	ACR
			CENTRARCHIDAE		5,600				
DDT	NATIONAL	16	SALMONIDAE		5,600	0.000	*	0.000	FAV
			SALMONIDAE		5,600				
	STATE	16	SALMONIDAE		5,600	0.000	*	0.000	FAV
			SALMONIDAE		5,600				
DIELDRIN	NATIONAL	12	SALMONIDAE		5,600	1,000	*	0.000	FAV
			SALMONIDAE		5,600				
	STATE	2	SALMONIDAE		5,600	1,000	*	0.000	FAV
			CYPRINIDAE		5,600				
ENDOSULFAN	NATIONAL	3	SALMONIDAE		5,600	0.000	*	0.000	ACR
			CYPRINIDAE		5,600				
	STATE	3	CYPRINIDAE		5,600	0.000	*	0.000	ACR
			CENTRARCHIDAE		5,600				

FOOTNOTE:
- * - LIMITS IN MICROGRAMS PER LITER
- FAV - FINAL PLANT VALUE
- FRV - FINAL RESIDUE VALUE
- ACR - COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV - FINAL CHRONIC VALUE
- SCV - SENSITIVE SPECIES CHRONIC VALUE
- ** - FAILED TO MEET MINIMUM DATA REQUIREMENT
- *** - STATE HAS LESS THAN 4 REMOVAL FAMILIES—NATIONAL VALUE USED
- N.A. - NARCOSIS EFFECT INTERCEPT VALUE
- TRV - APPLY EQUATION 2.1 TO DETERMINE MINIMUM AND 0.001 AVERAGE CRITERIA
- M - HARDNESS EFFECT INTERCEPT VALUE

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: MONTANA

TOXICANT	SOURCE OF TOXICITY DATA		SPECIES	FINAL ACUTE VALUE (µg/L)
ENDRIN	NATIONAL	17	RAINBOW TROUT	0.45
			SALMONIDAE	0.45
			PERLIDAE	0.45
	STATE	5	PTERONARCYIDAE	0.45
			SALMONIDAE	0.59
			PERLIDAE	0.59
HEPTACHLOR	NATIONAL	16	PTERONARCYIDAE	0.52
			CHIRONOMIDAE	1.011
			PERLIDAE	1.52
			SALMONIDAE	2.53
	STATE	7	PTERONARCYIDAE	0.52
			PERLIDAE	1.52
			CHIRONOMIDAE	2.53
M LEAD	NATIONAL	7	BRANCHINECTA	0.45
			SALMONIDAE	1.32
			SALMONIDAE	54.08
	STATE	5	CYPRINIDAE	465.716
			SALMONIDAE	1.32
			SALMONIDAE	54.08
LINDANE	NATIONAL	16	CHIRONOMIDAE	465.716
			PERLIDAE	52.571
			SALMONIDAE	54.08
	STATE	5	SALMONIDAE	52.571
			SALMONIDAE	54.08
			SIMULIIDAE	65.449
MERCURY	NATIONAL	5	DAPHNIDAE	0.88
			CHIRONOMIDAE	0.88
			ARCADIDAE	0.908
	STATE	2	SALMONIDAE	54.08
			DAPHNIDAE	0.88
			SALMONIDAE	0.908
M SHORE	NATIONAL	16	PTERONARCYIDAE	52.571
			CHIRONOMIDAE	465.716
			CHIRONOMIDAE	465.716
	STATE	3	PERLODIDAE	21.717
			CHIRONOMIDAE	465.716
			CHIRONOMIDAE	465.716
ZINC	NATIONAL	3	CHIRONOMIDAE	1.011
			DAPHNIDAE	1.011
			CHIRONOMIDAE	2.53
	STATE	3	SALMONIDAE	0.52
			CHIRONOMIDAE	2.53
			CYPRINIDAE	8.287
SELENIUM	NATIONAL	16	HYALELLIDAE (TALITRIDAE)	20.000
			DAPHNIDAE	4654.474
			CHIRONOMIDAE	5855.000
	STATE	7	HYALELLIDAE (TALITRIDAE)	20.000
			SALMONIDAE	54.08
			DAPHNIDAE	5855.000
S SILVER	NATIONAL	5	DAPHNIDAE	0.0000
			CHIRONOMIDAE	0.0000
			DAPHNIDAE	0.0000
	STATE	3	CHIRONOMIDAE	0.0000
			CYPRINIDAE	0.0011
			SALMONIDAE	0.0011
TOLUENE	NATIONAL	12	CHIRONOMIDAE	4.192
			DAPHNIDAE	1.000
			PTERONARCYIDAE	1.000
			PERLODIDAE	1.000
	STATE	10	PERLIDAE	1.000
			CHIRONOMIDAE	1.000
			CHIRONOMIDAE	2.000
			CHIRONOMIDAE	3.000
			CHIRONOMIDAE	3.047

STATE: MONTANA

TOXICANT	SOURCE OF TOXICITY DATA		SPECIES	FINAL ACUTE VALUE (µg/L)
S ZINC	NATIONAL	16	DAPHNIDAE	15.797
			PATERIDAE	31.000
			SALMONIDAE	43.897
			PHILOPOTAMIDAE	56.747
	STATE	16	DAPHNIDAE	15.797
			PATERIDAE	31.000
			SALMONIDAE	43.897
			PHILOPOTAMIDAE	56.747

FOOTNOTE			
		µg/L	= MICROGRAMS PER LITER
		FPV	= FINAL PLANT VALUE
		FRV	= FINAL RENKUE VALUE
		ACR	= COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
		FCV	= FINAL CHRONIC VALUE
		SCV	= SENSITIVE SPECIES CHRONIC VALUE
		F	= FAILED TO MEET MINIMUM DATA REQUIREMENT
		S	= STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
		H	= HARDNESS EFFECT INTERCEPT VALUE
			APPLY EQUATION 2.1 TO DETERMINE MAXIMUM CRITERIA
		M	= HARDNESS EFFECT INTERCEPT VALUE
			APPLY EQUATION 2.1 TO DETERMINE MAXIMUM AND 24-HOUR AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: NEBRASKA

TOXICANT	SOURCE OF TOXICITY DATA		SPECIES	FINAL ACUTE VALUE (µg/L)
ALDRIN	NATIONAL	14	CHIRONOMIDAE	7.481
			HELLIDAE	8.000
			PTERONARCYIDAE	8.000
	STATE	2	SALMONIDAE	4.000
			CHIRONOMIDAE	7.481
			HELLIDAE	8.000
ARSENIC	NATIONAL	3	SIMULIIDAE	110.000
			DAPHNIDAE	174.000
			SALMONIDAE	1000.000
			ICTALURIDAE	9000.000
	STATE	4	DAPHNIDAE	160.448
			SALMONIDAE	1000.000
			ICTALURIDAE	9000.000
			CHIRONOMIDAE	9000.000
M CADMIUM	NATIONAL	16	SALMONIDAE	0.207
			DAPHNIDAE	0.000
			SALMONIDAE	0.000
	STATE	17	PERLODIDAE	0.000
			CHIRONOMIDAE	0.000
			DAPHNIDAE	0.000
CHLORDANE	NATIONAL	6	PALAEMONIDAE	0.000
			PTERONARCYIDAE	0.000
			CYPRINIDAE	0.000
	STATE	3	CYPRINIDAE	0.000
			SALMONIDAE	0.000
			CHIRONOMIDAE	54.721
CHROMIUM	NATIONAL	16	DAPHNIDAE	0.000
			DAPHNIDAE	81.000
			PHILOPOTAMIDAE	0.000
	STATE	7	PHILOPOTAMIDAE	0.000
			DAPHNIDAE	0.000
			PHILOPOTAMIDAE	0.000
S COPPER	NATIONAL	16	PERCOPSIFORMES	0.000
			CHIRONOMIDAE	0.000
			PHYSIDAE	0.000
	STATE	16	TEMPERIDAE	1.000
			DAPHNIDAE	0.000
			CHIRONOMIDAE	0.000
CYANIDE	NATIONAL	16	PHYSIDAE	1.000
			TEMPERIDAE	1.000
			SALMONIDAE	25.000
			DAPHNIDAE	52.000
			CHIRONOMIDAE	112.000
	STATE	6	SALMONIDAE	25.000
			DAPHNIDAE	52.000
			CHIRONOMIDAE	112.000
DDT	NATIONAL	20	PHYSIDAE	1.000
			HELLIDAE	1.000
			SIMULIIDAE	1.000
	STATE	9	DAPHNIDAE	1.000
			HELLIDAE	1.000
			CHIRONOMIDAE	1.000
ENDRIN	NATIONAL	13	PERLODIDAE	0.000
			HELLIDAE	0.000
			SPHAERIIDAE	0.000
	STATE	4	SALMONIDAE	0.000
			CHIRONOMIDAE	0.000
			CYPRINIDAE	0.000
			DAPHNIDAE	0.000
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.000
			CYPRINIDAE	1.000
			PTERONARCYIDAE	1.000
			CATOSTOMIDAE	3.000
	STATE	6	SALMONIDAE	0.000
			CYPRINIDAE	1.000
			CATOSTOMIDAE	3.000
			CHIRONOMIDAE	3.011

STATE: NEBRASKA

TOXICANT	SOURCE OF TOXICITY DATA		SPECIES	FINAL ACUTE VALUE (µg/L)
DIAZINON	NATIONAL	17	BAETIDISTONE	0.400
			SALMONIDAE	0.400
			PERLIDAE	0.400
	STATE	5	SALMONIDAE	0.400
			PTERONARCYIDAE	0.400
			CHIRONOMIDAE (ANNORHICHA)	1.011
HEPTACHLOR	NATIONAL	16	PTERONARCYIDAE	0.520
			PALAEMONIDAE	1.000
			PERLIDAE	1.000
			NEMOURIDAE	1.000
	STATE	3	SALMONIDAE	0.520
			CHIRONOMIDAE	1.440
			CHIRONOMIDAE	55.000
			DAPHNIDAE	55.000
			CYPRINIDAE	174.000
M LEAD	NATIONAL	7	CYPRINIDAE	0.000
			DAPHNIDAE	0.000
			DAPHNIDAE	54.000
	STATE	5	CYPRINIDAE	54.000
			CYPRINIDAE	54.000
			CHIRONOMIDAE	54.000
LINDANE	NATIONAL	16	HELLIDAE	54.000
			PTERONARCYIDAE	54.000
			DAPHNIDAE	54.000
	STATE	6	SALMONIDAE	54.000
			CHIRONOMIDAE	54.000
			ICTALURIDAE	54.000
MERCURY	NATIONAL	6	DAPHNIDAE	54.000
			DAPHNIDAE	54.000
			ARCADIDAE	54.000
	STATE	4	DAPHNIDAE	54.000
			SALMONIDAE	54.000
			CHIRONOMIDAE	54.000
M NICKEL	NATIONAL	16	DAPHNIDAE	54.000
			BRACHYCENTRIDAE	54.000
			PHYSIDAE	54.000
	STATE	16	PHILOPOTAMIDAE	54.000
			PERCOPSIFORMES	54.000
			PHYSIDAE	54.000
ZINC	NATIONAL	3	CHIRONOMIDAE	54.000
			DAPHNIDAE	54.000
			CHIRONOMIDAE	54.000
	STATE	3	CHIRONOMIDAE	54.000
			CYPRINIDAE	54.000
			CHIRONOMIDAE (ANNORHICHA)	54.000
SELENIUM	NATIONAL	16	HYALELLIDAE (TALITRIDAE)	54.000
			DAPHNIDAE	54.000
			CHIRONOMIDAE	54.000
	STATE	7	HYALELLIDAE (TALITRIDAE)	54.000
			DAPHNIDAE	54.000
			SALMONIDAE	54.000
			CHIRONOMIDAE	54.000
S SILVER	NATIONAL	5	DAPHNIDAE	54.000
			CHIRONOMIDAE	54.000
			DAPHNIDAE	54.000
	STATE	3	CHIRONOMIDAE	54.000
			CYPRINIDAE	54.000
TOLUENE	NATIONAL	12	CHIRONOMIDAE	54.000
			PTERONARCYIDAE	54.000
			ICTALURIDAE	54.000
			CHIRONOMIDAE	54.000
	STATE	7	SALMONIDAE	54.000
			ICTALURIDAE	54.000
			CHIRONOMIDAE	54.000
			CYPRINIDAE	54.000

FOOTNOTE			
		µg/L	= MICROGRAMS PER LITER
		FPV	= FINAL PLANT VALUE
		FRV	= FINAL RENKUE VALUE
		ACR	= COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
		FCV	= FINAL CHRONIC VALUE
		SCV	= SENSITIVE SPECIES CHRONIC VALUE
		F	= FAILED TO MEET MINIMUM DATA REQUIREMENT
		S	= STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
		H	= HARDNESS EFFECT INTERCEPT VALUE
			APPLY EQUATION 2.1 TO DETERMINE MAXIMUM CRITERIA
		M	= HARDNESS EFFECT INTERCEPT VALUE
			APPLY EQUATION 2.1 TO DETERMINE MAXIMUM AND 24-HOUR AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: NEBRASKA

PENDANT	NUMBER OF FAMILIES TESTED		GENUS MEAN RECIPROCAL RANK	FAMILY NAME	FAMILY LOW VALUE (ug/L)	FRESHWATER ACUTE LIFE CRITERIA MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA ELIGIBLE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA CHRONIC (ug/L)
X ZINC	NATIONAL	15	1	SALMONIDAE	13,737	0.149	47.8958	SCV
			2	CENTRARCHIDAE	41,000			
			3	SALMONIDAE	43,963			
			4	PHILOPOTAMIDAE	53,737			
	STATE	11	1	SALMONIDAE	13,737	0.749 *	47.8958	SCV
			2	PERCIDAE	41,000			
			3	SALMONIDAE	43,963			
			4	HEPTAGENIIDAE	45,941			

STATE: NEVADA

PENDANT	NUMBER OF FAMILIES TESTED		GENUS MEAN RECIPROCAL RANK	FAMILY NAME	FAMILY LOW VALUE (ug/L)	FRESHWATER ACUTE LIFE CRITERIA MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA ELIGIBLE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA CHRONIC (ug/L)
ALDRIN	NATIONAL	12	1	CENTRARCHIDAE	7,401	3.000 *		
			2	PERLIDAE	8,600			
			3	SALMONIDAE	8,600			
			4	CENTRARCHIDAE	8,600			
			5	PERLODIDAE	7,751			
	STATE	5	1	SALMONIDAE	7,401	1.700 *		
			2	CENTRARCHIDAE	8,600			
			3	PERLODIDAE	7,751			
ARSENIC	NATIONAL	8	1	SALMONIDAE	850,000	113,000 *		
			2	SALMONIDAE	1,700,000			
			3	PERLIDAE	1,700,000			
	STATE	5	1	SALMONIDAE	850,000	355,400 *		
			2	SALMONIDAE	1,700,000			
			3	CENTRARCHIDAE	1,700,000			
X CADMIUM	NATIONAL	10	1	SALMONIDAE	0.267	0.267 *	0.0393	ACR
			2	SALMONIDAE	0.267			
			3	PERLIDAE	0.267			
	STATE	10	1	SALMONIDAE	0.267	0.267	0.0393	ACR
			2	SALMONIDAE	1.10			
			3	PERLIDAE	1.10			
CHLORDANE	NATIONAL	5	1	PERLODIDAE	1.204	1.204 *	0.0043	FAV
			2	PTERONARCYIDAE	2.400			
			3	CENTRARCHIDAE	2.400			
	STATE	5	1	CENTRARCHIDAE	2.400	4.000 *	0.0043	FAV
			2	SALMONIDAE	2.400			
			3	CENTRARCHIDAE	2.400			
CHROMIUM	NATIONAL	10	1	SALMONIDAE	10.711	10.344 *	0.2835	ACR
			2	SALMONIDAE	10.711			
			3	PERLIDAE	10.711			
	STATE	4	1	SALMONIDAE	10.711	716.554 *	ICE	FAV
			2	SALMONIDAE	10.711			
			3	PERLODIDAE	10.711			
X COPPER	NATIONAL	20	1	SALMONIDAE	6.540	6.54	0.4825	FCV
			2	SALMONIDAE	6.540			
			3	PERLIDAE	6.540			
	STATE	10	1	SALMONIDAE	6.540	6.101	0.87716	FCV
			2	SALMONIDAE	6.540			
			3	PLATYCNEMIDAE	6.540			
CYANIDE	NATIONAL	10	1	SALMONIDAE	11.210	21.436 *	5.2000	ACR
			2	SALMONIDAE	11.210			
			3	PERLIDAE	11.210			
	STATE	2	1	SALMONIDAE	11.210	30.000 *	5.2000	ACR
			2	SALMONIDAE	11.210			
DDT	NATIONAL	30	1	PERLIDAE	1.100	0.550	0.0010	FAV
			2	PERLIDAE	1.100			
			3	PERLIDAE	1.100			
	STATE	11	1	SALMONIDAE	1.100	0.231 *	0.0010	FAV
			2	PERLIDAE	1.100			
			3	PTERONARCYIDAE	1.100			
ENDRIN	NATIONAL	10	1	PERLODIDAE	0.0760	1.500 *	0.0023	FAV
			2	ASELLIDAE	0.0760			
			3	SALMONIDAE	0.0760			
	STATE	2	1	SALMONIDAE	0.0760	0.710 *	0.0010	FAV
			2	SALMONIDAE	0.0760			
			3	CENTRARCHIDAE	0.0760			
ENDOSULFAN	NATIONAL	5	1	CENTRARCHIDAE	0.0760	0.220 *	0.056	ACR
			2	PERLIDAE	0.0760			
			3	PERLODIDAE	0.0760			
	STATE	5	1	PERLODIDAE	0.0760	0.150 *	0.0560	ACR
			2	CENTRARCHIDAE	0.0760			
			3	SALMONIDAE	0.0760			

FOOTNOTE

* — UNITS IN MICROGRAMS PER LITER

FAV — FINAL PLANT VALUE

FRV — FINAL RESIDUE VALUE

ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD

FCV — FINAL CHRONIC VALUE

SCV — SENSITIVE SPECIES CHRONIC VALUE

** — FAILED TO MEET MINIMUM DATA REQUIREMENT

*** — STATE HAS LESS THAN 4 RECENT FAMILIES—NATIONAL VALUE USED

I — HARDNESS EFFECT INTERCEPT VALUE

S — APPLY EQUATION 2.7 TO DETERMINE MINIMUM CRITERIA

SAM — APPLY EQUATION 2.7 TO DETERMINE MINIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: NEVADA

PENDANT	NUMBER OF FAMILIES TESTED		GENUS MEAN RECIPROCAL RANK	FAMILY NAME	FAMILY LOW VALUE (ug/L)	FRESHWATER ACUTE LIFE CRITERIA MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA ELIGIBLE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA CHRONIC (ug/L)
ENDRIN	NATIONAL	17	1	SALMONIDAE	0.149	0.284 *	0.0600	FAV
			2	SALMONIDAE	0.149			
			3	PERLIDAE	0.149			
	STATE	10	1	PERLIDAE	0.149	0.500 *	0.0600	FAV
			2	SALMONIDAE	0.149			
			3	PTERONARCIDAE	0.149			
			4	PERLODIDAE	0.149			
HEPTACHLOR	NATIONAL	14	1	PTERONARCYIDAE	0.214	0.0520	0.0038	
			2	PALUDIDAE	0.214			
			3	PERLIDAE	0.214			
	STATE	7	1	HEPTAGENIIDAE	0.214	0.100 *	0.0038	FAV
			2	PTERONARCYIDAE	0.214			
			3	CENTRARCHIDAE	0.214			
X LEAD	NATIONAL	7	1	SALMONIDAE	1.32	0.262 *	0.0025	FCV
			2	SALMONIDAE	1.32			
			3	SALMONIDAE	1.32			
	STATE	7	1	SALMONIDAE	1.32	0.262 *	0.0025	FCV
			2	SALMONIDAE	1.32			
			3	CENTRARCHIDAE	1.32			
LINDANE	NATIONAL	14	1	ASELLIDAE	0.218	0.2210	0.0080	ACR
			2	SALMONIDAE	0.218			
			3	SALMONIDAE	0.218			
	STATE	5	1	CENTRARCHIDAE	0.218	0.380 *	0.0010	ACR
			2	SALMONIDAE	0.218			
			3	CENTRARCHIDAE	0.218			
MERCURY	NATIONAL	5	1	ICTALURIDAE	0.218	0.450 *	0.25	FAV
			2	SALMONIDAE	0.218			
			3	MESITIDAE	0.218			
	STATE	2	1	SALMONIDAE	0.218	0.181 *	0.0031	ACR
			2	SALMONIDAE	0.218			
			3	SALMONIDAE	0.218			
X MIXTURE	NATIONAL	10	1	SALMONIDAE	0.218	0.214 *	0.0001	ACR
			2	PTERONARCIDAE	0.218			
			3	CENTRARCHIDAE	0.218			
	STATE	3	1	PALUDIDAE	0.218	0.1000 *	0.0007	ACR
			2	PALUDIDAE	0.218			
			3	PERLODIDAE	0.218			
PCB	NATIONAL	7	1	PERLODIDAE	0.127	0.127 *	0.014	FAV
			2	PTERONARCIDAE	0.127			
			3	PTERONARCIDAE	0.127			
	STATE	2	1	SALMONIDAE	0.127	0.100 *	0.014	FAV
			2	CENTRARCHIDAE	0.127	**		
SELENIUM	NATIONAL	10	1	HYALELLIDAE (TALITRIDAE)	0.0500	18.400 *	5.0000	ACR
			2	CYPRINODONTIDAE	0.0500			
			3	SALMONIDAE	0.0500			
	STATE	5	1	HYALELLIDAE (TALITRIDAE)	0.0500	54.101 *	14.2575	ACR
			2	SALMONIDAE	0.0500			
			3	PERLODIDAE	0.0500			
X SILVER	NATIONAL	5	1	SALMONIDAE	0.0500	0.0000 *		
			2	CYPRINIDAE	0.0500			
			3	CYPRINODONTIDAE	0.0500			
	STATE	3	1	CYPRINIDAE	0.0500	0.0000 *		
			2	CYPRINIDAE	0.0500			
			3	SALMONIDAE	0.0500			
TOXAPHENE	NATIONAL	12	1	CENTRARCHIDAE	0.0500	0.207 *	0.0002	ACR
			2	PERLIDAE	0.0500			
			3	PTERONARCIDAE	0.0500			
	STATE	10	1	ICTALURIDAE	0.0500			
			2	CENTRARCHIDAE	0.0500	0.014 *	0.0002	ACR
			3	PTERONARCIDAE	0.0500			
			4	ICTALURIDAE	0.0500			
			5	SALMONIDAE	0.0500			

FOOTNOTE

* — UNITS IN MICROGRAMS PER LITER

FAV — FINAL PLANT VALUE

FRV — FINAL RESIDUE VALUE

ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD

FCV — FINAL CHRONIC VALUE

SCV — SENSITIVE SPECIES CHRONIC VALUE

** — FAILED TO MEET MINIMUM DATA REQUIREMENT

*** — STATE HAS LESS THAN 4 RECENT FAMILIES—NATIONAL VALUE USED

I — HARDNESS EFFECT INTERCEPT VALUE

S — APPLY EQUATION 2.7 TO DETERMINE MINIMUM CRITERIA

SAM — APPLY EQUATION 2.7 TO DETERMINE MINIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: NEW HAMPSHIRE

TOXICANT	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	FAMILY LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA ACUTE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA CHRONIC (ug/L)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	3.48	3.48 *	
			ANELLIDAE	5.60		
			PTYCHOCHEILIDAE	5.60		
			SALMONIDAE	14.00		
	STATE	5	SALMONIDAE	1.78	1.78 *	
			CENTRARCHIDAE	3.48		
			CYPRINODONTIDAE	5.60		
ARSENIC	NATIONAL	9	CENTRARCHIDAE	112.00	112.00 *	
			SALMONIDAE	1,000.00		
			SALMONIDAE	1,120.00		
	STATE	4	CENTRARCHIDAE	1,120.00	148.00 *	
			SALMONIDAE	1,120.00		
			CYPRINIDAE	5,600.00		
B. CADMIUM	NATIONAL	18	CENTRARCHIDAE	1.10	0.97	0.004 ACR
			SALMONIDAE	1.60		
			SALMONIDAE	1.60		
	STATE	10	SALMONIDAE	1.60	0.517	0.0052 ACR
			CENTRARCHIDAE	1.60		
			CENTRARCHIDAE	1.60		
CHLORDANE	NATIONAL	5	CYPRINODONTIDAE	1.60	1.51 *	0.0043 FRV
			PLEURONECTIDAE	2.40		
			CENTRARCHIDAE	2.40		
	STATE	4	CENTRARCHIDAE	2.40	2.13 *	0.0043 FRV
			CENTRARCHIDAE	2.40		
			CYPRINIDAE	4.80		
CHROMIUM	NATIONAL	18	CENTRARCHIDAE	21.11	15.154	2.015 ACR
			CENTRARCHIDAE	21.11		
			SALMONIDAE	21.11		
	STATE	4	SALMONIDAE	21.11	1,000.00 *	15.5 FRV
			SALMONIDAE	21.11		
			CENTRARCHIDAE	21.11		
E. COPPER	NATIONAL	20	CENTRARCHIDAE	2.90	2.90	2.4870 FCV
			CENTRARCHIDAE	2.90		
			CENTRARCHIDAE	2.90		
	STATE	10	CENTRARCHIDAE	2.90	5.128	7.4014 FCV
			CENTRARCHIDAE	2.90		
			CENTRARCHIDAE	2.90		
CYANIDE	NATIONAL	18	CENTRARCHIDAE	21.11	21.428 *	4.0473 ACR
			CENTRARCHIDAE	21.11		
			SALMONIDAE	21.11		
	STATE	4	SALMONIDAE	21.11	20.000 *	3.2007 ACR
			CENTRARCHIDAE	21.11		
			CENTRARCHIDAE	21.11		
DDT	NATIONAL	20	CENTRARCHIDAE	0.001	0.001	0.0010 FRV
			CENTRARCHIDAE	0.001		
			CENTRARCHIDAE	0.001		
	STATE	7	CENTRARCHIDAE	0.001	0.002 *	0.0010 FRV
			CENTRARCHIDAE	0.001		
			CENTRARCHIDAE	0.001		
DIELDRIN	NATIONAL	18	CENTRARCHIDAE	0.001	1.250 *	0.0019 FRV
			SALMONIDAE	0.001		
			SALMONIDAE	0.001		
	STATE	3	SALMONIDAE	0.001	0.002 *	0.0019 FRV
			CENTRARCHIDAE	0.001		
			CENTRARCHIDAE	0.001		
ENDRIN	NATIONAL	5	SALMONIDAE	0.001	0.002 *	0.0023 ACR
			CENTRARCHIDAE	0.001		
			CENTRARCHIDAE	0.001		
	STATE	3	CENTRARCHIDAE	0.001	0.002 *	0.0023 ACR
			CENTRARCHIDAE	0.001		
			CYPRINIDAE	0.001		

STATE: NEW HAMPSHIRE

TOXICANT	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	FAMILY LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA ACUTE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA CHRONIC (ug/L)
ENDRIN	NATIONAL	17	SALMONIDAE	0.035	0.001 *	0.0023 FRV
			PERCIDAE	0.035		
			SALMONIDAE	0.035		
	STATE	5	SALMONIDAE	0.035	0.141 **	0.0023 FRV
			CYPRINIDAE	0.071		
			CENTRARCHIDAE	0.071		
HEPTACHLOR	NATIONAL	18	PTERONARCIDAE	0.260	0.261 *	0.0038 FRV
			PERLIDAE	0.260		
			PERLIDAE	0.260		
	STATE	5	SALMONIDAE	0.260	0.005 *	0.0038 FRV
			SALMONIDAE	0.260		
			CYPRINIDAE	0.520		
M. LEAD	NATIONAL	7	SIMULIIDAE	1.32	1.32 *	0.0025 FCV
			SIMULIIDAE	2.64		
			SALMONIDAE	2.64		
	STATE	4	CYPRINIDAE	2.64	14.716 *	0.0025 FCV
			CYPRINIDAE	2.64		
			CENTRARCHIDAE	2.64		
LINDANE	NATIONAL	18	PTERONARCIDAE	2.64	2.64 *	0.0031 ACR
			SALMONIDAE	2.64		
			SALMONIDAE	2.64		
	STATE	6	CENTRARCHIDAE	2.64	4.208 *	0.0031 ACR
			CENTRARCHIDAE	2.64		
			CYPRINIDAE	2.64		
MERCURY	NATIONAL	5	CYPRINIDAE	2.40	2.40 *	0.38 FRV
			SALMONIDAE	2.40		
			SALMONIDAE	2.40		
	STATE	3	SALMONIDAE	2.40	2.400 *	0.38 FRV
			SALMONIDAE	2.40		
			CYPRINIDAE	4.80		
M. NICKEL	NATIONAL	18	CENTRARCHIDAE	26.71	26.71 *	2.965 ACR
			PTERONARCIDAE	26.71		
			CENTRARCHIDAE	26.71		
	STATE	10	CENTRARCHIDAE	26.71	19.139 *	2.4705 ACR
			CENTRARCHIDAE	26.71		
			CENTRARCHIDAE	26.71		
PCBS	NATIONAL	5	CENTRARCHIDAE	0.014	0.14 *	0.014 FRV
			CENTRARCHIDAE	0.014		
			CENTRARCHIDAE	0.014		
	STATE	4	CENTRARCHIDAE	0.014	0.000 *	0.014 FRV
			CENTRARCHIDAE	0.014		
			CYPRINIDAE	0.014		
PENTACHLOROPHENOL	NATIONAL	18	CENTRARCHIDAE	0.014	0.014 *	0.0081 FRV
			CENTRARCHIDAE	0.014		
			CENTRARCHIDAE	0.014		
	STATE	3	CENTRARCHIDAE	0.014	0.014 *	0.0081 FRV
			CENTRARCHIDAE	0.014		
			CYPRINIDAE	0.014		
SELENIUM	NATIONAL	18	CENTRARCHIDAE	0.014	0.014 *	0.0081 FRV
			CENTRARCHIDAE	0.014		
			CENTRARCHIDAE	0.014		
	STATE	3	CENTRARCHIDAE	0.014	0.014 *	0.0081 FRV
			CENTRARCHIDAE	0.014		
			CYPRINIDAE	0.014		
S. SILVER	NATIONAL	5	CENTRARCHIDAE	0.014	0.014 *	0.0081 FRV
			CENTRARCHIDAE	0.014		
			CENTRARCHIDAE	0.014		
	STATE	3	CENTRARCHIDAE	0.014	0.014 *	0.0081 FRV
			CENTRARCHIDAE	0.014		
			CYPRINIDAE	0.014		
TOXAPHENE	NATIONAL	18	PERLIDAE	0.014	0.014 *	0.0081 FRV
			PERLIDAE	0.014		
			CENTRARCHIDAE	0.014		
	STATE	3	CENTRARCHIDAE	0.014	0.014 *	0.0081 FRV
			CENTRARCHIDAE	0.014		
			CYPRINIDAE	0.014		

FOOTNOTE

- * — UNITS IN MICROGRAMS PER LITER
- FPV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- ** — FAILURE TO MEET MINIMUM DATA REQUIREMENT
- *** — STATE HAS LOWER TAXA 3 RESIDENT FAMILIES—NATIONAL VALUE USED
- I — HARDNESS EFFECT INTERCEPT VALUE
- SE — APPLY EQUATION 2.7 TO DETERMINE HARDNESS CRITERIA
- HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE HARDNESS AND ASSET CHRONIC CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: NEW HAMPSHIRE

TOXICANT	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	FAMILY LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA ACUTE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA CHRONIC (ug/L)
Z. ZINC	NATIONAL	18	DAPHNIIDAE	10.787	9.146	17.0909 SCV
			PHYSIDAE	41.900		
			SALMONIDAE	45.91		
			PHILOMIDAE	89.797		
	STATE	13	DAPHNIIDAE	89.797	0.466	17.0909 SCV
			PHYSIDAE	91.900		
			SALMONIDAE	95.91		
			PHILOMIDAE	89.797		

STATE: NEW JERSEY

TOXICANT	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	FAMILY LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA ACUTE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA CHRONIC (ug/L)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.80	3.000 *	
			ANELLIDAE	5.600		
			PTYCHOCHEILIDAE	5.600		
			SALMONIDAE	14.000		
	STATE	5	SALMONIDAE	14.000	1.300 *	
			CENTRARCHIDAE	7.80		
			CYPRINODONTIDAE	11.200		
ARSENIC	NATIONAL	9	CYPRINIDAE	71.210	114.000 *	
			SALMONIDAE	1,000.000		
			SALMONIDAE	1,120.000		
	STATE	5	CYPRINIDAE	71.210	171.000 *	
			SALMONIDAE	1,000.000		
			SALMONIDAE	1,120.000		
			CYPRINIDAE	5,600.000		
B. CADMIUM	NATIONAL	18	CENTRARCHIDAE	1.100	0.97	0.004 ACR
			SALMONIDAE	1.600		
			SALMONIDAE	1.600		
	STATE	17	SALMONIDAE	1.600	0.591	0.0052 ACR
			SALMONIDAE	1.600		
			CENTRARCHIDAE	1.600		
CHLORDANE	NATIONAL	5	CYPRINODONTIDAE	1.600	1.575 *	0.0043 FRV
			PLEURONECTIDAE	2.400		
			CENTRARCHIDAE	2.400		
	STATE	4	CENTRARCHIDAE	2.400	4.000 *	0.0043 FRV
			CENTRARCHIDAE	2.400		
			CYPRINIDAE	4.800		
CHROMIUM	NATIONAL	18	CENTRARCHIDAE	21.11	15.154	2.015 ACR
			CENTRARCHIDAE	21.11		
			SALMONIDAE	21.11		
	STATE	4	SALMONIDAE	21.11	1000.000 *	15.5 FRV
			CENTRARCHIDAE	21.11		
			CENTRARCHIDAE	21.11		
E. COPPER	NATIONAL	20	CENTRARCHIDAE	2.900	2.90	2.4870 FCV
			CENTRARCHIDAE	2.900		
			CENTRARCHIDAE	2.900		
	STATE	10	CENTRARCHIDAE	2.900	5.128	7.4014 FCV
			CENTRARCHIDAE	2.900		
			CENTRARCHIDAE	2.900		
CYANIDE	NATIONAL	18	CENTRARCHIDAE	21.11	21.428 *	4.0473 ACR
			CENTRARCHIDAE	21.11		
			SALMONIDAE	21.11		
	STATE	4	SALMONIDAE	21.11	20.000 *	3.2007 ACR
			CENTRARCHIDAE	21.11		
			CENTRARCHIDAE	21.11		
DDT	NATIONAL	20	CENTRARCHIDAE	0.001	0.001	0.0010 FRV
			CENTRARCHIDAE	0.001		
			CENTRARCHIDAE	0.001		
	STATE	7	CENTRARCHIDAE	0.001	0.002 *	0.0010 FRV
			CENTRARCHIDAE	0.001		
			CENTRARCHIDAE	0.001		
DIELDRIN	NATIONAL	18	CENTRARCHIDAE	0.001	1.250 *	0.0019 FRV
			SALMONIDAE	0.001		
			SALMONIDAE	0.001		
	STATE	3	SALMONIDAE	0.001	0.002 *	0.0019 FRV
			CENTRARCHIDAE	0.001		
			CENTRARCHIDAE	0.001		
ENDRIN	NATIONAL	5	SALMONIDAE	0.001	0.002 *	0.0023 ACR
			CENTRARCHIDAE	0.001		
			CENTRARCHIDAE	0.001		
	STATE	3	CENTRARCHIDAE	0.001	0.002 *	0.0023 ACR
			CENTRARCHIDAE	0.001		
			CYPRINIDAE	0.001		

FOOTNOTE

- * — UNITS IN MICROGRAMS PER LITER
- FPV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- ** — FAILURE TO MEET MINIMUM DATA REQUIREMENT
- *** — STATE HAS LOWER TAXA 3 RESIDENT FAMILIES—NATIONAL VALUE USED
- I — HARDNESS EFFECT INTERCEPT VALUE
- SE — APPLY EQUATION 2.7 TO DETERMINE HARDNESS CRITERIA
- HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.7 TO DETERMINE HARDNESS AND ASSET CHRONIC CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: NEW JERSEY

POLLUTANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE FRESHWATER FAMILY: NAME	LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (ug/L)		MAXIMUM (ug/L)	
BORON	NATIONAL	17	SALMONIDAE	9,440	2,201	*	2,200	FAV
			CENTRARCHIDAE	12,400				
			PERCIDAE	31,400				
			PTERONARCYIDAE	35,400				
	STATE	10	LEPTOCERIDAE	9,440	2,180	*	2,200	FAV
			SALMONIDAE	9,440				
			PERCIDAE	31,400				
			CENTRARCHIDAE	12,400				
HEPTACHLOR	NATIONAL	19	PTERONARCYIDAE	0.380	0.001	*	0.0038	FAV
			PALAEMONIDAE	1,200				
			PERLIDAE	2,400				
			HEPTAGENIIDAE	7,200				
	STATE	8	SALMONIDAE	0.380	0.001	*	0.0038	FAV
			CENTRARCHIDAE	12,400				
			PTERONARCYIDAE	35,400				
Sb, LEAD	NATIONAL	7	DAPHNIIDAE	1.32	0.053	*	0.00530	FCV
			SALMONIDAE	9,440				
			CYPRINIDAE	20,700				
	STATE	4	SALMONIDAE	20,600	14.974	*	0.00530	FCV
			CENTRARCHIDAE	22,600				
			PHILOPOTAMIDAE	22,600				
LINDANE	NATIONAL	19	CYPRINIDAE	19,600	2.216	*	0.0571	ACR
			ARELLIDAE	19,600				
			DAPHNIIDAE	20,400				
			BAETISCIDAE	20,400				
	STATE	7	SALMONIDAE	19,600	2.452	*	0.1600	ACR
			CENTRARCHIDAE	22,600				
			CHLORIDAE	40,100				
MERCURY	NATIONAL	9	DAPHNIIDAE	0.853	0.012	*	0.24	FAV
			BAETISCIDAE	0.853				
			ARELLIDAE	0.853				
	STATE	4	SALMONIDAE	34,000	0.646	*	0.24	FAV
			BAETISCIDAE	34,000				
			SALMONIDAE	34,000				
			PHILOPOTAMIDAE	34,000				
Ni, NICKEL	NATIONAL	19	DAPHNIIDAE	59,600	29.514	*	2.5301	ACR
			CHLORTHYMIDAE	59,600				
			PHILOPOTAMIDAE	59,600				
	STATE	12	DAPHNIIDAE	59,600	29.159	*	3.4155	ACR
			CENTRARCHIDAE	84,400				
			PHILOPOTAMIDAE	84,400				
PCBS	NATIONAL	5	SALMONIDAE	0.200	0.100	*	0.014	FAV
			CENTRARCHIDAE	0.201				
			CYPRINIDAE	0.201				
			SIMULIIDAE	0.201				
	STATE	3	SALMONIDAE	0.200	0.000	*	0.014	FAV
			CENTRARCHIDAE	0.201				
			SIMULIIDAE	0.201				
SELENIUM	NATIONAL	19	CHIRONOMUS DECORUS (HARMONIC MEAN)	185.000				
			VITALIS-LEAD (TALITRIDAE)	185.000	55.345	*	15.6000	ACR
			DAPHNIIDAE	185.000				
			CHIRONOMIDAE	185.000				
	STATE	8	VITALIS-LEAD (TALITRIDAE)	185.000	55.345	*	17.6700	ACR
			DAPHNIIDAE	185.000				
			SALMONIDAE	185.000				
			PERCIDAE	185.000				
S, SILVER	NATIONAL	3	DAPHNIIDAE	0.0000	0.00000	*		
			COTTIDAE	0.000				
			CYPRINIDAE	0.000				
	STATE	2	CYPRINODONTIDAE	0.013	0.00000	S **		
			SALMONIDAE	0.021				
			CENTRARCHIDAE	0.110				
			PHILOPOTAMIDAE	0.61				
TOLUAPHENE	NATIONAL	12	PERLIDAE	0.000	0.00	*	0.000	ACR
			PTERONARCYIDAE	1.000				
			ICTALURIDAE	2.000				
			CENTRARCHIDAE	2.000				
	STATE	5	CENTRARCHIDAE	0.000	1.844	*	0.0000	ACR
			ICTALURIDAE	2.000				
			SALMONIDAE	0.000				
			CYPRINIDAE	0.700				

STATE: NEW JERSEY

POLLUTANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE FRESHWATER FAMILY: NAME	LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (ug/L)		MAXIMUM (ug/L)	
Z, ZINC	NATIONAL	19	DAPHNIIDAE	45.737	0.140	*	47.0000	SCV
			PERCIDAE	47.000				
			SALMONIDAE	49.000				
			PHILOPOTAMIDAE	50.747				
	STATE	12	DAPHNIIDAE	45.737	0.140	*	47.0000	SCV
			PERCIDAE	47.000				
			SALMONIDAE	49.000				
			PHILOPOTAMIDAE	50.747				

TOOTNOTE
- * — UNITS IN MICROGRAMS PER LITER
- ** — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- FAV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- + — FAILED TO MEET MINIMUM DATA REQUIREMENT
- S — HARDNESS EFFECT INTERCEPT VALUE
  APPLY EQUATION 2.1 TO DETERMINE MAXIMUM CRITERIA
- M — HARDNESS EFFECT INTERCEPT VALUE
  APPLY EQUATION 2.2 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: NEW MEXICO

POLLUTANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE FRESHWATER FAMILY: NAME	LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (ug/L)		MAXIMUM (ug/L)	
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7,461	3,000	*		
			ARELLIDAE	8,000				
			ERYSIMORELLIDAE	9,000				
			SALMONIDAE	9,000				
	STATE	10	SALMONIDAE	4,000	1,000	*		
			CENTRARCHIDAE	7,461				
			EPHEMERELLIDAE	8,000				
			PERCHOTYPIDAE	10,000				
ARSENIC	NATIONAL	3	SALMONIDAE	256,000	110,000	*		
			CYPRINIDAE	1764,000				
			SALMONIDAE	14700,000				
			ICTALURIDAE	4947,000				
	STATE	2	SALMONIDAE	1764,000	441,000	*		
			CYPRINIDAE	4410,000				
			ICTALURIDAE	14700,000				
Bb, CADMIUM	NATIONAL	19	CENTRARCHIDAE	1600,000				
			SALMONIDAE	0.000	0.007	0.0041	ACR	
			DAPHNIIDAE	0.000				
			GAMMARIDAE	0.000				
			PHYSIDAE	0.000				
	STATE	10	SALMONIDAE	0.000	0.010	0.0060	ACR	
			PERCHOTYPIDAE	0.000				
			DAPHNIIDAE	0.000				
			GAMMARIDAE	0.000				
CHLORINE	NATIONAL	8	SALMONIDAE	0.000	1.004	*	0.0040	FAV
			PALAEMONIDAE	0.000				
			PTERONARCIDAE	0.000				
			CYPRINIDAE	0.000				
	STATE	5	HYDROPSYCHIDAE	0.000	0.000	*	0.0040	FAV
			SALMONIDAE	0.000				
			GAMMARIDAE	0.000				
			CENTRARCHIDAE	0.000				
CHROMIUM	NATIONAL	19	DAPHNIIDAE	0.000	15.994	*	0.2000	ACR
			GAMMARIDAE	0.000				
			PHILOPOTAMIDAE	0.000				
			PHYSIDAE	0.000				
	STATE	7	DAPHNIIDAE	0.000	1000.044	M	16.0	FPA
			PHYSIDAE	0.000				
			HYDROPSYCHIDAE	0.000				
X, COPPER	NATIONAL	20	DAPHNIIDAE	0.000	5.164		5.4000	FCV
			CYPRINIDAE	0.000				
			CHIRONOMIDAE	0.000				
			TUBIFICIDAE	1.000				
	STATE	14	DAPHNIIDAE	0.000	5.164		5.8000	FCV
			CYPRINODONTIDAE	0.000				
			PHYSIDAE	0.000				
			TUBIFICIDAE	1.000				
CYANIDE	NATIONAL	19	SALMONIDAE	0.000	21.400	*	4.9479	ACR
			DAPHNIIDAE	0.000				
			CENTRARCHIDAE	0.000				
			HEPTAGENIIDAE	0.000				
	STATE	1	SALMONIDAE	0.000	20.000	*	2.0977	ACR
			CENTRARCHIDAE	0.000				
			HEPTAGENIIDAE	0.000				
			SALMONIDAE	0.000				
DDT	NATIONAL	19	DAPHNIIDAE	1.000	0.000		0.0010	FAV
			CYPRINIDAE	1.000				
			RHODDIDAE	1.000				
			SALMONIDAE	1.000				
	STATE	12	DAPHNIIDAE	0.000	0.000	*	0.0010	FAV
			GAMMARIDAE	0.000				
			CENTRARCHIDAE	0.000				
DIELDRIN	NATIONAL	12	PERCHLIDAE	0.000	1.000	*	0.2410	FPV
			ARELLIDAE	0.000				
			SALMONIDAE	0.000				
			PTERONARCIDAE	0.000				
	STATE	8	SALMONIDAE	0.000	0.000	*	0.2410	FAV
			ERYSIMORELLIDAE	0.000				
			CENTRARCHIDAE	0.000				
			PERLIDAE	0.000				
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.000	0.000	*	0.1800	ACR
			CYPRINIDAE	1.000				
			PTERONARCIDAE	1.000				
			CATOSTOMIDAE	2.000				
	STATE	5	SALMONIDAE	0.000	0.000	*	0.1800	ACR
			CYPRINIDAE	1.000				
			PTERONARCIDAE	1.000				
			CATOSTOMIDAE	2.000				

STATE: NEW MEXICO

POLLUTANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE FRESHWATER FAMILY: NAME	LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAXIMUM (ug/L)		MAXIMUM (ug/L)	
BORON	NATIONAL	17	BAETISCIDAE	9,440	9,201	*	9,2000	FRV
			SALMONIDAE	9,440				
			PERLIDAE	9,400				
			PTERONARCIDAE	35,400				
	STATE	10	SALMONIDAE	9,440	9,149	*	9,4000	FRV
			PERLIDAE	9,400				
			PTERONARCIDAE	35,400				
			PHILOPOTAMIDAE	50,747				
HEPTACHLOR	NATIONAL	19	PTERONARCIDAE	0.380	0.001	*	0.0038	FRV
			PALAEMONIDAE	1,200				
			PERLIDAE	2,400				
			HEPTAGENIIDAE	7,200				
	STATE	7	PTERONARCIDAE	0.380	0.100	*	0.0038	FRV
			PERLIDAE	2,400				
			ICTALURIDAE	12,400				
Sb, LEAD	NATIONAL	7	CENTRARCHIDAE	12,400	0.001	*	0.00530	FCV
			DAPHNIIDAE	1.32				
			CYPRINIDAE	20,700				
	STATE	5	DAPHNIIDAE	1.32	0.053	*	0.00530	FCV
			SALMONIDAE	20,600				
			CENTRARCHIDAE	22,600				
LINDANE	NATIONAL	19	ARELLIDAE	19,600	0.216	*	0.0571	ACR
			SALMONIDAE	21,000				
			CENTRARCHIDAE	22,600				
	STATE	7	CENTRARCHIDAE	22,600	4.704	*	0.2000	ACR
			SALMONIDAE	34,000				
			CENTRARCHIDAE	34,000				
MERCURY	NATIONAL	9	DAPHNIIDAE	0.853	0.012	*	0.24	FRV
			SALMONIDAE	0.853				
			HEPTAGENIIDAE	34,000				
	STATE	4	DAPHNIIDAE	0.853	0.191	*	0.0071	ACR
			SALMONIDAE	34,000				
			CENTRARCHIDAE	34,000				
W, NICKEL	NATIONAL	19	DAPHNIIDAE	59,600	29.514	*	3.2301	ACR
			CHLORTHYMIDAE	59,600				
			PHILOPOTAMIDAE	59,600				
	STATE	11	PHILOPOTAMIDAE	84,400	29.017	*	2.4705	ACR
			PERCHOTYPIDAE	84,400				
			CHLORTHYMIDAE	84,400				
PCBS	NATIONAL	5	SALMONIDAE	0.200	0.101	*	0.014	FRV
			CENTRARCHIDAE	0.201				
			CYPRINIDAE	0.201				
	STATE	3	GAMMARIDAE	0.200	0.101	*	0.014	FRV
			SALMONIDAE	0.200				
			CENTRARCHIDAE	0.201				
SELENIUM	NATIONAL	19	VITALIS-LEAD (TALITRIDAE)	185.000	55.345	*	15.6000	ACR
			DAPHNIIDAE	185.000				
			CYPRINODONTIDAE	185.000				
			SALMONIDAE	185.000				
	STATE	8	VITALIS-LEAD (TALITRIDAE)	185.000	55.158	*	15.6001	ACR
			DAPHNIIDAE	185.000				
			SALMONIDAE	185.000				
			CYPRINIDAE	185.000				
S, SILVER	NATIONAL	3	DAPHNIIDAE	0.000	0.00000	*		
			CYPRINIDAE	0.000				
			SALMONIDAE	0.000				
	STATE	2	CYPRINIDAE	0.000	0.00000	*		
			COTTIDAE	0.000				
			CYPRINIDAE	0.000				
TOLUAPHENE	NATIONAL	12	SALMONIDAE	0.000	0.000	*	0.0000	ACR
			PTERONARCIDAE	0.000				
			ICTALURIDAE	0.000				
			CENTRARCHIDAE	0.000				
	STATE	5	CENTRARCHIDAE	0.000	0.000	*	0.0000	ACR
			ICTALURIDAE	0.000				
			CENTRARCHIDAE	4.700				

TOOTNOTE
- * — UNITS IN MICROGRAMS PER LITER
- ** — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- FAV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- + — FAILED TO MEET MINIMUM DATA REQUIREMENT
- S — HARDNESS EFFECT INTERCEPT VALUE
  APPLY EQUATION 2.1 TO DETERMINE MAXIMUM CRITERIA
- M — HARDNESS EFFECT INTERCEPT VALUE
  APPLY EQUATION 2.2 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: NEW MEXICO

TOXICANT	SOURCES OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY: NAME	MOST SENSITIVE RESIDENT FAMILY: LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAGNESIUM	FRESHWATER AQUATIC LIFE CRITERIA: DIAZ++	FRESHWATER AQUATIC LIFE CRITERIA: ARITHMETIC
2. ZINC	NATIONAL	18	DARWINIDAE	13,737	5,145	47,668	SCV
			RHYSIDIDAE	41,886			
			SALMONIDAE	49,851			
			PHILOSOMIDAE	55,767			
	STATE	18	DARWINIDAE	13,737	5,145	47,668	SCV
			PHYSIDAE	41,886			
			PERCIDAEVIDAE	49,851			
			SALMONIDAE	49,851			

STATE: NEW YORK

TOXICANT	SOURCES OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY: NAME	MOST SENSITIVE RESIDENT FAMILY: LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA: MAGNESIUM	FRESHWATER AQUATIC LIFE CRITERIA: DI-BUTT	FRESHWATER AQUATIC LIFE CRITERIA: ARITHMETIC
ENDRIN	NATIONAL	17	EARTHEWORTIDAE	4,445	4,391 *	4,4853	FRV
			SALMONIDAE	6,165			
			PERLIDAE	6,861			
			PTERONARCIDAE	6,861			
	STATE	17	EARTHEWORTIDAE	5,445	5,256 *	5,5365	FRV
			SALMONIDAE	6,165			
			PERLIDAE	6,861			
			PTERONARCIDAE	6,861			
HEPTACHLOR	NATIONAL	19	PTERONARCIDAE	5,861	5,861 *	5,5365	FRV
			PALAEMONIDAE	7,955			
			PERLIDAE	8,580			
			METARCIDAE	7,955			
	STATE	8	PALAEMONIDAE	7,955	5,255 *	5,5365	FRV
			SALMONIDAE	17,395			
			CENTRARCHIDAE	24,771			
M. LEAD	NATIONAL	1	SIMULIIDAE	47,845	5,697 *	6,6833	SCV
			SALMONIDAE	49,851			
			CYPRINIDAE	55,767			
	STATE	1	SIMULIIDAE	47,845	5,654 *	6,6833	SCV
			SALMONIDAE	49,851			
			CYPRINIDAE	55,767			
LINDANE	NATIONAL	19	CENTRARCHIDAE	19,855	3,216 *	4,3874	ACR
			SALMONIDAE	49,851			
			SIMULIIDAE	55,437			
	STATE	3	CENTRARCHIDAE	19,855	5,857 *	5,9405	ACR
			SIMULIIDAE	55,437			
			CENTRARCHIDAE	55,971			
MERCURY	NATIONAL	9	ECTALURIDAE	59,000	0.475 *	0.25	FRV
			DARWINIDAE	3,000			
			METARCIDAE	51,000			
	STATE	2	DARWINIDAE	3,000	0.701 *	0.25	FRV
			METARCIDAE	51,000			
			PALAEMONIDAE	49,000			
M. PCNS	NATIONAL	19	PALAEMONIDAE	78,971	20,914 *	2,3891	ACR
			DARWINIDAE	33,971			
			SIMULIIDAE	55,000			
			CENTRARCHIDAE	64,371			
	STATE	13	PALAEMONIDAE	64,371	25,000 *	2,9175	ACR
			DARWINIDAE	78,000			
			CENTRARCHIDAE	84,471			
			PALAEMONIDAE	84,471			
PCNS	NATIONAL	2	SALMONIDAE	5,000	5,107 *	5,914	FRV
			CENTRARCHIDAE	55,000			
			CYPRINIDAE	55,000			
	STATE	2	SALMONIDAE	5,000	6,122 *	6,914	FRV
			CENTRARCHIDAE	55,000			
			CYPRINIDAE	55,000			
SELENIUM	NATIONAL	16	HYALELLIDAE (TALITRIDAE)	256,000	20,545 *	15,0000	ACR
			DARWINIDAE	400,000			
			CYPRINODONTIDAE	640,870			
			SALMONIDAE	5,472,100			
	STATE	5	HYALELLIDAE (TALITRIDAE)	256,000	13,917 *	15,2044	ACR
			DARWINIDAE	400,000			
			SALMONIDAE	640,870			
4. SILVER	NATIONAL	3	DARWINIDAE	5,000	0.40000 *		
			COTTIDAE	5,000			
			CYPRINIDAE	5,000			
	STATE	4	CYPRINODONTIDAE	5,012	0.40041 *		
			COTTIDAE	5,012			
			CYPRINIDAE	5,012			
			SALMONIDAE	5,012			
TOLUAMENE	NATIONAL	13	CENTRARCHIDAE	5,170	1,007 *	1,2007	ACR
			PERLIDAE	1,200			
			PTERONARCIDAE	2,401			
			ECTALURIDAE	2,401			
	STATE	9	CENTRARCHIDAE	4,700	1,345 *	0.2017	ACR
			CYPRINODONTIDAE	5,000			
			SALMONIDAE	5,000			
			CYPRINIDAE	5,000			

FOOTNOTE:
- * — UNITS IN MICROGRAMS PER LITER
- ** — FRV: FINAL PLANT VALUE
- FRV: FINAL RESIDUE VALUE
- ACR: COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV: FINAL CHRONIC VALUE
- SCV: SENSITIVE SPECIES CHRONIC VALUE
- ++ — FAILED TO MEET MINIMUM DATA REQUIREMENT
- ** — STATE HAS LESS THAN 5 RESIDENT FAMILIES—NATIONAL VALUE USED
- S — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.1 TO DETERMINE MAXIMUM CRITERIA
- M — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.1 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: NEW YORK

STATE: NEW YORK

FOOTNOTE:
- * — UNITS IN MICROGRAMS PER LITER
- ** — FRV: FINAL PLANT VALUE
- FRV: FINAL RESIDUE VALUE
- ACR: COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV: FINAL CHRONIC VALUE
- SCV: SENSITIVE SPECIES CHRONIC VALUE
- ++ — FAILED TO MEET MINIMUM DATA REQUIREMENT
- ** — STATE HAS LESS THAN 5 RESIDENT FAMILIES—NATIONAL VALUE USED
- S — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.1 TO DETERMINE MAXIMUM CRITERIA
- M — HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 2.1 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: NORTH CAROLINA

PERCENT	SOURCE OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY GENUS NAME	FAMILY LOC VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA DAILY MAXIMUM (ug/L)	DAILY AVERAGE (ug/L)	AVERAGE (ug/L)
ALDRIN	NATIONAL	LC	CERATINCHIDAE	7.40	3.000	*	
			ABELLIDAE	8.000			
			SPHAERIIDELLIDAE	8.000			
			SALMONIDAE	8.000			
	STATE	S	SALMONIDAE	4.000	1.700	*	
			CERATINCHIDAE	7.40			
			SPHAERIIDELLIDAE	8.000			
ARSENIC	NATIONAL	F	CYPRINIDAE	774.00	110.000	*	
			SALMONIDAE	1,000.00			
			SALMONIDAE	1,000.00			
			ICTALURIDAE	1,000.00			
	STATE	I	SALMONIDAE	1,000.00	100.000	*	
			SALMONIDAE	1,000.00			
			CERATINCHIDAE	1,000.00			
			CYPRINIDAE	1,000.00			
B. CADMIUM	NATIONAL	M	SALMONIDAE	0.057	0.0041		ACR
			SALMONIDAE	0.40			
			SALMONIDAE	1.10			
	STATE	M	PHYSIDAE	0.061	0.016		ACR
			SALMONIDAE	0.061			
			SALMONIDAE	0.061			
CHLORDANE	NATIONAL	F	CYPRINODONTIDAE	1.000	1.014	*	0.004
			PHLOXINICHIDAE	1.000			
			CYPRINIDAE	1.000			
	STATE	I	CYPRINIDAE	1.000	1.000	*	0.0043
			SALMONIDAE	1.000			
			SALMONIDAE	1.000			
CHROMIUM	NATIONAL	M	SALMONIDAE	0.000	12.154		0.205
			SALMONIDAE	0.000			
			PHLOXINICHIDAE	0.000			
	STATE	S	PHLOXINICHIDAE	0.000	164.575	*	0.5
			PHLOXINICHIDAE	0.000			
			PERCICHTHYIDAE	0.000			
C. COPPER	NATIONAL	M	SALMONIDAE	0.000	0.134		0.0034
			CYPRINIDAE	0.000			
			PHYSIDAE	0.000			
	STATE	M	CYPRINIDAE	0.000	0.130		7.0000
			PHYSIDAE	0.000			
			TURPICOLIDAE	1.000			
CYANIDE	NATIONAL	M	SALMONIDAE	0.000	21.000	*	0.3472
			SALMONIDAE	0.000			
			CERATINCHIDAE	114.00			
	STATE	I	PERCIDAE	49.101	25.000	*	0.6971
			SALMONIDAE	74.00			
			SALMONIDAE	114.00			
			CERATINCHIDAE	49.101			
DDT	NATIONAL	M	SALMONIDAE	0.000	0.000		0.0010
			SALMONIDAE	1.000			
			SIDEDAE	1.700			
	STATE	M	SALMONIDAE	0.000	0.004		0.0010
			SIDEDAE	0.000			
			SALMONIDAE	1.000			
DIELDRIN	NATIONAL	M	ARGULIDAE	0.000	1.000	*	0.0019
			ABELLIDAE	0.000			
			SALMONIDAE	0.000			
	STATE	M	SALMONIDAE	0.000	0.004	*	0.0010
			SPHAERIIDELLIDAE	0.000			
			SALMONIDAE	0.000			
ENDOSULFAN	NATIONAL	S	CENTRARCHIDAE	0.000	0.000	*	0.000
			CYPRINIDAE	0.000			
			PTERONARCIDAE	0.000			
	STATE	S	CLAASSENIIDAE	0.000	0.131	*	0.0031
			CENTRARCHIDAE	0.000			
			CENTRARCHIDAE	0.000			

STATE: NORTH CAROLINA

PERCENT	SOURCE OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY GENUS	FAMILY LOC VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA DAILY MAXIMUM (ug/L)	DAILY AVERAGE (ug/L)	AVERAGE (ug/L)
ENDRIN	NATIONAL	IT	SALMONIDAE	0.000	0.001	*	0.0000
			PERCIDAE	0.000			
			SALMONIDAE	0.000			
	STATE	S	SALMONIDAE	0.000	0.110	*	0.0000
			PERCIDAE	0.000			
			SALMONIDAE	0.000			
HEPTACHLOR	NATIONAL	M	CENTRARCHIDAE (UNDIVIDED)	0.000	0.001	*	0.0000
			PHLOXINICHIDAE	0.000			
			PERCIDAE	0.000			
	STATE	S	SALMONIDAE	0.000	0.000	*	0.0000
			CENTRARCHIDAE	21.371			
			CENTRARCHIDAE	47.000			
HEPTACHLOR EPOXIDE	NATIONAL	F	SALMONIDAE	0.000	0.000	*	0.0000
			SALMONIDAE	1.000			
			SALMONIDAE	1.000			
	STATE	S	SALMONIDAE	0.000	0.000	*	0.0000
			CENTRARCHIDAE	21.371			
			CENTRARCHIDAE	47.000			
LEAD	NATIONAL	F	SALMONIDAE	0.000	0.007	*	0.0000
			SALMONIDAE	1.000			
			SALMONIDAE	1.000			
	STATE	S	SALMONIDAE	0.000	0.000	*	0.0000
			CENTRARCHIDAE	21.371			
			CENTRARCHIDAE	47.000			
LINDANE	NATIONAL	M	CATOSTOMIDAE	0.000	0.000	*	0.0000
			SALMONIDAE	0.000			
			SALMONIDAE	0.000			
	STATE	I	SALMONIDAE	0.000	0.000	*	0.0000
			CENTRARCHIDAE	21.371			
			CENTRARCHIDAE	47.000			
MERCURY	NATIONAL	S	SALMONIDAE	0.000	0.000	*	0.0000
			SALMONIDAE	0.000			
			SALMONIDAE	0.000			
	STATE	S	SALMONIDAE	0.000	0.000	*	0.0000
			SALMONIDAE	0.000			
			PERCICHTHYIDAE	0.000			
M. NICKEL	NATIONAL	M	SALMONIDAE	0.000	0.000	*	0.0000
			SALMONIDAE	0.000			
			PHLOXINICHIDAE	0.000			
	STATE	M	SALMONIDAE	0.000	0.000	*	0.0000
			SALMONIDAE	0.000			
			SALMONIDAE	0.000			
PCB	NATIONAL	S	SALMONIDAE	0.000	0.000	*	0.0000
			CENTRARCHIDAE	0.000			
	STATE	S	SALMONIDAE	0.000	0.000	*	0.0000
			SALMONIDAE	0.000			
			CENTRARCHIDAE	0.000			
SELENIUM	NATIONAL	M	APHELOCHEIRIDAE (UNDIVIDED)	0.000	0.000	*	0.0000
			APHELOCHEIRIDAE	0.000			
			CENTRARCHIDAE	0.000			
	STATE	F	APHELOCHEIRIDAE	0.000	0.000	*	0.0000
			SALMONIDAE	0.000			
			SALMONIDAE	0.000			
SILVER	NATIONAL	S	CYPRINIDAE	0.000	0.000	*	0.0000
			CYPRINIDAE	0.000			
	STATE	S	CENTRARCHIDAE	0.000	0.000	**	0.0000
			SALMONIDAE	0.000			
			CENTRARCHIDAE	0.000			
TOXAPHENE	NATIONAL	M	PERCIDAE	0.000	0.000	*	0.0000
			PERCIDAE	0.000			
			CENTRARCHIDAE	0.000			
	STATE	S	CENTRARCHIDAE	0.000	0.000	*	0.0000
			CENTRARCHIDAE	0.000			
			CENTRARCHIDAE	0.000			

FOOTNOTE
- * — UNITS IN MICROGRAMS PER LITER
- FPV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- F — FAILED TO MEET MINIMUM DATA REQUIREMENT
- T — STATE HAS LESS THAN 5 RESIDENT FAMILIES—NATIONAL VALUE USED
- S — HARDNESS EFFECT INTERCEPT VALUE
- M — HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND 24-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: NORTH CAROLINA

PERCENT	SOURCE OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY GENUS	FAMILY LOC VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA DAILY MAXIMUM (ug/L)	DAILY AVERAGE (ug/L)	AVERAGE (ug/L)
ZINC	NATIONAL	TS	DARTHIDAE	0.737	0.140	17.000	SCV
			PHYSIDAE	31.000			
			SALMONIDAE	49.911			
			PHLOXINICHIDAE	50.757			
	STATE	TS	DARTHIDAE	31.000	0.200	12.000	SCV
			PHYSIDAE	31.000			
			SALMONIDAE	49.000			
			PHLOXINICHIDAE	50.757			

STATE: NORTH DAKOTA

PERCENT	SOURCE OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY GENUS NAME	FAMILY LOC VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA DAILY MAXIMUM (ug/L)	DAILY AVERAGE (ug/L)	AVERAGE (ug/L)
ALDRIN	NATIONAL	LC	CERATINCHIDAE	7.40	3.000	*	
			ABELLIDAE	8.000			
			SPHAERIIDELLIDAE	8.000			
			SALMONIDAE	8.000			
	STATE	S	SALMONIDAE	4.000	1.400	*	
			CERATINCHIDAE	7.40			
			CYPRINIDAE	8.000			
ARSENIC	NATIONAL	F	CYPRINODONTIDAE	774.00	110.000	*	
			SALMONIDAE	1,000.00			
			SALMONIDAE	1,000.00			
			ICTALURIDAE	1,000.00			
	STATE	I	SALMONIDAE	1,000.00	100.000	*	
			SALMONIDAE	1,000.00			
			CENTRARCHIDAE	1,000.00			
B. CADMIUM	NATIONAL	M	SALMONIDAE	0.057	0.0041		ACR
			SALMONIDAE	0.40			
			SALMONIDAE	1.10			
	STATE	M	PHYSIDAE	0.061	0.014		ACR
			SALMONIDAE	0.061			
			SALMONIDAE	0.061			
CHLORDANE	NATIONAL	F	CYPRINODONTIDAE	1.000	1.014	*	0.004
			PHLOXINICHIDAE	1.000			
			CYPRINIDAE	1.000			
	STATE	I	CYPRINIDAE	1.000	1.000	*	0.0043
			SALMONIDAE	1.000			
			SALMONIDAE	1.000			
CHROMIUM	NATIONAL	M	SALMONIDAE	0.000	12.154		0.205
			SALMONIDAE	0.000			
			PHLOXINICHIDAE	0.000			
	STATE	S	SALMONIDAE	0.000	164.575	*	0.5
			SALMONIDAE	0.000			
			PERCICHTHYIDAE	0.000			
C. COPPER	NATIONAL	M	CYPRINIDAE	0.000	0.134		0.0034
			CYPRINIDAE	0.000			
			PHYSIDAE	0.000			
	STATE	M	TURPICOLIDAE	1.000	0.130		0.0000
			CYPRINIDAE	0.000			
			PHYSIDAE	0.000			
CYANIDE	NATIONAL	M	SALMONIDAE	0.000	21.000	*	0.3472
			SALMONIDAE	0.000			
			CERATINCHIDAE	114.00			
	STATE	I	PERCIDAE	49.101	25.000	*	0.6971
			SALMONIDAE	74.00			
			SALMONIDAE	114.00			
DDT	NATIONAL	M	SALMONIDAE	0.000	0.000		0.0010
			SALMONIDAE	1.000			
			SIDEDAE	1.700			
	STATE	M	SALMONIDAE	0.000	0.004		0.0010
			SIDEDAE	0.000			
			SALMONIDAE	1.000			
DIELDRIN	NATIONAL	M	PERCIDAE	0.000	1.000	*	0.0019
			ABELLIDAE	0.000			
			SALMONIDAE	0.000			
	STATE	M	SALMONIDAE	0.000	0.004	*	0.0010
			SPHAERIIDELLIDAE	0.000			
			SALMONIDAE	0.000			
ENDOSULFAN	NATIONAL	S	DARTHIDAE	0.000	0.000	*	0.000
			CYPRINIDAE	0.000			
			PTERONARCIDAE	0.000			
	STATE	S	CATOSTOMIDAE	0.000	0.131	*	0.0000
			SALMONIDAE	0.000			
			CYPRINIDAE	0.000			
			CENTRARCHIDAE	0.000			
			CENTRARCHIDAE	0.000			

FOOTNOTE
- * — UNITS IN MICROGRAMS PER LITER
- FPV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- F — FAILED TO MEET MINIMUM DATA REQUIREMENT
- T — STATE HAS LESS THAN 5 RESIDENT FAMILIES—NATIONAL VALUE USED
- S — HARDNESS EFFECT INTERCEPT VALUE
- M — HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
- APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND 24-DAY AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: NORTH DAKOTA

TOXICANT	SOURCES OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	FAMILY LOW VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)		MAXIMUM (+)	MINIMUM (+)	CHRONIC (++)	
SHOWN	NATIONAL	17	SALMONIDAE	0.45	0.001	*	0.0002	PAV		
			SALMONIDAE	0.45						
			PERLIDAE	0.62						
	STATE	2	SALMONIDAE	0.45	0.010	*	0.002	PAV		
			CHIRONOMIDAE	1.41						
			CENTRARCHIDAE	1.41						
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.60	0.001	*	0.0004	PAV		
			PALAEMONIDAE	1.69						
			PERLIDAE	2.69						
	STATE	2	SALMONIDAE	0.45	0.005	*	0.0002	PAV		
			PALAEMONIDAE	2.69						
M. LEAD	NATIONAL	7	SALMONIDAE	1.45	0.007	*	0.00028	FCV		
			CHIRONOMIDAE	1.51						
			SALMONIDAE	42.5						
	STATE	5	SALMONIDAE	42.5	0.003	*	0.00028	FCV		
			SALMONIDAE	42.5						
			CENTRARCHIDAE	45.9						
LINDANE	NATIONAL	15	ASELLIDAE	31.68	0.210	*	0.004	ACR		
			SALMONIDAE	31.68						
			SIMULIIDAE	31.68						
	STATE	5	CENTRARCHIDAE	33.67	13.05	*	1.004	ACR		
			CENTRARCHIDAE	33.67						
			SALMONIDAE	33.67						
MERCURY	NATIONAL	7	STYLURIDAE	42.68	0.470	*	0.05	PAV		
			LEPIDOPTERA	42.68						
			PERLIDAE	54.02						
	STATE	5	LEPIDOPTERA	0.85	0.85	*	0.0071	ACR		
			PERLIDAE	42.68						
			CHIRONOMIDAE	42.68						
M. NICKEL	NATIONAL	10	SALMONIDAE	58.47	52.91	*	5.291	ACR		
			HYDROPSYCHIDAE	58.47						
			CHIRONOMIDAE	58.47						
	STATE	10	SALMONIDAE	58.47	52.91	*	2.465	ACR		
			HYDROPSYCHIDAE	58.47						
			CHIRONOMIDAE	58.47						
PCB	NATIONAL	3	SALMONIDAE	0.01	0.14	*	0.014	PAV		
			CHIRONOMIDAE	0.01						
			SIMULIIDAE	0.01						
	STATE	3	SALMONIDAE	0.01	0.14	* 1.0	0.014	PAV		
			CHIRONOMIDAE	0.01						
			SIMULIIDAE	0.01						
SELENIUM	NATIONAL	16	ETHELIDAE (TAUTOGA)	0.01	15.04	*	34.000	ACR		
			CHIRONOMIDAE	0.01						
			CENTRARCHIDAE	0.01						
	STATE	1	ETHELIDAE (TAUTOGA)	0.01	15.04	*	14.000	ACR		
			SALMONIDAE	0.01						
			CHIRONOMIDAE	0.01						
4 SILVER	NATIONAL	5	SALMONIDAE	0.01	0.0006	*				
			CYPRINIDAE	0.01						
			CHIRONOMIDAE	0.01						
	STATE	2	SALMONIDAE	0.01	0.00076	*				
			SALMONIDAE	0.01						
TOXAPHENE	NATIONAL	10	PERLIDAE	0.01	0.007	*	0.0002	ACR		
			PERLIDAE	0.01						
			ETHELIDAE	0.01						
	STATE	2	CENTRARCHIDAE	0.01	0.005	*	0.0001	ACR		
			CENTRARCHIDAE	0.01						

STATE: NORTH DAKOTA

TOXICANT	SOURCES OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	FAMILY LOW VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)		MAXIMUM (+)	MINIMUM (+)	CHRONIC (++)	
2 ZINC	NATIONAL	19	SALMONIDAE	15.57	0.58	*	0.58	ACR		
			PERLIDAE	43.88						
			CHIRONOMIDAE	43.88						
	STATE	17	CHIRONOMIDAE	43.701						
			CHIRONOMIDAE	43.701	4.145		47.0000	ACR		
			SALMONIDAE	43.88						
			PERLIDAE	43.88						
			CHIRONOMIDAE	68.781						

FOOTNOTE:

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- FCV - FINAL CHRONIC VALUE
- SCV - SENSITIVE BENTHIC CHRONIC VALUE
- + - FAILED TO MEET MINIMUM DATA REQUIREMENT
- ++ - STATE HAS LESS THAN 3 RESIDENT FAMILIES--NATIONAL VALUE USED
- S - HARDNESS EFFECT ACROLOGY VALUE
- APPLY EQUATION C-7 TO DETERMINE MAXIMUM CRITERIA
- M - HARDNESS EFFECT ACROLOGY VALUE
- APPLY EQUATION C-7 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: OHIO

TOXICANT	SOURCES OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	FAMILY LOW VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)		MAXIMUM (+)	MINIMUM (+)	CHRONIC (++)	
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.61	3.000	*				
			ASELLIDAE	9.60						
			BRYAMORELLIDAE	9.60						
	STATE	8	SALMONIDAE	9.60	1.205	S				
			CENTRARCHIDAE	7.61						
			HADRULIDAE	10.68						
ARSENIC	NATIONAL	5	CYPRINIDAE	10.68						
			ELMIDAE	1768.00	110.000	S				
			SALMONIDAE	1768.00						
			ICTALURIDAE	1937.00						
	STATE	2	SIMULIIDAE	1968.00	171.000	*				
			SALMONIDAE	1968.00						
			CENTRARCHIDAE	1968.00						
M. CADMIUM	NATIONAL	16	SALMONIDAE	0.60	0.001		0.0002	ACR		
			SALMONIDAE	0.60						
			SIMULIIDAE	0.60						
	STATE	14	SALMONIDAE	0.60	0.010		0.0002	ACR		
			SALMONIDAE	0.60						
			SIMULIIDAE	1.07						
CHLORDANE	NATIONAL	8	CYPRINODONTIDAE	1.69	1.201	*	0.0043	FAV		
			PALAEMONIDAE	2.69						
			PTERONARCIDAE	10.68						
			CYPRINIDAE	10.68						
	STATE	5	SALMONIDAE	10.68	1.205	*	0.0043	FAV		
			CYPRINIDAE	10.68						
			CYPRINIDAE	10.68						
CHROMIUM	NATIONAL	16	SIMULIIDAE	32.68	16.04		11.000	ACR		
			SALMONIDAE	42.68						
			PHILOPOTAMIDAE	858.70						
	STATE	8	PHILOPOTAMIDAE	858.70	664.466	*	16.0	FAV		
			CYPRINIDAE	1041.67						
			PHILOPOTAMIDAE	1041.67						
4 COPPER	NATIONAL	20	SALMONIDAE	0.54	0.54		0.0978	FCV		
			SALMONIDAE	0.58						
			PHYSIDAE	1.69						
	STATE	16	SALMONIDAE	0.58	0.140		0.0178	FCV		
			SALMONIDAE	0.58						
			PHYSIDAE	1.69						
CYANIDE	NATIONAL	14	TUBIFICIDAE	1.69	21.000	*	1.2972	ACR		
			SALMONIDAE	10.68						
			HYDROPSYCHIDAE	10.68						
	STATE	9	PERCIDAE	106.57	50.000	*	4.000	ACR		
			SALMONIDAE	10.68						
			HYDROPSYCHIDAE	10.68						
DDT	NATIONAL	20	PERCIDAE	106.57	0.550		0.0010	FAV		
			PERCIDAE	1.69						
			PERCIDAE	1.69						
	STATE	13	SALMONIDAE	1.69	0.471	*	0.0043	FAV		
			PERCIDAE	1.69						
			PERCIDAE	1.69						
DIELDRIN	NATIONAL	12	PERCIDAE	1.69	1.250	*	0.0019	FAV		
			SALMONIDAE	1.69						
			SALMONIDAE	1.69						
	STATE	6	SALMONIDAE	1.69	0.240	*	0.0013	FAV		
			SALMONIDAE	10.68						
			CYPRINIDAE	10.68						
ENDOSULFAN	NATIONAL	5	SALMONIDAE	0.60	0.004	*	0.100	ACR		
			PTERONARCIDAE	2.69						
			CATOSTOMIDAE	2.69						
	STATE	3	SALMONIDAE	0.60	0.140	*	0.0170	ACR		
			CATOSTOMIDAE	1.01						

STATE: OHIO

TOXICANT	SOURCES OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	FAMILY LOW VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)		MAXIMUM (+)	MINIMUM (+)	CHRONIC (++)	
SHOWN	NATIONAL	17	SALMONIDAE	0.45	0.001	*	0.0002	PAV		
			SALMONIDAE	0.45						
			PERLIDAE	0.62						
	STATE	8	SALMONIDAE	0.45	0.010	*	0.002	PAV		
			CHIRONOMIDAE	1.41						
			CENTRARCHIDAE	1.41						
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.60	0.001	*	0.0004	PAV		
			PALAEMONIDAE	1.69						
			PERLIDAE	2.69						
	STATE	2	SALMONIDAE	0.45	0.005	*	0.0002	PAV		
			SALMONIDAE	2.69						
			CENTRARCHIDAE	1.41						
M. LEAD	NATIONAL	7	SALMONIDAE	1.45	0.007	*	0.00028	FCV		
			CHIRONOMIDAE	1.51						
			SALMONIDAE	42.5						
	STATE	5	SALMONIDAE	42.5	0.003	*	0.00028	FCV		
			SALMONIDAE	42.5						
			CENTRARCHIDAE	45.9						
LINDANE	NATIONAL	15	ASELLIDAE	31.68	0.210	*	0.004	ACR		
			SALMONIDAE	31.68						
			SIMULIIDAE	31.68						
	STATE	5	CENTRARCHIDAE	33.67	13.05	*	1.004	ACR		
			CENTRARCHIDAE	33.67						
			SALMONIDAE	33.67						
MERCURY	NATIONAL	7	STYLURIDAE	42.68	0.470	*	0.05	PAV		
			LEPIDOPTERA	42.68						
			PERLIDAE	54.02						
	STATE	5	LEPIDOPTERA	0.85	0.85	*	0.0071	ACR		
			PERLIDAE	42.68						
			CHIRONOMIDAE	42.68						
M. NICKEL	NATIONAL	10	SALMONIDAE	58.47	52.91	*	5.291	ACR		
			HYDROPSYCHIDAE	58.47						
			CHIRONOMIDAE	58.47						
	STATE	10	SALMONIDAE	58.47	52.91	*	2.465	ACR		
			HYDROPSYCHIDAE	58.47						
			CHIRONOMIDAE	58.47						
PCB	NATIONAL	3	SALMONIDAE	0.01	0.14	*	0.014	PAV		
			CHIRONOMIDAE	0.01						
			SIMULIIDAE	0.01						
	STATE	3	SALMONIDAE	0.01	0.14	* 1.0	0.014	PAV		
			CHIRONOMIDAE	0.01						
			SIMULIIDAE	0.01						
SELENIUM	NATIONAL	16	ETHELIDAE (TAUTOGA)	0.01	15.04	*	34.000	ACR		
			CHIRONOMIDAE	0.01						
			CENTRARCHIDAE	0.01						
	STATE	1	ETHELIDAE (TAUTOGA)	0.01	15.04	*	14.000	ACR		
			SALMONIDAE	0.01						
			CHIRONOMIDAE	0.01						
4 SILVER	NATIONAL	5	SALMONIDAE	0.01	0.0006	*				
			CYPRINIDAE	0.01						
			CHIRONOMIDAE	0.01						
	STATE	2	SALMONIDAE	0.01	0.00076	*				
			SALMONIDAE	0.01						
TOXAPHENE	NATIONAL	10	PERLIDAE	0.01	0.007	*	0.0002	ACR		
			PERLIDAE	0.01						
			ETHELIDAE	0.01						
	STATE	2	CENTRARCHIDAE	0.01	0.005	*	0.0001	ACR		
			CENTRARCHIDAE	0.01						

FOOTNOTE:

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- FCV - FINAL CHRONIC VALUE
- SCV - SENSITIVE BENTHIC CHRONIC VALUE
- + - FAILED TO MEET MINIMUM DATA REQUIREMENT
- ++ - STATE HAS LESS THAN 3 RESIDENT FAMILIES--NATIONAL VALUE USED
- S - HARDNESS EFFECT ACROLOGY VALUE
- APPLY EQUATION C-7 TO DETERMINE MAXIMUM CRITERIA
- M - HARDNESS EFFECT ACROLOGY VALUE
- APPLY EQUATION C-7 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: OHIO

TENSCRIPT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOWS VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	SILVER (ug/L)	ARSENIC (ug/L)
S OHIO	NATIONAL	15	CAPNIDAE	13.737	8.145	47.2856	SCV
			PHYSIDAE	17.208			
			BYLLOCORIDAE	19.267			
			PHILOPOTAMIDAE	20.150			
	STATE	10	PHYSIDAE	17.208	7.054	47.2856	SCV
			CAPNIDAE	17.208			
			PHILOPOTAMIDAE	19.267			

STATE: OKLAHOMA

TENSCRIPT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOWS VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	SILVER (ug/L)	ARSENIC (ug/L)
ALFALFA	NATIONAL	14	CENTRARCHIDAE	7.491	5.266	*	
			HELICIDAE	8.438			
			SPHAERIIDAE	8.665			
			PHYSIDAE	8.665			
	STATE	8	SALMONIDAE	1.676	1.178	*	
			CENTRARCHIDAE	7.491			
ATOKA	NATIONAL	9	SIMULIIDAE	110.000	110.000	*	
			SPHAERIIDAE	8.665			
			SALMONIDAE	8.665			
	STATE	7	SPHAERIIDAE	8.665	55.944	*	
			SALMONIDAE	8.665			
			PHYSIDAE	8.665			
BEAVER	NATIONAL	10	PHYSIDAE	8.665	5.497	0.0555	SCV
			CENTRARCHIDAE	7.491			
	STATE	6	PHYSIDAE	8.665	5.810	0.0555	SCV
			CENTRARCHIDAE	7.491			
			SALMONIDAE	8.665			
CHEROKEE	NATIONAL	9	PHYSIDAE	8.665	1.264	*	0.0555 FAV
			CENTRARCHIDAE	7.491			
	STATE	5	PHYSIDAE	8.665	1.265	*	0.0555 FAV
			CENTRARCHIDAE	7.491			
			SALMONIDAE	8.665			
CHOCTAW	NATIONAL	10	SPHAERIIDAE	8.665	12.343		0.0555 ACR
			PHYSIDAE	8.665			
			CENTRARCHIDAE	7.491			
	STATE	6	PHYSIDAE	8.665	5.545	*	0.0555 ACR
			CENTRARCHIDAE	7.491			
			SALMONIDAE	8.665			
COAL	NATIONAL	11	SPHAERIIDAE	8.665	5.164		0.0555 FCV
			CENTRARCHIDAE	7.491			
			SALMONIDAE	8.665			
	STATE	7	SPHAERIIDAE	8.665	5.167		0.0555 FCV
			CENTRARCHIDAE	7.491			
			SALMONIDAE	8.665			
COMANCHE	NATIONAL	11	SPHAERIIDAE	8.665	21.000	*	0.2472 ACR
			CENTRARCHIDAE	7.491			
			SALMONIDAE	8.665			
	STATE	8	SPHAERIIDAE	8.665	10.407	*	0.2472 ACR
			CENTRARCHIDAE	7.491			
			SALMONIDAE	8.665			
CRAIG	NATIONAL	10	SPHAERIIDAE	8.665	5.000		0.0555 FAV
			CENTRARCHIDAE	7.491			
			SALMONIDAE	8.665			
	STATE	7	SPHAERIIDAE	8.665	5.071	*	0.0555 FAV
			CENTRARCHIDAE	7.491			
			SALMONIDAE	8.665			
CREEK	NATIONAL	10	SPHAERIIDAE	8.665	1.005	*	0.0555 FAV
			CENTRARCHIDAE	7.491			
			SALMONIDAE	8.665			
	STATE	7	SPHAERIIDAE	8.665	5.081	*	0.0555 FAV
			CENTRARCHIDAE	7.491			
			SALMONIDAE	8.665			
CUSTER	NATIONAL	9	SPHAERIIDAE	8.665	5.000	*	0.0555 ACR
			CENTRARCHIDAE	7.491			
			SALMONIDAE	8.665			
	STATE	6	SPHAERIIDAE	8.665	5.165	*	0.0555 ACR
			CENTRARCHIDAE	7.491			
			SALMONIDAE	8.665			

FOOTNOTE	
*	= UNITS IN MICROGRAMS PER LITER
* *	= STATE HAS LOWS THAN 3 RESIDENT FAMILIES—NATIONAL VALUE USED
FAV	= FINAL PLANT VALUE
FRV	= FINAL RESIDUE VALUE
ACR	= COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV	= FINAL CHRONIC VALUE
SCV	= SENSITIVE SPECIES CRITERIA VALUE
F	= FAILED TO MEET MINIMUM DATA REQUIREMENT
S	= STATE HAS LESS THAN 3 RESIDENT FAMILIES—NATIONAL VALUE USED
H	= HARDNESS EFFECT WITH RECIPT VALUE
	APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
M	= HARDNESS EFFECT WITH RECIPT VALUE
	APPLY EQUATION 2.7 TO DETERMINE MINIMUM VALUE
	24-DAY AVERAGE CRITERIA

APPENDIX D

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: OKLAHOMA

TENSCRIPT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOWS VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	SILVER (ug/L)	ARSENIC (ug/L)
ENDRIN	NATIONAL	17	GASTEROSTEIDAE	6.445	3.281	*	0.0555 FRV
			SALMONIDAE	5.460			
			PERLIDAE	5.460			
			PTERONARCIDAE	5.460			
	STATE	10	SALMONIDAE	5.554	5.554	*	0.0555 FRV
			CYPRINIDAE	5.730			
			PORITIDAE	5.730			
HEPTACHLOR	NATIONAL	10	CENTRARCHIDAE	7.211			
			PTERONARCIDAE	5.460	3.981	*	0.0555 FRV
			PHILOPOTAMIDAE	5.460			
			PERLIDAE	5.460			
	STATE	7	PERLIDAE	5.460	4.563	*	0.0555 FRV
			GASTEROSTEIDAE	6.445			
			SALMONIDAE	5.460			
LEAD	NATIONAL	7	CENTRARCHIDAE	54.071	5.447	*	0.0555 FCV
			RANIDAE	1.421			
			DAPHNIIDAE	4.869			
			SALMONIDAE	5.460			
	STATE	6	CYPRINIDAE	28.742	5.555	*	0.0555 FCV
			SASSIDAE	1.421			
			SALMONIDAE	5.460			
LINDANE	NATIONAL	17	CENTRARCHIDAE	425.000	2.715	*	0.0511 ACR
			HELICIDAE	10.000			
			SALMONIDAE	21.000			
			SPHAERIIDAE	21.000			
	STATE	8	SALMONIDAE	21.000	13.400	*	1.4772 ACR
			RANIDAE	21.000			
			CENTRARCHIDAE	21.000			
MERCURY	NATIONAL	9	ACTINEDIDAE	6.000	3.418	*	0.35 FRV
			DAPHNIIDAE	6.000			
			NEMOURIDAE	6.000			
			HYDROPSYCHIDAE	21.000			
	STATE	5	SALMONIDAE	6.000	4.331	*	0.42 FRV
			MESITIDAE	6.000			
			SALMONIDAE	6.000			
NICKEL	NATIONAL	16	PHILOPOTAMIDAE	20.814	4.600	*	2.364 ACR
			SPHAERIIDAE	20.814			
			CENTRARCHIDAE	20.814			
	STATE	11	PHILOPOTAMIDAE	20.814	11.418	*	5.2556 ACR
			HEPTAGENIIDAE	20.814			
			CENTRARCHIDAE	20.814			
PCBS	NATIONAL	9	PHILOPOTAMIDAE	20.814	0.127	*	0.014 FRV
			SALMONIDAE	1.421			
			CENTRARCHIDAE	1.421			
	STATE	5	CYPRINIDAE	20.000	0.142	*	0.014 FRV
			SALMONIDAE	6.000			
			CENTRARCHIDAE	1.421			
SELENIUM	NATIONAL	10	CYPRINIDAE	1.421	10.545	*	20.000 ACR
			ACTINEDIDAE (FAUTRONE)	20.000			
			SPHAERIIDAE	20.000			
			CENTRARCHIDAE	20.000			
	STATE	9	ACTINEDIDAE (FAUTRONE)	20.000	10.000	*	20.000 ACR
			SPHAERIIDAE	20.000			
			SALMONIDAE	20.000			
SILVER	NATIONAL	9	CYPRINIDAE	1.421	0.00000	*	
			CYPRINIDAE	1.421			
	STATE	8	CYPRINIDAE	1.421	0.00000	*	
			CENTRARCHIDAE	1.421			
			SALMONIDAE	1.421			
TOXAPHENE	NATIONAL	12	HELICIDAE	1.421	0.201	*	0.0007 ACR
			PTERONARCIDAE	1.421			
			CENTRARCHIDAE	1.421			
	STATE	8	ACTINEDIDAE	1.421	1.265	*	0.0035 ACR
			CENTRARCHIDAE	1.421			
			SALMONIDAE	1.421			

FOOTNOTE	
*	= UNITS IN MICROGRAMS PER LITER
* *	= STATE HAS LESS THAN 3 RESIDENT FAMILIES—NATIONAL VALUE USED
FAV	= FINAL PLANT VALUE
FRV	= FINAL RESIDUE VALUE
ACR	= COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV	= FINAL CHRONIC VALUE
SCV	= SENSITIVE SPECIES CRITERIA VALUE
F	= FAILED TO MEET MINIMUM DATA REQUIREMENT
S	= STATE HAS LESS THAN 3 RESIDENT FAMILIES—NATIONAL VALUE USED
H	= HARDNESS EFFECT WITH RECIPT VALUE
	APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA
M	= HARDNESS EFFECT WITH RECIPT VALUE
	APPLY EQUATION 2.7 TO DETERMINE MINIMUM VALUE
	24-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: OREGON

PENTANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE FRESHWATER FAMILY	LOW VALUE (ug/L)	FRESHWATER QUALITY CRITERIA, MAXIMUM (ug/L)	FRESHWATER QUALITY CRITERIA, 24-HOUR AVERAGE (ug/L)	FRESHWATER QUALITY CRITERIA, INTERMEDIATE (ug/L)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7,180	3,000	*	
			ABELLIDAE	9,000			
			SALMONIDAE	9,000			
	STATE	8	SALMONIDAE	7,431	3,000	*	
			SPHAERIIDAE	9,000			
			PERCICHTHYIDAE	9,000			
ARSENIC	NATIONAL	9	SALMONIDAE	9,000	115,000	*	
			DAPHNIIDAE	170,000			
			SALMONIDAE	172,000			
	STATE	4	ICTALURIDAE	1,000,000	360,000	*	
			DAPHNIIDAE	1,000,000			
			SALMONIDAE	1,000,000			
B. CADMIUM	NATIONAL	16	CYPRINIDAE	2,000	0.057	0.0561	ACR
			SALMONIDAE	1,000			
			SCIAENIDAE	1,100			
	STATE	11	SALMONIDAE	2,000	0.014	0.0092	ACR
			PERCICHTHYIDAE	2,000			
			DAPHNIIDAE	1,400			
CHLORDANE	NATIONAL	3	PALAEMONIDAE	2,200	1.204	0.0043	FAV
			CYPRINIDAE	2,400			
			SALMONIDAE	2,400			
	STATE	1	CYPRINIDAE	2,400	4.297	0.0043	FAV
			SALMONIDAE	2,400			
			CENTRARCHIDAE	2,400			
CHROMIUM	NATIONAL	16	CENTRARCHIDAE	2,400	15.141	0.320	ACR
			DAPHNIIDAE	2,400			
			PERCICHTHYIDAE	2,400			
	STATE	1	CYPRINIDAE	2,400	741.754	N/A	FAV
			PERCICHTHYIDAE	2,400			
			SALMONIDAE	2,400			
5 COPPER	NATIONAL	12	DAPHNIIDAE	2,400	9.154	5.5972	FCV
			CHIRONOMIDAE	4,800			
			SALMONIDAE	4,800			
	STATE	12	TURBELLARIA	2,400	2.142	5.5447	FCV
			CHIRONOMIDAE	2,400			
			TURBELLARIA	2,400			
CYANIDE	NATIONAL	16	SALMONIDAE	76,000	51.488	4.2978	ACR
			DAPHNIIDAE	85,000			
			CENTRARCHIDAE	172,000			
	STATE	8	SALMONIDAE	85,000	28.000	3.5111	ACR
			DAPHNIIDAE	85,000			
			CENTRARCHIDAE	172,000			
DDT	NATIONAL	20	PERCIDAE	185,121	0.550	0.0010	FAV
			DAPHNIIDAE	1,000			
			SALMONIDAE	1,000			
	STATE	11	DAPHNIIDAE	1,000	0.001	0.0010	FAV
			PERCIDAE	1,000			
			CHIRONOMIDAE	1,000			
DIELDRIN	NATIONAL	10	DAPHNIIDAE	1,000	1.500	0.0019	FAV
			ABELLIDAE	2,000			
			SALMONIDAE	2,000			
	STATE	7	SPHAERIIDAE	2,000	1.275	0.0019	FAV
			SPHAERIIDAE	2,000			
			CENTRARCHIDAE	4,000			
ENDOSULFAN	NATIONAL	9	ABELLIDAE	2,000	0.220	0.1561	ACR
			SALMONIDAE	2,000			
			CYPRINIDAE	2,000			
	STATE	5	CYPRINIDAE	2,000	0.220	0.0143	ACR
			CATOSTOMIDAE	2,000			
			SALMONIDAE	2,000			
			CORIXIDAE (HEMIPTERA)	97,000			

STATE: OREGON

PENTANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE FRESHWATER FAMILY	LOW VALUE (ug/L)	FRESHWATER QUALITY CRITERIA, MAXIMUM (ug/L)	FRESHWATER QUALITY CRITERIA, 24-HOUR AVERAGE (ug/L)	FRESHWATER QUALITY CRITERIA, INTERMEDIATE (ug/L)
MIREX	NATIONAL	17	SALMONIDAE	2,000	0.001	*	
			SALMONIDAE	2,000			
	STATE	10	PERCIDAE	2,000	0.140	0.0010	FAV
			SALMONIDAE	2,000			
			PERCICHTHYIDAE	2,000			
METHOXYCLOR	NATIONAL	15	PERCICHTHYIDAE	2,000	0.201	0.0030	FAV
			PERCIDAE	2,000			
	STATE	8	ATHERINIDAE	2,000	0.165	0.0030	FAV
			SALMONIDAE	2,000			
			SPHAERIIDAE	2,000			
M. LEAD	NATIONAL	7	SALMONIDAE	2,000	0.057	0.0025	FCV
			SALMONIDAE	2,000			
			SALMONIDAE	2,000			
	STATE	5	SALMONIDAE	2,000	0.218	0.0025	FAV
			SALMONIDAE	2,000			
			SALMONIDAE	2,000			
LINDANE	NATIONAL	16	ABELLIDAE	2,000	0.240	0.2001	ACR
			SALMONIDAE	2,000			
			SALMONIDAE	2,000			
	STATE	7	SALMONIDAE	2,000	7.700	0.2400	ACR
			SALMONIDAE	2,000			
			SALMONIDAE	2,000			
MERCURY	NATIONAL	9	SALMONIDAE	2,000	0.470	0.25	FAV
			SALMONIDAE	2,000			
			SALMONIDAE	2,000			
	STATE	3	SALMONIDAE	2,000	0.181	0.1864	ACR
			SALMONIDAE	2,000			
			SALMONIDAE	2,000			
50. NICKEL	NATIONAL	16	SALMONIDAE	2,000	59.874	5.5991	ACR
			SPHAERIIDAE	2,000			
			PERCICHTHYIDAE	2,000			
	STATE	8	SALMONIDAE	2,000	71.765	5.3402	ACR
			SALMONIDAE	2,000			
			PERCICHTHYIDAE	2,000			
PCBS	NATIONAL	5	SALMONIDAE	2,000	0.197	0.014	FAV
			SALMONIDAE	2,000			
	STATE	3	SALMONIDAE	2,000	0.197	0.014	FAV
			SALMONIDAE	2,000			
			CENTRARCHIDAE	2,000			
SELENIUM	NATIONAL	20	ATHERINIDAE (SILVERSIDES)	2,000	20.540	5.1000	ACR
			ATHERINIDAE	2,000			
			SALMONIDAE	2,000			
	STATE	9	ATHERINIDAE (SILVERSIDES)	2,000	20.540	7.2001	ACR
			ATHERINIDAE	2,000			
			SALMONIDAE	2,000			
5. SILVER	NATIONAL	5	SALMONIDAE	2,000	0.0000	*	
			CENTRARCHIDAE	2,000			
			CYPRINIDAE	2,000			
	STATE	5	CYPRINIDAE	2,000	0.0000	*	
			CYPRINIDAE	2,000			
			SALMONIDAE	2,000			
TOXAPHENE	NATIONAL	10	SALMONIDAE	2,000	0.007	0.0002	ACR
			CYPRINIDAE	2,000			
			CYPRINIDAE	2,000			
	STATE	6	SALMONIDAE	2,000	0.005	0.0002	ACR
			SALMONIDAE	2,000			
			CYPRINIDAE	2,000			

FOOTNOTE
- * — UNITS IN MICROGRAMS PER LITER
- ** — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- FAV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- # — FAILED TO MEET MINIMUM DATA REQUIREMENT
- $ — HARDNESS EFFECT INTERCEPT VALUE
- M — APPLY EQUATION 2.7 TO DETERMINE MINIMUM CRITERIA
- N — APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND 24-HOUR AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: OREGON

PENTANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE FRESHWATER FAMILY	LOW VALUE (ug/L)	FRESHWATER QUALITY CRITERIA, MAXIMUM (ug/L)	FRESHWATER QUALITY CRITERIA, 24-HOUR AVERAGE (ug/L)	FRESHWATER QUALITY CRITERIA, INTERMEDIATE (ug/L)
6. ZINC	NATIONAL	16	DAPHNIIDAE	13,700	0.140	47.0000	SCV
			ANATIDAE	43,000			
			SALMONIDAE	43,000			
	STATE	10	DAPHNIIDAE	13,700	4.744	47.0000	SCV
			SALMONIDAE	43,000			
			PERCICHTHYIDAE	43,000			
			PHLOXINIDAE	62,000			

STATE: PENNSYLVANIA

PENTANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE FRESHWATER FAMILY	LOW VALUE (ug/L)	FRESHWATER QUALITY CRITERIA, MAXIMUM (ug/L)	FRESHWATER QUALITY CRITERIA, 24-HOUR AVERAGE (ug/L)	FRESHWATER QUALITY CRITERIA, INTERMEDIATE (ug/L)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7,180	3,000	*	
			ABELLIDAE	9,000			
			SALMONIDAE	9,000			
	STATE	4	SALMONIDAE	9,000	1,500	*	
			CENTRARCHIDAE	7,431			
			SPHAERIIDAE	9,000			
ARSENIC	NATIONAL	9	SALMONIDAE	9,000	114,000	*	
			DAPHNIIDAE	170,000			
			SALMONIDAE	172,000			
	STATE	3	ICTALURIDAE	1,000,000	171,000	*	
			DAPHNIIDAE	1,000,000			
			SALMONIDAE	1,000,000			
B. CADMIUM	NATIONAL	16	CENTRARCHIDAE	2,000	0.057	0.0561	ACR
			SALMONIDAE	1,000			
			SCIAENIDAE	1,100			
	STATE	10	SALMONIDAE	2,000	0.016	0.0092	ACR
			DAPHNIIDAE	1,400			
			SALMONIDAE	2,400			
CHLORDANE	NATIONAL	3	PALAEMONIDAE	2,200	1.204	0.0043	FAV
			PERCICHTHYIDAE	2,400			
			CYPRINIDAE	2,400			
	STATE	1	SALMONIDAE	2,400	1.204	0.0043	FAV
			CYPRINIDAE	2,400			
			SALMONIDAE	2,400			
CHROMIUM	NATIONAL	16	CENTRARCHIDAE	2,400	15.141	0.320	ACR
			DAPHNIIDAE	2,400			
			PERCICHTHYIDAE	2,400			
	STATE	4	SALMONIDAE	2,400	1,000.000	N/A	FAV
			PERCICHTHYIDAE	2,400			
			SALMONIDAE	2,400			
5 COPPER	NATIONAL	12	DAPHNIIDAE	2,400	9.154	5.5972	FCV
			CHIRONOMIDAE	4,800			
			SALMONIDAE	4,800			
	STATE	12	TURBELLARIA	2,400	9.142	5.5000	FCV
			DAPHNIIDAE	2,400			
			TURBELLARIA	2,400			
CYANIDE	NATIONAL	16	SALMONIDAE	76,000	51.488	4.2978	ACR
			DAPHNIIDAE	85,000			
			CENTRARCHIDAE	172,000			
	STATE	7	SALMONIDAE	85,000	22.000	3.5971	ACR
			DAPHNIIDAE	85,000			
			CENTRARCHIDAE	172,000			
DDT	NATIONAL	20	PERCIDAE	185,121	0.550	0.0010	FAV
			DAPHNIIDAE	1,000			
			SALMONIDAE	1,000			
	STATE	12	DAPHNIIDAE	1,000	0.100	0.0010	FAV
			PERCIDAE	1,000			
			CHIRONOMIDAE	1,000			
DIELDRIN	NATIONAL	10	DAPHNIIDAE	1,000	1.500	0.0019	FAV
			ABELLIDAE	2,000			
			SALMONIDAE	2,000			
	STATE	7	SPHAERIIDAE	2,000	0.057	0.0019	FAV
			SPHAERIIDAE	2,000			
			CENTRARCHIDAE	4,000			
ENDOSULFAN	NATIONAL	9	ABELLIDAE	2,000	0.220	0.1561	ACR
			SALMONIDAE	2,000			
			CYPRINIDAE	2,000			
	STATE	6	CYPRINIDAE	2,000	0.140	0.0143	ACR
			SALMONIDAE	2,000			
			CATOSTOMIDAE	2,000			
			CHIRONOMIDAE	2,000			

FOOTNOTE
- * — UNITS IN MICROGRAMS PER LITER
- ** — STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- FAV — FINAL PLANT VALUE
- FRV — FINAL RESIDUE VALUE
- ACR — COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV — FINAL CHRONIC VALUE
- SCV — SENSITIVE SPECIES CHRONIC VALUE
- # — FAILED TO MEET MINIMUM DATA REQUIREMENT
- $ — HARDNESS EFFECT INTERCEPT VALUE
- M — APPLY EQUATION 2.7 TO DETERMINE MINIMUM CRITERIA
- N — APPLY EQUATION 2.7 TO DETERMINE MAXIMUM AND 24-HOUR AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: PENNSYLVANIA

TOXICANT	SOURCE OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY: NAME	MOST SENSITIVE RESIDENT FAMILY: LC50 VALUE (+/-)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (+/-)	FRESHWATER AQUATIC LIFE CRITERIA: CHRONIC (+/-)	FRESHWATER AQUATIC LIFE CRITERIA: APPENDIX
ENDRIN	NATIONAL	17	SAINTBERNARDIDAE	0.035	0.291 +	0.0023	FAV
			SALMONIDAE	0.035			
			PERLIDAE	0.0727			
	STATE	10	PTERONARCYIDAE	0.0727	0.105 +	0.0053	FAV
			SALMONIDAE	0.0727			
			CENTRARCHIDAE	1.01			
HEPTACHLOR	NATIONAL	12	CYPRINIDAE	1.89	0.521 +	0.0038	FAV
			PTERONARCYIDAE	0.455			
	STATE	3	PALAEMONIDAE	1.205	0.205 +	0.0038	FAV
			SALMONIDAE	1.205			
			PERLIDAE	0.455			
			ARTACIDAE	1.205			
M. LEAD	NATIONAL	7	SAINTBERNARDIDAE	0.0727	0.007 +	0.00003	FCV
			SALMONIDAE	0.0727			
			CYPRINIDAE	0.455			
	STATE	3	SALMONIDAE	0.0727	0.0035 +	0.00004	FCV
			CENTRARCHIDAE	0.455			
			PALAEMONIDAE	0.455			
LINDANE	NATIONAL	10	ARILLIDAE	0.455	0.210 +	0.0073	ACR
			SALMONIDAE	0.455			
			CENTRARCHIDAE	0.455			
	STATE	7	SALMONIDAE	0.455	0.085 +	0.1010	AMR
			SALMONIDAE	0.455			
			CENTRARCHIDAE	0.727			
MERCURY	NATIONAL	5	SAINTBERNARDIDAE	0.455	0.455 +	0.25	FAV
			SALMONIDAE	0.455			
	STATE	1	SALMONIDAE	0.455	0.910 +	0.25	FAV
			ARTACIDAE	0.455			
			PALAEMONIDAE	0.455			
M. NICKEL	NATIONAL	15	SAINTBERNARDIDAE	0.455	30.914 +	3.3001	ACR
			SALMONIDAE	0.455			
	STATE	12	SAINTBERNARDIDAE	0.455	30.000 +	3.4000	ACR
			SALMONIDAE	0.455			
			PALAEMONIDAE	0.455			
PCBS	NATIONAL	3	SAINTBERNARDIDAE	0.455	0.127 +	0.014	FAV
			SALMONIDAE	0.455			
	STATE	2	SALMONIDAE	0.455	0.191 +	0.014	FAV
			CENTRARCHIDAE	0.455			
SELENIUM	NATIONAL	10	HYALELLIDAE/TALITRIDAE	0.455	18.445 +	20.000	ACR
			SALMONIDAE	0.455			
			CYPRINODONTIDAE	0.455			
	STATE	7	HYALELLIDAE/TALITRIDAE	0.455	30.001 +	6.745	ACR
			SALMONIDAE	0.455			
			CYPRINIDAE	0.455			
2, 3, 7, 8-TCDD	NATIONAL	5	CYPRINIDAE	0.455	0.00000 +		
			CYPRINIDAE	0.455			
	STATE	3	CYPRINIDAE	0.455	0.00000 +		
			CYPRINIDAE	0.455			
			CYPRINIDAE	0.455			
TOXAPHENE	NATIONAL	10	SAINTBERNARDIDAE	0.727	0.007 +	0.0007	ACR
			PTERONARCYIDAE	0.455			
			ICTALURIDAE	0.455			
	STATE	3	SALMONIDAE	0.455	1.205 +	0.0016	ACR
			SALMONIDAE	0.455			
			CYPRINIDAE	0.455			

STATE: PENNSYLVANIA

TOXICANT	SOURCE OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY: NAME	MOST SENSITIVE RESIDENT FAMILY: LC50 VALUE (+/-)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (+/-)	FRESHWATER AQUATIC LIFE CRITERIA: CHRONIC (+/-)	FRESHWATER AQUATIC LIFE CRITERIA: APPENDIX
2, ZINC	NATIONAL	16	SALMONIDAE	33.00	33.00	33.00	FAV
			DAPHNIIDAE	43.00			
			SALMONIDAE	43.00			
	STATE	11	SALMONIDAE	43.00	0.105 +	47.0000	ECV
			DAPHNIIDAE	43.00			
			SALMONIDAE	43.00			

FOOTNOTE

- * = UNITS IN MICROGRAMS PER LITER
- ** = STATE HAS LESS THAN 3 RESIDENT FAMILIES—NATIONAL VALUE USED
- FAV = FINAL PLANT VALUE
- FRV = FINAL RESIDUE VALUE
- ACR = COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV = FINAL CHRONIC VALUE
- ECV = SENSITIVE SPECIES CHRONIC VALUE
- + = FAILED TO MEET MINIMUM DATA REQUIREMENT
- ++ = STATE HAS LESS THAN 3 RESIDENT FAMILIES—NATIONAL VALUE USED
- I = HARDNESS EFFECT INTERCEPT VALUE
- SL = HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 2.7 TO DETERMINE SHARMAN CRITERIA
- APPLY EQUATION 2.7 TO DETERMINE SHARMAN AND R-DAY CHRONIC CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: RHODE ISLAND

TOXICANT	SOURCE OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY: NAME	MOST SENSITIVE RESIDENT FAMILY: LC50 VALUE (+/-)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (+/-)	FRESHWATER AQUATIC LIFE CRITERIA: CHRONIC (+/-)	FRESHWATER AQUATIC LIFE CRITERIA: APPENDIX
ALDRIN	NATIONAL	14	CENTRARCHIDAE	3.40	3.00 +		
			ARILLIDAE	3.00			
			HYALELLIDAE	3.00			
	STATE	3	SALMONIDAE	4.00	1.50 +		
			CENTRARCHIDAE	7.20			
			SPHAERIIDAE	3.00			
ARSENIC	NATIONAL	2	HYALELLIDAE	3.00	112.00 +		
			SAINTBERNARDIDAE	336.00			
			DAPHNIIDAE	1760.00			
	STATE	3	SALMONIDAE	14100.00	141.000 +		
			DAPHNIIDAE	1600.00			
			CENTRARCHIDAE	19000.00			
W. CADMIUM	NATIONAL	16	CYPRINIDAE	3.00			
			SALMONIDAE	3.00	0.287	0.0041	ACR
			SAINTBERNARDIDAE	3.00			
	STATE	16	PATRIDAE	3.00	0.416	0.0052	ACR
			CYPRINIDAE	3.00			
			SAINTBERNARDIDAE	3.00			
CHLORDANE	NATIONAL	3	CYPRINODONTIDAE	3.00	1.201 +	0.0043	FAV
			PTERONARCYIDAE	33.00			
			CYPRINIDAE	33.00			
	STATE	2	SAINTBERNARDIDAE	33.00	7.205 +	0.0043	FAV
			SALMONIDAE	33.00			
			CENTRARCHIDAE	33.00			
CHROMIUM	NATIONAL	16	CENTRARCHIDAE	34.71	32.00	4.2004	ACR
			CYPRINIDAE	37.00			
			SALMONIDAE	37.00			
			SAINTBERNARDIDAE	3000.00			
	STATE	4	SALMONIDAE	3000.00	3000.000 +	16.0	FAV
			PALAEMONIDAE	3000.00			
			PERCIDAE/ETHEOSTOMIDAE	3000.00			
2, COPPER	NATIONAL	20	CYPRINIDAE	3.00	3.84	3.4800	FCV
			CYPRINIDAE	3.00			
			PATRIDAE	3.00			
	STATE	16	CYPRINIDAE	3.00	9.00	7.0010	FCV
			CYPRINIDAE	3.00			
			PATRIDAE	3.00			
CYANIDE	NATIONAL	14	SALMONIDAE	3.00	31.00 +	1.3470	ACR
			CYPRINIDAE	3.00			
			CENTRARCHIDAE	3.00			
	STATE	8	CENTRARCHIDAE	3.00	30.000 +	2.0001	ACR
			CYPRINIDAE	3.00			
			CENTRARCHIDAE	3.00			
DDT	NATIONAL	20	PERCIDAE	3.00	0.000	0.0010	FAV
			ARILLIDAE	3.00			
			SALMONIDAE	3.00			
	STATE	5	SALMONIDAE	3.00	0.001 +	0.0010	FAV
			PERCIDAE	3.00			
			CENTRARCHIDAE	3.00			
DIELDRIN	NATIONAL	13	PERCIDAE	3.00	1.000 +	0.0019	FAV
			ARILLIDAE	3.00			
			SALMONIDAE	3.00			
	STATE	5	SALMONIDAE	3.00	0.471 +	0.0019	FAV
			HYALELLIDAE	3.00			
			CENTRARCHIDAE	34.00			
ENDOSULFAN	NATIONAL	3	SALMONIDAE	3.00	0.056 +	0.1560	ACR
			HYALELLIDAE	3.00			
			CYPRINIDAE	3.00			
	STATE	6	SALMONIDAE	3.00	0.140 +	0.0700	ACR
			CYPRINIDAE	3.00			
			CATOSTOMIDAE	3.00			
			CYPRINIDAE	3.00			

STATE: RHODE ISLAND

TOXICANT	SOURCE OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY: NAME	MOST SENSITIVE RESIDENT FAMILY: LC50 VALUE (+/-)	FRESHWATER AQUATIC LIFE CRITERIA: ACUTE (+/-)	FRESHWATER AQUATIC LIFE CRITERIA: CHRONIC (+/-)	FRESHWATER AQUATIC LIFE CRITERIA: APPENDIX
ENDRIN	NATIONAL	17	SAINTBERNARDIDAE	0.40	0.291 +	0.0023	FAV
			SALMONIDAE	0.40			
			PERLIDAE	0.80			
	STATE	2	PTERONARCYIDAE	0.80	0.105 +	0.0053	FAV
			SALMONIDAE	0.80			
			CENTRARCHIDAE	1.01			
HEPTACHLOR	NATIONAL	16	CYPRINIDAE	1.89	0.521 +	0.0038	FAV
			PTERONARCYIDAE	0.80			
			PALAEMONIDAE	1.89			
	STATE	5	SALMONIDAE	13.00	2.201 +	0.0052	FAV
			CENTRARCHIDAE	21.00			
			ARTACIDAE	47.00			
M. LEAD	NATIONAL	7	SAINTBERNARDIDAE	1.80	0.007 +	0.00026	FCV
			SALMONIDAE	1.80			
			CYPRINIDAE	1.80			
	STATE	4	CYPRINIDAE	69.00	14.000 +	0.00026	FCV
			CYPRINIDAE	69.00			
			CENTRARCHIDAE	69.00			
LINDANE	NATIONAL	10	ARILLIDAE	69.00	2.210 +	0.2011	ACR
			SALMONIDAE	21.00			
			CYPRINIDAE	21.00			
	STATE	6	CENTRARCHIDAE	69.00	1.700 +	0.1400	ACR
			SALMONIDAE	14.00			
			CENTRARCHIDAE	69.00			
MERCURY	NATIONAL	5	PERCIDAE	69.00	0.455 +	0.25	FAV
			SALMONIDAE	69.00			
	STATE	5	SALMONIDAE	69.00	0.000 +	0.25	FAV
			SALMONIDAE	69.00			
			PERCIDAE	69.00			
M. NICKEL	NATIONAL	16	CYPRINIDAE	69.00	30.914 +	3.3001	ACR
			HYALELLIDAE	69.00			
	STATE	12	CENTRARCHIDAE	69.00	30.000 +	2.4100	ACR
			CYPRINIDAE	69.00			
			CENTRARCHIDAE	69.00			
PCBS	NATIONAL	3	SALMONIDAE	69.00	0.127 +	0.014	FAV
			CYPRINIDAE	69.00			
	STATE	3	CENTRARCHIDAE	69.00	0.000 +	0.014	FAV
			CYPRINIDAE	69.00			
			CENTRARCHIDAE	69.00			
SELENIUM	NATIONAL	10	HYALELLIDAE/TALITRIDAE	69.00	18.445 +	20.000	ACR
			SALMONIDAE	69.00			
			CYPRINODONTIDAE	69.00			
	STATE	5	HYALELLIDAE/TALITRIDAE	69.00	30.000 +	14.010	ACR
			SALMONIDAE	69.00			
			CYPRINIDAE	69.00			
2, 3, 7, 8-TCDD	NATIONAL	5	CYPRINIDAE	69.00	0.00000 +		
			CYPRINIDAE	69.00			
	STATE	4	CYPRINIDAE	69.00	0.00000 +		
			CYPRINIDAE	69.00			
			CYPRINIDAE	69.00			
TOXAPHENE	NATIONAL	12	PERCIDAE	69.00	0.007 +	0.0007	ACR
			PTERONARCYIDAE	69.00			
			ICTALURIDAE	69.00			
	STATE	7	CENTRARCHIDAE	69.00	0.016 +	0.0016	ACR
			SALMONIDAE	69.00			
			CYPRINIDAE	69.00			

FOOTNOTE

- * = UNITS IN MICROGRAMS PER LITER
- ** = STATE HAS LESS THAN 3 RESIDENT FAMILIES—NATIONAL VALUE USED
- FAV = FINAL PLANT VALUE
- FRV = FINAL RESIDUE VALUE
- ACR = COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
- FCV = FINAL CHRONIC VALUE
- ECV = SENSITIVE SPECIES CHRONIC VALUE
- + = FAILED TO MEET MINIMUM DATA REQUIREMENT
- ++ = STATE HAS LESS THAN 3 RESIDENT FAMILIES—NATIONAL VALUE USED
- I = HARDNESS EFFECT INTERCEPT VALUE
- SL = HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 2.7 TO DETERMINE SHARMAN CRITERIA
- APPLY EQUATION 2.7 TO DETERMINE SHARMAN AND R-DAY CHRONIC CRITERIA

STATE: RHODE ISLAND

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY	LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	30-DAY (ug/L)	AVERAGE (ug/L)
5 ZINC	NATIONAL	16	DAPHNIDAE	53.757	0.148	47.0566	SCV
			PHYSIDAE	61.956			
			SALMONIDAE	65.091			
			PHILOXENIDAE	66.757			
	STATE	13	DAPHNIDAE	71.300	0.401	47.0566	SCV
			PHYSIDAE	61.956			
			SALMONIDAE	91.045			
			PHILOXENIDAE	66.757			

STATE: SOUTH CAROLINA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY	LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	30-DAY (ug/L)	AVERAGE (ug/L)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.201	3.000	*	
			ABELLIDAE	9.000			
			TETRAGONURIDAE	9.000			
			SALMONIDAE	10.000			
	STATE	8	SALMONIDAE	10.000	1.700	*	
			CENTRARCHIDAE	7.201			
			EPHEMERELLIDAE	9.000			
			CERATOPSYCHIDAE	11.254			
ARSENIC	NATIONAL	9	SALMONIDAE	205.000	113.000	*	
			SALMONIDAE	1504.200			
			SALMONIDAE	1410.000			
	STATE	5	SALMONIDAE	1410.000	150.240	*	
			SALMONIDAE	1410.000			
			SALMONIDAE	1410.000			
			CENTRARCHIDAE	3011.000			
B CADMIUM	NATIONAL	16	SALMONIDAE	0.200	0.0004	ACR	
			CYPRINIDAE	0.400			
			SUMMARIDAE	1.107			
	STATE	10	PHYSIDAE	0.200	0.016	*	0.0008 ACR
			SALMONIDAE	0.201			
			CYPRINIDAE	0.400			
			CYPRINODONTIDAE	1.000			
CHLORIDE	NATIONAL	2	PHYSIDAE	230.000			
			PALAEMONIDAE	8.200	1.201	*	0.0003 PAV
			PTERONARCIDAE	15.400			
			CYPRINIDAE	25.000			
	STATE	2	PTERONARCIDAE	15.400	1.201	*	0.0003 PAV
			CENTRARCHIDAE	16.200		**	
CHROMIUM	NATIONAL	16	SALMONIDAE	16.100	0.2000	ACR	
			CYPRINIDAE	1000.000			
			PHILOXENIDAE	2000.000			
	STATE	6	PHYSIDAE	2000.000	900.0072	*	45.0 TRV
			PHYSIDAE	2000.000			
			PHILOXENIDAE	2000.000			
C COPPER	NATIONAL	20	SALMONIDAE	2000.100	0.100		0.00578 FCV
			CHIRONOMIDAE	3.700			
	STATE	11	TRICORYTHIDAE	1.200	0.100	*	0.00140 FCV
			CHIRONOMIDAE	6.700			
			CHIRONOMIDAE	6.700			
CYANIDE	NATIONAL	16	SALMONIDAE	76.200	21.000	*	1.2000 ACR
			CHIRONOMIDAE	204.000			
			CERATOPSYCHIDAE	114.310			
	STATE	7	PERLIDAE	102.310	10.000	*	0.8571 ACR
			CHIRONOMIDAE	76.700			
			CERATOPSYCHIDAE	114.310			
DDT	NATIONAL	19	DAPHNIDAE	1.200	0.000		0.0010 PAV
			ISONYCHIIDAE	1.200			
			ISONYCHIIDAE	1.200			
	STATE	8	SALMONIDAE	0.200	0.200	*	0.0010 PAV
			ISONYCHIIDAE	0.200			
			ISONYCHIIDAE	0.200			
DIELDRIN	NATIONAL	18	CERATOPSYCHIDAE	0.200	1.300	*	0.2240 FAV
			ABELLIDAE	0.200			
			EPHEMERELLIDAE	0.200			
	STATE	9	EPHEMERELLIDAE	0.200	0.200	*	0.0010 FAV
			CERATOPSYCHIDAE	0.200			
ENDOSULFAN	NATIONAL	9	CYPRINIDAE	41.200	0.200	*	0.1000 ACR
			CYPRINIDAE	1.270			
			CYPRINIDAE	1.270			
	STATE	4	SALMONIDAE	2.200	0.210	*	0.0050 ACR
			SALMONIDAE	2.200			
			CENTRARCHIDAE	2.201			
			CORYDALIDAE (APPROXIMATED)	47.000			

FOOTNOTE			
ug/L	= UNITS IN MICROGRAMS PER LITER	*	= FAILED TO MEET MINIMUM DATA REQUIREMENT
FAV	= FINAL PLANT VALUE	**	= STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
FRV	= FINAL RESIDUE VALUE	I	= HARDNESS EFFECT INTERCEPT VALUE
ACR	= COMPUTED BY ACUTE TO CHRONIC RATIO METHOD	SI	= HARDNESS EFFECT INTERCEPT VALUE
FCV	= FINAL CHRONIC VALUE		= APPLY EQUATION 3.1 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA
SCV	= SENSITIVE SPECIES CHRONIC VALUE		

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: SOUTH CAROLINA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY	LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	30-DAY (ug/L)	AVERAGE (ug/L)
ENDRIN	NATIONAL	17	GASTROSTEIDAE	0.440	0.001	*	0.0023 FAV
			SALMONIDAE	0.490			
			PERLIDAE	0.852			
			PTERONARCIDAE	0.947			
	STATE	8	SALMONIDAE	0.700	0.110	*	0.0023 FAV
			PERLIDAE	0.700			
			PERLODIDAE	0.852			
			CENTRARCHIDAE (APPROXIMATED)	0.900			
HEXACHLOR	NATIONAL	12	PTERONARCIDAE	0.900	0.01	*	0.0038 FAV
			PTERONARCIDAE	0.900			
			PELECORYCHIDAE	1.300			
			PERLIDAE	1.800			
			ASTACIDAE	1.800			
	STATE	4	SALMONIDAE	13.000	0.467	*	0.0038 FAV
			CENTRARCHIDAE	24.111			
			DAPHNIDAE	56.748			
			CYPRINIDAE	110.000			
M LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.021	*	0.00003 SCV
			DAPHNIDAE	2.200			
			SALMONIDAE	20.362			
			CYPRINIDAE	356.780			
	STATE	6	SALMONIDAE	20.362	14.070	*	0.00003 FCV
			CENTRARCHIDAE	450.015			
			PHILOXENIDAE	800.845			
			CYPRINIDAE	814.862			
LINDANE	NATIONAL	18	ABELLIDAE	17.000	0.016	*	0.0034 ACR
			GAMMARIDAE	31.000			
			GAMMARIDAE	31.627			
			CENTRARCHIDAE	32.627			
	STATE	8	SALMONIDAE	17.000	13.825	*	0.0060 ACR
			CENTRARCHIDAE	32.627			
			PERCIDAE	36.000			
MERCURY	NATIONAL	20	CYPRINIDAE	112.000	2.400	*	0.25 TRV
			DAPHNIDAE	1.000			
			GAMMARIDAE	11.000			
			ASTACIDAE	3.401			
			SALMONIDAE	244.700			
	STATE	4	ASTACIDAE	70.000	1.400	*	0.25 TRV
			SALMONIDAE	244.700			
			PHILOXENIDAE	761.811			
M NICKEL	NATIONAL	19	NAIDIDAE	868.000	52.914	*	0.0431 ACR
			DAPHNIDAE	65.031			
			3 PHYSIDAE/PERLIDAE	232.500			
			SALMONIDAE	241.313			
			PHILOXENIDAE	241.313			
	STATE	11	DAPHNIDAE	175.000	11.122	*	1.2000 ACR
			PHILOXENIDAE	407.211			
			CHIRONOMIDAE	439.825			
			CENTRARCHIDAE	444.717			
PCB	NATIONAL	5	SALMONIDAE	2.000	0.103	*	0.014 FAV
			CENTRARCHIDAE	6.911			
			CYPRINIDAE	32.901			
			GAMMARIDAE	89.153			
	STATE	7	SALMONIDAE	2.000	0.127	*	0.014 FAV
			CENTRARCHIDAE	6.911		**	
			ISONYCHIIDAE (APPROXIMATED)	30.842			
SELENIUM	NATIONAL	11	PTERONARCIDAE (APPROX.)	1.000			
			DAPHNIDAE	130.000	32.000	*	13.0000 ACR
			CYPRINODONTIDAE	1962.614			
			SALMONIDAE	5.000.000			
	STATE	7	PTERONARCIDAE (APPROX.)	1.000	12.700	*	11.0001 ACR
			DAPHNIDAE	130.000			
			SALMONIDAE	5.000.000			
			SALMONIDAE	8478.723			
			PERCIDAE	7126.841			
5 SILVER	NATIONAL	8	DAPHNIDAE	1.200	0.00003	*	
			COTTIDAE	2.004			
			CYPRINIDAE	2.004			
			CYPRINODONTIDAE	2.012			
	STATE	1	SALMONIDAE	2.201	0.00003	*	
			CENTRARCHIDAE	2.712		**	
			PHYSIDAE	2.921			
				2.200			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.800	0.021	*	0.0067 ACR
			PTERONARCIDAE	2.821			
			TETRAGNATHIDAE	3.547			
			CENTRARCHIDAE	4.125			
	STATE	5	CENTRARCHIDAE	4.125	0.730	*	0.0015 ACR
			CYPRINIDAE	6.128			
			SALMONIDAE	9.961			
			PERCIDAE	11.000			

		*	= FAILED TO MEET MINIMUM DATA REQUIREMENT
		**	= STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED
		I	= HARDNESS EFFECT INTERCEPT VALUE
			= APPLY EQUATION 3.1 TO DETERMINE MAXIMUM CRITERIA
		SI	= HARDNESS EFFECT INTERCEPT VALUE
			= APPLY EQUATION 3.1 TO DETERMINE MINIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: SOUTH DAKOTA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOW VALUE (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (µg/L)	30-DAY (µg/L)	AVERAGE (µg/L)	
ALDRIN	NATIONAL	19	CENTRARCHIDAE	1,400	3.000			
			ASELLIDAE	6,000				
			EPHEMERELLIDAE	9,000				
			SALMONIDAE	10,800				
	STATE	5	SALMONIDAE	2,800	1.500			
			CENTRARCHIDAE	7,481				
			HIRUDINIDAE	14,000				
			CYPRINIDAE	19,900				
AMMONIA	NATIONAL	8	GAMMARIDAE	679,000	13,262			
			DAPHNIIDAE	1,794,240				
			SALMONIDAE	1,438,843				
			ICTALURIDAE	1,687,439				
	STATE	5	DAPHNIIDAE	1,794,240	60,000			
			SALMONIDAE	1,438,843				
			ICTALURIDAE	1,687,439				
			CENTRARCHIDAE	9,481,000				
CADMIUM	NATIONAL	19	SALMONIDAE	2,000	0.021	0.0004	ACR	
			DAPHNIIDAE	2,468				
			GAMMARIDAE	7,141				
			PHYSIDAE	7,882				
	STATE	7	SALMONIDAE	2,000	0.016	0.0002	ACR	
			DAPHNIIDAE	2,468				
			GAMMARIDAE	7,141				
			CYPRINODONTIDAE	7,900				
CHLORDANE	NATIONAL	8	PALAEMONIDAE	8,324	0.014	0.0043	FAV	
			PTERONARCIDAE	14,000				
			CYPRINIDAE	23,238				
	STATE	5	GAMMARIDAE	22,246	0.004	0.0041	FAV	
			PALAEMONIDAE	8,324				
			SALMONIDAE	29,481				
			CENTRARCHIDAE	34,000				
CHROMIUM	NATIONAL	19	GAMMARIDAE	67,000	11.184	1.5218	ACR	
			DAPHNIIDAE	8,988,979				
			PHILODINIDAE	9988,780				
			PHYSIDAE	24882,829				
	STATE	8	DAPHNIIDAE	8,988,979	79.0138	11.5	FAV	
			GAMMARIDAE	67,000				
			PHYSIDAE	24882,829				
			SALMONIDAE	51,961,912				
COPPER	NATIONAL	23	DAPHNIIDAE	1,000	2.784	1.4661	FCV	
			CHIRONOMIDAE	2,758				
			PHYSIDAE	3,882				
			TUBIFICIDAE	7,340				
	STATE	17	DAPHNIIDAE	2,300	3.732	0.8048	ACR	
			CHIRONOMIDAE	2,758				
			PHYSIDAE	3,882				
			SALMONIDAE	7,022				
CYANIDE	NATIONAL	10	SALMONIDAE	76,000	11.429	4.2472	ACR	
			DAPHNIIDAE	83,000				
			CENTRARCHIDAE	116,218				
	STATE	8	PERCIDAE	125,121	22.136	5.8835	ACR	
			SALMONIDAE	151,966				
			DAPHNIIDAE	84,000				
			CENTRARCHIDAE	116,218				
			CYPRINIDAE	125,121				
DDT	NATIONAL	20	DAPHNIIDAE	3,000	1.100	0.0010	FAV	
			PERCIDAE	1,900				
			ESOCIDAE	1,700				
			CHIRONOMIDAE	2,134				
	STATE	11	DAPHNIIDAE	1,327	0.440	0.0010	FAV	
			PERCIDAE	1,900				
			ESOCIDAE	1,700				
			GAMMARIDAE	2,031				
DIELDRIN	NATIONAL	13	PERCIDAE	1,900	1.500	0.0019	FAV	
			ASELLIDAE	2,000				
			SALMONIDAE	3,452				
	STATE	9	EPHEMERELLIDAE	3,000	0.240	0.0019	FAV	
			SALMONIDAE	3,452				
			ICTALURIDAE	21,800				
			PERCIDAE	1,900				
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.994	0.200	0.1994	ACR	
			DAPHNIIDAE	2,000				
			CYPRINIDAE	2,578				
			PTERONARCIDAE	7,000				
	STATE	11	ICTALURIDAE	2,040	0.110	0.0087	ACR	
			SALMONIDAE	2,994				
			CYPRINIDAE	3,578				
			ICTALURIDAE	3,040				
			CENTRARCHIDAE	3,611				

	= FAILED TO MEET MINIMUM DATA REQUIREMENT
	= STATE HAS LESS THAN 8 RESIDENT FAMILIES; NATIONAL VALUE USED
	= HARDNESS EFFECT IN MG/L CaCO3 VALUE
	= APPLY EQUATION (1) TO DETERMINE MAXIMUM (1-HOUR)
	= HARDNESS EFFECT IN MG/L CaCO3 VALUE
	= APPLY EQUATION (2) TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: SOUTH DAKOTA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOW VALUE (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (µg/L)	30-DAY (µg/L)	AVERAGE (µg/L)	
ENDRIN	NATIONAL	17	DAPHNIIDAE	0.170	0.140	0.0600	SCV	
			PHYSIDAE	41,000				
			SALMONIDAE	48,961				
	STATE	4	PHILODINIDAE	83,757	0.140	0.0600	SCV	
			DAPHNIIDAE	0.170				
			SALMONIDAE	26,242				
			PHYSIDAE	41,000				
			PHILODINIDAE	83,757				
HEPTACHLOR	NATIONAL	10	CHIRONOMIDAE	1,000	0.260	0.0038	FAV	
			PTERONARCIDAE	1,000				
			PALAEMONIDAE	1,000				
			PERLIDAE	2,000				
			ASTACIDAE	7,000				
	STATE	6	PERLIDAE	2,000	1.000	0.0038	FAV	
			PALAEMONIDAE	1,000				
			CENTRARCHIDAE	13,000				
			GAMMARIDAE	29,000				
LEAD	NATIONAL	1	GAMMARIDAE	1.9	0.021	0.0007	FCV	
			DAPHNIIDAE	4,000				
			SALMONIDAE	30,000				
			CYPRINIDAE	356,780				
	STATE	5	DAPHNIIDAE	4,000	0.329	0.0008	FCV	
			SALMONIDAE	196,116				
			CYPRINIDAE	356,780				
LINDANE	NATIONAL	16	CENTRARCHIDAE	160,000	1.018	0.0721	ACR	
			ASELLIDAE	16,000				
			SALMONIDAE	21,000				
			GAMMARIDAE	22,427				
			CENTRARCHIDAE	52,857				
	STATE	7	SALMONIDAE	21,000	2.000	0.1499	ACR	
			CENTRARCHIDAE	52,857				
			GAMMARIDAE	96,000				
			ICTALURIDAE	53,000				
MERCURY	NATIONAL	8	DAPHNIIDAE	0.900	2.400	1.200	FAV	
			GAMMARIDAE	12,000				
			ASTACIDAE	31,625				
			SALMONIDAE	244,776				
	STATE	5	DAPHNIIDAE	0.900	2.400	1.200	FAV	
			GAMMARIDAE	12,000				
			SALMONIDAE	248,597				
			PHYSIDAE	763,000				
NICKEL	NATIONAL	19	DAPHNIIDAE	20,977	2.814	0.3151	ACR	
			EPHEMERELLIDAE	30,000				
			CENTRARCHIDAE	345,410				
			PHILODINIDAE	481,211				
	STATE	11	DAPHNIIDAE	20,977	25.196	2.7966	ACR	
			CENTRARCHIDAE	345,842				
			PHILODINIDAE	481,211				
			CHIRONOMIDAE	538,925				
PCBS	NATIONAL	5	SALMONIDAE	2,000	0.120	0.014	FAV	
			CENTRARCHIDAE	4,911				
			CYPRINIDAE	22,900				
			GAMMARIDAE	30,000				
	STATE	5	SALMONIDAE	2,000	0.120	0.014	FAV	
			CENTRARCHIDAE	4,911				
			CYPRINIDAE	22,900				
SELENIUM	NATIONAL	11	HYALELLIDAE (TALITRIDAE)	239,000	52.646	21.0265	ACR	
			DAPHNIIDAE	1982,474				
			CYPRINODONTIDAE	8488,979				
			SALMONIDAE	8478,723				
	STATE	7	HYALELLIDAE (TALITRIDAE)	239,000	54.867	11.6284	ACR	
			DAPHNIIDAE	1982,474				
			SALMONIDAE	7848,826				
SILVER	NATIONAL	5	CYPRINIDAE	8852,438				
			DAPHNIIDAE	0.000	0.00065			
			COTTIDAE	0.004				
			CYPRINIDAE	0.009				
	STATE	3	CYPRINODONTIDAE	0.012	0.00015			
			DAPHNIIDAE	0.000				
			SALMONIDAE	0.012				
			SALMONIDAE	0.021				
			CENTRARCHIDAE	0.1				
TOXAPHENE	NATIONAL	13	PERLIDAE	200	0.021	0.0007	ACR	
			PTERONARCIDAE	0.021				
			ICTALURIDAE	0.041				
			CENTRARCHIDAE	0.725				
	STATE	5	PERLIDAE	200	0.040	0.0073	ACR	
			CENTRARCHIDAE	0.048				
			ICTALURIDAE	0.041				
			SALMONIDAE	0.251				

STATE: TENNESSEE

TOXICANT	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LOW VALUE (µg/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (µg/L)	30-DAY (µg/L)	AVERAGE (µg/L)	
ALDRIN	NATIONAL	CENTRARCHIDAE	1,400	1.500			
		ASELLIDAE	6,000				
		EPHEMERELLIDAE	9,000				
		SALMONIDAE	10,800				
	STATE	SALMONIDAE	4,500	1.400			
		CENTRARCHIDAE	7,481				
		PERCIDAE	10,000				
		HIRUDINIDAE	14,000				
AMMONIA	NATIONAL	GAMMARIDAE	679,000	113,263			
		DAPHNIIDAE	1794,240				
		SALMONIDAE	1438,843				
		ICTALURIDAE	1687,439				
	STATE	GAMMARIDAE	679,000	58.134			
		DAPHNIIDAE	1794,139				
		SALMONIDAE	1438,900				
		ICTALURIDAE	19481,430				
CADMIUM	NATIONAL	SALMONIDAE	2,000	0.021	0.0004	ACR	
		DAPHNIIDAE	2,468				
		GAMMARIDAE	7,141				
		PHYSIDAE	7,882				
	STATE	SALMONIDAE	2,004	0.015	0.0003	ACR	
		PERCICHTHYIDAE	2,163				
		DAPHNIIDAE	2,884				
		GAMMARIDAE	7,141				
CHLORDANE	NATIONAL	PALAEMONIDAE	8,325	1.014	0.0043	FAV	
		PTERONARCIDAE	14,000				
		CYPRINIDAE	23,238				
		GAMMARIDAE	22,246				
	STATE	PALAEMONIDAE	8,325	1.230	0.0043	FAV	
		CYPRINIDAE	23,238				
		SALMONIDAE	29,481				
CHROMIUM	NATIONAL	CENTRARCHIDAE	34,711				
		GAMMARIDAE	67,000	11.184	1.5218	ACR	
		DAPHNIIDAE	8,988,979				
		PHILODINIDAE	9988,780				
		PHYSIDAE	24882,829				
	STATE	GAMMARIDAE	67,000	5.387	0.7466	ACR	
		DAPHNIIDAE	8,988,979				
		PHYSIDAE	24882,829				
		PERCICHTHYIDAE	29454,750				
COPPER	NATIONAL	DAPHNIIDAE	2,000	2.784	1.4661	FCV	
		CHIRONOMIDAE	2,758				
		PHYSIDAE	3,882				
		TUBIFICIDAE	7,340				
	STATE	DAPHNIIDAE	2,756	3.117	1.7832	FCV	
		CHIRONOMIDAE	2,758				
		PHYSIDAE	3,882				
CYANIDE	NATIONAL	SALMONIDAE	7,022	11.429	4.2472	ACR	
		SALMONIDAE	76,000				
		DAPHNIIDAE	83,000				
		CENTRARCHIDAE	116,218				
	STATE	PERCIDAE	125,121	19.931	5.1918	ACR	
		SALMONIDAE	151,966				
		CENTRARCHIDAE	116,218				
		CYPRINIDAE	125,121				
DDT	NATIONAL	DAPHNIIDAE	3,000	1.100	0.0010	FAV	
		PERCIDAE	1,900				
		ESOCIDAE	1,700				
		GAMMARIDAE	2,031				
	STATE	DAPHNIIDAE	0.678	0.264	0.0010	FAV	
		ASTACIDAE	3,000				
		PALAEMONIDAE	3,234				
		CENTRARCHIDAE	4,102				
DIELDRIN	NATIONAL	PERCICHTHYIDAE	4,900	1.500	0.0019	FAV	
		ASELLIDAE	2,000				
		SALMONIDAE	5,452				
		EPHEMERELLIDAE	3,000				
	STATE	SALMONIDAE	0.458	0.142	0.0019	FAV	
		CENTRARCHIDAE	8,611				
		PALAEMONIDAE	20,000				
		CYPRINIDAE	25,700				
ENDOSULFAN	NATIONAL	SALMONIDAE	0.994	0.200	0.1994	ACR	
		DAPHNIIDAE	2,000				
		PTERONARCIDAE	7,000				
		ICTALURIDAE	2,040				
	STATE	SALMONIDAE	2,994	0.151	0.0087	ACR	
		CYPRINIDAE	3,578				
		ICTALURIDAE	3,040				
		CENTRARCHIDAE	3,611				

	= FAILED TO MEET MINIMUM DATA REQUIREMENT
	= STATE HAS LESS THAN 8 RESIDENT FAMILIES; NATIONAL VALUE USED
	= HARDNESS EFFECT IN MG/L CaCO3 VALUE
	= APPLY EQUATION (1) TO DETERMINE MAXIMUM (1-HOUR)
	= HARDNESS EFFECT IN MG/L CaCO3 VALUE
	= APPLY EQUATION (2) TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: TENNESSEE

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ENDRIN	NATIONAL	11	GASTEROSTEIDAE	0.440	0.081 *	0.0023	FRV
			SALMONIDAE	0.466			
			PERLIDAE	0.483			
			PTERONARCYIDAE	0.847			
	STATE	8	SALMONIDAE	0.594	0.284 *	0.0023	FRV
			CYPRINIDAE	0.710			
			POECILIIDAE	0.750			
			CENTRARCHIDAE	1.211			
HEPTACHLOR	NATIONAL	10	PTERONARCYIDAE	0.980	0.201 *	0.0038	FRV
			PALAEMONIDAE	1.800			
			PERLIDAE	2.800			
			ASTACIDAE	7.800			
	STATE	5	PALAEMONIDAE	1.800	0.242 *	0.0038	FRV
			SALMONIDAE	13.028			
			CENTRARCHIDAE	24.771			
			DAPHNIDAE	50.148			
## LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.807 *	0.00083	FCV
			DAPHNIDAE	4.520			
			SALMONIDAE	86.062			
			CYPRINIDAE	208.750			
	STATE	7	GAMMARIDAE	1.161	3.099 *	0.00084	FCV
			SALMONIDAE	156.146			
			CYPRINIDAE	208.782			
			CENTRARCHIDAE	455.215			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	2.218 *	0.2574	ACR
			SALMONIDAE	21.988			
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	52.871			
	STATE	6	SALMONIDAE	8.004	1.487 *	0.1389	ACR
			CENTRARCHIDAE	52.871			
			ICTALURIDAE	53.080			
			CYPRINIDAE	94.805			
MERCURY	NATIONAL	6	DAPHNIDAE	5.000	2.470 *	0.01	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	21.823			
			SALMONIDAE	344.258			
	STATE	6	GAMMARIDAE	10.000	3.828 *	0.01	FRV
			SALMONIDAE	248.581			
			PHILODINIDAE	783.471			
			NAIDIDAE	999.999			
## NICKEL	NATIONAL	16	DAPHNIDAE	86.077	32.814 *	3.9651	ACR
			EPHEMERELLIDAE	233.360			
			CENTRARCHIDAE	346.472			
			PHILODINIDAE	401.217			
	STATE	11	DAPHNIDAE	76.496	11.612 *	1.2766	ACR
			PERCICHTHYIDAE	301.310			
			CENTRARCHIDAE	325.842			
			PHILODINIDAE	401.217			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.131 *	0.014	FRV
			CENTRARCHIDAE	5.871			
			CYPRINIDAE	32.401			
			GAMMARIDAE	99.353			
	STATE	5	SALMONIDAE	2.000	0.144 *	0.014	FRV
			CENTRARCHIDAE	5.871			
			CYPRINIDAE	32.401			
			GAMMARIDAE	82.354			
SELENIUM	NATIONAL	15	HYALELLIDAE (TALITRIDAE)	139.999	82.848 *	22.0398	ACR
			DAPHNIDAE	1052.474			
			CYPRINODONTIDAE	5480.575			
			SALMONIDAE	8479.121			
	STATE	8	HYALELLIDAE (TALITRIDAE)	139.999	14.102 *	10.1864	ACR
			DAPHNIDAE	3860.999			
			SALMONIDAE	7049.808			
			CYPRINIDAE	8002.436			
$ SILVER	NATIONAL	8	DAPHNIDAE	3.002	1.0000 *		
			COTTIDAE	3.094			
			CYPRINIDAE	5.005			
			CYPRINODONTIDAE	7.012			
	STATE	6	COTTIDAE	5.094	1.0041 *		
			CYPRINIDAE	9.011			
			SALMONIDAE	9.021			
			CENTRARCHIDAE	9.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.621 *	0.0002	ACR
			PTERONARCYIDAE	2.621			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.775			
	STATE	6	ICTALURIDAE	3.547	1.384 *	0.0002	ACR
			CENTRARCHIDAE	4.775			
			SALMONIDAE	5.251			
			CYPRINIDAE	8.053			

STATE: TENNESSEE

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	14	DAPHNIDAE	13.737	8.148	47.0000	SCV
			PHYSIDAE	41.958			
			SALMONIDAE	46.887			
			PHILODINIDAE	82.757			
	STATE	12	DAPHNIDAE	27.333	8.386	47.0000	SCV
			SALMONIDAE	56.342			
			PHYSIDAE	41.958			
			PERCICHTHYIDAE	46.384			

FOOTNOTES			
+	UNITS IN MICROGRAMS PER LITER	*	FAILED TO MEET MINIMUM DATA REQUIREMENT
FPV	FINAL PLANT VALUE	**	STATE HAS LESS THAN 4 RESIDENT FAMILIES - NATIONAL VALUE USED
FRV	FINAL RESIDUE VALUE	$	HARDNESS EFFECT INTERCEPT VALUE; APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
ACR	COMPUTED BY ACUTE TO CHRONIC RATIO METHOD	##	HARDNESS EFFECT INTERCEPT VALUE
FCV	FINAL CHRONIC VALUE		APPLY EQUATION 3.7 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA
SCV	SENSITIVE SPECIES CHRONIC VALUE		

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: TEXAS

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.451	2.996 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	8.000			
			SALMONIDAE	10.803			
	STATE	7	CENTRARCHIDAE	7.451	2.646 *		
			PERCICHTHYIDAE	10.000			
			ANGUILLIDAE	16.000			
			CYPRINIDAE	16.892			
ARSENIC	NATIONAL	6	GAMMARIDAE	879.999	113.863 *		
			DAPHNIDAE	1784.245			
			SALMONIDAE	14126.843			
			ICTALURIDAE	16487.430			
	STATE	4	DAPHNIDAE	1046.138	140.462 *		
			ICTALURIDAE	16487.430			
			CENTRARCHIDAE	18464.978			
			CYPRINIDAE	27184.382			
## CADMIUM	NATIONAL	15	SALMONIDAE	0.046	3.027	0.0004	ACR
			DAPHNIDAE	1.406			
			GAMMARIDAE	1.117			
			PHYSIDAE	2.866			
	STATE	12	PERCICHTHYIDAE	0.162	1.041 *	0.0009	ACR
			DAPHNIDAE	2.684			
			PHYSIDAE	2.866			
			PHILODINIDAE	8.987			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	8.325	1.974 *	0.0043	FRV
			PTERONARCYIDAE	15.000			
			CYPRINIDAE	23.238			
			GAMMARIDAE	32.246			
	STATE	5	PALAEMONIDAE	8.325	2.558 *	0.0043	FRV
			CYPRINIDAE	23.238			
			CENTRARCHIDAE	54.771			
			POECILIIDAE	160.000			
CHROMIUM	NATIONAL	18	GAMMARIDAE	67.000	17.184	0.0278	ACR
			DAPHNIDAE	6289.979			
			PHILODINIDAE	8888.785			
			PHYSIDAE	24800.828			
	STATE	7	PHILODINIDAE	8888.785	2371.126 *	10.0	FPV
			PHYSIDAE	24800.828			
			POECILIIDAE	29999.887			
			PERCICHTHYIDAE	30454.750			
## COPPER	NATIONAL	23	DAPHNIDAE	0.305	4.184	1.4905	FCV
			CHIRONOMIDAE	2.798			
			PHYSIDAE	2.895			
			TUBIFICIDAE	7.345			
	STATE	15	DAPHNIDAE	0.298	1.721 *	6.5898	FCV
			CHIRONOMIDAE	2.798			
			PHYSIDAE	2.895			
			TUBIFICIDAE	7.345			
CYANIDE	NATIONAL	10	SALMONIDAE	76.727	7.428 *	4.2677	ACR
			DAPHNIDAE	82.000			
			CENTRARCHIDAE	114.376			
			PERCIDAE	125.121			
	STATE	7	DAPHNIDAE	83.000	26.71 *	3.8072	ACR
			CENTRARCHIDAE	114.376			
			PERCIDAE	125.121			
			CYPRINIDAE	257.898			
DDT	NATIONAL	26	DAPHNIDAE	1.121	3.560	0.0010	FRV
			PERCIDAE	1.981			
			ESOCIDAE	1.700			
			GAMMARIDAE	2.734			
	STATE	10	DAPHNIDAE	2.878	0.350 *	0.0010	FRV
			PERCIDAE	1.988			
			ASTACIDAE	3.409			
			PALAEMONIDAE	4.234			
DIELDRIN	NATIONAL	13	POECILIIDAE	4.503	1.430 *	0.0019	FRV
			ASELLIDAE	5.000			
			SALMONIDAE	5.452			
			EPHEMERELLIDAE	8.000			
	STATE	8	POECILIIDAE	4.503	1.066 *	0.0019	FRV
			CENTRARCHIDAE	10.611			
			PALAEMONIDAE	20.000			
			CYPRINIDAE	80.762			
ENDOSULFAN	NATIONAL	5	SALMONIDAE	0.484	0.208 *	0.1064	ACR
			CYPRINIDAE	1.279			
			PTERONARCYIDAE	2.400			
			CATOSTOMIDAE	7.240			
	STATE	4	CYPRINIDAE	1.279	0.226 *	0.0746	ACR
			POECILIIDAE	3.700			
			CENTRARCHIDAE	3.617			
			COENAGRIONIDAE (AGRIONIDAE)	87.450			

STATE: TEXAS

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ENDRIN	NATIONAL	17	GASTEROSTEIDAE	0.440	0.081 *	0.0023	FRV
			SALMONIDAE	0.466			
			PERLIDAE	0.483			
			PTERONARCYIDAE	0.847			
	STATE	8	POECILIIDAE	0.946	0.418 *	0.0023	FRV
			CENTRARCHIDAE	1.011			
			CYPRINIDAE	1.066			
			PALAEMONIDAE	1.300			
HEPTACHLOR	NATIONAL	10	PTERONARCYIDAE	0.980	0.201 *	0.0038	FRV
			PALAEMONIDAE	1.800			
			PERLIDAE	2.800			
			ASTACIDAE	7.800			
	STATE	8	PALAEMONIDAE	1.800	0.234 *	0.0038	FRV
			ASTACIDAE	7.800			
			CENTRARCHIDAE	24.771			
			DAPHNIDAE	50.148			
## LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.807 *	0.00083	FCV
			DAPHNIDAE	4.520			
			SALMONIDAE	86.062			
			CYPRINIDAE	208.750			
	STATE	4	CYPRINIDAE	208.782	113.677 *	1.3486	ACR
			CENTRARCHIDAE	455.215			
			POECILIIDAE	532.888			
			PHILODINIDAE	853.645			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	2.218 *	0.2574	ACR
			SALMONIDAE	21.988			
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	52.871			
	STATE	6	CENTRARCHIDAE	52.871	11.787 *	1.4257	ACR
			ICTALURIDAE	53.080			
			PERCIDAE	68.000			
			CYPRINIDAE	94.805			
MERCURY	NATIONAL	6	DAPHNIDAE	5.000	2.470 *	0.01	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	21.823			
			SALMONIDAE	344.258			
	STATE	3	ASTACIDAE	20.000	5.570 * **	0.01	FRV
			PHILODINIDAE	783.471			
			NAIDIDAE	999.999			
## NICKEL	NATIONAL	16	DAPHNIDAE	86.077	32.814 *	3.9651	ACR
			EPHEMERELLIDAE	233.360			
			CENTRARCHIDAE	346.472			
			PHILODINIDAE	401.217			
	STATE	11	DAPHNIDAE	76.496	36.638 *	3.1781	ACR
			PERCICHTHYIDAE	301.310			
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	436.625			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	5.871			
			CYPRINIDAE	32.401			
			GAMMARIDAE	99.353			
	STATE	3	CENTRARCHIDAE	5.871	0.157 * **	0.014	FRV
			CYPRINIDAE	32.401			
			COENAGRIONIDAE (AGRIONIDAE)	282.843			
SELENIUM	NATIONAL	15	HYALELLIDAE (TALITRIDAE)	139.999	82.848 *	22.0398	ACR
			DAPHNIDAE	1052.474			
			CYPRINODONTIDAE	5480.575			
			SALMONIDAE	8479.121			
	STATE	6	HYALELLIDAE (TALITRIDAE)	139.999	38.146 *	11.5526	ACR
			DAPHNIDAE	3860.999			
			CYPRINIDAE	8002.436			
			POECILIIDAE	7999.945			
$ SILVER	NATIONAL	8	DAPHNIDAE	3.002	1.0000 *		
			COTTIDAE	3.094			
			CYPRINIDAE	5.005			
			CYPRINODONTIDAE	7.012			
	STATE	4	CYPRINIDAE	9.011	1.0001 *		
			CENTRARCHIDAE	9.112			
			CHIRONOMIDAE	4.136			
			PHILODINIDAE	9.517			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.621 *	0.0002	ACR
			PTERONARCYIDAE	2.621			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.775			
	STATE	6	ICTALURIDAE	3.547	1.266 *	0.0002	ACR
			CENTRARCHIDAE	4.775			
			CYPRINIDAE	8.433			
			PERCIDAE	13.000			

FOOTNOTES			
+	UNITS IN MICROGRAMS PER LITER	*	FAILED TO MEET MINIMUM DATA REQUIREMENT
FPV	FINAL PLANT VALUE	**	STATE HAS LESS THAN 4 RESIDENT FAMILIES - NATIONAL VALUE USED
FRV	FINAL RESIDUE VALUE	$	HARDNESS EFFECT INTERCEPT VALUE; APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
ACR	COMPUTED BY ACUTE TO CHRONIC RATIO METHOD	##	HARDNESS EFFECT INTERCEPT VALUE
FCV	FINAL CHRONIC VALUE		APPLY EQUATION 3.7 TO DETERMINE MAXIMUM AND 30-DAY AVERAGE CRITERIA
SCV	SENSITIVE SPECIES CHRONIC VALUE		

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: TEXAS

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)		96-DAY (ug/L)		AVERAGE (ug/L)	
1 Zinc	NATIONAL	19	DAPHNIDAE	11.170	4.146	x	4.146	x		
			PHYSIDAE	41.566						
			SALMONIDAE	46.261						
			PHILODINIDAE	92.751						
	STATE	11	DAPHNIDAE	21.233	7.884	x	7.884	x		
			PHYSIDAE	41.566						
			PERICHAETHIDAE	46.254						
			PHILODINIDAE	92.751						

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)		96-DAY (ug/L)		AVERAGE (ug/L)	
ALDRIN	NATIONAL	14	CENTRARCHIDAE	1.491	3.000	x				
			ABELLIDAE	9.100						
			EPHEMERELLIDAE	9.200						
			SALMONIDAE	10.800						
	STATE	8	SALMONIDAE	1.951	1.974	x				
			CENTRARCHIDAE	5.841						
			PERICHAETHIDAE	10.000						
			PERICHAETHIDAE	10.000						
ARSENIC	NATIONAL	5	GAMMARIDAE	339.800	113.360	x				
			DAPHNIDAE	1784.345						
			SALMONIDAE	14128.943						
			ICTALURIDAE	19487.420						
	STATE	5	DAPHNIDAE	1784.345	407.956	x				
			SALMONIDAE	14128.943						
			ICTALURIDAE	19487.420						
			CENTRARCHIDAE	34464.928						
M LADMIUM	NATIONAL	19	SALMONIDAE	0.546	0.007		0.0004		ACR	
			DAPHNIDAE	0.485						
			GAMMARIDAE	1.147						
	STATE	14	PHYSIDAE	2.900	0.008		0.0001		ACR	
			PERICHAETHIDAE	5.152						
			PERICHAETHIDAE	5.152						
			GAMMARIDAE	7.147						
CHLORIDE	NATIONAL	5	PALAEMONIDAE	8.325	1.974	x	2.004		FAV	
			PTERONARCIDAE	15.000						
			CYPRINIDAE	23.239						
			GAMMARIDAE	31.248						
	STATE	5	PTERONARCIDAE	15.000	5.386	x	2.004		FAV	
			CYPRINIDAE	23.239						
			GAMMARIDAE	31.248						
			SALMONIDAE	32.857						
CHROMIUM	NATIONAL	19	GAMMARIDAE	67.920	2.164		4.579		ACR	
			DAPHNIDAE	5268.578						
			PHILODINIDAE	5885.750						
			PHYSIDAE	5885.750						
	STATE	8	DAPHNIDAE	5268.578	164.446	x	10.0		FPV	
			PHYSIDAE	5885.750						
			PERICHAETHIDAE	9884.790						
			CYPRINIDAE	57481.977						
COPPER	NATIONAL	23	DAPHNIDAE	5.804	2.784		3.466	16	FCV	
			CHIRONOMIDAE	8.778						
			PHYSIDAE	9.586						
			TUBIFICIDAE	11.946						
	STATE	13	DAPHNIDAE	5.804	2.721		2.687	38	FCV	
			CHIRONOMIDAE	8.778						
			TUBIFICIDAE	11.946						
			PLANORBIDAE	1.624						
CYANIDE	NATIONAL	19	SALMONIDAE	76.752	71.429	x	4.247		ACR	
			DAPHNIDAE	80.000						
			CENTRARCHIDAE	114.519						
	STATE	5	PERCIDAE	126.121	86.207	x	3.931		ACR	
			DAPHNIDAE	80.000						
			CENTRARCHIDAE	114.519						
			PERCIDAE	126.121						
DDT	NATIONAL	20	DAPHNIDAE	0.371	0.550		0.0010		FAV	
			PERCIDAE	1.180						
			EBOOIDAE	1.752						
			GAMMARIDAE	2.234						
	STATE	12	DAPHNIDAE	0.371	0.303	x	0.0010		FAV	
			PERCIDAE	1.180						
			GAMMARIDAE	2.234						
			CENTRARCHIDAE	2.598						
DIELDRIN	NATIONAL	12	PERCHIDAE	0.553	1.000		0.0019		FAV	
			ABELLIDAE	9.000						
			SALMONIDAE	10.400						
			EPHEMERELLIDAE	11.000						
	STATE	8	EPHEMERELLIDAE	11.000	0.632	x	0.0019		FAV	
			CENTRARCHIDAE	12.611						
			PERLIDAE	24.000						
ENDOSULFAN	NATIONAL	8	SALMONIDAE	0.560	0.056	x	0.0064		ACR	
			CYPRINIDAE	1.279						
			PTERONARCIDAE	2.300						
			CATOSTOMIDAE	3.240						
	STATE	8	SALMONIDAE	0.560	0.146	x	0.1400		ACR	
			CYPRINIDAE	1.279						
			PTERONARCIDAE	2.300						
			CATOSTOMIDAE	3.240						

		x	FAILED TO MEET MINIMUM DATA REQUIREMENT
		xx	STATE HAS LESS THAN 5 RESIDENT FAMILIES - NATIONAL VALUE USED
		S	HARDNESS EFFECT INTERCEPT VALUE
			APPLY EQUATION 2.1 TO DETERMINE MAXIMUM CRITERIA
			HARDNESS EFFECT INTERCEPT VALUE
			APPLY EQUATION 2.1 TO DETERMINE MAXIMUM AND 96-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: UTAH

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)		96-DAY (ug/L)		AVERAGE (ug/L)	
ENDRIN	NATIONAL	17	GASTROSTEIDAE	0.440	0.207	x	0.0023		FAV	
			SALMONIDAE	0.546						
			PERLIDAE	2.000						
			PTERONARCIDAE	3.847						
	STATE	8	SALMONIDAE	0.351	0.125	x	0.0023		FAV	
			PERLIDAE	0.465						
			PTERONARCIDAE	3.847						
			CENTRARCHIDAE	11.011						
HEPTACHLOR	NATIONAL	15	PTERONARCIDAE	0.990	0.251	x	0.0038		FAV	
			PALAEMONIDAE	1.800						
			PERLIDAE	1.900						
	STATE	7	NETACIDAE	2.900	0.125	x	0.0038		FAV	
			PTERONARCIDAE	3.847						
			PERLIDAE	3.900						
			CENTRARCHIDAE	11.011						
M LENE	NATIONAL	7	GAMMARIDAE	0.181	0.037	x	0.00003		FCV	
			DAPHNIDAE	4.000						
			SALMONIDAE	30.000						
			CYPRINIDAE	294.780						
	STATE	4	DAPHNIDAE	4.000	1.081	x	0.00002		FCV	
			SALMONIDAE	30.000						
			CYPRINIDAE	294.780						
			CENTRARCHIDAE	456.975						
LINDANE	NATIONAL	17	ABELLIDAE	10.000	2.016	x	1.574		ACR	
			SALMONIDAE	21.000						
			GAMMARIDAE	22.427						
			CENTRARCHIDAE	52.911						
	STATE	8	SALMONIDAE	11.168	5.115	x	3.992		ACR	
			CENTRARCHIDAE	52.195						
			GAMMARIDAE	48.000						
			ICTALURIDAE	52.911						
MERCURY	NATIONAL	5	SALMONIDAE	0.066	0.012	x	0.01		FAV	
			GAMMARIDAE	0.201						
			NETACIDAE	1.611						
	STATE	5	SALMONIDAE	0.066	0.012	x	0.0012		ACR	
			GAMMARIDAE	0.201						
			SALMONIDAE	244.599						
NICKEL	NATIONAL	18	DAPHNIDAE	85.277	32.914	x	1.987		ACR	
			EPHEMERELLIDAE	233.566						
			CENTRARCHIDAE	345.472						
			PHILODINIDAE	401.217						
	STATE	9	DAPHNIDAE	85.277	21.763	x	1.2425		ACR	
			PERICHAETHIDAE	301.510						
			PHILODINIDAE	401.217						
PCBs	NATIONAL	5	CHIRONOMIDAE	436.000	0.100		0.014		FAV	
			DAPHNIDAE	1000						
			CENTRARCHIDAE	2.811						
			CYPRINIDAE	32.667						
	STATE	5	GAMMARIDAE	59.342						
			SALMONIDAE	2.500	0.131	x	0.014		FAV	
			CENTRARCHIDAE	2.811	**					
			CYPRINIDAE	32.667						
SELENIUM	NATIONAL	15	PHILLOGASTRIDAE	0.000						
			DAPHNIDAE	1000.000	52.646	x	12.599		ACR	
			CHIRONOMIDAE	1000.674						
			SALMONIDAE	5489.315						
	STATE	7	PHILLOGASTRIDAE	5479.123						
			DAPHNIDAE	126.389	52.631	x	1.5618		ACR	
			SALMONIDAE	1000.674						
			CYPRINIDAE	5479.123						
SILVER	NATIONAL	8	CYPRINIDAE	8853.438						
			DAPHNIDAE	0.050	1.00052	x				
			COTTIDAE	0.054						
			CYPRINIDAE	0.200						
			CHIRONOMIDAE	0.613						
	STATE	6	DAPHNIDAE	0.050	1.0016	x				
			COTTIDAE	0.054						
			CYPRINIDAE	0.200						
			SALMONIDAE	0.621						
TETRACHLOROETHYLENE	NATIONAL	12	PERLIDAE	0.900	7.721	x	0.7087		ACR	
			PTERONARCIDAE	2.621						
			ICTALURIDAE	3.947						
			CENTRARCHIDAE	4.074						
	STATE	11	PERLIDAE	0.900	9.543	x	0.7088		ACR	
			PTERONARCIDAE	2.621						
			CENTRARCHIDAE	4.074						
			ICTALURIDAE	3.947						

		x	FAILED TO MEET MINIMUM DATA REQUIREMENT
		xx	STATE HAS LESS THAN 5 RESIDENT FAMILIES - NATIONAL VALUE USED
		S	HARDNESS EFFECT INTERCEPT VALUE
			APPLY EQUATION 2.1 TO DETERMINE MAXIMUM CRITERIA
			HARDNESS EFFECT INTERCEPT VALUE
			APPLY EQUATION 2.1 TO DETERMINE MAXIMUM AND 96-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: VERMONT

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	FRESHWATER AQUATIC LIFE CRITERIA LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA 96-DAY (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (ug/L)	
ALDRIN	NATIONAL	14	CENTRARCHIDAE	1 400	3.000	*		
			ABELLIDAE	8 000				
			EPHEMERELLIDAE	8 200				
			SALMONIDAE	10 800				
	STATE	8	SALMONIDAE	9 900	1.70	**		
			CENTRARCHIDAE	7 400				
			EPHEMERELLIDAE	8 200				
			CYPRINIDAE	11 700				
ARSENIC	NATIONAL	9	GAMMARIDAE	172 000	13,000	*		
			GAMMARIDAE	172 000				
			SALMONIDAE	1139 000				
			KTLLIFORMI	1940 430				
	STATE	4	SALMONIDAE	1940 1 M	148 000	*		
			SALMONIDAE	1413 000				
			CYPRINIDAE	1940 000				
			CENTRARCHIDAE	1940 000				
B CADMIUM	NATIONAL	19	SALMONIDAE	0 007	0 0004	ACR		
			DAPHNIDAE	0 460				
			GAMMARIDAE	1 147				
	STATE	15	PHYSIDAE	0 000	0 017	0 0004	ACR	
			DAPHNIDAE	0 004				
			GAMMARIDAE	1 147				
			CHIRONOMIDAE	1 431				
CHLORDANE	NATIONAL	8	PALAEMONIDAE	1 430	1 814	*	0 0043	FAV
			PTERONARCIDAE	15 000				
			CYPRINIDAE	23 238				
			GAMMARIDAE	32 248				
	STATE	4	CYPRINIDAE	12 511	2 27	*	0 0043	FAV
			GAMMARIDAE	32 248				
			SALMONIDAE	53 880				
			CENTRARCHIDAE	54 711				
CHROMIUM	NATIONAL	15	GAMMARIDAE	87 000	11 184	3 378	ACR	
			DAPHNIDAE	6 000 000				
			PHILOPOTAMIDAE	6000 760				
	STATE	5	PHYSIDAE	2 000 000	1 440 000	16 0	FAV	
			DAPHNIDAE	6 000 000				
			PHYSIDAE	6000 000				
			SALMONIDAE	6000 000				
COPPER	NATIONAL	23	DAPHNIDAE	2 300	3 764	1 9874	FCV	
			CHIRONOMIDAE	3 750				
			PHYSIDAE	3 980				
			TUBIFICIDAE	7 000				
	STATE	19	DAPHNIDAE	2 700	3 736	1 5466	FCV	
			CHIRONOMIDAE	3 750				
			PHYSIDAE	3 980				
			TUBIFICIDAE	7 000				
CYANIDE	NATIONAL	13	SALMONIDAE	76 701	72 429	*	4 2472	ACR
			DAPHNIDAE	84 000				
			CENTRARCHIDAE	114 219				
	STATE	1	PERCIDAE	95 701	39 582	*	3 8471	ACR
			DAPHNIDAE	84 000				
			CENTRARCHIDAE	114 219				
			PERCIDAE	95 701				
DDT	NATIONAL	20	DAPHNIDAE	1 021	1 100	0 001	FAV	
			PERCIDAE	1 100				
			ESOCIDAE	1 700				
			GAMMARIDAE	2 224				
	STATE	8	DAPHNIDAE	1 670	1 001	0 0011	FAV	
			PERCIDAE	1 100				
			ESOCIDAE	1 700				
			GAMMARIDAE	2 224				
DIELDRIN	NATIONAL	12	PERCIDAE	4 500	1 500	0 1015	FAV	
			ESOCIDAE	5 000				
			SALMONIDAE	5 462				
	STATE	5	SALMONIDAE	5 462	1 500	0 1015	FAV	
			EPHEMERELLIDAE	6 000				
			CENTRARCHIDAE	11 400				
ENDOSULFAN	NATIONAL	8	SALMONIDAE	0 064	0 056	0 0164	ACR	
			CYPRINIDAE	1 670				
			PTERONARCIDAE	1 900				
			ECLIPTOMIDAE	2 240				
	STATE	4	SALMONIDAE	0 064	0 149	0 0162	ACR	
			CYPRINIDAE	1 670				
			ECLIPTOMIDAE	2 240				
			CENTRARCHIDAE	11 400				

STATE: VERMONT

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	FRESHWATER AQUATIC LIFE CRITERIA LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA 96-DAY (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (ug/L)	
ENDRIN	NATIONAL	14	GASTEROSTEIDAE	0 140	0 201	*	0 0023	FAV
			SALMONIDAE	0 240				
			PERLIDAE	0 450				
			PTERONARCIDAE	0 900				
	STATE	9	SALMONIDAE	0 098	0 141	*	0 0002	FAV
			CYPRINIDAE	0 350				
			CENTRARCHIDAE	1 017				
			CORDULEMYIIDAE (ADIRONDAC	1 400				
			PTERONARCIDAE	1 900	2 261	*	0 0018	FAV
			PALAEMONIDAE	11 000				
HEPTACHLOR	NATIONAL	19	GAMMARIDAE	1 800				
			PERLODIDAE	2 000				
	STATE	8	SALMONIDAE	0 098	0 140	*	0 0038	FAV
			CENTRARCHIDAE	26 000				
			GAMMARIDAE	27 000				
			DAPHNIDAE	76 740				
			GAMMARIDAE	1 147				
			DAPHNIDAE	4 000				
			SALMONIDAE	60 000				
			CYPRINIDAE	386 792				
			SALMONIDAE	20 000				
			CYPRINIDAE	73 000				
			CENTRARCHIDAE	469 515				
LINDANE	NATIONAL	19	PHILOPOTAMIDAE	850 940				
			SALMONIDAE	12 000				
			SALMONIDAE	21 000				
			GAMMARIDAE	31 000				
			CENTRARCHIDAE	52 611				
	STATE	8	SALMONIDAE	14 158	1 960	*	0 2117	ACR
			GAMMARIDAE	23 621				
			CENTRARCHIDAE	42 746				
			PERCIDAE	48 000				
MERCURY	NATIONAL	5	DAPHNIDAE	5 000	2 400	*	1 20	FAV
			GAMMARIDAE	13 000				
			HETAGENIA	31 000				
			SALMONIDAE	244 200				
	STATE	4	GAMMARIDAE	15 000	2 400	*	1 20	FAV
			HETAGENIA	31 000				
			SALMONIDAE	248 981				
			SALMONIDAE	1000 000				
NICKEL	NATIONAL	19	DAPHNIDAE	82 277	82 814	*	2 991	ACR
			EPHEMERELLIDAE	253 940				
			CENTRARCHIDAE	540 170				
			PHILOPOTAMIDAE	987 211				
	STATE	12	DAPHNIDAE	78 000	57 139	*	2 4762	ACR
			CENTRARCHIDAE	540 170				
			PHILOPOTAMIDAE	987 211				
			CHIRONOMIDAE	1 000 000				
PCBS	NATIONAL	7	SALMONIDAE	2 000	2 127	*	0 014	FAV
			CENTRARCHIDAE	4 911				
			CYPRINIDAE	30 000				
			GAMMARIDAE	98 000				
	STATE	5	SALMONIDAE	2 000	0 980	*	0 014	FAV
			CENTRARCHIDAE	4 911				
			CYPRINIDAE	30 000				
			GAMMARIDAE	98 000				
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	120 000	97 846	*	20 000	ACR
			PERCIDAE	1000 000				
			CYPRINODONTIDAE	2000 000				
			CYPRINIDAE	4000 000				
	STATE	3	HYALELLIDAE (TALITRIDAE)	120 000	98 114	*	11 846	ACR
			CYPRINIDAE	2000 000				
			DAPHNIDAE	2000 000				
SILVER	NATIONAL	9	DAPHNIDAE	4 000	0 0041	*		
			SALMONIDAE	8 000				
			CYPRINIDAE	8 000				
			CYPRINODONTIDAE	8 000				
	STATE	1	SALMONIDAE	8 000	0 0041	*		
			CENTRARCHIDAE	8 000				
			SALMONIDAE	8 000				
			PHILODINIDAE	8 000				
TOXAPHENE	NATIONAL	10	PERLIDAE	1 000	0 730	*	0 0002	ACR
			PTERONARCIDAE	1 900				
			ECLIPTOMIDAE	2 240				
			CENTRARCHIDAE	4 700				
	STATE	3	CENTRARCHIDAE	4 700	0 730	*	0 0002	ACR
			CYPRINIDAE	8 000				
			SALMONIDAE	8 000				
			CENTRARCHIDAE	8 000				
			PERCIDAE	1 000				

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: VERMONT

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	FRESHWATER AQUATIC LIFE CRITERIA LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA 96-DAY (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (ug/L)	
2,4-D	NATIONAL	13	DAPHNIDAE	11 000	8 148	4 7 0000	SCV	
			PHYSIDAE	11 000				
			SALMONIDAE	48 000				
			PHILODINIDAE	82 701				
	STATE	4	DAPHNIDAE	11 000	8 141	4 7 0000	SCV	
			PHYSIDAE	11 000				
			SALMONIDAE	48 000				
			PHILODINIDAE	82 701				

STATE: VIRGINIA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	FRESHWATER AQUATIC LIFE CRITERIA LC50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA 96-DAY (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (ug/L)	
ALDRIN	NATIONAL	14	CENTRARCHIDAE	1 400	3 000	*		
			ABELLIDAE	8 000				
			EPHEMERELLIDAE	8 200				
			SALMONIDAE	10 800				
	STATE	8	SALMONIDAE	9 900	1 70	**		
			CENTRARCHIDAE	7 400				
			EPHEMERELLIDAE	8 200				
			ARGILLATAE	10 000				
ARSENIC	NATIONAL	9	GAMMARIDAE	172 000	113 253	*		
			GAMMARIDAE	172 248				
			SALMONIDAE	1139 000				
			KTLLIFORMI	1940 430				
	STATE	4	DAPHNIDAE	1940 1 M	151 000	*		
			SALMONIDAE	1413 000				
			CENTRARCHIDAE	1940 000				
			CYPRINIDAE	2000 000				
B CADMIUM	NATIONAL	19	SALMONIDAE	0 007	0 0004	ACR		
			DAPHNIDAE	0 460				
			GAMMARIDAE	1 147				
	STATE	15	PHYSIDAE	0 000	0 017	0 0002	ACR	
			SALMONIDAE	0 004				
			DAPHNIDAE	0 004				
			GAMMARIDAE	1 147				
			CHIRONOMIDAE	1 431				
CHLORDANE	NATIONAL	8	PALAEMONIDAE	1 430	1 814	*	0 0043	FAV
			PTERONARCIDAE	15 000				
			CYPRINIDAE	23 238				
			GAMMARIDAE	32 248				
	STATE	4	CYPRINIDAE	23 238	1 875	*	0 0043	FAV
			SALMONIDAE	53 880				
			GAMMARIDAE	40 000				
			CENTRARCHIDAE	54 711				
CHROMIUM	NATIONAL	15	GAMMARIDAE	87 000	11 184	3 378	ACR	
			DAPHNIDAE	6 000 000				
			PHILODINIDAE	6000 760				
	STATE	5	PHYSIDAE	2 000 000	1 440 000	16 0	FAV	
			PHILODINIDAE	6000 760				
			PHYSIDAE	6000 000				
			PERCIDAE	6000 000				
COPPER	NATIONAL	23	DAPHNIDAE	2 300	3 764	1 9874	FCV	
			CHIRONOMIDAE	3 750				
			PHYSIDAE	3 980				
			TUBIFICIDAE	7 000				
	STATE	19	DAPHNIDAE	2 700	3 736	1 5466	FCV	
			CHIRONOMIDAE	3 750				
			PHYSIDAE	3 980				
			TUBIFICIDAE	7 000				
CYANIDE	NATIONAL	13	SALMONIDAE	76 701	51 429	*	4 2472	ACR
			DAPHNIDAE	84 000				
			CENTRARCHIDAE	114 219				
	STATE	1	PERCIDAE	95 701	39 582	*	3 8471	ACR
			DAPHNIDAE	84 000				
			CENTRARCHIDAE	114 219				
			PERCIDAE	95 701				
DDT	NATIONAL	20	DAPHNIDAE	1 021	1 100	0 001	FAV	
			PERCIDAE	1 100				
			ESOCIDAE	1 700				
			GAMMARIDAE	2 224				
	STATE	8	DAPHNIDAE	1 670	1 001	0 0011	FAV	
			PERCIDAE	1 100				
			ESOCIDAE	1 700				
			GAMMARIDAE	2 224				
DIELDRIN	NATIONAL	12	PERCIDAE	4 500	1 500	0 1015	FAV	
			ESOCIDAE	5 000				
			SALMONIDAE	5 462				
	STATE	5	SALMONIDAE	5 462	1 500	0 1015	FAV	
			EPHEMERELLIDAE	6 000				
			CENTRARCHIDAE	11 400				
ENDOSULFAN	NATIONAL	8	SALMONIDAE	0 064	0 056	0 0164	ACR	
			CYPRINIDAE	1 670				
			PTERONARCIDAE	1 900				
			CATOSTOMIDAE	1 240				
	STATE	4	SALMONIDAE	0 064	0 149	0 0162	ACR	
			CYPRINIDAE	1 670				
			CENTRARCHIDAE	11 400				

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: VIRGINIA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LCV50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)		96-DAY (ug/L)		AVERAGE (ug/L)	
ENDRIN	NATIONAL	11	QUATERNIDAE	3.46	0.001	x	0.0023			FIN
			SALMONIDAE	5.66						
			PERLIDAE	5.67						
			PTERONARCIDAE	5.67						
	STATE	8	CENTRARCHIDAE	5.66	0.171	x	0.0021			FIN
			CYPRINIDAE	5.72						
			CENTRARCHIDAE	7.51						
			NON-SALMONIDAE (GENUS MEAN)	7.60						
HEPTACHLOR	NATIONAL	12	PTERONARCIDAE	3.98	0.251	x	0.0038			FIN
			PALAEMONIDAE	4.60						
			PERLIDAE	5.60						
			NEMOURIDAE	5.60						
	STATE	5	SALMONIDAE	13.05	2.46	x	0.0036			FIN
			CENTRARCHIDAE	24.11						
			GAMMARIDAE	47.33						
			DAPHNIIDAE	57.74						
33 LEAD	NATIONAL	7	GAMMARIDAE	1.91	0.021	x	0.0003			FCV
			GAMMARIDAE	4.00						
			SALMONIDAE	20.39						
			CYPRINIDAE	169.74						
	STATE	4	SALMONIDAE	20.39	3.966	x	0.0003			FCV
			CYPRINIDAE	169.74						
			CENTRARCHIDAE	402.51						
LINDANE	NATIONAL	12	PELECYPODA	31.00	2.19	x	0.219			ACR
			SALMONIDAE	31.00						
			GAMMARIDAE	32.42						
			CENTRARCHIDAE	52.61						
	STATE	6	GAMMARIDAE	15.48	1.16	x	0.186			ACR
			SALMONIDAE	19.19						
			CENTRARCHIDAE	52.61						
			PERLIDAE	98.50						
MERCURY	NATIONAL	9	DAPHNIIDAE	1.00	0.75	x	0.91			FIN
			GAMMARIDAE	10.00						
			METAZOA	31.62						
			SALMONIDAE	34.09						
	STATE	4	GAMMARIDAE	10.00	2.84	x	0.91			FIN
			METAZOA	32.00						
			SALMONIDAE	34.09						
			PELECYPODA	163.41						
28 NICKEL	NATIONAL	16	DAPHNIIDAE	38.51	32.81	x	3.961			ACR
			FRESHWATER CLAM	232.00						
			SALMONIDAE	232.00						
			PELECYPODA	401.01						
	STATE	12	DAPHNIIDAE	79.49	30.38	x	3.670			ACR
			CENTRARCHIDAE	349.70						
			PELECYPODA	401.01						
			CHIRONOMIDAE	548.60						
PCBS	NATIONAL	5	SALMONIDAE	5.66	0.127	x	0.014			FIN
			CENTRARCHIDAE	8.61						
			CYPRINIDAE	32.80						
			GAMMARIDAE	98.50						
	STATE	3	SALMONIDAE	5.66	1.53		0.014			FIN
			CENTRARCHIDAE	8.61						
			CYPRINIDAE	32.80						
55 SILVER	NATIONAL	12	HYALELLIDAE (TALITRIDAE	29.99	52.84	x	22.080			ACR
			DAPHNIIDAE	1000.00						
			CHIRONOMIDAE	1000.00						
	STATE	6	HYALELLIDAE (TALITRIDAE	29.99	14.98	x	14.647			ACR
			DAPHNIIDAE	1000.00						
			SALMONIDAE	1000.00						
3 ZINC	NATIONAL	8	DAPHNIIDAE	0.000	0.00063	x				
			CLOTTIDAE	0.094						
			CYPRINIDAE	0.094						
			CYPRINODONTIDAE	0.113						
	STATE	4	CYPRINIDAE	0.011	0.00206	x				
			SALMONIDAE	0.021						
			CENTRARCHIDAE	0.113						
TOXAPHENE	NATIONAL	12	PERLIDAE	0.01	0.737	x	0.0087			ACR
			PTERONARCIDAE	0.01						
			ICTALURIDAE	0.041						
	STATE	5	CENTRARCHIDAE	0.131	0.441	x	0.0061			ACR
			SALMONIDAE	0.818						
			CYPRINIDAE	0.931						
			PERLIDAE	2.00						

STATE: VIRGINIA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LCV50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)		96-DAY (ug/L)		AVERAGE (ug/L)	
9 ZINC	NATIONAL	15	DAPHNIIDAE	13.751	0.146		17.000			SCV
			PHYSIDAE	41.000						
			SALMONIDAE	68.997						
			PHILOMYIDAE	82.751						
	STATE	13	DAPHNIIDAE	21.272	0.266		17.000			SCV
			PHYSIDAE	41.000						
			SALMONIDAE	68.997						
			PHILOMYIDAE	82.751						

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: WASHINGTON

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LCV50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)		96-DAY (ug/L)		AVERAGE (ug/L)	
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.400	3.000	x				
			ASELLIDAE	8.500						
			EPHEMERELLIDAE	10.000						
			SALMONIDAE	10.900						
	STATE	6	CENTRARCHIDAE	7.400	3.000	x				
			EPHEMERELLIDAE	8.500						
			SALMONIDAE	10.900						
			CYPRINIDAE	11.514						
ARSENIC	NATIONAL	8	GAMMARIDAE	519.000	113.067	x				
			DAPHNIIDAE	764.240						
			SALMONIDAE	1139.843						
			ICTALURIDAE	1647.430						
	STATE	7	DAPHNIIDAE	764.240	343.848	x				
			SALMONIDAE	1139.843						
			CENTRARCHIDAE	1650.838						
			PTERONARCIDAE	2036.800						
34 CADMIUM	NATIONAL	18	SALMONIDAE	0.048	0.021		0.004			ACR
			DAPHNIIDAE	0.149						
			CYPRINIDAE	0.167						
			PHYSIDAE	1.000						
	STATE	12	SALMONIDAE	0.048	0.011		0.0002			ACR
			DAPHNIIDAE	0.149						
			GAMMARIDAE	0.167						
			PHYSIDAE	1.000						
CHLORDANE	NATIONAL	7	PALAEMONIDAE	0.021	1.914	x	0.0043			FIN
			PTERONARCIDAE	15.000						
			CYPRINIDAE	23.239						
			GAMMARIDAE	32.000						
	STATE	6	PTERONARCIDAE	15.000	2.73	x	0.0043			FIN
			TYPHINIDAE	15.864						
			GAMMARIDAE	16.000						
			SALMONIDAE	43.736						
CHROMIUM	NATIONAL	13	GAMMARIDAE	57.000	12.184		3.329			ACR
			DAPHNIIDAE	6,000,000						
			PHILOMYIDAE	6000.740						
			PHYSIDAE	14000.000						
	STATE	7	DAPHNIIDAE	6,000,000	480.000	x	13.0			FIN
			PHILOMYIDAE	6000.740						
			CYPRINIDAE	6,000,000						
3 COPPER	NATIONAL	21	DAPHNIIDAE	9,000,000	5.156		3.4813			FCV
			CHIRONOMIDAE	11.700						
			PHYSIDAE	11.900						
			TUBIFICIDAE	13.000						
	STATE	11	TUBIFICIDAE	13.000	5.156		3.4829			FCV
			CHIRONOMIDAE	11.700						
			TUBIFICIDAE	13.000						
			SALMONIDAE	40						
CYANIDE	NATIONAL	12	DAPHNIIDAE	76.707	31.626	x	11.672			ACR
			GAMMARIDAE	83.000						
			CENTRARCHIDAE	114.318						
	STATE	5	PERLIDAE	75.121	25.665	x	11.681			ACR
			DAPHNIIDAE	76.707						
			GAMMARIDAE	83.000						
			CENTRARCHIDAE	114.318						
DDT	NATIONAL	20	PERLIDAE	0.121	0.550		0.001			FIN
			DAPHNIIDAE	0.240						
			GAMMARIDAE	0.240						
			PELOCOMA	1.700						
	STATE	11	DAPHNIIDAE	0.240	0.110	x	0.0010			FIN
			PERLIDAE	0.121						
			GAMMARIDAE	0.600						
			CENTRARCHIDAE	0.850						
DIAZINON	NATIONAL	14	PERLIDAE	0.900	1.000	x	0.0018			FIN
			ASELLIDAE	3.000						
			SALMONIDAE	6.452						
			EPHEMERELLIDAE	9.000						
	STATE	8	SALMONIDAE	6.452	1.000	x	0.0018			FIN
			EPHEMERELLIDAE	9.000						
			CENTRARCHIDAE	10.811						
			PERLIDAE	11.000						
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.064	0.208	x	0.0180			ACR
			CYPRINIDAE	0.170						
			PTERONARCIDAE	2.900						
			CENTRARCHIDAE	3.000						
	STATE	6	CENTRARCHIDAE	3.000	0.101	x	0.0180			ACR
			PTERONARCIDAE	3.300						
			CENTRARCHIDAE	3.811						
			GAMMARIDAE	5.000						

STATE: WASHINGTON

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LCV50 VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)		96-DAY (ug/L)		AVERAGE (ug/L)	
ENDRIN	NATIONAL	11	QUATERNIDAE	3.46	0.001	x	0.0023			FIN
			SALMONIDAE	5.66						
			PERLIDAE	5.67						
			PTERONARCIDAE	5.67						
	STATE	10	QUATERNIDAE	3.46	0.001	x	0.0021			FIN
			SALMONIDAE	5.66						
			PERLIDAE	5.67						
HEPTACHLOR	NATIONAL	12	PTERONARCIDAE	3.98	0.251	x	0.0038			FIN
			PALAEMONIDAE	4.60						
			PERLIDAE	5.60						
	STATE	7	PTERONARCIDAE	3.98	0.112	x	0.0038			FIN
			PERLIDAE	5.60						
			CENTRARCHIDAE	24.000						
			GAMMARIDAE	47.000						
33 LEAD	NATIONAL	7	GAMMARIDAE	1.91	0.021	x	0.0003			FCV
			GAMMARIDAE	4.00						
			SALMONIDAE	20.39						
			CYPRINIDAE	169.74						
	STATE	5	CYPRINIDAE	4.000	0.219	x	0.0003			FCV
			SALMONIDAE	20.39						
			CENTRARCHIDAE	402.51						
LINDANE	NATIONAL	12	ASELLIDAE	15.000	2.19	x	0.219			ACR
			SALMONIDAE	31.000						
			GAMMARIDAE	32.42						
			CENTRARCHIDAE	52.61						
	STATE	9	SALMONIDAE	31.000	8.00	x	0.0625			ACR
			CENTRARCHIDAE	52.61						
			GAMMARIDAE	98.000						
			ICTALURIDAE	94.000						
MERCURY	NATIONAL	9	DAPHNIIDAE	1.00	0.75	x	0.91			FIN
			GAMMARIDAE	10.00						
			METAZOA	31.623						
	STATE	5	SALMONIDAE	34.09	0.151	x	0.0074			ACR
			GAMMARIDAE	10.00						
			SALMONIDAE	34.09						
			PELECYPODA	163.41						
28 NICKEL	NATIONAL	16	DAPHNIIDAE	38.51	32.81	x	3.961			ACR
			FRESHWATER CLAM	232.00						
			CENTRARCHIDAE	349.70						
			PHILOMYIDAE	401.01						
	STATE	8	DAPHNIIDAE	38.51	20.991	x	2.917			ACR
			PHILOMYIDAE	401.01						
			CHIRONOMIDAE	548.60						
			CENTRARCHIDAE	349.70						
PCBS	NATIONAL	7	SALMONIDAE	5.66	0.127	x	0.014			FIN
			CENTRARCHIDAE	8.61						
			CYPRINIDAE	8.61						
			GAMMARIDAE	98.50						
	STATE	3	SALMONIDAE	5.66	1.53		0.014			FIN
			CENTRARCHIDAE	8.61						
			CYPRINIDAE	32.80						
SILVER	NATIONAL	12	HYALELLIDAE (TALITRIDAE	29.99	52.84	x	22.080			ACR
			DAPHNIIDAE	1000.00						
			CHIRONOMIDAE	1000.00						
			SALMONIDAE	1000.00						
	STATE	9	HYALELLIDAE (TALITRIDAE	29.99	29.92	x	11.941			ACR
			SALMONIDAE	1000.00						
			PHYSIDAE	2000.00						
3 ZINC	NATIONAL	9	DAPHNIIDAE	0.002	0.00063	x				
			CLOTTIDAE	0.094						
			CYPRINIDAE	0.094						
			CYPRINODONTIDAE	0.113						
	STATE	5	DAPHNIIDAE	0.002	0.00206	x				
			CLOTTIDAE	0.094						
			CYPRINIDAE	0.094						
			SALMONIDAE	0.021						
			CENTRARCHIDAE	0.113						
TOXAPHENE	NATIONAL	12	PERLIDAE	0.01	0.737	x	0.0087			ACR
			PTERONARCIDAE	0.01						
			ICTALURIDAE	0.041						
	STATE	10	CENTRARCHIDAE	0.131	0.735	x	0.0060			ACR
			PTERONARCIDAE	2.400						
			CENTRARCHIDAE	2.946						
			ICTALURIDAE	3.000						

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: WASHINGTON

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY	LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	30-DAY (ug/L)	AVERAGE (ug/L)	
ZINC	NATIONAL	15	DAPHNIIDAE	13,737	8,148	47,000	50%	
			PHYSIDAE	41,588				
			SALMONIDAE	46,881				
			PHILODROMIDAE	82,757				
	STATE	5	DAPHNIIDAE	13,737	2,962	47,000	50%	
			SALMONIDAE	41,588				
			CENTRARCHIDAE	46,881				
			PHILODROMIDAE	82,757				
			GAMMARIDAE	119,501				

STATE: WEST VIRGINIA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY	LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	30-DAY (ug/L)	AVERAGE (ug/L)	
ALDRIN	NATIONAL	14	CENTRARCHIDAE	1,461	1.500	+		
			SIDELLIDAE	3,000				
			EPHEMERELLIDAE	5,000				
			SALMONIDAE	10,000				
	STATE	5	SALMONIDAE	1,500	1.144	+		
			CENTRARCHIDAE	1,461				
			ANGUILLIDAE	14,000				
			CYPRINIDAE	14,700				
ARSENIC	NATIONAL	8	GAMMARIDAE	676,000	119,263	+		
			DAPHNIIDAE	1,784,000				
			SALMONIDAE	>4100,000				
			CTALURIDAE	>9497,000				
	STATE	5	DAPHNIIDAE	1046,139	171,480	+		
			SALMONIDAE	>4100,000				
			ICTALURIDAE	>9497,000				
			CENTRARCHIDAE	>9497,000				
66 CADMIUM	NATIONAL	16	SALMONIDAE	24,000	0.987		0.0994	ACR
			DAPHNIIDAE	2,449				
			GAMMARIDAE	1,747				
			PHYSIDAE	2,000				
	STATE	12	SALMONIDAE	3,004	0.911		0.0991	ACR
			DAPHNIIDAE	3,954				
			GAMMARIDAE	1,747				
			PHYSIDAE	2,000				
CHLORDANE	NATIONAL	8	PALAEMONIDAE	6,325	1.974	+	0.0043	FRV
			PTERONARCIDAE	15,000				
			CYPRINIDAE	22,236				
			GAMMARIDAE	37,249	1.974	+	0.0043	FRV
	STATE	5	CYPRINIDAE	22,236	1.974	+	0.0043	FRV
			SALMONIDAE	61,000		**		
			CENTRARCHIDAE	74,000				
CHROMIUM	NATIONAL	16	GAMMARIDAE	47,000	17.184		0.2578	ACR
			DAPHNIIDAE	6289,773				
			PHILODROMIDAE	8888,750				
			PHYSIDAE	24882,000				
	STATE	5	PHILODROMIDAE	8888,750	1762,291	+	10.1	FRV
			PHYSIDAE	24882,000				
			CYPRINIDAE	57481,573				
			SALMONIDAE	64881,000				
9 COPPER	NATIONAL	15	DAPHNIIDAE	5,759	2.784		1.8878	TCV
			CHIRONOMIDAE	8,799				
			PHYSIDAE	8,000				
	STATE	11	DAPHNIIDAE	5,759	5.133		8.4348	TCV
			CHIRONOMIDAE	8,799				
			PHYSIDAE	8,000				
			TUBIFICIDAE	7,340				
CYANIDE	NATIONAL	16	SALMONIDAE	76,751	21.426	+	4.3470	ACR
			DAPHNIIDAE	42,000				
			CENTRARCHIDAE	114,774				
	STATE	6	PERCIDAE	126,121				
			SALMONIDAE	76,751	20.906	+	3.7717	ACR
			DAPHNIIDAE	42,000				
			CENTRARCHIDAE	114,774				
DDT	NATIONAL	20	CYPRINIDAE	807,000	0.550		0.0010	FRV
			DAPHNIIDAE	1,000				
			PERCIDAE	1,000				
			ESOCIDAE	1,750				
	STATE	5	DAPHNIIDAE	2,000	0.242	+	0.0010	FRV
			CENTRARCHIDAE	1,000				
			SALMONIDAE	7,000				
			SCIAENIDAE	16,000				
DIELDRIN	NATIONAL	12	PERCIDAE	4,000	1.500	+	0.0019	FRV
			ANGUILLIDAE	5,000				
			SALMONIDAE	5,462				
			EPHEMERELLIDAE	8,000				
	STATE	4	SALMONIDAE	2,449	0.125	+	0.0012	FRV
			CENTRARCHIDAE	10,811				
			CYPRINIDAE	30,162				
			DAPHNIIDAE	251,862				
ENDOSULFAN	NATIONAL	8	SALMONIDAE	0.854	0.208	+	0.1084	ACR
			CYPRINIDAE	1,278				
			CENTRARCHIDAE	2,000				
			CYPRINODONTIDAE	2,000				
	STATE	5	SALMONIDAE	0.854	0.191	+	0.0941	ACR
			CYPRINIDAE	1,278				
			CATOSTOMIDAE	2,000				
			CENTRARCHIDAE	2,811				

*	FAILED TO MEET MINIMUM DATA REQUIREMENT		
**	STATE HAS LESS THAN 5 RESIDENT FAMILIES (NATIONAL VALUE USED)		
$	HARDNESS EFFECT INTERCEPT VALUE		
	APPLY EQUATION (1) TO DETERMINE MAXIMUM CRITERIA		
	APPLY EQUATION (2) TO DETERMINE MAXIMUM SAC		
	30-DAY AVERAGE CRITERIA		

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: WEST VIRGINIA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY	LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)	30-DAY (ug/L)	AVERAGE (ug/L)	
ENDRIN	NATIONAL	7	GASTROPODAE	2,440	0.281	+	0.0023	FRV
			SALMONIDAE	2,000				
			PERLIDAE	3,462				
			PTERONARCIDAE	3,462				
	STATE	5	SALMONIDAE	2,000	0.152	+	0.0023	FRV
			CYPRINIDAE	2,511				
			CENTRARCHIDAE	2,511				
			ODONATA(=ANISOPTERA) (AGRIONIDAE)	830				
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	3,000	0.251	+	0.0038	FRV
			PALAEMONIDAE	3,000				
			PERLIDAE	3,000				
			NEPHEMERIDAE	3,000				
	STATE	4	SALMONIDAE	13,000	0.125	+	0.0038	FRV
			CENTRARCHIDAE	29,000				
			DAPHNIIDAE	84,746				
			CYPRINIDAE	84,746				
55 LEAD	NATIONAL	7	GAMMARIDAE	1,320	0.537	+	0.00820	FCV
			DAPHNIIDAE	1,320				
			SALMONIDAE	80,000				
			CYPRINIDAE	204,700				
	STATE	4	SALMONIDAE	80,000	13.998	+	0.32004	FCV
			CYPRINIDAE	204,700				
			CENTRARCHIDAE	454,000				
			PHILODROMIDAE	858,845				
LINDANE	NATIONAL	10	SIDELLIDAE	10,000	3.218	+	0.2474	ACR
			SALMONIDAE	21,000				
			GAMMARIDAE	23,437				
			CENTRARCHIDAE	52,871				
	STATE	5	SALMONIDAE	14,700	2.345	+	0.2679	ACR
			CENTRARCHIDAE	52,198				
			ICTALURIDAE	52,598				
			CYPRINIDAE	64,800				
MERCURY	NATIONAL	8	DAPHNIIDAE	51,000	3.478	+	0.25	FRV
			GAMMARIDAE	51,000				
			ASTACIDAE	51,823				
			SALMONIDAE	Over 256				
	STATE	5	GAMMARIDAE	14,000	3.744	+	0.25	FRV
			ASTACIDAE	38,000				
			SALMONIDAE	240,000				
			PHILODROMIDAE	1821,611				
66 MIREX	NATIONAL	18	DAPHNIIDAE	60,571	32.514	+	0.1000	ACR
			EPHEMERELLIDAE	233,000				
			CENTRARCHIDAE	340,472				
			PHILODROMIDAE	401,211				
	STATE	11	DAPHNIIDAE	78,400	11.098	+	0.2842	ACR
			CENTRARCHIDAE	340,472				
			PHILODROMIDAE	401,211				
			CENTRARCHIDAE	454,000				
ZINC	NATIONAL	15	SALMONIDAE	13,737	8.148	+	47.0000	50%
			DAPHNIIDAE	13,737				
			SALMONIDAE	46,881				
			PHILODROMIDAE	82,757				
	STATE	11	DAPHNIIDAE	71,023	7.909	+	47.0000	50%
			CYPRINIDAE	41,588				
			SALMONIDAE	46,881				
			PHILODROMIDAE	82,757				
SELENIUM	NATIONAL	20	ODONATA(=ANISOPTERA) (AGRIONIDAE)	262,842				
			PTERONARCIDAE	338,000	82.846	+	12.5000	ACR
			DAPHNIIDAE	1862,474				
			CYPRINODONTIDAE	8468,678				
			SALMONIDAE	8479,723				
	STATE	7	PTERONARCIDAE	338,000	82.801	+	12.7486	ACR
			DAPHNIIDAE	3862,000				
			SALMONIDAE	8479,723				
5 SILVER	NATIONAL	8	CYPRINIDAE	9002,439				
			CYPRINIDAE	0.000	0.00063	+		
			COTTIDAE	0.000				
			CYPRINIDAE	0.004				
			CYPRINODONTIDAE	0.004				
	STATE	7	COTTIDAE	0.004	0.00058	+		
			CYPRINIDAE	0.011				
			SALMONIDAE	0.021				
			CENTRARCHIDAE	0.112				
TOXAPHENE	NATIONAL	13	PERLIDAE	1,000	0.531	+	0.0087	ACR
			PTERONARCIDAE	1,427				
			ICTALURIDAE	2,541				
			CENTRARCHIDAE	7,125				
	STATE	6	CENTRARCHIDAE	2,846	0.512	+	0.0132	ACR
			ICTALURIDAE	2,541				
			SALMONIDAE	8,678				
			CYPRINIDAE	9,000				

*	FAILED TO MEET MINIMUM DATA REQUIREMENT		
**	STATE HAS LESS THAN 5 RESIDENT FAMILIES (NATIONAL VALUE USED)		
$	HARDNESS EFFECT INTERCEPT VALUE		
	APPLY EQUATION (1) TO DETERMINE MAXIMUM CRITERIA		
	APPLY EQUATION (2) TO DETERMINE MAXIMUM SAC		
	30-DAY AVERAGE CRITERIA		

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: WISCONSIN

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE NEWBERRY FAMILY NAME	LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)		30-DAY (ug/L)		AVERAGE (ug/L)	
ALDRIN	NATIONAL	13	CENTRARCHIDAE	7,161	3.000	A				
			ABELLIDAE	9,000						
			EPHEMERELLIDAE	9,000						
			SALMONIDAE	14,851						
	STATE	5	CENTRARCHIDAE	7,161	7.844	A				
			SALMONIDAE	14,851						
			ANGUILLIDAE	16,000						
			CYPRINIDAE	16,360						
ARSENIC	NATIONAL	5	GAMMARIDAE	676,000	113,000	A				
			DAPHNIIDAE	1,784,000						
			SALMONIDAE	1,418,000						
			ICTALURIDAE	1,647,000						
	STATE	4	GAMMARIDAE	676,000	74,000	A				
			DAPHNIIDAE	1,784,000						
			SALMONIDAE	1,418,000						
			ICTALURIDAE	1,647,000						
M CADMIUM	NATIONAL	19	SALMONIDAE	2.108	0.021		0.0004		ACR	
			DAPHNIIDAE	2.343						
			GAMMARIDAE	3.117						
			PHYSIDAE	3.860						
	STATE	3	SALMONIDAE	2.108	0.015		0.0002		ACR	
			DAPHNIIDAE	2.343						
			GAMMARIDAE	3.117						
CHLORIDE	NATIONAL	9	CYPRINODONTIDAE	1,500	1,911	A	0.0063		FAV	
			PALAEMONIDAE	9,125						
			PTERONARCIDAE	15,000						
			CYPRINIDAE	27,238						
			GAMMARIDAE	32,248						
	STATE	3	PALAEMONIDAE	9,125	1,911	A	0.0063		FAV	
			CYPRINIDAE	27,238						
			GAMMARIDAE	32,248						
CHROMIUM	NATIONAL	15	CENTRARCHIDAE	47,196						
			SALMONIDAE	41,784	12.194		0.5578		ACR	
			GAMMARIDAE	47,000						
			DAPHNIIDAE	6,898,976						
			PHILOMETIDAE	6,898,760						
			PHYSIDAE	24,861,600						
	STATE	8	DAPHNIIDAE	6,898,976	1,441	A	0.0646		ACR	
			PHILOMETIDAE	6,898,760						
			PHYSIDAE	24,861,600						
			CYPRINIDAE	24,861,600						
E COPPER	NATIONAL	23	DAPHNIIDAE	4,356	5.194		0.4818		FCV	
			GYRINOPHILIDAE	4,758						
			PHYSIDAE	5,000						
			TUBIFICIDAE	7,000						
	STATE	18	DAPHNIIDAE	4,356	2.149		0.1932		FCV	
			GYRINOPHILIDAE	4,758						
			PHYSIDAE	5,000						
			TUBIFICIDAE	7,000						
CYANIDE	NATIONAL	13	SALMONIDAE	16,757	21.429	A	4.3472		ACR	
			DAPHNIIDAE	42,000						
			CENTRARCHIDAE	74,219						
			PERCIDAE	76,121						
	STATE	7	SALMONIDAE	16,757	20.920	A	3.9607		ACR	
			DAPHNIIDAE	42,000						
			CENTRARCHIDAE	74,219						
			PERCIDAE	76,121						
DDT	NATIONAL	20	DAPHNIIDAE	1,000	0.550		0.0010		FAV	
			PERCIDAE	1,000						
			ENGOSIDAE	1,700						
			GAMMARIDAE	3,374						
	STATE	12	DAPHNIIDAE	3,418	0.367	A	0.0010		FAV	
			PERCIDAE	1,000						
			GAMMARIDAE	3,374						
DIELDRIN	NATIONAL	13	METALDIDAE	2,000	1.500	A	0.0019		FAV	
			PERCIDAE	4,000						
			ABELLIDAE	5,000						
			SALMONIDAE	5,452						
	STATE	6	EPHEMERELLIDAE	6,000	1.129	A	0.0019		FAV	
			SALMONIDAE	5,452						
			CENTRARCHIDAE	10,871						
			PELECYPODA	20,000						
ENDOSULFAN	NATIONAL	9	SALMONIDAE	1,000	0.056	A	0.0084		ACR	
			DAPHNIIDAE	1,000						
			PTERONARCIDAE	2,000						
	STATE	4	CENTRARCHIDAE	2,000	0.109	A	0.0162		ACR	
			CYPRINIDAE	2,000						
			CATOSTOMIDAE	3,240						
			CENTRARCHIDAE	3,811						

A =	TABLE VALUE BASED ON CHRONIC VALUE
B =	TABLE VALUE BASED ON ACUTE-CHRONIC RATIO
C =	TABLE VALUE BASED ON PLANT VALUE
D =	TABLE VALUE BASED ON RESIDUE VALUE
E =	TABLE VALUE BASED ON ACUTE TO CHRONIC RATIO METHOD
F =	FINAL CHRONIC VALUE
G =	FINAL ACUTE VALUE
H =	FINAL PLANT VALUE
I =	FINAL RESIDUE VALUE
J =	TABLE VALUE BY ACUTE TO CHRONIC RATIO METHOD
K =	FINAL CHRONIC VALUE
L =	FINAL ACUTE VALUE
M =	FINAL PLANT VALUE
N =	FINAL RESIDUE VALUE
O =	TABLE VALUE BY ACUTE TO CHRONIC RATIO METHOD
P =	FINAL CHRONIC VALUE
Q =	FINAL ACUTE VALUE
R =	FINAL PLANT VALUE
S =	FINAL RESIDUE VALUE
T =	TABLE VALUE BY ACUTE TO CHRONIC RATIO METHOD
U =	FINAL CHRONIC VALUE
V =	FINAL ACUTE VALUE
W =	FINAL PLANT VALUE
X =	FINAL RESIDUE VALUE
Y =	TABLE VALUE BY ACUTE TO CHRONIC RATIO METHOD
Z =	FINAL CHRONIC VALUE
* =	FAILED TO MEET MINIMUM DATA REQUIREMENT
** =	STATE HAS LESS THAN 4 RECENT FAMILIES - NATIONAL VALUE USED
1 =	HARDNESS EFFECT - INTERCEPT VALUE
	APPLY EQUATION (1) TO DETERMINE MAXIMUM CRITERIA
2 =	HARDNESS EFFECT - INTERCEPT VALUE
	APPLY EQUATION (1) TO DETERMINE MAXIMUM CRITERIA
3 =	HARDNESS EFFECT - INTERCEPT VALUE
	30-DAY AVERAGE CRITERIA

APPENDIX D
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: WISCONSIN

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE NEWBERRY FAMILY NAME	LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)		30-DAY (ug/L)		AVERAGE (ug/L)	
ENDRIN	NATIONAL	11	GASTEROSTEIDAE	5,440	0.001	A	0.0001		FAL	
			SALMONIDAE	5,440						
			PERLIDAE	8,000						
			PTERONARCIDAE	8,641						
	STATE	5	SALMONIDAE	5,625	0.001	A	0.0001		FAV	
			CYPRINIDAE	21,033						
			CENTRARCHIDAE	1,811						
HEPTACHLOR	NATIONAL	10	PALAEMONIDAE	1,000	0.001	A	0.0038		FAL	
			PTERONARCIDAE	5,000						
			PALAEMONIDAE	1,000						
			CENTRARCHIDAE	28,000						
	STATE	4	SALMONIDAE	20,000	0.001	A	0.0038		FAV	
			ACTICIDAE	7,000						
			PALAEMONIDAE	1,000						
			CENTRARCHIDAE	28,000						
M LEAD	NATIONAL	7	SALMONIDAE	1,000	0.021	A	0.0001		FCV	
			GAMMARIDAE	1,147						
			DAPHNIIDAE	4,000						
			CYPRINIDAE	68,760						
	STATE	3	GAMMARIDAE	1,147	0.054	A	0.0005		FCV	
			SALMONIDAE	39,000						
			CYPRINIDAE	68,760						
LINDANE	NATIONAL	10	ABELLIDAE	10,000	2.016	A	0.0754		ACR	
			SALMONIDAE	21,000						
			GAMMARIDAE	22,627						
			CENTRARCHIDAE	32,871						
	STATE	5	SALMONIDAE	21,000	0.801	A	0.029		ACR	
			GAMMARIDAE	22,627						
			CENTRARCHIDAE	32,196						
MERCURY	NATIONAL	5	DAPHNIIDAE	1,000	0.470	A	0.01		FAL	
			GAMMARIDAE	10,000						
			METALDIDAE	10,000						
			SALMONIDAE	364,256						
	STATE	1	SALMONIDAE	10,000	1.400	A	1.05		FAL	
			SALMONIDAE	364,256						
			PHILOMETIDAE	362,441						
M NICKEL	NATIONAL	18	DAPHNIIDAE	48,977	52.814	A	5.160		ACR	
			GYRINOPHILLIDAE	233,000						
			CENTRARCHIDAE	349,472						
			PHILOMETIDAE	361,577						
	STATE	13	DAPHNIIDAE	19,000	52.884	A	4.4858		ACR	
			GYRINOPHILLIDAE	233,000						
			CENTRARCHIDAE	349,472						
			PHILOMETIDAE	361,577						
PCBS	NATIONAL	3	SALMONIDAE	2,000	0.127	A	0.014		FAV	
			CENTRARCHIDAE	8,000						
			CYPRINIDAE	10,000						
	STATE	0	SALMONIDAE	2,000	0.063	A	0.014		FAV	
			CENTRARCHIDAE	2,000						
			CYPRINIDAE	10,000						
SELENIUM	NATIONAL	10	HYALELLIDAE(TALITRIDAE)	20,000	67.946	A	13.566		ACR	
			DAPHNIIDAE	1,000,000						
			CYPRINODONTIDAE	1,000,000						
			SALMONIDAE	5,000,000						
	STATE	1	HYALELLIDAE(TALITRIDAE)	20,000	62.857	A	12.566		ACR	
			DAPHNIIDAE	1,000,000						
			SALMONIDAE	5,000,000						
E SILVER	NATIONAL	9	CYPRINIDAE	5,000,000						
			DAPHNIIDAE	5,000						
			COTTIDAE	9,000						
			CENTRARCHIDAE	9,000						
			CYPRINODONTIDAE	9,000						
	STATE	0	CYPRINIDAE	9,000	0.00041	A				
			DAPHNIIDAE	5,000						
			COTTIDAE	9,000						
			CENTRARCHIDAE	9,000						
TOXAPHENE	NATIONAL	13	PERLIDAE	1,000	0.021	A	0.0007		ACR	
			SALMONIDAE	1,000						
			ICTALURIDAE	1,647						
			CENTRARCHIDAE	1,750						
	STATE	5	CENTRARCHIDAE	2,000	0.043	A	0.0015		ACR	
			ICTALURIDAE	1,647						
			SALMONIDAE	3,781						
			CYPRINIDAE	4,000						

STATE: WYOMING

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE NEWBERRY FAMILY NAME	LOW VALUE (ug/L)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (ug/L)		30-DAY (ug/L)		AVERAGE (ug/L)	
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7,161	3.000	A				
			ABELLIDAE	9,000						
			EPHEMERELLIDAE	9,000						
			SALMONIDAE	14,851						
	STATE	8	SALMONIDAE	4,500	1.422	A				
			CENTRARCHIDAE	7,161						
			EPHEMERELLIDAE	9,000						
			CYPRINIDAE	16,360						
ARSENIC	NATIONAL	4	GAMMARIDAE	676,000	113,000	A				
			DAPHNIIDAE	1,784,000						
			SALMONIDAE	1,418,000						
			ICTALURIDAE	1,647,000						
	STATE	3	DAPHNIIDAE	1,784,000	407,000	A				
			SALMONIDAE	1,418,000						
			ICTALURIDAE	1,647,000						
M CADMIUM	NATIONAL	19	CENTRARCHIDAE	1,000,000	0.021		0.0004		ACR	
			SALMONIDAE	2,108						
			DAPHNIIDAE	2,343						
			GAMMARIDAE	3,117						
			PHYSIDAE	3,860						
	STATE	12	SALMONIDAE	2,034	0.009		0.0001		ACR	
			DAPHNIIDAE	2,343						
			GAMMARIDAE	3,117						
CHLORIDE	NATIONAL	9	PHYSIDAE	3,860						
			PALAEMONIDAE	9,125	1,911	A	0.0641		FAV	
			PTERONARCIDAE	15,000						
			CYPRINIDAE	27,238						
			GAMMARIDAE	32,248						
	STATE	8	PTERONARCIDAE	15,000	3,598	A	0.0642		FAV	
			CYPRINIDAE	27,238						
			GAMMARIDAE	28,000						
			SALMONIDAE	37,862						
CHROMIUM	NATIONAL	15	GAMMARIDAE	47,000	12.194		0.5578		ACR	
			DAPHNIIDAE	6,898,976						
			PHILOMETIDAE	6,898,760						
			PHYSIDAE	24,861,600						
	STATE	8	DAPHNIIDAE	6,898,976	761,538	A	16.0		FAV	
			PHILOMETIDAE	6,898,760						
			PHYSIDAE	24,861,600						
			CYPRINIDAE	24,861,600						
E COPPER	NATIONAL	23	DAPHNIIDAE	4,356	5.194		0.4818		FCV	
			GYRINOPHILIDAE	4,758						
			PHYSIDAE	5,000						
			TUBIFICIDAE	7,000						
	STATE	13	DAPHNIIDAE	4,356	4.152		0.3852		FCV	
			GYRINOPHILIDAE	4,758						
			PHYSIDAE	5,000						
			TUBIFICIDAE	7,000						
CYANIDE	NATIONAL	13	SALMONIDAE	16,757	21.429	A	4.3472		ACR	
			DAPHNIIDAE	42,000						
			CENTRARCHIDAE	74,219						
			PERCIDAE	76,121						
	STATE	8	SALMONIDAE	16,757	20.920	A	3.9607		ACR	
			DAPHNIIDAE	42,000						
			CENTRARCHIDAE	74,219						
			PERCIDAE	76,121						
DDT	NATIONAL	20	DAPHNIIDAE	1,000	0.550		0.0010		FAV	
			PERCIDAE	1,000						
			ENGOSIDAE	1,700						
			GAMMARIDAE	3,374						
	STATE	11	DAPHNIIDAE	3,418	0.367	A	0.0010		FAV	
			PERCIDAE	1,000						
			GAMMARIDAE	3,374						
DIELDRIN	NATIONAL	13	PERCIDAE	4,000	1.500	A	0.0019		FAV	
			ABELLIDAE	5,000						
			SALMONIDAE	5,452						
			EPHEMERELLIDAE	6,000						
	STATE	8	SALMONIDAE	5,452	1.129	A	0.0019		FAV	
			EPHEMERELLIDAE	6,000						
			CENTRARCHIDAE	10,871						
			PERCIDAE	20,000						
ENDOSULFAN	NATIONAL	9	SALMONIDAE	1,000	0.056	A	0.0084		ACR	
			DAPHNIIDAE	1,000						
			CYPRINIDAE	2,000						
			PTERONARCIDAE	2,000						
	STATE	6	SALMONIDAE	1,000	0.109	A	0.0162		ACR	
			CYPRINIDAE	2,000						
			PTERONARCIDAE	2,000						
			CATOSTOMIDAE	3,240						

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C =	TABLE VALUE BASED ON PLANT VALUE
D =	TABLE VALUE BASED ON RESIDUE VALUE
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F =	FINAL CHRONIC VALUE
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V =	FINAL ACUTE VALUE
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X =	FINAL RESIDUE VALUE
Y =	TABLE VALUE BY ACUTE TO CHRONIC RATIO METHOD
Z =	FINAL CHRONIC VALUE
* =	FAILED TO MEET MINIMUM DATA REQUIREMENT
** =	STATE HAS LESS THAN 4 RECENT FAMILIES - NATIONAL VALUE USED
1 =	HARDNESS EFFECT - INTERCEPT VALUE
	APPLY EQUATION (1) TO DETERMINE MAXIMUM CRITERIA
2 =	HARDNESS EFFECT - INTERCEPT VALUE
	APPLY EQUATION (1) TO DETERMINE MAXIMUM CRITERIA
3 =	HARDNESS EFFECT - INTERCEPT VALUE
	30-DAY AVERAGE CRITERIA

APPENDIX G
TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: WYOMING

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY	FRESHWATER AQUATIC LIFE CRITERIA		
			NAME	LOW FALUE (ug/L)	MAXIMUM (ug/L)	24-HOUR AVERAGE (ug/L)
ENDRIN	NATIONAL	11	GASTEROSTEIDAE	0.040	0.057	0.0023
			SALMONIDAE	0.060		
			PERLIDAE	0.060		
			PTERONARCIDAE	0.847		
	STATE	8	SALMONIDAE	0.057	0.125	0.0023
			PERLIDAE	0.060		
			PTERONARCIDAE	0.847		
HEPTACHLOR	NATIONAL	12	CENTRARCHIDAE	1.01	0.261	0.0038
			PTERONARCIDAE	0.380		
			PALAEMONIDAE	1.60		
			PERLIDAE	3.60		
	STATE	7	NETADOIDAE	1.60	0.125	0.0038
			PTERONARCYIDAE	2.00		
			PERLIDAE	3.60		
			SALMONIDAE	13.00		
			CENTRARCHIDAE	46.00		
M. LEAC	NATIONAL	1	GAMMARIDAE	1.10	2.007	0.00002
			DAPHNIIDAE	4.00		
			SALMONIDAE	30.00		
			CYPRINIDAE	300.70		
	STATE	1	DAPHNIIDAE	4.00	0.007	0.00002
			SALMONIDAE	30.00		
			CYPRINIDAE	300.70		
			CENTRARCHIDAE	300.570		
LINDANE	NATIONAL	12	ABELLIDAE	0.250	0.218	0.011
			SALMONIDAE	31.000		
			GAMMARIDAE	33.57		
			CENTRARCHIDAE	12.671		
	STATE	8	SALMONIDAE	14.100	0.100	0.008
			CENTRARCHIDAE	42.700		
			GAMMARIDAE	33.570		
			PERLIDAE	60.000		
MERCURY	NATIONAL	8	DAPHNIIDAE	0.000	0.470	0.25
			GAMMARIDAE	14.000		
			NETADOIDAE	21.000		
			SALMONIDAE	244.200		
	STATE	1	DAPHNIIDAE	0.000	0.101	0.0007
			GAMMARIDAE	14.000		
			SALMONIDAE	148.000		
			PHILOPOTAMIDAE	340.21		
M. NICKEL	NATIONAL	10	DAPHNIIDAE	30.007	32.810	0.000
			EPHEMERELLIDAE	232.000		
			CENTRARCHIDAE	340.570		
			PHILOPOTAMIDAE	481.217		
	STATE	3	DAPHNIIDAE	30.007	21.117	2.298
			PHILOPOTAMIDAE	481.217		
			CHIRONOMIDAE	438.000		
			CENTRARCHIDAE	340.570		
PCBS	NATIONAL	7	SALMONIDAE	2.000	0.100	0.014
			CENTRARCHIDAE	6.001		
			CYPRINIDAE	22.001		
			GAMMARIDAE	96.961		
	STATE	7	SALMONIDAE	2.000	0.101	0.014
			CENTRARCHIDAE	2.000		
			CYPRINIDAE	22.001		
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	130.000	10.846	20.000
			DAPHNIIDAE	1860.410		
			CYPRINODONTIDAE	6480.670		
			SALMONIDAE	8470.701		
	STATE	1	HYALELLIDAE (TALITRIDAE)	130.000	10.001	17.9979
			DAPHNIIDAE	1860.410		
			SALMONIDAE	8470.701		
			SALMONIDAE	8500.438		
S. SILVER	NATIONAL	6	DAPHNIIDAE	0.000	0.00082	
			CYPRINIDAE	0.000		
			SALMONIDAE	0.000		
			CYPRINODONTIDAE	0.000		
	STATE	4	DAPHNIIDAE	0.000	0.00008	
			CYPRINIDAE	0.000		
			SALMONIDAE	0.000		
TOLUENE	NATIONAL	11	PERLIDAE	0.000	0.007	0.0007
			PTERONARCYIDAE	0.047		
			ETHLUMIDAE	0.047		
			CENTRARCHIDAE	4.700		
	STATE	10	PERLIDAE	0.000	0.042	0.008
			PTERONARCYIDAE	0.047		
			CENTRARCHIDAE	2.000		
			ETHLUMIDAE	0.047		

	= DATA WAS INCREMENTAL (TOX)
	= FINAL PLANT VALUE
	= FINAL RESIDENT VALUE
	= CALCULATED BY ACUTE-TO-CHRONIC RATIO METHOD
	= FINAL CHRONIC VALUE
	= LEAST CALCULATED CHRONIC VALUE
	= FAILED TO MEET minimum DATA REQUIREMENT
	= STATE HAS LESS THAN 5 RESIDENT FAMILIES. NATIONAL VALUE USED
	= FINAL ACUTE VALUE
	= APPLY EQUATION 2 TO DETERMINE MAXIMUM CRITERIA
	= HARDNESS EFFECT INTERCEPT VALUE
	= APPLY EQUATION 2 TO DETERMINE MAXIMUM AND 24-DAY AVERAGE CRITERIA

APPENDIX E
RECALCULATION RESULTS