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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.

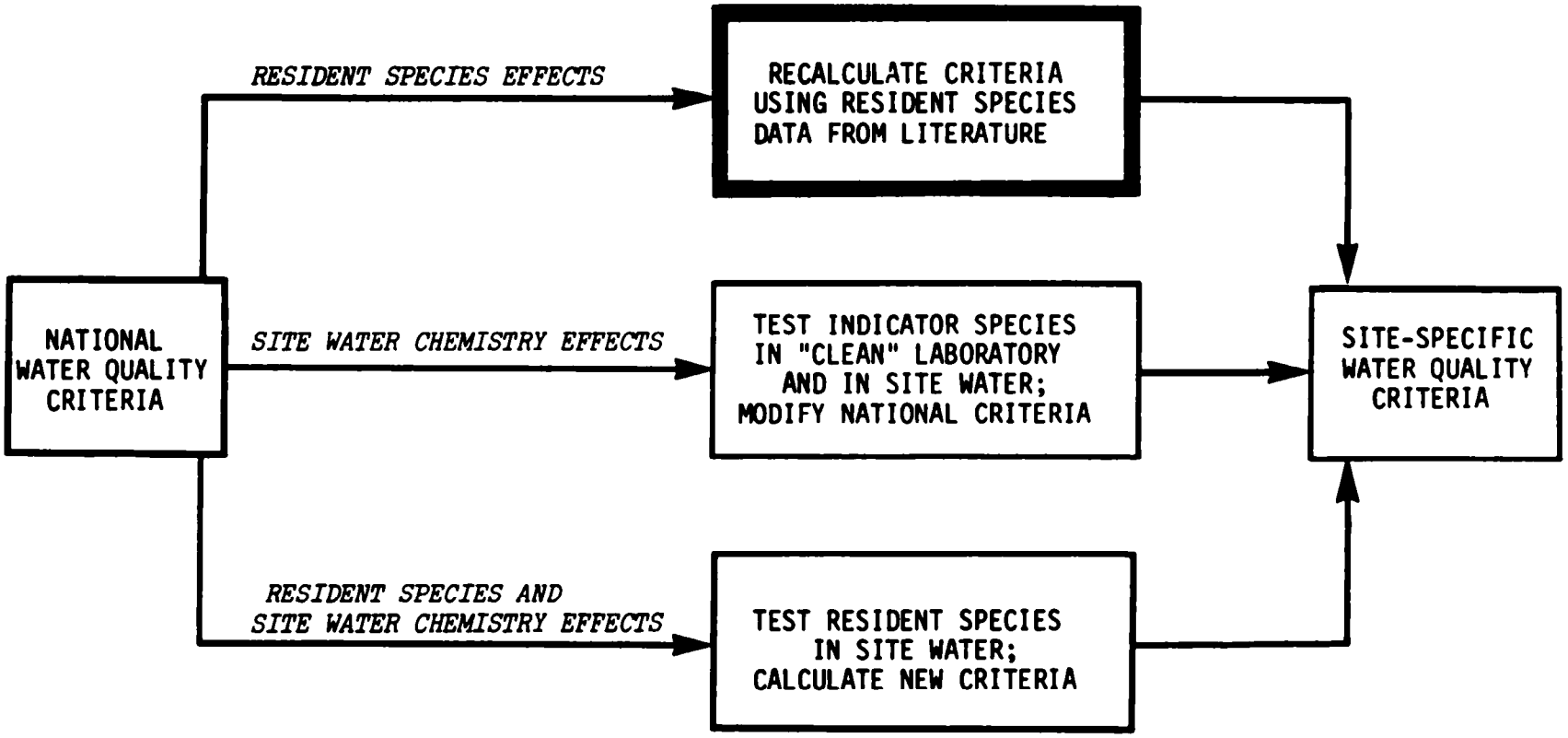

Figure 1.1 Protocols Proposed by EPA for Site-Specific Criteria Modification

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, scud, 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, Mollusca, 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	$\frac{\exp[1.05(\ln H) - 2.93]^{3}}{122}$	—	—	260	160	ACR
Chlordane	3.949/14.0	—	—	0.0043	—	FRV
Chromium	24.327/72.0	—	—	—	10	FCV1
Copper	$\frac{\exp[0.94(\ln H) - 0.95]}{5.78}$	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	475	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	—	—	0.076	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 these 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 VI	Copper	Cyanide	DDT	Dieldrin	Endosulfan	Endrin	Heptachlor	Lead	Lindane	Mercury	Nickel	PCB	Selenium	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 (Gyrulus 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 (Cypridopsis 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 Pseudolimneaus)		X			X	X	X						X				X		X	X	
Scud (Gammarus Sp.)			X			X									X	X					X
Scud (Hyallela Azteca)																		X			
Crayfish (Faxonella Clypeata)															X						
Crayfish (Orconectes Nais)								X	X		X	X									
Crayfish (Orconectes Limosus)															X						
Crayfish (Orconectes Rusticus)						X															
Crayfish (Procamberus 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	Aldrin	Arsenic	Cadmium	Chlordane	Chromium VI	Copper	Cyanide	DDT	Dieldrin	Endosulfan	Endrin	Heptachlor	Lead	Lindane	Mercury	Nickel	PCB	Selenium	Silver	Toxaphene	Zinc
Stonefly (Acroneuria Lycorius)						X									X	X					
Stonefly (Acroneuria Pacifica)	X							X	X		X										
Stonefly (Claassennia 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 Verticalus)											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 Californica)								X													
Caddisfly (Unidentified)			X			X										X					X
American Eel (Anguilla Rostrata)	X		X			X										X					X
Coho Salmon (Oncorhynchus Kisutch)	X			X		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	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	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	X
Lake Trout (Salvelinus Namaycush)								X													
Northern Pike (Esox Lucius)								X													
Mottled Sculpin (Cottus Bairdi)																			X		
Longfin Dace (Agosia Chrysogaster)						X															X
Stoneroller (Campostoma Anomalum)						X														X	
Goldfish (Carassius Auratus)	X	X	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	X
Golden Shiner (Notemigonus Crysoleucas)																				X	X
Striped Shiner (Notropis Chrysocephalus)						X															

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

Species	Aldrin	Arsenic	Cadmium	Chlordane	Chromium VI	Copper	Cyanide	DDT	Dieldrin	Endosulfan	Endrin	Heptachlor	Lead	Lindane	Mercury	Nickel	PCB	Selenium	Silver	Toxaphene	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	X	X
Northern Squawfish (Ptychocheliusoregonensis)			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		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	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 Macronchirus)	X	X	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)							X	X						X						X	

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

Species	Reference
Planarian (Polycelis felina)	Kenk (personal communication)
Rotifer Philodina acuticornis)	
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 (Gyraulus 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 (Cypridopsis vidua)	"
Copepod (Unidentified)	Pennak, 1978
Isopod (Asellus brevicaudus)	Williams, 1972
Isopod (Asellus communis)	"
Scud (Gammarus fasciatus)	Hosinger, 1972
Scud (Gammarus lacustris)	"
Scud (Gammarus pseudolimneaus)	"
Scud (Gammarus Sp.)	Pennak, 1978
Scud (Hyalleia 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 lycorius)	Stark et al., 1976
Stonefly (Acroneuria pacifica)	"
Stonefly (Claassennia sabulosa)	"
Stonefly (Pteronarcella badia)	Baumann et al., 1977
Stonefly (Pteronarcys californica)	"
Damselfly (Ischnura verticalus)	Walker, 1953
Damselfly (Ischnura Sp.)	Merritt & Cummins, 1978
Damselfly (Unidentified)	"
Midge (Chironomus plumosus)	U.S. Agr. Res. Service, 1985
Midge (Chironomus tentans)	"
Midge (Chironomus Sp.)	Merritt & Cummins, 1978
Midge (Tanytarsus dissimilis)	U.S. Agr. Res. Service, 1985
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:

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

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

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

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

$$FAV = e^A \tag{2.4}$$

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

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 $\mu g/l$. 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:

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

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	68.0	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	55.9999	4.0254	54.0	Coho Salmon (Oncorhynchus kisutch)
11	56.9999	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	68.0	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	3.1458	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	33.68	Salmonidae
4	0.67	40.00	Gammanidae

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):

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

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 (μg/l)	Family
1	0.07	4.36	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	53.9790	3.9886	13.0	Cladoceran (Daphnia magna)
2	78.4561	4.3625	15.0	Cladoceran (Daphnia pulicaria)
3	206.4833	5.3399	90.0	Rock Bass (Ambloplites rupestris)
4	233.5550	5.4534	33.0	Mayfly (Ephemerella subvaria)
5	301.5102	5.7088	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	506.5306	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	664.8523	6.4996	24.0	Scud (Gammarus Sp.)
16	721.1083	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	1084.21	6.9886	42.0	Damselfy (Unidentified)
20	1544.49	7.3425	52.0	Caddisfly (Unidentified)
21	2029.91	7.6157	35.0	Stonefly (Acroneuria lycorius)
22	2226.41	7.7081	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	5.7088	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	506.5306	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	664.8523	6.4996	24.0	Scud (Gammarus Sp.)
14	721.1083	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	7.7081	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	445.5883	6.0994	47	Perchithyidae
7	607.9420	6.4101	40	Cyprinidae
8	627.1620	6.4412	37	Anguillidae
9	664.8523	6.4996	25	Gammaridae
10	721.1083	6.5808	10	Naididae
11	731.3375	6.5949	12	Bithyniidae (Bulimidae) (Hydrobiidae)
12	1544.4988	7.3425	34	Hydropsychidae
13	2226.4189	7.7081	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:

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

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

or

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

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

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:

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

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

or

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

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 2.18). 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	3.1689	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:

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

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

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

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

or

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

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 roseala)*
bristleworm *(Nais* sp.*)*
worm *(Limnodrilus hoffmeisteri)*
snail *(Gyraulus circumstriatus)*
snail *(Physa* sp.*)*
cladoceran (Daphnia pulex)
cladoceran *(Daphnia pulicaria)*
cladoceran *(Simocephalus serrulatus)*
copepod (unidentified)
scud *(Hyallela azteca)*
damselfly *(Ischnura* sp.*)*
midge (Chironomus plumsus)

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

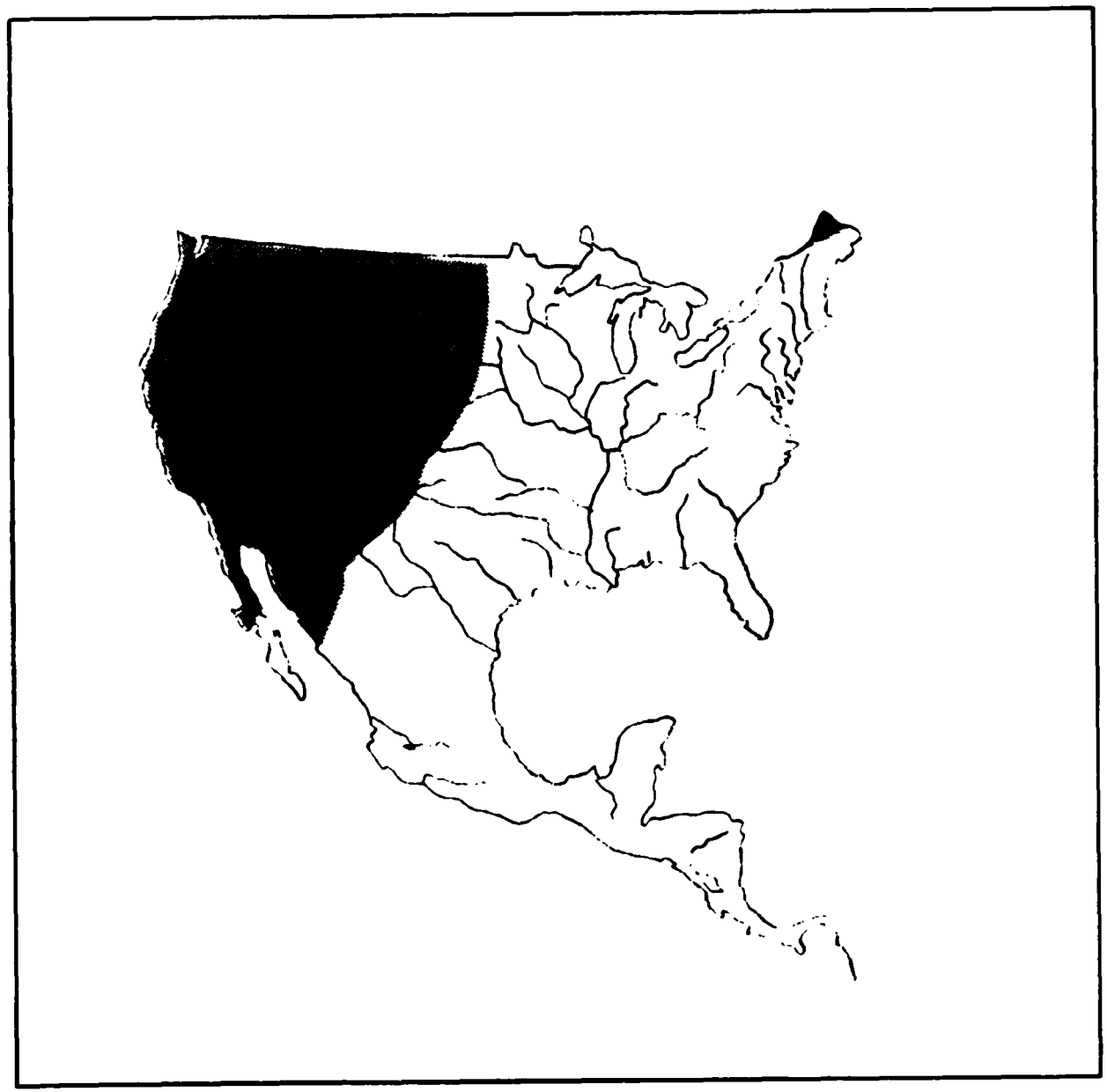

Figure 3.1 Distribution of *Daphnia magna* in the United States (Modified from Brooks, 1957)

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

	Criteria							
Chemical Name	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. conchostracean, 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:

$$M^2 = 0.104 \tag{3.1}$$

$$\bar{x} = 3.48 \tag{3.2}$$

$$\bar{y} = 0.51 \tag{3.3}$$

$$A = 2.58 \tag{3.4}$$

The FAV is:

$$e^A = e^{2.58} = 13.2\ \mu g/l \tag{3.5}$$

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:

$$FAV/2 = 13.2/2 = 6.6\ \mu g/l \tag{3.6}$$

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 0.528 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:

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

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:

$$VCR = \exp[(v \ln (H) + z] \tag{3.8}$$

with

$$z = \ln (CR) \tag{3.9}$$

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
National	1.05	-3.81	0.94	-1.84	1.22	-3.30	0.76	3.49	1.72	-7.54	0.83	1.82
Alabama	1.05	-4.34	0.94	-1.96	1.22	3.62	0.76	3.45	1.72	-7.96	0.83	2.13
Arizona	1.05	-4.81	0.94	-2.06	1.22	-1.02	0.76	3.15	1.72	-9.12	0.83	1.63
Arkansas	1.05	-1.86	0.94	-2.11	1.22	-3.35	0.76	3.37	1.72	-10.82	0.83	1.52
California	1.05	-4.20	0.94	-2.06	1.22	-1.02	0.76	3.15	1.72	-9.12	0.83	1.62
Colorado	1.05	-4.42	0.94	-2.02	1.22	-1.12	0.76	3.08	1.72	-8.11	0.83	1.50
Connecticut	1.05	-3.96	0.94	-1.97	1.22	2.71	0.76	3.50	1.72	-9.72	0.83	2.13
Delaware	1.05	-3.81	0.94	-1.96	1.22	3.60	0.76	3.50	1.72	-7.54	0.83	1.89
Florida**	1.05	-3.08	0.94	-2.06	1.22	5.06	0.76	3.43	1.72	-7.54	0.83	2.22
Georgia	1.05	-4.83	0.94	-2.06	1.22	2.64	0.76	3.40	1.72	-10.82	0.83	2.25
Idaho	1.05	-4.34	0.94	-2.16	1.22	-1.25	0.76	3.00	1.72	-8.11	0.83	0.99
Illinois	1.05	-3.91	0.94	-1.91	1.22	-2.83	0.76	3.56	1.72	-7.80	0.83	2.29
Indiana	1.05	-3.96	0.94	-1.91	1.22	3.62	0.76	3.51	1.72	-7.96	0.83	2.29
Iowa	1.05	-1.15	0.94	-2.02	1.22	-3.35	0.76	3.44	1.72	-8.47	0.83	1.61
Kansas**	1.05	-3.19	0.94	-2.15	1.22	-3.30	0.76	3.40	1.72	-7.54	0.83	1.99
Kentucky	1.05	-4.34	0.94	-1.96	1.22	-2.83	0.76	3.45	1.72	-7.80	0.83	2.13
Louisiana	1.05	-3.19	0.94	-2.10	1.22	-3.30	0.76	3.37	1.72	-7.54	0.83	2.10
Maine	1.05	-4.20	0.94	-1.89	1.22	-3.30	0.76	3.56	1.72	-7.54	0.83	2.14
Maryland	1.05	-3.86	0.94	-1.97	1.22	2.17	0.76	3.50	1.72	-7.96	0.83	2.14
Massachusetts	1.05	-3.96	0.94	-1.93	1.22	2.17	0.76	3.50	1.72	-9.72	0.83	2.13
Michigan	1.05	-3.77	0.94	-1.93	1.22	-2.92	0.76	3.52	1.72	-7.80	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	1.22	-3.35	0.76	3.45	1.72	-10.82	0.83	2.04
Missouri	1.05	-2.83	0.94	-2.06	1.22	-3.30	0.76	3.46	1.72	-11.51	0.83	2.04
Montana	1.05	-4.71	0.94	-2.02	1.22	-1.25	0.76	3.08	1.72	-8.80	0.83	1.54
Nebraska	1.05	-5.12	0.94	-1.90	1.22	-1.25	0.76	3.15	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	-9.43	0.83	1.21
New Hampshire	1.05	-4.07	0.94	-1.97	1.22	2.37	0.76	3.50	1.72	-9.72	0.83	2.13
New Jersey	1.05	-3.86	0.94	-1.97	1.22	2.64	0.76	3.50	1.72	-7.54	0.83	2.12
New Mexico	1.05	-4.42	0.94	-1.90	1.22	-1.25	0.76	3.22	1.72	-8.11	0.83	1.80
New York	1.05	-3.54	0.94	-1.89	1.22	-2.92	0.76	3.56	1.72	-7.80	0.83	2.09
North Carolina	1.05	-3.96	0.94	-1.97	1.22	2.64	0.76	3.50	1.72	-7.54	0.83	2.12
North Dakota	1.05	-4.27	0.94	-1.90	1.22	-1.12	0.76	3.16	1.72	-8.80	0.83	1.42
Ohio	1.05	-4.20	0.94	-1.93	1.22	2.17	0.76	3.50	1.72	-7.80	0.83	2.07
Oklahoma	1.05	-4.34	0.94	-1.99	1.22	-2.83	0.76	3.45	1.72	-8.87	0.83	2.13
Oregon	1.05	-4.27	0.94	-2.10	1.22	-1.52	0.76	3.08	1.72	-8.25	0.83	1.56
Pennsylvania	1.05	-3.96	0.94	-1.93	1.22	2.71	0.76	3.52	1.72	-7.96	0.83	2.13
Rhode Island	1.05	-3.96	0.94	-1.97	1.22	2.71	0.76	3.50	1.72	-9.72	0.83	2.13
South Carolina	1.05	-4.14	0.94	-2.02	1.22	2.64	0.76	3.44	1.72	-7.54	0.83	2.07
South Dakota	1.05	-4.14	0.94	-1.90	1.22	-1.12	0.76	3.23	1.72	-8.80	0.83	1.48
Tennessee	1.05	-4.34	0.94	-1.99	1.22	-2.83	0.76	3.45	1.72	-7.80	0.83	2.13
Texas**	1.05	-3.19	0.94	-2.11	1.22	4.73	0.76	3.43	1.72	-8.80	0.83	2.04
Utah	1.05	-4.71	0.94	-2.11	1.22	-1.25	0.76	3.08	1.72	-8.11	0.83	1.56
Vermont	1.05	-4.07	0.94	-1.97	1.22	2.37	0.76	3.50	1.72	-9.72	0.83	2.13
Virginia	1.05	-4.07	0.94	-1.93	1.22	2.71	0.76	3.56	1.72	-9.72	0.83	2.12
Washington	1.05	-4.34	0.94	-2.15	1.22	-1.52	0.76	3.00	1.72	-8.25	0.83	0.96
West Virginia	1.05	-4.51	0.94	-2.02	1.22	2.71	0.76	3.44	1.72	-7.96	0.83	2.03
Wisconsin	1.05	-3.96	0.94	-1.93	1.22	-2.92	0.76	3.52	1.72	-7.80	0.83	2.07
Wyoming	1.05	-4.71	0.94	-2.02	1.22	-1.25	0.76	3.08	1.72	-8.11	0.83	1.54

v Slope of hardness effect.
z Acute intercept.
* Use 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	Arsenic	Cadmium	Chlordane	Chromium	Copper	Cyanide	DDT	Dieldrin	Endosulfan	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 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	Chromium	Copper	Cyanide	DDT	Dieldrin	Endosulfan	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 (36)			
Demospongia 3660	Spongillidae 366301	Sponge	Ephydatia fluviatilis
PHYLUM: PLATYHELMINTHES (39)			
Turbellaria 3901	Planariidae	Planarian	Planaria gonocephala
		Planarian*	Polycelis felina
	Dendrocoelidae 391501	Planarian	Procotyla fluviatilis (Dendrocoelum lacteum)
PHYLUM: GASTROTRICHA (44)			
Chaetonotoida 4402	Chaetonotidae 440201	Gastrotrich	Lepidodermella squamatum
PHYLUM: ROTIFERA (ROTATORIA) (45)			
Bdelloidea 4503	Philodinidae 450402	Rotifer	Philodina acuticornis
		Rotifer	Philodina roseola
Monogononta 4506	Brachionidae 450601	Rotifer	Keratella cochlearis
PHYLUM: ANNELIDA (50)			
Archiannelida 5002	Aeolosomatidae 500301	Worm	Aeolosoma headleyi
Oligochaeta 5004	Lumbriculidae 500501	Worm	Lumbriculus variegatus
	Tubificidae 500902	Tubificid worm	Limnodrilus hoffmeisteri
		Tubificid worm	Tubifex tubifex
	Naididae 500903	Worm	Nais sp.
		Worm	Pristina sp.
PHYLUM: MOLLUSCA (5086)			
Gastropoda 51	Viviparidae 510306	Snail	Campeloma decisum
	Bithyniidae (Amnicolidae) (Bulimidae) (Hydrobiidae) 510317	Snail	Amnicola sp.
	Pleuroceridae 510340	Snail	Goniobasis livescens
		Snail	Goniobasis virginica
		Snail	Leptoxis carinata (Nitocris carinata) (Mudalia carinata)
		Snail	Nitrocris sp.
	Lymnaeidae	Snail	Lymnaea catascopium (Lymnaea emarginata) (Stagnicola emarginata)
		Snail	Lymnaea elodes (Lymnaea palustris)
		Snail	Lymnaea stagnalis
		Snail	Lymnaea sp.
	Planorbidae 511412	Snail*	Biomphalaria glabrata
		Snail	Gyraulus circumstriatus
		Snail	Helisoma campanulatum
	Physidae 511413	Snail	Aplexa hypnorum
		Snail*	Physa fontinalis
		Snail	Physa gyrina
		Snail	Physa heterostrophe
		Snail	Physa integra
Bivalvia (Pelecypoda) 55	Margaritiferidae 551201	Mussel	Margaritifera Margaritifera
	Unionidae 551202	Mussel	Cyrtonaias tampicoensis
	Corbiculidae 551545	Asiatic clam	Corbicula fluminea
		Asiatic clam	Corbicula manilensis
	Pisidiidae (Sphaeriidae) 551546	Fingernail clam	Eupera cubensis (Eupera singleyi)
		Fingernail clam	Musculium transversum (Sphaerium transversum)
		Fingernail clam	Sphaerium corneum
PHYLUM: ARTHROPODA (68-69)			
Crustacea 61	Lynceidae 610701	Conchostracan	Lynceus brachyurus
	Sididae 610901	Cladoceran	Diaphanosoma sp.
	Daphnidae 610902	Cladoceran	Ceriodaphnia reticulata

APPENDIX A

RESIDENT NORTH AMERICAN SPECIES OF AQUATIC ANIMALS USED IN TOXICITY TESTS

Freshwater Species

Class	Family	Species: Common Name	Species: Scientific Name
		Cladoceran	Daphnia ambigua
		Cladoceran	Daphnia carinata
		Cladoceran*	Daphnia cucullata
		Cladoceran	Daphnia galeata mendotae
		Cladoceran	Daphnia hyalina
		Cladoceran	Daphnia longispina
		Cladoceran	Daphnia magna
		Cladoceran	Daphnia pulex
		Cladoceran	Daphnia pulicaria
		Cladoceran	Daphnia similis
		Cladoceran	Daphnia ambiguus
		Cladoceran	Simocephalus vetulus
	Bosminidae 610903	Cladoceran	Bosmina longirostris
	Polyphemidae 610906	Cladoceran	Polyphemus pediculus
	Cyprididae (Cypridae) 611303	Ostracod*	Cypretta kawatai
		Ostracod	Cypridopsis vidua
	Diaptomidae 611618	Copepod*	Eudiaptomus padanus
	Cyclopidae 612008	Copepod*	Cyclops abyssorum
		Copepod	Cyclops bicuspidatus
		Copepod	Cyclops vernalis
		Copepod	Eucyclops agilis
		Copepod	Mesocyclops leuckarti
	Asellidae 616302	Isopod*	Asellus asiaticus
		Isopod	Asellus brevicaudus
		Isopod	Asellus communis
		Isopod*	Asellus meridianus
		Isopod	Asellus racovitzai
	Gammaridae 616921	Scud	Crangonyx pseudogracilis
		Scud	Gammarus fasciatus
		Scud	Gammarus lacustris
		Scud	Gammarus pseudolimnaeus
		Scud	Gammarus sp.
	Hyalellidae (Talitridae) 616923	Scud	Hyalella azteca (Hyalella knickerbockeri)
	Palaemonidae 617911	Glass shrimp	Palaemonetes kadiakensis
	Astacidae 618102	Crayfish	Cambarus latimanus
		Crayfish	Faxonella clypeatus
		Crayfish	Orconectes limosus
		Crayfish	Orconectes propinquus

Freshwater Species

Class	Family	Species: Common Name	Species: Scientific Name
		Crayfish	Orconectes nais
		Crayfish	Orconectes rusticus
		Crayfish	Orconectes virilis
		Crayfish	Pacifastacus leniusculus
		Crayfish	Procambarus acutus
		Crayfish	Procambarus clarki (Procambarus clarkii)
		Crayfish	Procambarus simulans
		Crayfish	Procambarus sp.
Insecta 62-65	Heptageniidae 621601	Mayfly	Stenonema fuscum
		Mayfly	Stenonema rubrum
	Baetidae 621602	Mayfly	Callibaetis sp.
	Ephemerellidae	Mayfly	Ephemerella dorsalis
		Mayfly	Ephemerella grandis
		Mayfly	Ephemerella subvaria
		Mayfly	Ephemerella sp.
	Caenidae 621602	Mayfly	Caenis diminuta
	Ephemeridae 622003	Mayfly	Hexagenia bilineata
		Mayfly	Hexagenia rigida
		Mayfly	Hexagenia sp.
	Libellulidae 622801	Dragonfly	Pantala hymenea (Pantala hymenea)
	Coenagrionidae (Agrionidae) (Coenagriidae) 622804	Damselfly	Ischnura verticalis
		Damselfly	Ischnura sp.
	Pteronarcidae 625201	Stonefly	Pteronarcella badia
		Stonefly	Pteronarcys californica
		Stonefly	Pteronarcys dorsata
		Stonefly	Pteronarcys sp.
	Perlidae 625401	Stonefly	Acroneuria lycorias
		Stonefly	Acroneuria pacifica
		Stonefly	Claassenia sabulosa
	Perlodidae 625402	Stonefly	Arcynopteryx parallela
	Dytiscidae 630506	Beetle	
	Elmidae (Elminthidae) 631604	Beetle	Stenelmis sexlineata
	Hydropsychidae 641804	Caddisfly	Arctopsyche grandis
		Caddisfly	Hydropsyche betteni

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Freshwater Species

Class	Family	Species: Common Name	Species: Scientific Name
		Caddisfly	Hydropsyche californica
		Caddisfly	Hydropsyche sp.
	Brachycentridae 641815	Caddisfly	Brachycentrus sp.
	Ceratopogonidae 650504	Biting midge	
	Chironomidae 650508	Midge	Chironomus plumosus
		Midge	Chironomus tentans
		Midge	Chironomus sp.
		Midge	Tanytarsus dissimulis
PHYLUM: ECTOPROCTA (BRYOZOA) (78)			
Phylactolaemata 7817	Pectinatellidae	Bryozoan	Pectinatella magnifica
	Lophopodidae	Bryozoan	Lophopodella carteri
	Plumatellidae 781701	Bryozoan	Plumatella emerginata
PHYLUM: CHORDATA (6388)			
Agnatha 86	Petromyzontidae 860301	Sea lamprey	Petromyzon marinus
Osteichthyes 8717	Anguillidae 874101	American eel	Anguilla rostrata
	Salmonidae 875601	Pink salmon	Oncorhynchus gorbuscha
		Cocho salmon	Oncorhynchus kisutch
		Sockeye salmon	Oncorhynchus nerka
		Chinook salmon	Oncorhynchus tshawytscha
		Golden trout	Salmo aquabonita
		Cutthroat trout	Salmo clarki
		Rainbow trout (Steelhead trout)	Salmo gairdneri
		Atlantic salmon	Salmo salar
		Brown trout	Salmo trutta
		Brook trout	Salvelinus fontinalis
		Lake trout	Salvelinus namaycush
	Esocidae 875801	Northern pike	Esox lucius
	Cyprinidae 877601	Chiselmouth	Acrocheilus alutaceus
		Longfin dace	Agosia chrysogaster
		Central stoneroller	Campostoma anomalum
		Goldfish	Carassius auratus
		Common carp	Cyprinus carpio
		Zebra danio*	Danio rerio
		Zerbrafish*	(Brachydanio rerio)
		Golden shiner	Notemigonus crysoleucas
		Pugnose shiner	Notropis anogenus
		Emerald shiner	Notropis atherinoides
		Striped shiner	Notropis chrysocephalus

Freshwater Species

Class	Family	Species: Common Name	Species: Scientific Name
		Common shiner	Notropis cornutus
		Pugnose minnow	Notropis emiliae
		Spottail shiner	Notropis hudsonius
		Red shiner	Notropis lutrensis
		Spotfin shiner	Notropis spectrunculus
		Northern redbelly dace	Phoxinus eos
		Bluntnose minnow	Pimephales notatus
		Fathead minnow	Pimephales promelas
		Northern squawfish	Ptychocheilus oregonensis
		Blacknose dace	Rhinichthys atratulus
		Spotted dace	Rhinichthys osculus
		Rudd	Scardinius erythrophthalmus
		Creek chub	Semotilus atromaculatus
		Pearl dace	Semotilus margarita
		Tench	Tinca tinca
	Catostomidae 877604	White sucker	Catostomus commersoni
	Ictaluridae 877702	Black bullhead	Ictalurus melas
		Yellow bullhead	Ictalurus natalis
		Brown bullhead	Ictalurus nebulosus
		Channel catfish	Ictalurus punctatus
	Clariidae 877712	Walking catfish	Clarias batrachus
	Cyprinodontidae 880404	Banded killifish	Fundulus diaphanus
		Flagfish	Jordanella floridae
	Poeciliidae 880408	Mosquitofish	Gambusia affinis
		Amazon molly	Poecilia formosa
		Sailfin molly	Poecilia latipinna
		Molly	Poecilia sp.
		Guppy	Poecilia reticulata
		Southern platyfish	Xiphophorus maculatus
	Gasterosteidae 881801	Brook stickleback	Culaea inconstans
		Threespine stickleback	Gasterosteus aculeatus
		Ninespine stickleback	Pungitius pungitius
	Percichthyidae	White perch	Morone americana
		Striped bass	Morone saxatilis
	Centrarchidae 883516	Rock bass	Ambloplites rupestris
		Green sunfish	Lepomis cyanellus
		Pumpkinseed	Lepomis gibbosus
		Orangespotted sunfish	Lepomis humilis
		Bluegill	Lepomis macrochirus
		Longear sunfish	Lepomis megalotis

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Freshwater Species

Class	Family	Species: Common Name	Species: Scientific Name
		Redear 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
	Sciaenidae 883054	Freshwater drum	Aplodinotus grunniens
	Cichlidae 883061	Mozambique tilapia	Tilapia mossambica
	Cottidae 883102	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	PARAMECIIDAE
4	SPIROSTOMATIDAE (SPIROSTOMATIDAE)
5	PLANARIIDAE
6	CHAETONOTIDAE
7	PHILODINIDAE
8	AEOLOSOMATIDAE
9	TUBIFICIDAE
10	NAIDIDAE
11	VIVIPARIDAE
12	BITHYNIIDAE (BULIMIDAE) (HYDROBIIDAE)
13	PLEUROCERIDAE
14	LYMNAEIDAE
15	PLANORBIDAE
16	PHYSIDAE
17	PISIDIIDAE (SPHAERIIDAE)
18	LYNCEIDAE
19	DAPHNIDAE
20	POLYPHEMIDAE
21	CYPRIDIDAE (CYPRIDAE)
22	DIAPTOMIDAE
23	CYCLOPIDAE
24	ASELLIDAE
25	GAMMARIDAE
26	HYALELLIDAE (TALITRIDAE)
27	PALAEMONIDAE
28	ASTACIDAE
29	EPHEMERELLIDAE
30	EPHEMERIDAE (BAETIDAE)
31	COENAGRIONIDAE (AGRIONIDAE)
32	PTERONARCIDAE
33	PERLIDAE
34	HYDROPSYCHIDAE
35	CHIRONOMIDAE
36	PETROMYZONTIDAE
37	ANGUILLIDAE
38	SALMONIDAE
39	ESOCIDAE
40	CYPRINIDAE
41	CATOSTOMIDAE
42	ICTALURIDAE
43	CLARIIDAE
44	CYPRINODONTIDAE
45	POECILIIDAE
46	GASTEROSTEIDAE
47	PERCICHTHYIDAE
48	CENTRARCHIDAE
49	PERCIDAE
50	SCIAENIDAE
51	CICHLIDAE
52	COTTIDAE
53	RANIDAE
54	MICROHYLIDAE
55	BUFONIDAE
56	HYLIDAE
57	AMBYSTOMATIDAE
58	SALAMANDRIDAE

APPENDIX B-3

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 ACUTICORNIS)
7	3.00	ROTIFER (PHILODINA ROSEOLA)
10	4.00	BRISTLEWORM (NAIS SP.)
9	4.25	TUBIFICID WORM (TUBIFEX TUBIFEX)
9	4.50	WORM (LIMNODRILUS HOFFMEISTERI)
12	5.00	SNAIL (AMNICOLA SP.)
11	6.00	SNAIL (CAMPELOMA DECISUM)
15	7.00	SNAIL (GYRAULUS CIRCUMSTRIATUS)
14	8.00	SNAIL (LYMNAEA PALUSTRIS)
16	9.00	SNAIL (PHYSA HETEROSTROPHA)
16	10.00	SNAIL (PHYSA INTEGRA)
16	11.00	SNAIL (PHYSA SP.)
17	11.50	FINGERNAIL CLAM (MUSCULIUM TRANSVERSUM)
19	12.00	CLADOCERAN (DAPHNIA CARINATA)
19	13.00	CLADOCERAN (DAPHNIA MAGNA)
19	14.00	CLADOCERAN (DAPHNIA PULEX)
19	15.00	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 (HYALLELA AZTECA)
28	26.00	CRAYFISH (FAXONELLA CLYPEATA)
28	27.00	CRAYFISH (ORCONECTES NAIS)
28	28.00	CRAYFISH (ORCONECTES LIMOSUS)
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)
30	34.00	MAYFLY (HEXAGENIA BILINEATA)
33	35.00	STONEFLY (ACRONEURIA LYCORIUS)
33	36.00	STONEFLY (ACRONEURIA PACIFICA)
33	37.00	STONEFLY (CLAASSENNIA SABULOSA)
32	38.00	STONEFLY (PTERONARCELLA BADIA)
32	39.00	STONEFLY (PTERONARCYS CALIFORNICA)
31	40.00	DAMSELFLY (ISCHNURA VERTICALUS)
31	41.00	DAMSELFLY (ISCHNURA SP.)
31	42.00	DAMSELFLY (UNIDENTIFIED)
35	43.00	MIDGE (CHIRONOMUS PLUMOSUS)
35	44.00	MIDGE (CHIRONOMUS TENTANS)
35	45.00	MIDGE (CHIRONOMUS SP.)
35	46.00	MIDGE (TANYTARSUS DISSIMILIS)
35	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 KISUTCH)
38	55.00	SOCKEYE SALMON (ONCORHYNCHUS NERKA)
38	56.50	PINK SALMON (ONCORHYNCHUS GORBUSCHA)
38	56.00	CHINOOK SALMON (ONCORHYNCHUS TSHAWYTSCHA)
38	57.00	CUTTHROAT TROUT (SALMO CLARKI)
38	58.00	RAINBOW TROUT (SALMO GAIRDNERI)
38	59.00	ATLANTIC SALMON (SALMO SALAR)
38	60.00	BROWN TROUT (SALMO TRUTTA)
38	60.50	GOLDEN TROUT (SALMO AGUABONITA)
38	61.00	BROOK TROUT (SALVELINUS FONTINALIS)
38	62.00	LAKE TROUT (SALVELINUS NAMAYCUSH)
38	62.50	SISCOWET (SALVELINUS NAMAYCUSH SISCOWET)
39	63.00	NORTHERN PIKE (ESOX LUCIUS)
52	64.00	MOTTLED SCULPIN (COTTUS BAIRDI)
52	64.40	SLIMY SCULPIN (COTTUS COGNATUS)
40	65.00	LONGFIN DACE (AGOSIA CHRYSOGASTER)
40	66.00	STONEROLLER (CAMPOSTOMA ANOMALUM)
40	67.00	GOLDFISH (CARASSIUS AURATUS)
40	68.00	CARP (CYPRINUS CARPIO)
40	69.00	GOLDEN SHINER (NOTEMIGONUS CRYSOLEUCAS)
40	69.50	SPOTFIN SHINER (NOTROPIS SPILOPTERUS)
40	70.00	STRIPED SHINER (NOTROPIS CHRYSOCEPHALUS)
40	70.50	RED SHINER (NOTROPIS LUTRENSIS)
40	71.00	NORTHERN REDBELLY DACE (PHOXINUS EOS)
40	72.00	BLUNTNOSE MINNOW (PIMEPHALES NOTATUS)
40	73.00	FATHEAD MINNOW (PIMEPHALES PROMELAS)
40	73.50	NORTHERN SQUAWFISH (PTYCHOCHEILUS OREGONENSIS)
40	74.00	BLACKNOSE DACE (RHINICHTHYS ATRATULUS)
40	75.00	SPECKLED DACE (RHINICHTHYS OSCULUS)
40	76.00	CREEK CHUB (SEMOTILUS ATROMACULATUS)
41	76.50	LONGNOSE SUCKER (CATOSTOMUS CATOSTOMUS)
41	77.00	WHITE SUCKER (CATOSTOMUS COMMERSONI)
42	78.00	BLACK BULLHEAD (ICTALURUS MELAS)
42	79.00	BROWN BULLHEAD (ICTALURUS NEBULOSUS)
42	80.00	CHANNEL CATFISH (ICTALURUS PUNCTATUS)
44	81.00	BANDED KILLIFISH (FUNDULUS DIAPHANUS)
44	82.00	FLAGFISH (JORDANELLA FLORIDAE)
45	83.00	MOSQUITOFISH (GAMBUSIA AFFINIS)
45	84.00	GUPPY (POECILIA RETICULATA)
45	85.00	SOUTHERN PLATYFISH (XIPHOPHORUS MACULATUS)
46	86.00	BROOK STICKLEBACK (CULAEA INCONSTANS)
46	87.00	THREESPINE STICKLEBACK (GASTEROSTEUS ACULEATUS)
47	88.00	WHITE PERCH (MORONE AMERICANA)
47	89.00	STRIPED BASS (MORONE SAXATILIS)
48	90.00	ROCK BASS (AMBLOPLITES RUPESTRIS)
48	91.00	GREEN SUNFISH (LEPOMIS CYANELLUS)
48	92.00	PUMPKINSEED (LEPOMIS GIBBOSUS)
48	93.00	BLUEGILL (LEPOMIS MACROCHIRUS)
48	94.00	LONGEAR SUNFISH (LEPOMIS MEGALOTIS)
48	95.00	REDEAR SUNFISH (LEPOMIS MICROLOPHUS)
48	96.00	SMALLMOUTH BASS (MICROPTERUS DOLOMIEUI)
48	97.00	LARGEMOUTH BASS (MICROPTERUS SALMOIDES)
48	98.00	BLACK CRAPPIE (POMOXIS NIGROMACULATUS)
49	99.00	RAINBOW DARTER (ETHEOSTOMA CAERULEUM)
49	100.00	ORANGETHROAT DARTER (ETHEOSTOMA SPECTABILE)
49	101.00	YELLOW PERCH (PERCA FLAVESCENS)
49	102.00	WALLEYE (STIZOSTEDION VITREUM VITREUM)
50	103.00	FRESHWATER DRUM (APLODINOTUS GRUNNIENS)

APPENDIX B-4
RESIDENT SPECIES, BY STATE

STATE	NUMBER OF SPECIES	SPECIES IDENTIFICATION NUMBERS						
ALABAMA	54	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	16.00	18.00	19.00	24.00
		28.00	29.00	30.00	31.00	40.00	41.00	42.00
		45.00	47.00	52.00	53.00	55.00	64.00	65.00
		67.00	69.00	69.00	70.00	72.00	73.00	74.00
		76.00	77.00	78.00	79.00	88.00	89.00	90.00
		90.00	91.00	92.00	94.00	95.00	99.00	97.00
		99.00	99.00	102.00	103.00	4.00		
ARIZONA	59	2.00	3.00	4.00	7.00	8.00	11.00	12.00
		13.00	14.00	16.00	18.00	19.00	22.00	24.00
		28.00	32.00	36.00	37.00	38.00	39.00	41.00
		43.00	45.00	47.00	52.00	53.00	57.00	59.00
		60.00	61.00	65.00	67.00	68.00	69.00	73.00
		75.00	76.00	88.00	89.00	94.00	99.00	91.00
		92.00	99.00	99.00	97.00	98.00	101.00	102.00
		4.00						
ARKANSAS	57	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	16.00	18.00	19.00	19.00
		23.00	24.00	25.00	28.00	27.00	30.00	31.00
		34.00	40.00	41.00	43.00	45.00	47.00	52.00
		55.00	59.00	64.00	65.00	67.00	68.00	69.00
		70.00	72.00	73.00	75.00	77.00	78.00	79.00
		80.00	83.00	89.00	91.00	93.00	94.00	95.00
		96.00	97.00	99.00	99.00	100.00	102.00	103.00
		4.00						
CALIFORNIA	54	2.00	3.00	4.00	7.00	8.00	11.00	12.00
		13.00	14.00	16.00	18.00	19.00	22.00	24.00
		28.00	32.00	36.00	37.00	41.00	42.00	45.00
		47.00	48.00	51.00	52.00	54.00	55.00	59.00
		57.00	59.00	60.00	61.00	62.00	67.00	68.00
		69.00	73.00	75.00	76.00	88.00	89.00	94.00
		96.00	97.00	99.00	91.00	92.00	99.00	99.00
		97.00	99.00	102.00	4.00	49.00		
COLORADO	54	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	12.00	13.00	14.00	16.00	18.00
		19.00	20.00	22.00	24.00	28.00	30.00	36.00
		37.00	39.00	39.00	41.00	43.00	44.00	45.00
		47.00	48.00	52.00	55.00	57.00	58.00	59.00
		60.00	64.00	65.00	67.00	68.00	71.00	73.00
		75.00	76.00	77.00	78.00	88.00	91.00	99.00
		99.00	97.00	99.00	102.00	4.00		
CONNECTICUT	52	2.00	3.00	4.00	5.00	6.00	7.00	8.00
		9.00	10.00	11.00	14.00	16.00	18.00	19.00
		21.00	24.00	28.00	33.00	32.00	40.00	41.00
		43.00	45.00	47.00	52.00	53.00	55.00	59.00
		60.00	65.00	61.00	62.00	67.00	68.00	69.00
		72.00	74.00	75.00	77.00	78.00	81.00	87.00
		89.00	89.00	92.00	93.00	99.00	97.00	99.00
		101.00	102.00	4.00				
DELAWARE	51	2.00	3.00	4.00	5.00	6.00	7.00	8.00
		9.00	10.00	11.00	14.00	16.00	18.00	19.00
		21.00	24.00	25.00	33.00	30.00	32.00	40.00
		41.00	45.00	46.00	47.00	52.00	53.00	59.00
		60.00	67.00	69.00	69.00	74.00	75.00	77.00
		79.00	80.00	81.00	83.00	87.00	88.00	89.00
		91.00	92.00	93.00	99.00	97.00	98.00	101.00
		102.00	4.00					
FLORIDA	39	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	16.00	18.00	17.00	19.00
		28.00	29.00	30.00	41.00	43.00	45.00	47.00
		59.00	59.00	67.00	69.00	69.00	70.00	89.00
		92.00	93.00	94.00	95.00	99.00	99.00	99.00
		97.00	99.00	102.00	4.00			
GEORGIA	51	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	16.00	18.00	19.00	20.00
		28.00	29.00	32.00	40.00	41.00	45.00	46.00
		47.00	59.00	52.00	59.00	59.00	61.00	64.00
		66.00	67.00	69.00	69.00	74.00	76.00	77.00
		79.00	79.00	89.00	89.00	89.00	89.00	91.00
		99.00	94.00	95.00	99.00	97.00	99.00	99.00
		102.00	4.00					
IDAHO	52	2.00	3.00	4.00	7.00	8.00	11.00	12.00
		13.00	14.00	16.00	18.00	19.00	22.00	24.00
		28.00	32.00	36.00	37.00	38.00	39.00	41.00
		43.00	44.00	45.00	47.00	49.00	51.00	52.00
IDAHO (CONTINUED)	52	55.00	59.00	57.00	59.00	60.00	61.00	62.00
		64.00	67.00	68.00	73.00	75.00	79.00	89.00
		91.00	92.00	99.00	99.00	97.00	99.00	101.00
		102.00	4.00	73.00				
ILLINOIS	72	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	16.00	18.00	17.00	19.00
		19.00	21.00	23.00	24.00	28.00	29.00	30.00
		31.00	33.00	34.00	40.00	41.00	43.00	44.00
		45.00	47.00	59.00	52.00	55.00	54.00	59.00
		59.00	59.00	62.00	63.00	64.00	66.00	67.00
		69.00	69.00	70.00	72.00	73.00	74.00	75.00
		77.00	78.00	79.00	80.00	81.00	83.00	85.00
		89.00	90.00	91.00	92.00	93.00	94.00	95.00
		96.00	97.00	99.00	99.00	100.00	101.00	102.00
		103.00	4.00					
INDIANA	64	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	16.00	18.00	19.00	21.00
		24.00	25.00	28.00	30.00	40.00	41.00	42.00
		44.00	45.00	47.00	59.00	52.00	53.00	54.00
		55.00	59.00	60.00	62.00	64.00	66.00	67.00
		69.00	69.00	70.00	72.00	73.00	74.00	75.00
		77.00	78.00	79.00	80.00	81.00	83.00	85.00
		89.00	91.00	92.00	93.00	94.00	95.00	96.00
		97.00	99.00	99.00	100.00	101.00	102.00	103.00
		4.00						
IOWA	59	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	16.00	18.00	19.00	21.00
		23.00	24.00	25.00	28.00	30.00	31.00	40.00
		41.00	43.00	44.00	45.00	46.00	47.00	52.00
		55.00	59.00	60.00	62.00	67.00	68.00	69.00
		72.00	73.00	74.00	75.00	77.00	78.00	79.00
		80.00	81.00	83.00	85.00	89.00	91.00	99.00
		94.00	95.00	97.00	99.00	99.00	100.00	101.00
		102.00	103.00	4.00				
KANSAS	49	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	12.00	14.00	16.00	18.00	19.00
		28.00	27.00	30.00	40.00	41.00	43.00	44.00
		45.00	47.00	52.00	55.00	60.00	67.00	69.00
		69.00	72.00	73.00	76.00	77.00	78.00	89.00
		89.00	89.00	99.00	91.00	99.00	94.00	95.00
		97.00	99.00	100.00	101.00	102.00	103.00	4.00
KENTUCKY	57	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	16.00	18.00	19.00	19.00
		23.00	24.00	28.00	30.00	39.00	40.00	41.00
		43.00	45.00	47.00	52.00	55.00	59.00	59.00
		64.00	65.00	67.00	68.00	69.00	70.00	72.00
		73.00	74.00	75.00	77.00	78.00	79.00	80.00
		83.00	89.00	90.00	91.00	99.00	94.00	95.00
		96.00	97.00	99.00	99.00	100.00	102.00	103.00
		4.00						
LOUISIANA	46	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	16.00	18.00	17.00	19.00
		23.00	28.00	30.00	31.00	34.00	41.00	42.00
		45.00	47.00	52.00	55.00	64.00	66.00	67.00
		69.00	69.00	70.00	72.00	73.00	75.00	76.00
		79.00	80.00	83.00	85.00	91.00	93.00	94.00
		95.00	97.00	99.00	102.00	103.00	4.00	
MAINE	55	2.00	3.00	4.00	5.00	6.00	7.00	8.00
		9.00	10.00	11.00	14.00	16.00	18.00	19.00
		28.00	32.00	34.00	35.00	38.00	39.00	39.00
		32.00	35.00	40.00	41.00	43.00	45.00	47.00
		52.00	53.00	54.00	55.00	60.00	61.00	62.00
		65.00	69.00	71.00	72.00	74.00	75.00	77.00
		79.00	81.00	83.00	87.00	89.00	89.00	92.00
		93.00	97.00	99.00	101.00	102.00	4.00	
MARYLAND	62	2.00	3.00	4.00	5.00	6.00	7.00	8.00
		9.00	10.00	11.00	14.00	16.00	18.00	17.00
		19.00	20.00	21.00	24.00	28.00	29.00	30.00
		32.00	34.00	40.00	41.00	43.00	45.00	47.00
		52.00	53.00	54.00	55.00	60.00	61.00	64.00
		65.00	67.00	68.00	69.00	72.00	73.00	74.00
		75.00	77.00	78.00	79.00	81.00	83.00	87.00
		88.00	89.00	90.00	91.00	92.00	93.00	94.00
		95.00	97.00	99.00	101.00	102.00	4.00	
MASSACHUSETTS	61	2.00	3.00	4.00	5.00	6.00	7.00	8.00

APPENDIX B-4
RESIDENT SPECIES, BY STATE

STATE	NUMBER OF SPECIES	SPECIES IDENTIFICATION NUMBERS						
MASSACHUSETTS (CONTINUED)	61	9.00	10.00	11.00	14.00	15.00	16.00	17.00
		18.00	20.00	21.00	24.00	25.00	26.00	28.00
		30.00	32.00	40.00	41.00	43.00	46.00	47.00
		52.00	55.00	56.00	59.00	60.00	66.00	67.00
		68.00	67.00	68.00	69.00	71.00	73.00	74.00
		76.00	77.00	78.00	79.00	80.00	81.00	88.00
		87.00	88.00	89.00	90.00	92.00	98.00	99.00
		97.00	99.00	101.00	102.00	4.00		
MICHIGAN	72	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	15.00	16.00	17.00	18.00
		21.00	22.00	23.00	24.00	25.00	28.00	30.00
		31.00	32.00	33.00	35.00	40.00	41.00	43.00
		44.00	45.00	47.00	50.00	52.00	53.00	54.00
		55.00	56.00	60.00	61.00	62.00	64.00	66.00
		67.00	68.00	69.00	70.00	71.00	72.00	73.00
		74.00	75.00	77.00	78.00	79.00	80.00	81.00
		83.00	88.00	89.00	91.00	92.00	93.00	94.00
		95.00	97.00	98.00	99.00	100.00	101.00	102.00
		103.00	4.00					
MINNESOTA	64	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	15.00	16.00	18.00	21.00
		22.00	24.00	25.00	26.00	30.00	40.00	41.00
		43.00	44.00	45.00	46.00	47.00	50.00	51.00
		52.00	53.00	55.00	56.00	60.00	61.00	62.00
		63.00	66.00	67.00	68.00	69.00	71.00	72.00
		73.00	74.00	76.00	77.00	78.00	79.00	80.00
		81.00	83.00	88.00	89.00	91.00	93.00	94.00
		95.00	97.00	98.00	99.00	101.00	102.00	103.00
		4.00						
MISSISSIPPI	56	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	15.00	16.00	17.00	18.00
		19.00	20.00	24.00	25.00	28.00	30.00	31.00
		34.00	40.00	41.00	43.00	46.00	47.00	52.00
		53.00	54.00	55.00	57.00	60.00	66.00	70.00
		72.00	73.00	76.00	78.00	79.00	80.00	83.00
		88.00	89.00	90.00	91.00	93.00	94.00	98.00
		99.00	97.00	98.00	99.00	102.00	103.00	4.00
MISSOURI	59	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	15.00	16.00	17.00	18.00
		24.00	26.00	27.00	28.00	31.00	34.00	40.00
		41.00	43.00	44.00	46.00	47.00	52.00	53.00
		55.00	56.00	64.00	66.00	67.00	68.00	69.00
		70.00	72.00	73.00	76.00	77.00	78.00	79.00
		80.00	83.00	88.00	89.00	91.00	92.00	93.00
		94.00	98.00	99.00	97.00	98.00	99.00	100.00
		102.00	103.00	4.00				
MONTANA	58	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	12.00	13.00	14.00	15.00	16.00
		17.00	18.00	22.00	24.00	25.00	32.00	36.00
		37.00	38.00	39.00	41.00	43.00	44.00	46.00
		47.00	52.00	54.00	55.00	57.00	58.00	60.00
		61.00	62.00	66.00	67.00	68.00	69.00	71.00
		73.00	76.00	77.00	78.00	80.00	81.00	82.00
		88.00	89.00	97.00	98.00	101.00	102.00	103.00
		4.00	73.00					
NEBRASKA	53	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	12.00	13.00	14.00	15.00	16.00
		18.00	20.00	40.00	41.00	43.00	46.00	47.00
		52.00	53.00	55.00	56.00	61.00	66.00	68.00
		67.00	68.00	69.00	71.00	72.00	73.00	74.00
		76.00	77.00	78.00	79.00	80.00	88.00	89.00
		91.00	92.00	93.00	98.00	97.00	98.00	103.00
		101.00	102.00	103.00	4.00			
NEVADA	46	2.00	3.00	4.00	7.00	8.00	11.00	12.00
		13.00	14.00	15.00	16.00	18.00	32.00	34.00
		36.00	38.00	39.00	40.00	41.00	43.00	44.00
		46.00	47.00	52.00	55.00	57.00	58.00	60.00
		61.00	67.00	68.00	76.00	79.00	80.00	88.00
		94.00	98.00	91.00	98.00	99.00	97.00	101.00
		4.00	73.00	40.00				
NEW HAMPSHIRE	52	2.00	3.00	4.00	5.00	6.00	7.00	
		8.00	9.00	10.00	11.00	14.00	15.00	16.00
		18.00	32.00	34.00	35.00	39.00	40.00	40.00
		41.00	43.00	46.00	47.00	52.00	55.00	56.00
		60.00	66.00	61.00	62.00	63.00	69.00	71.00
		73.00	74.00	76.00	77.00	79.00	81.00	88.00

STATE	NUMBER OF SPECIES	SPECIES IDENTIFICATION NUMBERS						
NEW HAMPSHIRE (CONTINUED)	52	89.00	90.00	99.00	92.00	98.00	99.00	97.00
		98.00	101.00	102.00	4.00			
NEW JERSEY	54	2.00	3.00	4.00	5.00	6.00	7.00	8.00
		9.00	10.00	11.00	14.00	15.00	16.00	18.00
		20.00	21.00	24.00	25.00	28.00	32.00	40.00
		41.00	43.00	46.00	47.00	52.00	53.00	55.00
		56.00	61.00	62.00	67.00	68.00	69.00	74.00
		76.00	77.00	78.00	79.00	81.00	88.00	87.00
		89.00	90.00	99.00	91.00	92.00	98.00	98.00
		97.00	98.00	101.00	102.00	4.00		
NEW MEXICO	61	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	12.00	13.00	14.00	15.00	16.00
		18.00	22.00	24.00	25.00	28.00	32.00	35.00
		37.00	38.00	39.00	41.00	43.00	45.00	47.00
		48.00	52.00	55.00	56.00	57.00	58.00	60.00
		61.00	64.00	66.00	68.00	67.00	68.00	69.00
		73.00	76.00	78.00	77.00	79.00	80.00	83.00
		88.00	89.00	91.00	98.00	94.00	98.00	98.00
		97.00	98.00	101.00	102.00	4.00		
NEW YORK	74	2.00	3.00	4.00	5.00	6.00	7.00	8.00
		9.00	10.00	11.00	14.00	15.00	16.00	17.00
		18.00	21.00	22.00	23.00	24.00	25.00	28.00
		30.00	31.00	32.00	35.00	40.00	41.00	43.00
		46.00	47.00	52.00	55.00	56.00	60.00	63.00
		64.00	61.00	62.00	66.00	64.00	66.00	67.00
		68.00	69.00	70.00	71.00	72.00	73.00	74.00
		76.00	77.00	78.00	79.00	80.00	81.00	83.00
		88.00	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
		101.00	102.00	103.00	4.00			
NORTH CAROLINA	63	2.00	3.00	4.00	5.00	6.00	7.00	8.00
		9.00	10.00	11.00	14.00	15.00	16.00	18.00
		21.00	24.00	25.00	28.00	32.00	40.00	41.00
		46.00	46.00	47.00	52.00	53.00	55.00	56.00
		61.00	66.00	67.00	68.00	69.00	74.00	76.00
		77.00	78.00	79.00	81.00	88.00	89.00	89.00
		90.00	91.00	92.00	93.00	98.00	99.00	97.00
		98.00	101.00	102.00	4.00			
NORTH DAKOTA	51	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	12.00	13.00	14.00	15.00	16.00
		18.00	32.00	34.00	35.00	41.00	46.00	44.00
		46.00	47.00	52.00	55.00	56.00	60.00	67.00
		68.00	69.00	71.00	72.00	76.00	74.00	76.00
		77.00	78.00	79.00	80.00	81.00	88.00	89.00
		91.00	98.00	98.00	97.00	98.00	101.00	102.00
		103.00	4.00					
OHIO	60	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	15.00	16.00	17.00	18.00
		21.00	24.00	25.00	28.00	30.00	31.00	35.00
		40.00	41.00	43.00	44.00	46.00	48.00	47.00
		52.00	53.00	55.00	56.00	58.00	61.00	62.00
		63.00	64.00	66.00	67.00	68.00	69.00	70.00
		72.00	73.00	74.00	76.00	77.00	78.00	79.00
		80.00	81.00	83.00	88.00	89.00	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	4.00		
OKLAHOMA	55	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	12.00	14.00	15.00	16.00	18.00
		22.00	23.00	24.00	25.00	28.00	37.00	39.00
		31.00	40.00	41.00	43.00	46.00	48.00	47.00
		52.00	53.00	55.00	56.00	57.00	58.00	60.00
		70.00	73.00	74.00	76.00	78.00	79.00	80.00
		83.00	88.00	89.00	91.00	92.00	94.00	98.00
		99.00	97.00	98.00	100.00	102.00	103.00	4.00
OREGON	62	2.00	3.00	4.00	7.00	8.00	11.00	12.00
		13.00	14.00	15.00	16.00	17.00	18.00	22.00
		24.00	28.00	32.00	33.00	35.00	41.00	43.00
		44.00	46.00	47.00	48.00	51.00	52.00	54.00
		55.00	56.00	57.00	58.00	60.00	61.00	62.00
		64.00	67.00	68.00	70.00	67.00	68.00	91.00
		92.00	93.00	98.00	97.00	98.00	101.00	102.00
		4.00	73.00	40.00				
PENNSYLVANIA	60	2.00	3.00	4.00	5.00	6.00	7.00	8.00
		9.00	10.00	11.00	14.00	15.00	16.00	18.00
		20.00	21.00	24.00	25.00	28.00	30.00	31.00

APPENDIX B-4
RESIDENT SPECIES, BY STATE

STATE	NUMBER OF SPECIES	SPECIES IDENTIFICATION NUMBERS						
PENNSYLVANIA (CONTINUED)	66	32.00	33.00	40.00	41.00	43.00	46.00	47.00
		50.00	52.00	53.00	55.00	56.00	60.00	61.00
		62.00	63.00	64.00	65.00	67.00	68.00	69.00
		70.00	71.00	73.00	74.00	76.00	77.00	78.00
		79.00	80.00	81.00	85.00	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	101.00	102.00	4.00	
RHODE ISLAND	53	2.00	3.00	4.00	5.00	6.00	7.00	8.00
		9.00	10.00	11.00	14.00	16.00	18.00	19.00
		21.00	24.00	25.00	28.00	30.00	32.00	40.00
		41.00	43.00	46.00	47.00	52.00	53.00	55.00
		56.00	58.00	60.00	61.00	62.00	67.00	68.00
		69.00	73.00	74.00	76.00	77.00	79.00	81.00
		87.00	88.00	89.00	92.00	95.00	96.00	97.00
		98.00	101.00	102.00	4.00			
SOUTH CAROLINA	59	2.00	3.00	4.00	5.00	6.00	7.00	8.00
		9.00	10.00	11.00	14.00	16.00	18.00	17.00
		18.00	25.00	28.00	30.00	32.00	40.00	41.00
		43.00	45.00	47.00	52.00	53.00	55.00	61.00
		66.00	67.00	68.00	69.00	74.00	76.00	77.00
		79.00	81.00	85.00	86.00	88.00	91.00	92.00
		93.00	95.00	96.00	97.00	98.00	101.00	102.00
		4.00						
SOUTH DAKOTA	53	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	12.00	13.00	14.00	16.00	18.00
		19.00	22.00	24.00	25.00	30.00	37.00	41.00
		43.00	46.00	47.00	52.00	53.00	55.00	56.00
		60.00	66.00	67.00	68.00	69.00	71.00	73.00
		74.00	75.00	76.00	77.00	78.00	80.00	81.00
		85.00	86.00	91.00	93.00	95.00	97.00	98.00
		101.00	102.00	103.00	4.00			
TENNESSEE	60	2.00	3.00	4.00	5.00	7.00	9.00	9.00
		10.00	11.00	14.00	16.00	18.00	17.00	18.00
		23.00	24.00	25.00	30.00	31.00	34.00	40.00
		41.00	43.00	46.00	47.00	52.00	53.00	55.00
		66.00	64.00	66.00	67.00	68.00	69.00	70.00
		72.00	73.00	74.00	76.00	77.00	79.00	79.00
		80.00	83.00	86.00	88.00	91.00	95.00	94.00
		96.00	98.00	97.00	99.00	100.00	103.00	102.00
		105.00	4.00					
TEXAS	91	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	12.00	14.00	16.00	18.00	17.00
		18.00	26.00	28.00	27.00	30.00	31.00	40.00
		41.00	43.00	46.00	48.00	47.00	52.00	53.00
		66.00	67.00	68.00	69.00	73.00	76.00	79.00
		80.00	83.00	84.00	86.00	91.00	93.00	94.00
		96.00	98.00	97.00	99.00	100.00	101.00	102.00
		103.00	4.00					
UTAH	62	2.00	3.00	4.00	7.00	8.00	11.00	12.00
		13.00	14.00	16.00	18.00	17.00	18.00	22.00
		24.00	26.00	32.00	28.00	37.00	39.00	39.00
		41.00	43.00	44.00	46.00	47.00	48.00	51.00
		52.00	55.00	57.00	58.00	60.00	61.00	62.00
		64.00	67.00	68.00	73.00	76.00	77.00	78.00
		80.00	86.00	91.00	93.00	96.00	97.00	98.00
		101.00	102.00	4.00				
VERMONT	56	2.00	3.00	4.00	6.00	9.00	7.00	8.00
		9.00	10.00	11.00	14.00	16.00	18.00	19.00
		20.00	21.00	22.00	24.00	25.00	28.00	32.00
		40.00	41.00	43.00	46.00	47.00	52.00	53.00
		56.00	58.00	59.00	60.00	61.00	62.00	66.00
		68.00	69.00	71.00	73.00	74.00	76.00	77.00
		79.00	81.00	85.00	86.00	88.00	92.00	93.00
		96.00	97.00	98.00	101.00	102.00	4.00	
VIRGINIA	66	2.00	3.00	4.00	5.00	6.00	7.00	8.00
		9.00	10.00	11.00	14.00	16.00	18.00	19.00
		21.00	24.00	26.00	28.00	30.00	32.00	34.00
		39.00	40.00	41.00	43.00	46.00	47.00	52.00
		53.00	55.00	56.00	61.00	66.00	67.00	68.00
		69.00	72.00	73.00	74.00	76.00	77.00	79.00
		81.00	85.00	86.00	88.00	91.00	92.00	93.00
		96.00	98.00	97.00	99.00	101.00	102.00	4.00
WASHINGTON	69	2.00	3.00	4.00	7.00	8.00	11.00	12.00
		13.00	14.00	16.00	18.00	17.00	18.00	22.00
		22.00	24.00	26.00	32.00	36.00	37.00	39.00

STATE	NUMBER OF SPECIES	SPECIES IDENTIFICATION NUMBERS						
WASHINGTON (CONTINUED)	69	41.00	43.00	44.00	46.00	47.00	52.00	54.00
		55.00	56.00	57.00	59.00	60.00	61.00	64.00
		67.00	68.00	70.00	72.00	67.00	81.00	82.00
		88.00	90.00	97.00	99.00	101.00	102.00	4.00
		73.00						
WEST VIRGINIA	63	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	16.00	18.00	19.00	20.00
		24.00	26.00	28.00	29.00	40.00	41.00	43.00
		46.00	47.00	52.00	53.00	55.00	60.00	61.00
		64.00	66.00	67.00	68.00	69.00	70.00	72.00
		73.00	74.00	76.00	77.00	78.00	79.00	80.00
		85.00	91.00	93.00	94.00	96.00	97.00	98.00
		99.00	102.00	103.00	4.00			
WISCONSIN	60	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	14.00	16.00	18.00	17.00	18.00
		21.00	22.00	23.00	24.00	26.00	29.00	30.00
		31.00	33.00	35.00	40.00	41.00	43.00	44.00
		46.00	47.00	50.00	52.00	53.00	54.00	55.00
		56.00	60.00	61.00	62.00	64.00	66.00	67.00
		68.00	69.00	70.00	71.00	72.00	73.00	74.00
		76.00	77.00	78.00	79.00	80.00	81.00	85.00
		86.00	91.00	92.00	93.00	94.00	96.00	97.00
		98.00	99.00	101.00	102.00	103.00	4.00	
WYOMING	55	2.00	3.00	4.00	5.00	7.00	8.00	9.00
		10.00	11.00	12.00	13.00	14.00	16.00	18.00
		19.00	22.00	24.00	25.00	30.00	36.00	37.00
		39.00	39.00	41.00	43.00	44.00	46.00	47.00
		52.00	55.00	57.00	58.00	59.00	61.00	62.00
		64.00	66.00	67.00	68.00	69.00	73.00	76.00
		76.00	77.00	78.00	80.00	81.00	82.00	83.00
		86.00	97.00	98.00	101.00	102.00	4.00	

APPENDIX B-5
SPECIES DISTRIBUTION IN THE UNITED STATES

SPECIES	TOTAL NUMBER OF STATES	STATE IDENTIFICATION NUMBERS
ROTIFER (PHILODINA ACUTICORNIS)	48	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 43 44 45 46 47 48
ROTIFER (PHILODINA ROSEOLA)	48	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 43 44 45 46 47 48
BRISTLEWORM (NAIS SP.)	48	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 43 44 45 46 47 48
WORM (LIMNODRILUS HOFFMEISTERI)	48	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 43 44 45 46 47 48
SNAIL (AMNICOLA SP.)	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
SNAIL (CAMPELOMA DECISUM)	14	1 2 3 4 5 6 7 8 9 10 11 12 13 14
SNAIL (GYRAULUS CIRCUMSTRIATUS)	48	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 43 44 45 46 47 48
SNAIL (LYMNAEA PALUSTRIS)	48	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 43 44 45 46 47 48
SNAIL (PHYSA HETEROSTROPHA)	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
SNAIL (PHYSA INTEGRA)	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
SNAIL (PHYSA SP.)	48	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 43 44 45 46 47 48
CLADOCERAN (DAPHNIA CARINATA)	17	32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
CLADOCERAN (DAPHNIA MAGNA)	14	32 33 34 35 39 40 41 42 43 44 45 46 47 48
CLADOCERAN (DAPHNIA PULEX)	48	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 43 44 45 46 47 48
CLADOCERAN (DAPHNIA PULICARIA)	48	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 43 44 45 46 47 48
CLADOCERAN (SIMOCEPHALUS SERRULATUS)	48	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
CLADOCERAN (SIMOCEPHALUS SERRULATUS) (CONTINUED)	48	31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
SEED SHRIMP (CYPRIDOPSIS VIDUA)	18	4 7 11 14 19 21 28 29 32 35 16 31 34 40 37 38 43 46
COPEPOD (UNIDENTIFIED)	48	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 43 44 45 46 47 48
ISOPOD (ASELLUS BREVICAUDUS)	4	39 28 16 34
ISOPOD (ASELLUS COMMUNIS)	9	40 1 11 4 9 6 3 46 17
SCUD (GAMMARUS FASCIATUS)	18	3 4 5 6 7 8 9 10 11 12 13 21 22 23 25 26 27 28
SCUD (GAMMARUS LACUSTRIS)	21	1 2 3 7 22 23 27 32 33 35 36 39 40 41 42 43 44 45 46 47 48
SCUD (GAMMARUS PSEUDOLIMNAEUS)	10	7 22 23 26 28 34 36 39 16 19
SCUD (GAMMARUS SP.)	41	1 2 3 4 5 6 7 8 9 10 11 12 13 17 18 19 20 21 22 23 24 25 26 27 28 29 30 32 33 35 36 39 40 41 42 43 44 45 46 47 48
SCUD (HYALELLA AZTECA)	48	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 43 44 45 46 47 48
CRAYFISH (FAXONELLA CLYPEATA)	9	28 29 16 15 31 34 35 14 37
CRAYFISH (ORCONECTES NAIS)	5	39 35 29 36 37
CRAYFISH (ORCONECTES LIMOSUS)	12	10 1 11 4 7 8 12 17 6 5 2 3
CRAYFISH (ORCONECTES RUSTICUS)	11	28 29 30 16 1 4 22 41 21 37 38
CRAYFISH (PROCAMBARUS ACUTUS)	31	29 30 16 15 28 28 28 35 15 16 31 1 11 4 22 27 34 39 6 7 8 13 21 25 5 6 14 18 37 12 38
GLASS SHRIMP (PALAEMONETES KADIAKENSIS)	16	7 8 21 22 29 28 28 16 29 34 31 29 30 35 37
MAYFLY (EPHEMERELLA GRANDIS)	27	28 29 40 41 42 43 44 45 46 47 48 22 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
MAYFLY (EPHEMERELLA SUBVARIA)	4	22 6 28 29
MAYFLY (HEXAGENIA BILINEATA)	8	10 24 29 30 31 11 12 28
STONEFLY (ACRONEURIA LYCORIAS)	7	1 22 7 21 12 17 28
STONEFLY (ACRONEURIA PACIFICA)	12	28 29 30 40 41 42 43 44 45 46 47 48
STONEFLY (CLASSENIA SABULOSA)	10	28 29 30 40 41 42 43 44 45 46
STONEFLY (PTERONARCELLA BADIA)	9	28 29 40 41 42 43 44 46 47
STONEFLY (PTERONARCYS CALIFORNICA)	8	28 29 40 41 42 43 44 46
DAMSELFLY (ISCHNURA VERTICALIS)	28	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 17 18 19 20 21 22 23 24 25 26 27 28 29 30 34 35 36 37
DAMSELFLY (ISCHNURA SP.)	48	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 43 44 45 46 47 48

APPENDIX B-5
SPECIES DISTRIBUTION IN THE UNITED STATES

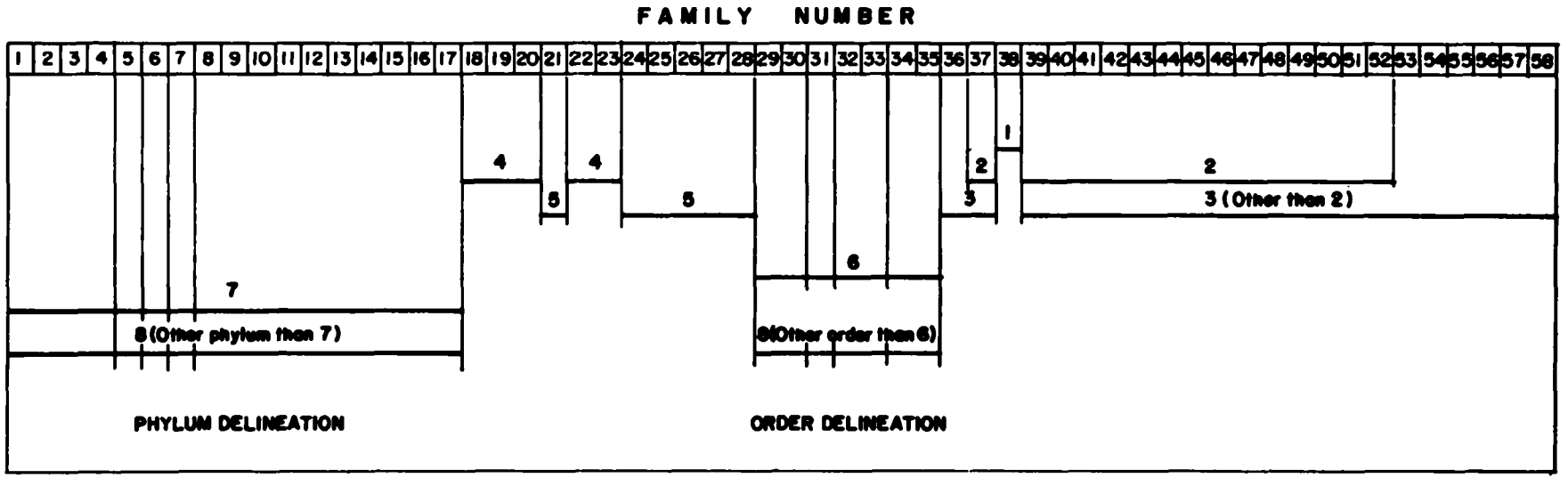
SPECIES	TOTAL NUMBER OF STATES	STATE IDENTIFICATION NUMBERS
MIDGE (CHIRONOMUS PLUMOSUS)	48	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
MIDGE (CHIRONOMUS TENTANS)	16	21 22 23 25 26 27 28 29 32 35 36 39 40 42 43 45 46 47
MIDGE (CHIRONOMUS SP.)	48	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 43 44 45 46 47 48
MIDGE (TANYTARSUS DISSIMILIS)	5	21 27 28 36 37
MIDGE (UNIDENTIFIED)	48	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 43 44 45 46 47 48
CADDISFLY (ARCTOPSYCHE GRANDIS)	6	40 41 42 43 46 48
CADDISFLY (CLISTORONIA MAGNIFICA)	3	46 47 48
CADDISFLY (HYDROPSYCHE BETTENI)	8	8 16 21 22 23 26 30 27
CADDISFLY (HYDROPSYCHE CALIFORNICA)	5	37 42 43 46 48
CADDISFLY (UNIDENTIFIED)	48	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 43 44 45 46 47 48
AMERICAN EEL (ANGUILLA ROSTRATA)	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 29 30 39 31 32 34 35 36 37 41
COHO SALMON (ONCORHYNCHUS KISUTCH)	11	1 11 32 33 35 36 31 38 45 46 48
SOCKEYE SALMON (ONCORHYNCHUS NERKA)	16	3 4 5 6 8 9 30 39 40 41 42 43 44 45 46 47 48
CHINOOK SALMON (ONCORHYNCHUS TSHAWYTSCHA)	19	7 22 23 25 26 27 42 45 46 48
CUTTHROAT TROUT (SALMO CLARKI)	11	38 39 40 41 42 43 44 45 46 47 48
RAINBOW TROUT (SALMO GAIRDNERI)	39	2 3 4 5 6 7 8 9 10 11 12 13 14 16 17 18 19 20 21 22 23 25 26 27 32 33 34 35 36 39 40 41 42 43 44 45 46 47 48
ATLANTIC SALMON (SALMO SALAR)	7	1 2 3 4 5 6 7
BROWN TROUT (SALMO TRUTTA)	35	1 2 3 4 5 6 7 8 9 10 11 12 13 17 18 19 21 22 23 25 26 27 28 30 33 34 35 36 45 41 42 43 44 46 48 47 48
BROOK TROUT (SALVELINUS FONTINALIS)	39	1 2 3 4 5 6 7 8 9 11 12 13 14 16 17 21 22 25 27 34 35 39 41 42 43 44 45 46 47 48
LAKE TROUT (SALVELINUS NAMAYCUSH)	22	1 2 3 4 5 6 7 8 9 21 22 23 25 26 27 28 30 40 42 43 46 48
NORTHERN PIKE (ESOX LUCIUS)	12	3 7 8 21 26 27 28 29 32 35 34 36
MOTTLED SCULPIN (COTTUS BAIRDI)	23	7 8 11 16 17 18 19 20 21 22 23 24 25 26 29 30 39 40 41 42 43 46 48
LONGFIN DACE (AGOSIA CHRYSOGASTER)	2	41 44
STONEROLLER (CAMPOSTOMA ANOMALUM)	31	7 8 11 12 13 14 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 39 40 41

SPECIES	TOTAL NUMBER OF STATES	STATE IDENTIFICATION NUMBERS
GOLDFISH (CARASSIUS AURATUS)	48	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 43 44 45 46 47 48
CARP (CYPRINUS CARPIO)	48	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 43 44 45 46 47 48
GOLDEN SHINER (NOTEMIGONUS CRYSOLEUCAS)	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 41 44 45
STRIPED SHINER (NOTROPIS CHRYSOCEPHALUS)	16	7 8 17 18 19 20 21 32 33 34 35 36 39 30 31 35
NORTHERN REDBELLY DACE (PHOXINUS EOS)	14	1 2 3 4 7 8 32 35 37 38 39 34 36 40
BLUNTNOSE MINNOW (PIMEPHALES NOTATUS)	33	7 11 12 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
FATHEAD MINNOW (PIMEPHALES PROMELAS)	39	1 2 3 4 5 6 7 8 11 12 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 33 35 34 35 36 37 38 39 40 41 42 43 44 45
NORTHERN SQUAWFISH (PTYCHOCHEILUS OREGONENSIS)	5	36 42 45 46 47
BLACKNOSE DACE (RHINICHTHYS ATRATULUS)	30	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 25 26 27 29 32 33 34
SPECKLED DACE (RHINICHTHYS OSCULUS)	16	39 40 41 42 43 44 45 46 47 48
CREEK CHUB (SEMOTILUS ATROMACULATUS)	40	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
WHITE SUCKER (CATOSTOMUS COMMERSONI)	37	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 17 18 19 20 21 22 23 25 26 27 28 29 30 32 33 34 35 36 39 40 41 43
BLACK BULLHEAD (ICTALURUS MELAS)	37	4 7 8 11 13 15 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 43 44 45 47 48
BROWN BULLHEAD (ICTALURUS NEBULOSUS)	34	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 34 35
CHANNEL CATFISH (ICTALURUS PUNCTATUS)	36	4 7 8 9 10 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 43 44 47 48
BANDED KILLIFISH (FUNDULUS DIAPHANUS)	23	1 2 3 4 5 6 7 8 9 10 11 12 13 14 21 22 23 25 26 27 28 32 33
FLASHFISH (JORDANELLA FLORIDAE)	1	16
MOSQUITOFISH (GAMBUSIA AFFINIS)	26	7 9 10 11 13 14 15 16 18 19 20 21 22 24 25 27 28 29 30 31 35 36 37 41 42 44 47 48
GUPPY (POECILIA RETICULATA)	5	16 37 44 47 48
SOUTHERN PLATYFISH (XIPHOPHORUS MACULATUS)	3	16 47 48
BROOK STICKLEBACK (CULAEA INCONSTANS)	16	1 2 3 4 7 8 21 22 23 24 25 26 27 28 32 33 34 41

APPENDIX B-6
SPECIES DISTRIBUTION IN THE UNITED STATES

SPECIES	TOTAL NUMBER OF STATES	STATE IDENTIFICATION NUMBERS
THREESPINE STICKLEBACK (GASTEROSTEUS ACULEATUS)	12	1 4 5 6 7 8 9 10 11 46 48 49
WHITE PERCH (MORONE AMERICANA)	14	1 2 3 4 5 6 7 8 9 10 11 12 13 14
STRIPED BASS (MORONE SAXATILIS)	32	1 2 4 5 6 7 8 9 10 11 12 13 14 15 16 18 19 20 23 24 28 29 31 34 35 36 37 41 43 44 46 48
ROCK BASS (AMBLOPLITES RUPESTRIS)	35	2 3 4 7 8 9 11 12 13 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 32 33 35 35
GREEN SUNFISH (LEPOMIS CYANELLUS)	41	7 8 9 10 11 12 13 14 15 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 43 44 45 46 47 48
PUMPKINSEED (LEPOMIS GIBBOSUS)	30	1 2 3 4 5 6 7 8 9 10 11 12 13 14 21 22 23 25 26 29 34 35 39 42 44 45 46 48
BLUEGILL (LEPOMIS MACROCHIRUS)	47	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 43 44 45 46 47 48
LONGEAR SUNFISH (LEPOMIS MEGALOTIS)	23	7 8 11 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 35 36 37 41
REDEAR SUNFISH (LEPOMIS MICROLOPHUS)	20	7 8 12 13 14 15 16 18 19 20 21 23 24 25 28 29 30 31 36 37 41
SMALLMOUTH BASS (MICROPTERUS DOLOMIEU)	46	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 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
LARGEMOUTH BASS (MICROPTERUS SALMOIDES)	48	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 43 44 45 46 47 48
BLACK CRAPPIE (POMOXIS NIGROMACULATUS)	47	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 43 44 45 46 47 48
RAINBOW DARTER (ETHEOSTOMA CAERULEUM)	17	7 8 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
ORANGETHROAT DARTER (ETHEOSTOMA SPECTABILE)	13	16 19 21 22 23 25 28 29 30 34 35 36 37
YELLOW PERCH (PERCA FLAVESCENS)	35	1 2 3 4 5 6 7 8 9 10 11 12 13 14 21 22 23 26 26 27 28 29 30 34 35 37 38 39 41 42 43 44 45 46 47
WALLEYE (STIZOSTEDION VITREUM VITREUM)	47	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 43 44 45 46 47 48
FRESHWATER DRUM (APLODINOTUS GRUNNIENS)	23	7 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38

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., conchostracean, 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.

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: ALDRIN

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
NATIONAL	14	CENTRARCHIDAE	7.491	3.300 *		
		ASELLIDAE	9.600			
		EPHEMERELLIDAE	9.600			
		SALMONIDAE	10.600			
ALABAMA	7	SALMONIDAE	4.600	1.400 *		
		CENTRARCHIDAE	7.491			
		PERCICHTHYIDAE	10.600			
		ANGUILLIDAE	10.600			
ARIZONA	10	SALMONIDAE	4.600	1.600 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		PERCICHTHYIDAE	10.600			
ARKANSAS	6	CENTRARCHIDAE	7.491	2.101 *		
		ASELLIDAE	9.600			
		ANGUILLIDAE	10.600			
		CYPRINIDAE	10.300			
CALIFORNIA	9	CENTRARCHIDAE	7.491	3.300 *		
		EPHEMERELLIDAE	9.600			
		PERCICHTHYIDAE	10.600			
		SALMONIDAE	10.600			
COLORADO	8	SALMONIDAE	4.600	1.400 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		CYPRINIDAE	10.300			
CONNECTICUT	9	SALMONIDAE	4.600	1.600 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		ANGUILLIDAE	10.600			
DELAWARE	9	SALMONIDAE	4.600	1.700 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		CYPRINIDAE	11.314			
§ FLORIDA	6	CENTRARCHIDAE	7.491	2.600 *		
		PERCICHTHYIDAE	10.600			
		CYPRINIDAE	11.314			
		ANGUILLIDAE	10.600			
GEORGIA	7	SALMONIDAE	4.600	1.700 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		PERCICHTHYIDAE	10.600			
IDAHO	8	SALMONIDAE	5.341	1.600 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		CYPRINIDAE	10.300			
ILLINOIS	10	CENTRARCHIDAE	7.491	3.300 *		
		ASELLIDAE	9.600			
		PERCICHTHYIDAE	10.600			
		SALMONIDAE	10.600			
INDIANA	8	CENTRARCHIDAE	7.491	2.607 *		
		PERCICHTHYIDAE	10.600			
		SALMONIDAE	10.600			
		ANGUILLIDAE	10.600			
IOWA	7	CENTRARCHIDAE	7.491	2.773 *		
		ANGUILLIDAE	10.600			
		CYPRINIDAE	10.300			
		CYPRINODONTIDAE	21.600			
KANSAS	8	CENTRARCHIDAE	7.491	2.464 *		
		PERCICHTHYIDAE	10.600			
		ANGUILLIDAE	10.600			
		CYPRINIDAE	10.300			
KENTUCKY	7	SALMONIDAE	4.600	1.774 *		
		CENTRARCHIDAE	7.491			
		ASELLIDAE	9.600			
		PERCICHTHYIDAE	10.600			
LOUISIANA	7	CENTRARCHIDAE	7.491	2.646 *		
		PERCICHTHYIDAE	10.600			
		ANGUILLIDAE	10.600			
		CYPRINIDAE	10.300			
MAINE	8	EPHEMERELLIDAE	9.600	3.313 *		
		CYPRINIDAE	11.732			
		ANGUILLIDAE	10.600			
		PERCICHTHYIDAE	20.494			
MARYLAND	9	CENTRARCHIDAE	7.491	2.740 *		
		EPHEMERELLIDAE	9.600			
		SALMONIDAE	14.377			
		ANGUILLIDAE	10.600			
MASSACHUSETTS	9	SALMONIDAE	4.600	1.600 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		ANGUILLIDAE	10.600			

TOXICANT: ALDRIN

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
MICHIGAN	9	CENTRARCHIDAE	7.491	2.767 *		
		EPHEMERELLIDAE	9.600			
		SALMONIDAE	10.600			
		ANGUILLIDAE	10.600			
MINNESOTA	7	SALMONIDAE	5.341	1.600 *		
		CENTRARCHIDAE	7.491			
		ANGUILLIDAE	10.600			
		CYPRINIDAE	10.300			
MISSISSIPPI	7	CENTRARCHIDAE	7.491	2.300 *		
		ASELLIDAE	9.600			
		PERCICHTHYIDAE	10.600			
		ANGUILLIDAE	10.600			
MISSOURI	6	CENTRARCHIDAE	7.491	2.601 *		
		PERCICHTHYIDAE	10.600			
		ANGUILLIDAE	10.600			
		CYPRINIDAE	10.300			
MONTANA	6	CENTRARCHIDAE	7.491	2.600 *		
		EPHEMERELLIDAE	9.600			
		SALMONIDAE	14.377			
		CYPRINIDAE	10.300			
NEBRASKA	6	SALMONIDAE	4.600	1.300 *		
		CENTRARCHIDAE	7.491			
		PERCICHTHYIDAE	10.600			
		ANGUILLIDAE	10.600			
NEVADA	8	SALMONIDAE	4.600	1.730 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		CYPRINIDAE	11.314			
NEW HAMPSHIRE	9	SALMONIDAE	4.600	1.770 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		CYPRINIDAE	11.732			
NEW JERSEY	9	SALMONIDAE	4.600	1.700 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		CYPRINIDAE	11.314			
NEW MEXICO	10	SALMONIDAE	4.600	1.600 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		PERCICHTHYIDAE	10.600			
NEW YORK	10	SALMONIDAE	5.341	1.600 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		ANGUILLIDAE	10.600			
NORTH CAROLINA	9	SALMONIDAE	4.600	1.700 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		CYPRINIDAE	11.314			
NORTH DAKOTA	6	SALMONIDAE	4.600	1.600 *		
		CENTRARCHIDAE	7.491			
		CYPRINIDAE	10.300			
		CYPRINODONTIDAE	21.600			
OHIO	8	SALMONIDAE	4.600	1.300 *		
		CENTRARCHIDAE	7.491			
		ANGUILLIDAE	10.600			
		CYPRINIDAE	10.300			
OKLAHOMA	8	SALMONIDAE	4.600	1.470 *		
		CENTRARCHIDAE	7.491			
		PERCICHTHYIDAE	10.600			
		ANGUILLIDAE	10.600			
OREGON	8	CENTRARCHIDAE	7.491	3.307 *		
		EPHEMERELLIDAE	9.600			
		PERCICHTHYIDAE	10.600			
		SALMONIDAE	10.600			
PENNSYLVANIA	10	SALMONIDAE	4.600	1.600 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		ANGUILLIDAE	10.600			
RHODE ISLAND	9	SALMONIDAE	4.600	1.600 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		ANGUILLIDAE	10.600			
SOUTH CAROLINA	8	SALMONIDAE	4.600	1.730 *		
		CENTRARCHIDAE	7.491			
		EPHEMERELLIDAE	9.600			
		CYPRINIDAE	11.314			
SOUTH DAKOTA	8	SALMONIDAE	4.600	1.300 *		
		CENTRARCHIDAE	7.491			
		ANGUILLIDAE	10.600			
		CYPRINIDAE	10.300			

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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: ALDRIN

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
TENNESSEE	7	SALMONIDAE	4.000	1.402 *		
		CENTRARCHIDAE	7.491			
		PERCIDONTHYIDAE	10.000			
		AMBULLIDAE	10.000			
# TEXAS	7	CENTRARCHIDAE	7.491	2.646 *		
		PERCIDONTHYIDAE	10.000			
		AMBULLIDAE	10.000			
		CYPRINIDAE	10.322			
UTAH	9	SALMONIDAE	4.000	1.574 *		
		CENTRARCHIDAE	7.491			
		SPHAERIELLIDAE	9.000			
		PERCIDONTHYIDAE	10.000			
VERMONT	9	SALMONIDAE	4.000	1.770 *		
		CENTRARCHIDAE	7.491			
		SPHAERIELLIDAE	9.000			
		CYPRINIDAE	11.732			
VIRGINIA	9	SALMONIDAE	4.000	1.889 *		
		CENTRARCHIDAE	7.491			
		SPHAERIELLIDAE	9.000			
		AMBULLIDAE	10.000			
WASHINGTON	8	CENTRARCHIDAE	7.491	3.362 *		
		SPHAERIELLIDAE	9.000			
		SALMONIDAE	10.000			
		CYPRINIDAE	11.314			
WEST VIRGINIA	8	SALMONIDAE	4.000	1.144 *		
		CENTRARCHIDAE	7.491			
		AMBULLIDAE	10.000			
		CYPRINIDAE	10.322			
WISCONSIN	8	CENTRARCHIDAE	7.491	2.844 *		
		SALMONIDAE	10.000			
		AMBULLIDAE	10.000			
		CYPRINIDAE	10.322			
WYOMING	8	SALMONIDAE	4.000	1.439 *		
		CENTRARCHIDAE	7.491			
		SPHAERIELLIDAE	9.000			
		CYPRINIDAE	10.322			

TOXICANT: ARSENIC

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
NATIONAL	8	GAMMARIDAE	670.000	113.300 *		
		DAPHNIDAE	1704.340			
		SALMONIDAE	14125.040			
		ICTALURIDAE	16457.400			
ALABAMA	5	DAPHNIDAE	1040.130	171.816 *		
		SALMONIDAE	12000.000			
		ICTALURIDAE	16457.400			
		CENTRARCHIDAE	19484.000			
ARIZONA	6	DAPHNIDAE	1704.340	497.300 *		
		SALMONIDAE	14125.040			
		ICTALURIDAE	16457.400			
		CENTRARCHIDAE	19484.000			
ARKANSAS	5	GAMMARIDAE	670.000	42.377 *		
		DAPHNIDAE	1040.130			
		ICTALURIDAE	16457.400			
		CENTRARCHIDAE	19484.000			
CALIFORNIA	6	DAPHNIDAE	1704.340	300.445 *		
		SALMONIDAE	14125.040			
		ICTALURIDAE	16457.400			
		CENTRARCHIDAE	19484.000			
COLORADO	6	DAPHNIDAE	1704.340	497.300 *		
		SALMONIDAE	12000.000			
		ICTALURIDAE	16457.400			
		CENTRARCHIDAE	19484.000			
CONNECTICUT	4	DAPHNIDAE	1040.130	141.000 *		
		SALMONIDAE	14125.040			
		CENTRARCHIDAE	19484.000			
		CYPRINIDAE	22104.000			
DELAWARE	5	DAPHNIDAE	1040.130	171.816 *		
		SALMONIDAE	12000.000			
		ICTALURIDAE	16457.400			
		CENTRARCHIDAE	19484.000			
# FLORIDA	5	DAPHNIDAE	1040.130	100.000 *		
		ICTALURIDAE	16457.400			
		CENTRARCHIDAE	19484.000			
		CYPRINIDAE	22101.570			
GEORGIA	5	DAPHNIDAE	1040.130	171.400 *		
		SALMONIDAE	14125.040			
		ICTALURIDAE	16457.400			
		CENTRARCHIDAE	19484.000			
IDAHO	5	DAPHNIDAE	1704.340	300.557 *		
		SALMONIDAE	14125.040			
		CENTRARCHIDAE	19484.000			
		CYPRINIDAE	22104.000			
ILLINOIS	6	GAMMARIDAE	670.000	69.104 *		
		DAPHNIDAE	1040.130			
		SALMONIDAE	12000.000			
		ICTALURIDAE	16457.400			
INDIANA	5	DAPHNIDAE	1040.130	171.816 *		
		SALMONIDAE	12000.000			
		ICTALURIDAE	16457.400			
		CENTRARCHIDAE	19484.000			
IOWA	5	GAMMARIDAE	670.000	42.377 *		
		DAPHNIDAE	1040.130			
		ICTALURIDAE	16457.400			
		CENTRARCHIDAE	19484.000			
# KANSAS	4	DAPHNIDAE	1040.130	140.400 *		
		ICTALURIDAE	16457.400			
		CENTRARCHIDAE	19484.000			
		CYPRINIDAE	22104.000			
KENTUCKY	6	GAMMARIDAE	670.000	69.104 *		
		DAPHNIDAE	1040.130			
		SALMONIDAE	12000.000			
		ICTALURIDAE	16457.400			
LOUISIANA	4	DAPHNIDAE	1040.130	140.400 *		
		ICTALURIDAE	16457.400			
		CENTRARCHIDAE	19484.000			
		CYPRINIDAE	22104.000			
MAINE	3	DAPHNIDAE	1040.130	113.300 *		
		SALMONIDAE	14125.040		**	
		CYPRINIDAE	10000.000			
			0.000			
MARYLAND	4	DAPHNIDAE	1040.130	141.000 *		
		SALMONIDAE	14125.040			
		CENTRARCHIDAE	19484.000			
		CYPRINIDAE	22104.000			
MASSACHUSETTS	5	DAPHNIDAE	1040.130	171.400 *		
		SALMONIDAE	14125.040			
		ICTALURIDAE	16457.400			
		CENTRARCHIDAE	19484.000			

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

* — 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 MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

RECALCULATION OF STATE TOXIC CRITERIA

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U.S. Environmental Protection Agency
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Contract No. 68-01-6403

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APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: ARSENIC

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
MICHIGAN	6	GAMMARIDAE	575.000	53.000 *		
		DAPHNIDAE	1043.139			
		SALMONIDAE	14133.043			
		ICTALURIDAE	10457.459			
MINNESOTA	5	DAPHNIDAE	1043.139	171.455 *		
		SALMONIDAE	14133.043			
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			
# MISSISSIPPI	5	GAMMARIDAE	575.000	42.377 *		
		DAPHNIDAE	1043.139			
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			
MISSOURI	4	DAPHNIDAE	1043.139	149.455 *		
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			
		CYPRINIDAE	20104.359			
MONTANA	6	DAPHNIDAE	1794.345	497.359 *		
		SALMONIDAE	14133.043			
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			
NEBRASKA	5	DAPHNIDAE	1794.345	359.445 *		
		SALMONIDAE	14133.043			
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			
NEVADA	5	DAPHNIDAE	1794.345	359.445 *		
		SALMONIDAE	14133.043			
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			
NEW HAMPSHIRE	4	DAPHNIDAE	1043.139	149.552 *		
		SALMONIDAE	14133.043			
		CYPRINIDAE	20104.359			
		CENTRARCHIDAE	10484.559			
NEW JERSEY	5	DAPHNIDAE	1043.139	171.455 *		
		SALMONIDAE	14133.043			
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			
NEW MEXICO	6	DAPHNIDAE	1794.345	497.359 *		
		SALMONIDAE	14133.043			
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			
NEW YORK	6	GAMMARIDAE	575.000	53.000 *		
		DAPHNIDAE	1043.139			
		SALMONIDAE	14133.043			
		ICTALURIDAE	10457.459			
NORTH CAROLINA	4	DAPHNIDAE	1043.139	132.343 *		
		SALMONIDAE	14133.043			
		CENTRARCHIDAE	10484.559			
		CYPRINIDAE	20941.575			
NORTH DAKOTA	5	DAPHNIDAE	1794.345	359.691 *		
		SALMONIDAE	13333.333			
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			
OHIO	5	DAPHNIDAE	1043.139	171.455 *		
		SALMONIDAE	14133.043			
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			
OKLAHOMA	6	GAMMARIDAE	575.000	53.104 *		
		DAPHNIDAE	1043.139			
		SALMONIDAE	13333.333			
		ICTALURIDAE	10457.459			
OREGON	4	DAPHNIDAE	1794.345	359.559 *		
		SALMONIDAE	14133.043			
		CENTRARCHIDAE	10484.559			
		CYPRINIDAE	20941.575			
PENNSYLVANIA	5	DAPHNIDAE	1043.139	171.455 *		
		SALMONIDAE	14133.043			
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			
RHODE ISLAND	4	DAPHNIDAE	1043.139	141.559 *		
		SALMONIDAE	14133.043			
		CENTRARCHIDAE	10484.559			
		CYPRINIDAE	20104.359			
SOUTH CAROLINA	4	DAPHNIDAE	1043.139	132.343 *		
		SALMONIDAE	14133.043			
		CENTRARCHIDAE	10484.559			
		CYPRINIDAE	20941.575			
SOUTH DAKOTA	5	DAPHNIDAE	1794.345	359.691 *		
		SALMONIDAE	13333.333			
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			

TOXICANT: ARSENIC

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
TENNESSEE	6	GAMMARIDAE	575.000	53.104 *		
		DAPHNIDAE	1043.139			
		SALMONIDAE	13333.333			
		ICTALURIDAE	10457.459			
# TEXAS	4	DAPHNIDAE	1043.139	149.455 *		
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			
		CYPRINIDAE	20104.359			
UTAH	6	DAPHNIDAE	1794.345	497.359 *		
		SALMONIDAE	14133.043			
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			
VERMONT	4	DAPHNIDAE	1043.139	149.552 *		
		SALMONIDAE	14133.043			
		CYPRINIDAE	20104.359			
		CENTRARCHIDAE	10484.559			
VIRGINIA	4	DAPHNIDAE	1043.139	141.559 *		
		SALMONIDAE	14133.043			
		CENTRARCHIDAE	10484.559			
		CYPRINIDAE	20104.359			
WASHINGTON	5	DAPHNIDAE	1794.345	343.545 *		
		SALMONIDAE	14133.043			
		CENTRARCHIDAE	10484.559			
		PTEROMARCIDAE	25555.555			
WEST VIRGINIA	5	DAPHNIDAE	1043.139	171.455 *		
		SALMONIDAE	14133.043			
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			
WISCONSIN	6	GAMMARIDAE	575.000	53.000 *		
		DAPHNIDAE	1043.139			
		SALMONIDAE	14133.043			
		ICTALURIDAE	10457.459			
WYOMING	6	DAPHNIDAE	1794.345	497.359 *		
		SALMONIDAE	14133.043			
		ICTALURIDAE	10457.459			
		CENTRARCHIDAE	10484.559			

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 3.7 TO DETERMINE MAXIMUM AND/OR
30-DAY AVERAGE CRITERIA

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

TOXICANT: CADMIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+) (1)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+) (2)	30-DAY (+)	AVERAGE (++) (3)
NATIONAL	16	SALMONIDAE	0.040	0.027	0.0004	ACR
		DAPHNIDAE	0.499			
		GAMMARIDAE	1.147			
		PHYSIDAE	2.899			
ALABAMA	14	SALMONIDAE	0.044	0.013	0.0002	ACR
		PERCICHTHYIDAE	0.103			
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
ARIZONA	13	SALMONIDAE	0.044	0.010	0.0001	ACR
		PERCICHTHYIDAE	0.103			
		DAPHNIDAE	0.499			
		GAMMARIDAE	1.147			
ARKANSAS	12	DAPHNIDAE	0.894	0.211 *	0.0004	ACR
		GAMMARIDAE	1.147			
		PHYSIDAE	2.899			
		PHILOGENIDAE	0.027			
CALIFORNIA	14	SALMONIDAE	0.040	0.015	0.0002	ACR
		PERCICHTHYIDAE	0.103			
		DAPHNIDAE	0.499			
		GAMMARIDAE	1.147			
COLORADO	12	SALMONIDAE	0.044	0.012	0.0002	ACR
		DAPHNIDAE	0.499			
		GAMMARIDAE	1.147			
		PHYSIDAE	2.899			
CONNECTICUT	16	SALMONIDAE	0.044	0.010	0.0000	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			
DELAWARE	17	SALMONIDAE	0.044	0.027	0.0004	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			
# FLORIDA	13	PERCICHTHYIDAE	0.103	0.040 *	0.0007	ACR
		DAPHNIDAE	0.894			
		PHYSIDAE	2.899			
		PHILOGENIDAE	0.027			
GEORGIA	14	SALMONIDAE	0.044	0.000 *	0.0001	ACR
		PERCICHTHYIDAE	0.103			
		DAPHNIDAE	0.894			
		PHYSIDAE	2.899			
IDAHO	12	SALMONIDAE	0.040	0.013	0.0002	ACR
		DAPHNIDAE	0.499			
		GAMMARIDAE	1.147			
		PHYSIDAE	2.899			
ILLINOIS	16	SALMONIDAE	0.044	0.000	0.0000	ACR
		PERCICHTHYIDAE	0.103			
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
INDIANA	14	SALMONIDAE	0.044	0.010	0.0000	ACR
		PERCICHTHYIDAE	0.103			
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
IOWA	13	DAPHNIDAE	0.894	0.317 *	0.0001	ACR
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			
		PHYSIDAE	2.899			
# KANSAS	12	PERCICHTHYIDAE	0.103	0.041 *	0.0000	ACR
		DAPHNIDAE	0.894			
		PHYSIDAE	2.899			
		PHILOGENIDAE	0.027			
KENTUCKY	14	SALMONIDAE	0.044	0.013	0.0002	ACR
		PERCICHTHYIDAE	0.103			
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
LOUISIANA	12	PERCICHTHYIDAE	0.103	0.041 *	0.0000	ACR
		DAPHNIDAE	0.894			
		PHYSIDAE	2.899			
		PHILOGENIDAE	0.027			
MAINE	16	SALMONIDAE	0.000	0.015	0.0002	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			
MARYLAND	17	SALMONIDAE	0.044	0.021	0.0000	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			
MASSACHUSETTS	16	SALMONIDAE	0.044	0.010	0.0000	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			

TOXICANT: CADMIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+) (1)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+) (2)	30-DAY (+)	AVERAGE (++) (3)
MICHIGAN	16	SALMONIDAE	0.040	0.023	0.0000	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			
MINNESOTA	14	SALMONIDAE	0.040	0.021	0.0000	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			
# MISSISSIPPI	13	PERCICHTHYIDAE	0.103	0.000	0.0000	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		PHYSIDAE	2.899			
MISSOURI	13	PERCICHTHYIDAE	0.103	0.000 *	0.0000	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		PHYSIDAE	2.899			
MONTANA	12	SALMONIDAE	0.044	0.000	0.0001	ACR
		DAPHNIDAE	0.499			
		GAMMARIDAE	1.147			
		PHYSIDAE	2.899			
NEBRASKA	12	SALMONIDAE	0.044	0.000 *	0.0001	ACR
		PERCICHTHYIDAE	0.103			
		DAPHNIDAE	0.499			
		PHYSIDAE	2.899			
NEVADA	12	SALMONIDAE	0.044	0.000	0.0001	ACR
		DAPHNIDAE	0.499			
		GAMMARIDAE	1.147			
		PHYSIDAE	2.899			
NEW HAMPSHIRE	16	SALMONIDAE	0.044	0.017	0.0002	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			
NEW JERSEY	17	SALMONIDAE	0.044	0.021	0.0000	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			
NEW MEXICO	16	SALMONIDAE	0.044	0.012	0.0002	ACR
		PERCICHTHYIDAE	0.103			
		DAPHNIDAE	0.499			
		GAMMARIDAE	1.147			
NEW YORK	17	SALMONIDAE	0.040	0.000	0.0004	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			
NORTH CAROLINA	16	SALMONIDAE	0.044	0.010	0.0000	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			
NORTH DAKOTA	12	SALMONIDAE	0.044	0.014	0.0002	ACR
		DAPHNIDAE	0.499			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			
OHIO	14	SALMONIDAE	0.044	0.010	0.0002	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			
OKLAHOMA	14	SALMONIDAE	0.044	0.013	0.0002	ACR
		PERCICHTHYIDAE	0.103			
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
OREGON	13	SALMONIDAE	0.040	0.014	0.0002	ACR
		PERCICHTHYIDAE	0.103			
		DAPHNIDAE	0.499			
		GAMMARIDAE	1.147			
PENNSYLVANIA	16	SALMONIDAE	0.044	0.010	0.0000	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			
RHODE ISLAND	16	SALMONIDAE	0.044	0.010	0.0000	ACR
		DAPHNIDAE	0.894			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			
SOUTH CAROLINA	16	SALMONIDAE	0.044	0.010 *	0.0002	ACR
		DAPHNIDAE	0.894			
		CYPRINODONTIDAE	1.899			
		PHYSIDAE	2.899			
SOUTH DAKOTA	13	SALMONIDAE	0.044	0.010	0.0002	ACR
		DAPHNIDAE	0.499			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.899			

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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: CADMIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LOSS VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
TENNESSEE	14	SALMONIDAE	0.004	0.013	0.0002	ACR
		PERCICHTHYIDAE	0.163			
		DAPHNIDAE	0.004			
		GAMMARIDAE	1.147			
# TEXAS	12	PERCICHTHYIDAE	0.163	0.041 *	0.0000	ACR
		DAPHNIDAE	0.004			
		PHYSIDAE	2.000			
		PHILODINIDAE	0.007			
UTAH	12	SALMONIDAE	0.004	0.000	0.0001	ACR
		PERCICHTHYIDAE	0.163			
		DAPHNIDAE	0.400			
		GAMMARIDAE	1.147			
VERMONT	16	SALMONIDAE	0.004	0.017	0.0002	ACR
		DAPHNIDAE	0.004			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.000			
VIRGINIA	16	SALMONIDAE	0.004	0.017	0.0002	ACR
		DAPHNIDAE	0.004			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.000			
WASHINGTON	12	SALMONIDAE	0.045	0.013	0.0002	ACR
		DAPHNIDAE	0.400			
		GAMMARIDAE	1.147			
		PHYSIDAE	2.000			
WEST VIRGINIA	12	SALMONIDAE	0.004	0.011	0.0001	ACR
		DAPHNIDAE	0.004			
		GAMMARIDAE	1.147			
		PHYSIDAE	2.000			
WISCONSIN	16	SALMONIDAE	0.045	0.010	0.0000	ACR
		DAPHNIDAE	0.004			
		GAMMARIDAE	1.147			
		CYPRINODONTIDAE	1.000			
WYOMING	12	SALMONIDAE	0.004	0.000	0.0001	ACR
		DAPHNIDAE	0.400			
		GAMMARIDAE	1.147			
		PHYSIDAE	2.000			

TOXICANT: CHLORDANE

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LOSS VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
NATIONAL	8	PALAEMONIDAE	0.355	1.574 *	0.0043	FRV
		PTERONARCIDAE	16.000			
		CYPRINIDAE	22.330			
		GAMMARIDAE	32.340			
ALABAMA	4	PALAEMONIDAE	0.355	1.232 *	0.0043	FRV
		CYPRINIDAE	22.330			
		SALMONIDAE	33.491			
		CENTRARCHIDAE	54.711			
ARIZONA	7	PTERONARCIDAE	16.000	0.771 *	0.0043	FRV
		CYPRINIDAE	22.330			
		GAMMARIDAE	32.000			
		SALMONIDAE	33.002			
ARKANSAS	3	PALAEMONIDAE	0.355	1.574 *	0.0043	FRV
		CYPRINIDAE	22.330	**		
		CENTRARCHIDAE	54.711			
			0.000			
CALIFORNIA	6	CYPRINIDAE	22.330	7.044 *	0.0043	FRV
		GAMMARIDAE	32.000			
		SALMONIDAE	40.720			
		CENTRARCHIDAE	54.711			
COLORADO	6	PTERONARCIDAE	16.000	0.330 *	0.0043	FRV
		CYPRINIDAE	22.330			
		SALMONIDAE	33.491			
		GAMMARIDAE	32.000			
CONNECTICUT	4	CYPRINIDAE	22.330	7.575 *	0.0043	FRV
		SALMONIDAE	33.002			
		GAMMARIDAE	40.000			
		CENTRARCHIDAE	54.711			
DELAWARE	4	CYPRINIDAE	16.004	4.120 *	0.0043	FRV
		SALMONIDAE	33.491			
		GAMMARIDAE	40.000			
		CENTRARCHIDAE	54.711			
# FLORIDA	3	CYPRINIDAE	16.004	1.574 *	0.0043	FRV
		CENTRARCHIDAE	54.711	**		
		POECILIDAE	100.000			
			0.000			
GEORGIA	3	CYPRINIDAE	16.004	1.574 *	0.0043	FRV
		SALMONIDAE	33.002	**		
		CENTRARCHIDAE	54.711			
			0.000			
IDAHO	6	PTERONARCIDAE	16.000	0.042 *	0.0043	FRV
		CYPRINIDAE	22.330			
		GAMMARIDAE	32.000			
		SALMONIDAE	40.591			
ILLINOIS	5	PALAEMONIDAE	0.355	1.457 *	0.0043	FRV
		CYPRINIDAE	22.330			
		GAMMARIDAE	40.000			
		SALMONIDAE	40.327			
INDIANA	4	CYPRINIDAE	22.330	0.051 *	0.0043	FRV
		GAMMARIDAE	40.000			
		SALMONIDAE	40.327			
		CENTRARCHIDAE	54.711			
IOWA	4	PALAEMONIDAE	0.355	1.355 *	0.0043	FRV
		CYPRINIDAE	22.330			
		GAMMARIDAE	40.000			
		CENTRARCHIDAE	54.711			
# KANSAS	2	CYPRINIDAE	22.330	1.574 *	0.0043	FRV
		CENTRARCHIDAE	54.711	**		
			0.000			
			0.000			
KENTUCKY	3	CYPRINIDAE	22.330	1.574 *	0.0043	FRV
		SALMONIDAE	33.491	**		
		CENTRARCHIDAE	54.711			
			0.000			
LOUISIANA	4	PALAEMONIDAE	0.355	1.557 *	0.0043	FRV
		CYPRINIDAE	22.330			
		CENTRARCHIDAE	54.711			
		SALMONIDAE	33.000			
MAINE	3	CYPRINIDAE	12.371	1.574 *	0.0043	FRV
		GAMMARIDAE	32.000	**		
		SALMONIDAE	33.330			
			0.000			
MARYLAND	4	CYPRINIDAE	22.330	0.017 *	0.0043	FRV
		GAMMARIDAE	40.000			
		SALMONIDAE	40.044			
		CENTRARCHIDAE	54.711			
MASSACHUSETTS	4	CYPRINIDAE	22.330	7.575 *	0.0043	FRV
		SALMONIDAE	33.002			
		GAMMARIDAE	40.000			
		CENTRARCHIDAE	54.711			

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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

TOXICANT: CHLORDANE

STATE	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 (++)
MICHIGAN	5	PALAEMONIDAE	0.355	1.511 *	0.0043	FRV
		CYPRINIDAE	33.200			
		GAMMARIDAE	32.240			
		SALMONIDAE	40.720			
MINNESOTA	4	CYPRINIDAE	33.200	7.511 *	0.0043	FRV
		GAMMARIDAE	32.240			
		SALMONIDAE	40.591			
		CENTRARCHIDAE	84.711			
§ MISSISSIPPI	3	PALAEMONIDAE	0.355	1.574 * **	0.0043	FRV
		CYPRINIDAE	33.200			
		CENTRARCHIDAE	84.711			
			0.000			
MISSOURI	3	PALAEMONIDAE	0.355	1.574 * **	0.0043	FRV
		CYPRINIDAE	33.200			
		CENTRARCHIDAE	84.711			
			0.000			
MONTANA	6	PTERONARCIDAE	10.000	0.001 *	0.0043	FRV
		CYPRINIDAE	33.200			
		GAMMARIDAE	33.000			
		SALMONIDAE	40.044			
NEBRASKA	4	CYPRINIDAE	33.200	7.010 *	0.0043	FRV
		SALMONIDAE	33.002			
		CENTRARCHIDAE	84.711			
		GAMMIDAE	33.257			
NEVADA	6	CYPRINIDAE	10.004	4.000 *	0.0043	FRV
		GAMMARIDAE	33.000			
		SALMONIDAE	33.000			
		CENTRARCHIDAE	84.711			
NEW HAMPSHIRE	4	CYPRINIDAE	12.571	3.113 *	0.0043	FRV
		GAMMARIDAE	33.000			
		SALMONIDAE	33.000			
		CENTRARCHIDAE	84.711			
NEW JERSEY	4	CYPRINIDAE	10.004	4.000 *	0.0043	FRV
		SALMONIDAE	33.002			
		GAMMARIDAE	40.000			
		CENTRARCHIDAE	84.711			
NEW MEXICO	6	PTERONARCIDAE	10.000	0.000 *	0.0043	FRV
		CYPRINIDAE	33.000			
		GAMMARIDAE	33.000			
		SALMONIDAE	33.002			
NEW YORK	5	PALAEMONIDAE	0.355	1.000 *	0.0043	FRV
		CYPRINIDAE	33.000			
		GAMMARIDAE	32.240			
		SALMONIDAE	40.591			
NORTH CAROLINA	4	CYPRINIDAE	10.004	4.000 *	0.0043	FRV
		SALMONIDAE	33.002			
		GAMMARIDAE	40.000			
		CENTRARCHIDAE	84.711			
NORTH DAKOTA	5	CYPRINIDAE	33.200	0.004 *	0.0043	FRV
		SALMONIDAE	33.451			
		GAMMARIDAE	33.000			
		CENTRARCHIDAE	84.711			
OHIO	5	PALAEMONIDAE	0.355	1.000 *	0.0043	FRV
		CYPRINIDAE	33.200			
		SALMONIDAE	33.002			
		GAMMARIDAE	40.000			
OKLAHOMA	5	PALAEMONIDAE	0.355	1.000 *	0.0043	FRV
		CYPRINIDAE	33.200			
		SALMONIDAE	33.451			
		GAMMARIDAE	33.000			
OREGON	5	CYPRINIDAE	10.004	4.357 *	0.0043	FRV
		GAMMARIDAE	33.000			
		SALMONIDAE	40.720			
		CENTRARCHIDAE	84.711			
PENNSYLVANIA	5	PALAEMONIDAE	0.355	1.000 *	0.0043	FRV
		CYPRINIDAE	33.200			
		SALMONIDAE	33.002			
		GAMMARIDAE	40.000			
RHODE ISLAND	4	CYPRINIDAE	33.200	7.575 *	0.0043	FRV
		SALMONIDAE	33.002			
		GAMMARIDAE	40.000			
		CENTRARCHIDAE	84.711			
SOUTH CAROLINA	3	CYPRINIDAE	10.004	1.574 * **	0.0043	FRV
		SALMONIDAE	33.002			
		CENTRARCHIDAE	84.711			
			0.000			
SOUTH DAKOTA	5	CYPRINIDAE	33.200	0.004 *	0.0043	FRV
		SALMONIDAE	33.451			
		GAMMARIDAE	33.000			
		CENTRARCHIDAE	84.711			

TOXICANT: CHLORDANE

STATE	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 (++)
TENNESSEE	4	PALAEMONIDAE	0.355	1.202 *	0.0043	FRV
		CYPRINIDAE	33.200			
		SALMONIDAE	33.451			
		CENTRARCHIDAE	84.711			
§ TEXAS	4	PALAEMONIDAE	0.355	0.000 *	0.0043	FRV
		CYPRINIDAE	33.200			
		CENTRARCHIDAE	84.711			
		POECILIIDAE	100.000			
UTAH	6	PTERONARCIDAE	10.000	0.000 *	0.0043	FRV
		CYPRINIDAE	33.200			
		GAMMARIDAE	33.000			
		SALMONIDAE	33.002			
VERMONT	4	CYPRINIDAE	12.571	3.572 *	0.0043	FRV
		GAMMARIDAE	32.240			
		SALMONIDAE	33.002			
		CENTRARCHIDAE	84.711			
VIRGINIA	4	CYPRINIDAE	33.200	7.575 *	0.0043	FRV
		SALMONIDAE	33.002			
		GAMMARIDAE	40.000			
		CENTRARCHIDAE	84.711			
WASHINGTON	6	PTERONARCIDAE	10.000	3.775 *	0.0043	FRV
		CYPRINIDAE	10.004			
		GAMMARIDAE	33.000			
		SALMONIDAE	40.720			
WEST VIRGINIA	3	CYPRINIDAE	33.200	1.574 * **	0.0043	FRV
		SALMONIDAE	33.002			
		CENTRARCHIDAE	84.711			
			0.000			
WISCONSIN	5	PALAEMONIDAE	0.355	1.511 *	0.0043	FRV
		CYPRINIDAE	33.200			
		GAMMARIDAE	32.240			
		SALMONIDAE	40.720			
WYOMING	6	PTERONARCIDAE	10.000	0.000 *	0.0043	FRV
		CYPRINIDAE	33.200			
		GAMMARIDAE	33.000			
		SALMONIDAE	33.002			

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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY 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	LOEC VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
NATIONAL	10	GAMMARIDAE	67.000	12.104	0.3570	ACR
		DAPHNIDAE	6559.570			
		PHILODINIDAE	6559.700			
		PHYSIDAE	24552.555			
ALABAMA	6	PHILODINIDAE	6559.700	1692.459 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		CYPRINIDAE	57451.572			
ARIZONA	7	DAPHNIDAE	6559.570	1149.847 *	10.0	FPV
		PHILODINIDAE	6559.700			
		POECILIIDAE	25559.557			
		PERICHOTHYIDAE	20454.700			
ARKANSAS	5	GAMMARIDAE	67.000	2.555 *	0.5555	ACR
		PHILODINIDAE	6559.700			
		PHYSIDAE	24552.555			
		CYPRINIDAE	57451.572			
CALIFORNIA	7	DAPHNIDAE	6559.570	1149.847 *	10.0	FPV
		PHILODINIDAE	6559.700			
		POECILIIDAE	25559.557			
		PERICHOTHYIDAE	20454.700			
COLORADO	6	DAPHNIDAE	6559.570	701.555 *	10.0	FPV
		PHILODINIDAE	6559.700			
		PHYSIDAE	24552.555			
		CYPRINIDAE	57451.572			
CONNECTICUT	6	PHILODINIDAE	6559.700	1692.459 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		CYPRINIDAE	57451.572			
DELAWARE	6	PHILODINIDAE	6559.700	1555.742 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		SALMONIDAE	65554.701			
# FLORIDA	6	PHILODINIDAE	6559.700	2134.135 *	10.0	FPV
		PHYSIDAE	24552.555			
		POECILIIDAE	25559.557			
		PERICHOTHYIDAE	20454.700			
GEORGIA	6	PHILODINIDAE	6559.700	1694.573 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		SALMONIDAE	65554.145			
IDAHO	5	DAPHNIDAE	6559.570	549.555 *	10.0	FPV
		PHILODINIDAE	6559.700			
		CYPRINIDAE	57451.572			
		SALMONIDAE	65554.145			
ILLINOIS	7	GAMMARIDAE	67.000	5.357 *	0.1455	ACR
		PHILODINIDAE	6559.700			
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
INDIANA	6	PHILODINIDAE	6559.700	1692.459 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		CYPRINIDAE	57451.572			
IOWA	6	GAMMARIDAE	67.000	3.457 *	0.5545	ACR
		PHILODINIDAE	6559.700			
		PHYSIDAE	24552.555			
		CYPRINIDAE	57451.572			
# KANSAS	5	PHILODINIDAE	6559.700	1149.554 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		CYPRINIDAE	57451.572			
KENTUCKY	7	GAMMARIDAE	67.000	5.357 *	0.1455	ACR
		PHILODINIDAE	6559.700			
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
LOUISIANA	5	PHILODINIDAE	6559.700	1149.554 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		CYPRINIDAE	57451.572			
MAINE	5	PHILODINIDAE	6559.700	1011.155 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		CYPRINIDAE	45557.555			
MARYLAND	6	PHILODINIDAE	6559.700	1692.459 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		CYPRINIDAE	57451.572			
MASSACHUSETTS	6	PHILODINIDAE	6559.700	1692.459 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		CYPRINIDAE	57451.572			

TOXICANT: CHROMIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LOEC VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
MICHIGAN	6	GAMMARIDAE	67.000	3.457 *	0.5545	ACR
		PHILODINIDAE	6559.700			
		PHYSIDAE	24552.555			
		CYPRINIDAE	57451.572			
MINNESOTA	6	PHILODINIDAE	6559.700	1691.459 *	10.0	FPV
		PHYSIDAE	24552.555			
		CYPRINIDAE	57451.572			
		CHIRONOMIDAE	65559.700			
# MISSISSIPPI	6	GAMMARIDAE	67.000	4.155 *	0.1141	ACR
		PHILODINIDAE	6559.700			
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
MISSOURI	5	PHILODINIDAE	6559.700	1149.554 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		CYPRINIDAE	57451.572			
MONTANA	6	DAPHNIDAE	6559.570	701.555 *	10.0	FPV
		PHILODINIDAE	6559.700			
		PHYSIDAE	24552.555			
		CYPRINIDAE	57451.572			
NEBRASKA	7	DAPHNIDAE	6559.570	1355.044 *	10.0	FPV
		PHILODINIDAE	6559.700			
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
NEVADA	6	DAPHNIDAE	6559.570	710.554 *	10.0	FPV
		PHILODINIDAE	6559.700			
		POECILIIDAE	25559.557			
		SALMONIDAE	65554.145			
NEW HAMPSHIRE	6	PHILODINIDAE	6559.700	1555.355 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		CYPRINIDAE	45557.555			
NEW JERSEY	6	PHILODINIDAE	6559.700	1694.573 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		SALMONIDAE	65554.145			
NEW MEXICO	7	DAPHNIDAE	6559.570	1355.044 *	10.0	FPV
		PHILODINIDAE	6559.700			
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
NEW YORK	7	GAMMARIDAE	67.000	5.357 *	0.1455	ACR
		PHILODINIDAE	6559.700			
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
NORTH CAROLINA	6	PHILODINIDAE	6559.700	1694.573 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		SALMONIDAE	65554.145			
NORTH DAKOTA	6	DAPHNIDAE	6559.570	701.555 *	10.0	FPV
		PHILODINIDAE	6559.700			
		PHYSIDAE	24552.555			
		CYPRINIDAE	57451.572			
OHIO	6	PHILODINIDAE	6559.700	1691.459 *	10.0	FPV
		PHYSIDAE	24552.555			
		CYPRINIDAE	57451.572			
		CHIRONOMIDAE	65559.700			
OKLAHOMA	6	GAMMARIDAE	67.000	0.049 *	0.1030	ACR
		PHILODINIDAE	6559.700			
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
OREGON	6	DAPHNIDAE	6559.570	710.704 *	10.0	FPV
		PHILODINIDAE	6559.700			
		PERICHOTHYIDAE	20454.700			
		SALMONIDAE	65554.145			
PENNSYLVANIA	6	PHILODINIDAE	6559.700	1692.459 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		CYPRINIDAE	57451.572			
RHODE ISLAND	6	PHILODINIDAE	6559.700	1692.459 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		CYPRINIDAE	57451.572			
SOUTH CAROLINA	6	PHILODINIDAE	6559.700	1694.573 *	10.0	FPV
		PHYSIDAE	24552.555			
		PERICHOTHYIDAE	20454.700			
		SALMONIDAE	65554.145			
SOUTH DAKOTA	6	DAPHNIDAE	6559.570	701.555 *	10.0	FPV
		PHILODINIDAE	6559.700			
		PHYSIDAE	24552.555			
		CYPRINIDAE	57451.572			

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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY 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 (+)	FRESHWATER AQUATIC LIFE CRITERIA 30-DAY (+)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (++)
TENNESSEE	7	GAMMARIDAE	67,000	5.337 *	0.1456	ACR
		PHILODINIDAE	6000,700			
		PHYSIDAE	24000,000			
		PERIGONTHYIDAE	20484,700			
# TEXAS	7	PHILODINIDAE	6000,700	2271.139 *	10.0	FPV
		PHYSIDAE	24000,000			
		POECILIIDAE	20000,007			
		PERIGONTHYIDAE	20484,700			
UTAH	6	DAPHNIIDAE	6000,000	784.440 *	10.0	FPV
		PHILODINIDAE	6000,700			
		PERIGONTHYIDAE	20484,700			
		CYPRINIDAE	97401,072			
VERMONT	6	PHILODINIDAE	6000,700	1440.002 *	10.0	FPV
		PHYSIDAE	24000,000			
		CYPRINIDAE	40007,000			
		SALMONIDAE	00004,140			
VIRGINIA	6	PHILODINIDAE	6000,700	1002.400 *	10.0	FPV
		PHYSIDAE	24000,000			
		PERIGONTHYIDAE	20484,700			
		CYPRINIDAE	97401,072			
WASHINGTON	6	DAPHNIIDAE	6000,000	400.000 *	10.0	FPV
		PHILODINIDAE	6000,700			
		SALMONIDAE	00004,140			
		CYPRINIDAE	97401,072			
WEST VIRGINIA	6	PHILODINIDAE	6000,700	1302.207 *	10.0	FPV
		PHYSIDAE	24000,000			
		CYPRINIDAE	97401,072			
		SALMONIDAE	00004,140			
WISCONSIN	6	GAMMARIDAE	67,000	3.407 *	0.0046	ACR
		PHILODINIDAE	6000,700			
		PHYSIDAE	24000,000			
		CYPRINIDAE	97401,072			
WYOMING	6	DAPHNIIDAE	6000,000	701.000 *	10.0	FPV
		PHILODINIDAE	6000,700			
		PHYSIDAE	24000,000			
		CYPRINIDAE	97401,072			

TOXICANT: COPPER

STATE	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 (++)
NATIONAL	33	DAPHNIIDAE	0.200	0.104	0.40010	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		TUBIFICIDAE	1.340			
ALABAMA	17	DAPHNIIDAE	0.000	0.137	0.40400	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		SALMONIDAE	1.000			
ARIZONA	13	DAPHNIIDAE	0.000	0.135	3.77400	PCV
		CHIRONOMIDAE	0.700			
		TUBIFICIDAE	1.340			
		PLANORBIDAE	1.404			
ARKANSAS	16	DAPHNIIDAE	0.200	0.121 *	4.70002	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		TUBIFICIDAE	1.340			
CALIFORNIA	13	DAPHNIIDAE	0.200	0.120	2.74100	PCV
		CHIRONOMIDAE	0.700			
		TUBIFICIDAE	1.340			
		SALMONIDAE	1.401			
COLORADO	13	DAPHNIIDAE	0.200	0.120	0.00002	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		SALMONIDAE	1.200			
CONNECTICUT	16	DAPHNIIDAE	0.200	0.130	7.40116	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		TUBIFICIDAE	1.340			
DELAWARE	16	DAPHNIIDAE	0.200	0.142	0.30004	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		SALMONIDAE	1.000			
# FLORIDA	16	DAPHNIIDAE	0.200	0.127 *	0.30441	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		TUBIFICIDAE	1.340			
GEORGIA	16	DAPHNIIDAE	0.200	0.127 *	0.30044	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		TUBIFICIDAE	1.340			
IDAHO	11	DAPHNIIDAE	0.200	0.116	3.11300	PCV
		CHIRONOMIDAE	0.700			
		TUBIFICIDAE	1.340			
		PLANORBIDAE	1.404			
ILLINOIS	16	DAPHNIIDAE	0.200	0.140	4.00040	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		SALMONIDAE	1.040			
INDIANA	16	DAPHNIIDAE	0.200	0.140	0.40400	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		SALMONIDAE	1.040			
IOWA	17	DAPHNIIDAE	0.200	0.130 *	4.00040	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		TUBIFICIDAE	1.340			
# KANSAS	14	DAPHNIIDAE	0.200	0.116 *	0.30001	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		TUBIFICIDAE	1.340			
KENTUCKY	16	DAPHNIIDAE	0.200	0.142	4.70002	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		SALMONIDAE	1.000			
LOUISIANA	16	DAPHNIIDAE	0.200	0.130 *	0.00072	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		SALMONIDAE	1.200			
MAINE	20	DAPHNIIDAE	0.200	0.101	7.20000	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		TUBIFICIDAE	1.340			
MARYLAND	16	DAPHNIIDAE	0.200	0.130	0.20000	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		TUBIFICIDAE	1.340			
MASSACHUSETTS	16	DAPHNIIDAE	0.200	0.140	0.47114	PCV
		CHIRONOMIDAE	0.700			
		PHYSIDAE	0.000			
		TUBIFICIDAE	1.340			

FOOTNOTE

\+ — UNITS IN MICROGRAMS PER LITER
\+ + — FPV FINAL PLANT VALUE
FRV FINAL RESIDUE VALUE
ACR COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
PCV 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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

TOXICANT: COPPER

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
MICHIGAN	10	DAPHNIDAE	0.200	0.145	4.76332	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		SALMONIDAE	1.300			
MINNESOTA	16	DAPHNIDAE	0.200	0.139	0.57759	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
# MISSISSIPPI	16	DAPHNIDAE	0.200	0.127	4.46175	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
MISSOURI	16	DAPHNIDAE	0.200	0.127 *	0.57759	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
MONTANA	13	DAPHNIDAE	0.200	0.132	0.61665	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
NEBRASKA	16	DAPHNIDAE	0.200	0.109 *	0.50400	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
NEVADA	12	DAPHNIDAE	0.200	0.121	0.57713	PCV
		CHIRONOMIDAE	0.769			
		TUBIFICIDAE	1.345			
		PLANORBIDAE	1.494			
NEW HAMPSHIRE	16	DAPHNIDAE	0.200	0.139	7.49116	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
NEW JERSEY	16	DAPHNIDAE	0.200	0.139	0.38884	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
NEW MEXICO	16	DAPHNIDAE	0.200	0.109	0.50400	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
NEW YORK	20	DAPHNIDAE	0.200	0.101	0.32754	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
NORTH CAROLINA	16	DAPHNIDAE	0.200	0.139	7.49116	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
NORTH DAKOTA	16	DAPHNIDAE	0.200	0.109	0.50400	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		SALMONIDAE	1.600			
OHIO	16	DAPHNIDAE	0.200	0.145	0.57759	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
OKLAHOMA	17	DAPHNIDAE	0.200	0.137	4.69475	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		SALMONIDAE	1.600			
OREGON	12	DAPHNIDAE	0.200	0.122	0.61447	PCV
		CHIRONOMIDAE	0.769			
		TUBIFICIDAE	1.345			
		SALMONIDAE	1.491			
PENNSYLVANIA	16	DAPHNIDAE	0.200	0.145	0.66669	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
RHODE ISLAND	16	DAPHNIDAE	0.200	0.139	7.49116	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
SOUTH CAROLINA	17	DAPHNIDAE	0.200	0.138 *	0.34149	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
SOUTH DAKOTA	16	DAPHNIDAE	0.200	0.109	0.50400	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		SALMONIDAE	1.600			

TOXICANT: COPPER

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
TENNESSEE	17	DAPHNIDAE	0.200	0.137	4.76332	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		SALMONIDAE	1.600			
# TEXAS	16	DAPHNIDAE	0.200	0.121 *	0.56591	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
UTAH	12	DAPHNIDAE	0.200	0.121	2.80135	PCV
		CHIRONOMIDAE	0.769			
		TUBIFICIDAE	1.345			
		PLANORBIDAE	1.494			
VERMONT	16	DAPHNIDAE	0.200	0.139	7.49116	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
VIRGINIA	16	DAPHNIDAE	0.200	0.145	0.38884	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
WASHINGTON	11	DAPHNIDAE	0.200	0.110	0.64669	PCV
		CHIRONOMIDAE	0.769			
		TUBIFICIDAE	1.345			
		SALMONIDAE	1.491			
WEST VIRGINIA	17	DAPHNIDAE	0.200	0.139	0.49400	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			
WISCONSIN	16	DAPHNIDAE	0.200	0.145	4.76332	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		SALMONIDAE	1.300			
WYOMING	13	DAPHNIDAE	0.200	0.132	0.66662	PCV
		CHIRONOMIDAE	0.769			
		PHYSIDAE	0.895			
		TUBIFICIDAE	1.345			

FOOTNOTE

* — UNITS IN MICROGRAMS PER LITER

** — FPV FINAL PLANT VALUE
FRV FINAL RESIDUE VALUE
ACR COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
PCV 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 MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: CYANIDE

STATE	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 (++)
NATIONAL	10	SALMONIDAE	76,797	31.459 *	4.2472	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
ALABAMA	5	SALMONIDAE	57,689	16.459 *	2.5959	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		CYPRINIDAE	317,689			
ARIZONA	6	SALMONIDAE	76,797	35.595 *	3.5951	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
ARKANSAS	5	DAPHNIDAE	89,689	27.597 *	3.7279	ACR
		CENTRARCHIDAE	114,310			
		GAMMARIDAE	167,689			
		CYPRINIDAE	317,689			
CALIFORNIA	5	SALMONIDAE	76,797	16.592 *	2.6492	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		CYPRINIDAE	317,689			
COLORADO	6	SALMONIDAE	57,689	16.459 *	2.5959	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		CYPRINIDAE	317,689			
CONNECTICUT	6	SALMONIDAE	76,797	35.595 *	3.5951	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
DELAWARE	7	SALMONIDAE	57,689	21.459 *	2.5959	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
‡ FLORIDA	5	DAPHNIDAE	89,689	16.597 *	2.4414	ACR
		CENTRARCHIDAE	114,310			
		PORCILIDAE	259,484			
		CYPRINIDAE	317,689			
GEORGIA	6	SALMONIDAE	76,797	14.697 *	1.5959	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		CYPRINIDAE	317,689			
IDAHO	6	SALMONIDAE	76,797	35.595 *	3.5951	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
ILLINOIS	5	SALMONIDAE	57,689	32.168 *	2.5959	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
INDIANA	6	SALMONIDAE	57,689	30.746 *	2.6595	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
IOWA	8	DAPHNIDAE	89,689	39.349 *	4.4959	ACR
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
		GAMMARIDAE	167,689			
‡ KANSAS	6	DAPHNIDAE	89,689	27.174 *	3.5732	ACR
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
		CYPRINIDAE	317,689			
KENTUCKY	7	SALMONIDAE	57,689	16.591 *	2.6176	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		GAMMARIDAE	167,689			
LOUISIANA	5	DAPHNIDAE	89,689	16.127 *	2.1752	ACR
		CENTRARCHIDAE	114,310			
		CYPRINIDAE	317,689			
		PHYSIDAE	431,459			
MAINE	7	DAPHNIDAE	89,689	35.949 *	4.6579	ACR
		CENTRARCHIDAE	114,310			
		SALMONIDAE	167,689			
		PERCIDAE	133,121			
MARYLAND	8	SALMONIDAE	76,797	39.210 *	4.5959	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
MASSACHUSETTS	7	SALMONIDAE	76,797	35.595 *	3.5977	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			

TOXICANT: CYANIDE

STATE	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 (++)
MICHIGAN	8	SALMONIDAE	76,797	39.210 *	4.5959	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
MINNESOTA	8	SALMONIDAE	76,797	39.210 *	4.5959	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
‡ MISSISSIPPI	6	DAPHNIDAE	89,689	27.597 *	3.7279	ACR
		CENTRARCHIDAE	114,310			
		GAMMARIDAE	167,689			
		CYPRINIDAE	317,689			
MISSOURI	6	DAPHNIDAE	89,689	16.127 *	2.1752	ACR
		CENTRARCHIDAE	114,310			
		CYPRINIDAE	317,689			
		PHYSIDAE	431,459			
MONTANA	6	SALMONIDAE	76,797	35.595 *	3.5951	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
NEBRASKA	6	SALMONIDAE	76,797	35.595 *	3.5951	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
NEVADA	6	SALMONIDAE	76,797	35.459 *	3.5459	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	121,689			
		PERCIDAE	133,121			
NEW HAMPSHIRE	6	SALMONIDAE	76,797	35.595 *	3.5951	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
NEW JERSEY	8	SALMONIDAE	76,797	39.210 *	4.5959	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
NEW MEXICO	7	SALMONIDAE	76,797	35.595 *	3.5977	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
NEW YORK	8	SALMONIDAE	76,797	39.210 *	4.5959	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
NORTH CAROLINA	7	SALMONIDAE	76,797	35.595 *	3.5977	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
NORTH DAKOTA	6	SALMONIDAE	57,689	30.746 *	2.5959	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
OHIO	8	SALMONIDAE	76,797	39.210 *	4.5959	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
OKLAHOMA	6	SALMONIDAE	57,689	16.597 *	2.5959	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		GAMMARIDAE	167,689			
OREGON	6	SALMONIDAE	76,797	35.359 *	3.5141	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
PENNSYLVANIA	7	SALMONIDAE	76,797	35.595 *	3.5977	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
RHODE ISLAND	6	SALMONIDAE	76,797	35.595 *	3.5951	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
SOUTH CAROLINA	7	SALMONIDAE	76,797	35.595 *	3.5977	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			
SOUTH DAKOTA	6	SALMONIDAE	57,689	30.746 *	2.5959	ACR
		DAPHNIDAE	89,689			
		CENTRARCHIDAE	114,310			
		PERCIDAE	133,121			

FOOTNOTE

* — UNITS IN MICROGRAMS PER LITER

\+ — PFV FINAL PLANT VALUE
PRV 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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

TOXICANT: CYANIDE

STATE	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 (++)
TENNESSEE	7	SALMONIDAE	57.000	10.031 *	2.5176	ACR
		DAPHNIDAE	69.000			
		CENTRARCHIDAE	114.310			
		GAMMARIDAE	167.000			
# TEXAS	7	DAPHNIDAE	69.000	20.174 *	3.0572	ACR
		CENTRARCHIDAE	114.310			
		PERCIDAE	125.121			
		CYPRINIDAE	297.000			
UTAH	6	SALMONIDAE	70.707	20.355 *	3.0141	ACR
		DAPHNIDAE	69.000			
		CENTRARCHIDAE	114.310			
		PERCIDAE	125.121			
VERMONT	7	SALMONIDAE	70.707	20.000 *	2.0577	ACR
		DAPHNIDAE	69.000			
		CENTRARCHIDAE	114.310			
		PERCIDAE	125.121			
VIRGINIA	6	SALMONIDAE	70.707	20.000 *	2.0591	ACR
		DAPHNIDAE	69.000			
		CENTRARCHIDAE	114.310			
		PERCIDAE	125.121			
WASHINGTON	6	SALMONIDAE	70.707	20.000 *	2.0591	ACR
		DAPHNIDAE	69.000			
		CENTRARCHIDAE	114.310			
		PERCIDAE	125.121			
WEST VIRGINIA	6	SALMONIDAE	70.707	20.000 *	2.7713	ACR
		DAPHNIDAE	69.000			
		CENTRARCHIDAE	114.310			
		CYPRINIDAE	297.000			
WISCONSIN	7	SALMONIDAE	70.707	20.000 *	2.0577	ACR
		DAPHNIDAE	69.000			
		CENTRARCHIDAE	114.310			
		PERCIDAE	125.121			
WYOMING	6	SALMONIDAE	70.707	20.000 *	2.0591	ACR
		DAPHNIDAE	69.000			
		CENTRARCHIDAE	114.310			
		PERCIDAE	125.121			

TOXICANT: DDT

STATE	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 (++)
NATIONAL	20	DAPHNIDAE	1.283	0.000	0.0010	FRV
		PERCIDAE	1.000			
		ISOCIDAE	1.700			
		GAMMARIDAE	2.204			
ALABAMA	8	DAPHNIDAE	0.570	0.344 *	0.0010	FRV
		ASTACIDAE	3.000			
		PALAEMONIDAE	3.204			
		CENTRARCHIDAE	4.102			
ARIZONA	11	DAPHNIDAE	1.283	0.470 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	3.000			
		CENTRARCHIDAE	3.282			
ARKANSAS	9	DAPHNIDAE	0.570	0.355 *	0.0010	FRV
		ASTACIDAE	2.400			
		PALAEMONIDAE	3.204			
		ASELLIDAE	4.000			
CALIFORNIA	10	DAPHNIDAE	1.283	0.442 *	0.0010	FRV
		GAMMARIDAE	3.000			
		CENTRARCHIDAE	3.282			
		SALMONIDAE	8.021			
COLORADO	10	DAPHNIDAE	1.283	0.510 *	0.0010	FRV
		GAMMARIDAE	3.000			
		CENTRARCHIDAE	3.000			
		SALMONIDAE	4.570			
CONNECTICUT	7	DAPHNIDAE	0.570	0.316 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	1.004			
		CENTRARCHIDAE	3.000			
DELAWARE	9	DAPHNIDAE	0.570	0.344 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	1.004			
		ASTACIDAE	3.000			
# FLORIDA	7	DAPHNIDAE	0.570	0.160 *	0.0010	FRV
		ASTACIDAE	3.000			
		CENTRARCHIDAE	3.282			
		ICTALURIDAE	17.000			
GEORGIA	7	DAPHNIDAE	0.570	0.345 *	0.0010	FRV
		ASTACIDAE	3.000			
		CENTRARCHIDAE	4.102			
		SALMONIDAE	8.101			
IDAHO	11	DAPHNIDAE	1.283	0.470 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	3.000			
		CENTRARCHIDAE	3.282			
ILLINOIS	14	DAPHNIDAE	0.570	0.400 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	1.004			
		ISOCIDAE	1.700			
INDIANA	10	DAPHNIDAE	0.570	0.357 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	1.004			
		ASTACIDAE	3.000			
IOWA	12	DAPHNIDAE	0.570	0.402 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	1.004			
		ISOCIDAE	1.700			
# KANSAS	7	DAPHNIDAE	0.570	0.355 *	0.0010	FRV
		PERCIDAE	1.000			
		ASTACIDAE	2.400			
		CENTRARCHIDAE	3.204			
KENTUCKY	8	DAPHNIDAE	0.570	0.359 *	0.0010	FRV
		ASTACIDAE	3.000			
		ASELLIDAE	4.000			
		CENTRARCHIDAE	4.102			
LOUISIANA	9	DAPHNIDAE	0.570	0.304 *	0.0010	FRV
		ASTACIDAE	3.000			
		PALAEMONIDAE	3.204			
		CENTRARCHIDAE	4.102			
MAINE	9	DAPHNIDAE	0.570	0.304 *	0.0010	FRV
		PERCIDAE	1.000			
		CENTRARCHIDAE	2.300			
		GAMMARIDAE	3.000			
MARYLAND	10	DAPHNIDAE	0.570	0.357 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	1.004			
		ASTACIDAE	3.000			
MASSACHUSETTS	11	DAPHNIDAE	0.570	0.370 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	1.004			
		ASTACIDAE	3.000			

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
- * — 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 MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

TOXICANT: DDT

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LOEC VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
MICHIGAN	13	DAPHNIDAE	0.570	0.410 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	2.304			
		ASTACIDAE	3.000			
MINNESOTA	12	DAPHNIDAE	0.570	0.434 *	0.0010	FRV
		PERCIDAE	1.000			
		ISOCIDAE	1.700			
		GAMMARIDAE	2.304			
§ MISSISSIPPI	10	DAPHNIDAE	0.570	0.355 *	0.0010	FRV
		ASTACIDAE	3.000			
		PALAEMONIDAE	3.304			
		ASELLIDAE	4.000			
MISSOURI	10	DAPHNIDAE	0.570	0.355 *	0.0010	FRV
		ISOCIDAE	1.700			
		ASTACIDAE	2.400			
		PALAEMONIDAE	3.304			
MONTANA	12	DAPHNIDAE	1.300	0.510 *	0.0010	FRV
		PERCIDAE	1.000			
		ISOCIDAE	1.700			
		GAMMARIDAE	3.000			
NEBRASKA	9	DAPHNIDAE	1.300	0.402 *	0.0010	FRV
		PERCIDAE	1.000			
		ISOCIDAE	1.700			
		CENTRARCHIDAE	3.300			
NEVADA	11	DAPHNIDAE	1.300	0.501 *	0.0010	FRV
		PERCIDAE	1.000			
		PTEROMARCIDAE	1.000			
		GAMMARIDAE	3.000			
NEW HAMPSHIRE	8	DAPHNIDAE	0.570	0.355 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	3.000			
		CENTRARCHIDAE	3.000			
NEW JERSEY	9	DAPHNIDAE	0.570	0.344 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	1.004			
		ASTACIDAE	3.000			
NEW MEXICO	12	DAPHNIDAE	1.300	0.459 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	3.000			
		CENTRARCHIDAE	4.100			
NEW YORK	14	DAPHNIDAE	0.570	0.403 *	0.0010	FRV
		PERCIDAE	1.000			
		ISOCIDAE	1.700			
		GAMMARIDAE	2.304			
NORTH CAROLINA	9	DAPHNIDAE	0.570	0.344 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	1.004			
		ASTACIDAE	3.000			
NORTH DAKOTA	10	DAPHNIDAE	1.300	0.472 *	0.0010	FRV
		PERCIDAE	1.000			
		ISOCIDAE	1.700			
		GAMMARIDAE	3.000			
OHIO	13	DAPHNIDAE	0.570	0.471 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	1.004			
		ISOCIDAE	1.700			
OKLAHOMA	9	DAPHNIDAE	0.570	0.377 *	0.0010	FRV
		ASTACIDAE	2.400			
		GAMMARIDAE	3.000			
		PALAEMONIDAE	3.304			
OREGON	11	DAPHNIDAE	1.300	0.501 *	0.0010	FRV
		PERCIDAE	1.000			
		PTEROMARCIDAE	1.000			
		GAMMARIDAE	3.000			
PENNSYLVANIA	12	DAPHNIDAE	0.570	0.402 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	1.004			
		ISOCIDAE	1.700			
RHODE ISLAND	8	DAPHNIDAE	0.570	0.301 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	1.004			
		ASTACIDAE	3.000			
SOUTH CAROLINA	8	DAPHNIDAE	0.570	0.355 *	0.0010	FRV
		PERCIDAE	1.000			
		ASTACIDAE	3.000			
		CENTRARCHIDAE	3.570			
SOUTH DAKOTA	11	DAPHNIDAE	1.300	0.465 *	0.0010	FRV
		PERCIDAE	1.000			
		ISOCIDAE	1.700			
		GAMMARIDAE	3.000			

TOXICANT: DDT

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LOEC VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
TENNESSEE	9	DAPHNIDAE	0.570	0.304 *	0.0010	FRV
		ASTACIDAE	3.000			
		PALAEMONIDAE	3.304			
		CENTRARCHIDAE	4.100			
§ TEXAS	10	DAPHNIDAE	0.570	0.357 *	0.0010	FRV
		PERCIDAE	1.000			
		ASTACIDAE	2.400			
		PALAEMONIDAE	3.304			
UTAH	12	DAPHNIDAE	1.300	0.500 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	3.000			
		CENTRARCHIDAE	3.000			
VERMONT	9	DAPHNIDAE	0.570	0.401 *	0.0010	FRV
		PERCIDAE	1.000			
		ISOCIDAE	1.700			
		GAMMARIDAE	2.304			
VIRGINIA	8	DAPHNIDAE	0.570	0.331 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	1.004			
		ASTACIDAE	3.000			
WASHINGTON	11	DAPHNIDAE	1.300	0.470 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	3.000			
		CENTRARCHIDAE	3.300			
WEST VIRGINIA	6	DAPHNIDAE	0.570	0.210 *	0.0010	FRV
		CENTRARCHIDAE	3.304			
		SALMONIDAE	7.040			
		SCIAENIDAE	10.000			
WISCONSIN	12	DAPHNIDAE	0.570	0.357 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	2.304			
		ASTACIDAE	3.000			
WYOMING	10	DAPHNIDAE	1.300	0.455 *	0.0010	FRV
		PERCIDAE	1.000			
		GAMMARIDAE	3.000			
		CENTRARCHIDAE	3.300			

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 3.7 TO DETERMINE MAXIMUM AND/OR 30-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 (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	FRESHWATER AQUATIC LIFE CRITERIA 30-DAY (+)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (++)
NATIONAL	12	POECILIIDAE	4,000	1.030 *	0.0010	FRV
		ASELLIDAE	5,000			
		SALMONIDAE	5,482			
		EPHEMERELLIDAE	5,000			
ALABAMA	5	SALMONIDAE	2,400	0.482 *	0.0010	FRV
		CENTRARCHIDAE	10,011			
		PALAEMONIDAE	20,000			
		CYPRINIDAE	30,102			
ARIZONA	9	SALMONIDAE	2,400	0.700 *	0.0010	FRV
		POECILIIDAE	4,000			
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
ARKANSAS	6	ASELLIDAE	5,000	1.307 *	0.0010	FRV
		CENTRARCHIDAE	10,011			
		PALAEMONIDAE	20,000			
		CYPRINIDAE	30,102			
CALIFORNIA	8	POECILIIDAE	4,000	1.544 *	0.0010	FRV
		SALMONIDAE	5,482			
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
COLORADO	6	SALMONIDAE	2,400	0.602 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
		PERLIDAE	24,000			
CONNECTICUT	9	SALMONIDAE	2,400	0.471 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	14,400			
		CYPRINIDAE	30,102			
DELAWARE	6	SALMONIDAE	2,400	0.302 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
		CYPRINIDAE	41,000			
§ FLORIDA	4	POECILIIDAE	4,000	0.251 *	0.0010	FRV
		CENTRARCHIDAE	14,400			
		CYPRINIDAE	41,000			
		DAPHNIDAE	201,000			
GEORGIA	5	SALMONIDAE	2,400	0.300 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
		CYPRINIDAE	41,000			
IDAHO	8	SALMONIDAE	3,073	1.007 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
		PERLIDAE	24,000			
ILLINOIS	7	ASELLIDAE	5,000	1.120 *	0.0010	FRV
		SALMONIDAE	5,482			
		CENTRARCHIDAE	10,011			
		PALAEMONIDAE	20,000			
INDIANA	6	SALMONIDAE	5,482	0.207 *	0.0010	FRV
		CENTRARCHIDAE	10,011			
		CYPRINIDAE	30,102			
		DAPHNIDAE	201,000			
IOWA	5	CENTRARCHIDAE	10,011	0.602 *	0.0010	FRV
		PALAEMONIDAE	20,000			
		CYPRINIDAE	30,102			
		DAPHNIDAE	201,000			
§ KANSAS	4	CENTRARCHIDAE	10,011	0.430 *	0.0010	FRV
		CYPRINIDAE	30,102			
		DAPHNIDAE	100,745			
		ASTACIDAE	730,000			
KENTUCKY	6	SALMONIDAE	5,400	0.300 *	0.0010	FRV
		ASELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
		CYPRINIDAE	30,102			
LOUISIANA	5	SALMONIDAE	10,000	2.000 *	0.0010	FRV
		CENTRARCHIDAE	10,011			
		PALAEMONIDAE	20,000			
		CYPRINIDAE	30,102			
MAINE	6	EPHEMERELLIDAE	5,000	0.300 *	0.0010	FRV
		SALMONIDAE	10,000			
		CYPRINIDAE	22,101			
		DAPHNIDAE	201,000			
MARYLAND	6	SALMONIDAE	5,104	1.007 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
		CYPRINIDAE	30,102			
MASSACHUSETTS	6	SALMONIDAE	2,400	0.471 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	14,400			
		CYPRINIDAE	30,102			

TOXICANT: DIELDRIN

STATE	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 (++)
MICHIGAN	7	SALMONIDAE	5,482	1.000 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
		PALAEMONIDAE	20,000			
MINNESOTA	6	SALMONIDAE	3,073	0.211 *	0.0010	FRV
		CENTRARCHIDAE	10,011			
		CYPRINIDAE	30,102			
		DAPHNIDAE	201,000			
§ MISSISSIPPI	5	ASELLIDAE	5,000	1.116 *	0.0010	FRV
		CENTRARCHIDAE	10,011			
		PALAEMONIDAE	20,000			
		CYPRINIDAE	30,102			
MISSOURI	5	CENTRARCHIDAE	10,011	0.602 *	0.0010	FRV
		PALAEMONIDAE	20,000			
		CYPRINIDAE	30,102			
		DAPHNIDAE	201,000			
MONTANA	6	SALMONIDAE	5,104	1.201 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
		PERLIDAE	24,000			
NEBRASKA	4	SALMONIDAE	2,400	0.121 *	0.0010	FRV
		CENTRARCHIDAE	10,011			
		CYPRINIDAE	30,102			
		DAPHNIDAE	100,745			
NEVADA	6	SALMONIDAE	2,400	0.746 *	0.0010	FRV
		POECILIIDAE	4,000			
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
NEW HAMPSHIRE	6	SALMONIDAE	2,400	0.540 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	14,400			
		CYPRINIDAE	22,101			
NEW JERSEY	6	SALMONIDAE	2,400	0.302 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
		CYPRINIDAE	41,000			
NEW MEXICO	6	SALMONIDAE	2,400	0.602 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
		PERLIDAE	24,000			
NEW YORK	7	SALMONIDAE	3,073	1.000 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
		PALAEMONIDAE	20,000			
NORTH CAROLINA	6	SALMONIDAE	2,400	0.302 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
		CYPRINIDAE	41,000			
NORTH DAKOTA	5	SALMONIDAE	2,400	0.140 *	0.0010	FRV
		CENTRARCHIDAE	10,011			
		CYPRINIDAE	30,102			
		DAPHNIDAE	100,745			
OHIO	6	SALMONIDAE	2,400	0.500 *	0.0010	FRV
		CENTRARCHIDAE	10,011			
		PALAEMONIDAE	20,000			
		CYPRINIDAE	30,102			
OKLAHOMA	7	SALMONIDAE	2,400	0.501 *	0.0010	FRV
		CENTRARCHIDAE	10,011			
		PALAEMONIDAE	20,000			
		CYPRINIDAE	30,102			
OREGON	7	SALMONIDAE	5,400	1.370 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
		PERLIDAE	24,000			
PENNSYLVANIA	7	SALMONIDAE	2,400	0.007 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
		PALAEMONIDAE	20,000			
RHODE ISLAND	6	SALMONIDAE	2,400	0.471 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	14,400			
		CYPRINIDAE	30,102			
SOUTH CAROLINA	5	SALMONIDAE	2,400	0.300 *	0.0010	FRV
		EPHEMERELLIDAE	5,000			
		CENTRARCHIDAE	10,011			
		CYPRINIDAE	41,000			
SOUTH DAKOTA	6	SALMONIDAE	2,400	0.400 *	0.0010	FRV
		CENTRARCHIDAE	10,011			
		PERLIDAE	24,000			
		CYPRINIDAE	30,102			

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 3.7 TO DETERMINE MAXIMUM AND/OR
30-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 (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	FRESHWATER AQUATIC LIFE CRITERIA 30-DAY (+)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (++)
TENNESSEE	5	SALMONIDAE	2.459	0.492 *	0.0010	FRV
		CENTRARCHIDAE	10.011			
		PALAEMONIDAE	20.000			
		CYPRINIDAE	33.192			
# TEXAS	6	POECILIIDAE	4.600	1.000 *	0.0010	FRV
		CENTRARCHIDAE	10.011			
		PALAEMONIDAE	20.000			
		CYPRINIDAE	33.192			
UTAH	6	SALMONIDAE	2.459	0.492 *	0.0010	FRV
		SPHAERIERIIDAE	6.000			
		CENTRARCHIDAE	10.011			
		PERLIDAE	24.000			
VERMONT	6	SALMONIDAE	2.459	0.049 *	0.0010	FRV
		SPHAERIERIIDAE	6.000			
		CENTRARCHIDAE	14.459			
		CYPRINIDAE	33.191			
VIRGINIA	6	SALMONIDAE	2.459	0.492 *	0.0010	FRV
		SPHAERIERIIDAE	6.000			
		CENTRARCHIDAE	10.011			
		CYPRINIDAE	33.192			
WASHINGTON	6	SALMONIDAE	2.459	1.400 *	0.0010	FRV
		SPHAERIERIIDAE	6.000			
		CENTRARCHIDAE	10.011			
		PERLIDAE	24.000			
WEST VIRGINIA	4	SALMONIDAE	2.459	0.100 *	0.0010	FRV
		CENTRARCHIDAE	10.011			
		CYPRINIDAE	33.192			
		SIMULIIDAE	331.000			
WISCONSIN	6	SALMONIDAE	2.459	1.300 *	0.0010	FRV
		CENTRARCHIDAE	10.011			
		PALAEMONIDAE	20.000			
		CYPRINIDAE	33.192			
WYOMING	6	SALMONIDAE	2.459	0.492 *	0.0010	FRV
		SPHAERIERIIDAE	6.000			
		CENTRARCHIDAE	10.011			
		PERLIDAE	24.000			

TOXICANT: ENDOSULFAN

STATE	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 (++)
NATIONAL	9	SALMONIDAE	0.004	0.000 *	0.1004	ACR
		CYPRINIDAE	1.370			
		PTERONARCIDAE	2.300			
		CATOSTOMIDAE	3.340			
ALABAMA	5	SALMONIDAE	0.004	0.137 *	0.0701	ACR
		CYPRINIDAE	1.370			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
ARIZONA	5	SALMONIDAE	0.004	0.104 *	0.0044	ACR
		CYPRINIDAE	1.370			
		PTERONARCIDAE	2.300			
		POECILIIDAE	3.700			
ARKANSAS	4	CYPRINIDAE	1.370	0.000 *	0.0105	ACR
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
		GOMPHAGRONIDAE (AGRONIDAE)	37.000			
CALIFORNIA	7	SALMONIDAE	0.004	0.100 *	0.0700	ACR
		CYPRINIDAE	1.370			
		POECILIIDAE	3.700			
		CENTRARCHIDAE	3.011			
COLORADO	5	SALMONIDAE	0.004	0.100 *	0.1000	ACR
		CYPRINIDAE	1.370			
		PTERONARCIDAE	2.300			
		CATOSTOMIDAE	3.340			
CONNECTICUT	6	SALMONIDAE	0.004	0.140 *	0.0702	ACR
		CYPRINIDAE	1.370			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
DELAWARE	5	SALMONIDAE	0.004	0.147 *	0.0701	ACR
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
		GAMMARIDAE	0.000			
# FLORIDA	3	POECILIIDAE	3.700	0.200 * **	0.1004	ACR
		CENTRARCHIDAE	3.011			
		GOMPHAGRONIDAE (AGRONIDAE)	37.000			
			0.000			
GEORGIA	4	SALMONIDAE	0.004	0.010 *	0.0000	ACR
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
		GOMPHAGRONIDAE (AGRONIDAE)	37.000			
IDAHO	7	SALMONIDAE	0.004	0.170 *	0.0370	ACR
		CYPRINIDAE	1.370			
		PTERONARCIDAE	2.300			
		CENTRARCHIDAE	3.011			
ILLINOIS	6	SALMONIDAE	0.004	0.140 *	0.0702	ACR
		CYPRINIDAE	1.370			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
INDIANA	6	SALMONIDAE	0.004	0.140 *	0.0702	ACR
		CYPRINIDAE	1.370			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
IOWA	5	CYPRINIDAE	1.370	0.201 *	0.1000	ACR
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
		GAMMARIDAE	0.000			
# KANSAS	4	CYPRINIDAE	1.370	0.000 *	0.0105	ACR
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
		GOMPHAGRONIDAE (AGRONIDAE)	37.000			
KENTUCKY	5	SALMONIDAE	0.004	0.137 *	0.0701	ACR
		CYPRINIDAE	1.370			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
LOUISIANA	3	CYPRINIDAE	1.370	0.200 * **	0.1004	ACR
		CENTRARCHIDAE	3.011			
		GOMPHAGRONIDAE (AGRONIDAE)	37.000			
			0.000			
MAINE	4	CYPRINIDAE	1.370	0.040 *	0.0210	ACR
		CATOSTOMIDAE	3.340			
		GAMMARIDAE	0.000			
		GOMPHAGRONIDAE (AGRONIDAE)	37.000			
MARYLAND	6	SALMONIDAE	0.004	0.140 *	0.0702	ACR
		CYPRINIDAE	1.370			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
MASSACHUSETTS	6	SALMONIDAE	0.004	0.140 *	0.0702	ACR
		CYPRINIDAE	1.370			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			

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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

TOXICANT: ENDOSULFAN

STATE	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 (++)
MICHIGAN	6	SALMONIDAE	0.004	0.149 *	0.0702	ACR
		CYPRINIDAE	1.270			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
MINNESOTA	6	SALMONIDAE	0.004	0.149 *	0.0702	ACR
		CYPRINIDAE	1.270			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
# MISSISSIPPI	3	CYPRINIDAE	1.270	0.200 *	0.1004	ACR
		CENTRARCHIDAE	3.011	**		
		COBNAGRONIDAE (AGRONIDAE)	57.000			
MISSOURI	4	CYPRINIDAE	1.270	0.000 *	0.0105	ACR
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
		COBNAGRONIDAE (AGRONIDAE)	57.000			
MONTANA	5	SALMONIDAE	0.004	0.100 *	0.1000	ACR
		CYPRINIDAE	1.270			
		PTERONARCIDAE	2.300			
		CATOSTOMIDAE	3.340			
NEBRASKA	6	SALMONIDAE	0.004	0.149 *	0.0702	ACR
		CYPRINIDAE	1.270			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
NEVADA	6	SALMONIDAE	0.004	0.105 *	0.0044	ACR
		POECILIDAE	3.700			
		CENTRARCHIDAE	3.011			
		GAMMARIDAE	0.000			
NEW HAMPSHIRE	6	SALMONIDAE	0.004	0.149 *	0.0702	ACR
		CYPRINIDAE	1.270			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
NEW JERSEY	5	SALMONIDAE	0.004	0.147 *	0.0701	ACR
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
		GAMMARIDAE	0.000			
NEW MEXICO	8	SALMONIDAE	0.004	0.100 *	0.1000	ACR
		CYPRINIDAE	1.270			
		PTERONARCIDAE	2.300			
		CATOSTOMIDAE	3.340			
NEW YORK	6	SALMONIDAE	0.004	0.149 *	0.0702	ACR
		CYPRINIDAE	1.270			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
NORTH CAROLINA	5	SALMONIDAE	0.004	0.147 *	0.0701	ACR
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
		GAMMARIDAE	0.000			
NORTH DAKOTA	7	SALMONIDAE	0.004	0.101 *	0.0003	ACR
		CYPRINIDAE	1.270			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
OHIO	6	SALMONIDAE	0.004	0.149 *	0.0702	ACR
		CYPRINIDAE	1.270			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
OKLAHOMA	5	SALMONIDAE	0.004	0.100 *	0.0045	ACR
		CYPRINIDAE	1.270			
		CENTRARCHIDAE	3.011			
		GAMMARIDAE	0.000			
OREGON	8	SALMONIDAE	0.004	0.000 *	0.0145	ACR
		CENTRARCHIDAE	3.011			
		GAMMARIDAE	0.000			
		COBNAGRONIDAE (AGRONIDAE)	57.000			
PENNSYLVANIA	6	SALMONIDAE	0.004	0.149 *	0.0702	ACR
		CYPRINIDAE	1.270			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
RHODE ISLAND	6	SALMONIDAE	0.004	0.149 *	0.0702	ACR
		CYPRINIDAE	1.270			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
SOUTH CAROLINA	4	SALMONIDAE	0.004	0.010 *	0.0000	ACR
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
		COBNAGRONIDAE (AGRONIDAE)	57.000			
SOUTH DAKOTA	7	SALMONIDAE	0.004	0.101 *	0.0003	ACR
		CYPRINIDAE	1.270			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			

TOXICANT: ENDOSULFAN

STATE	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 (++)
TENNESSEE	5	SALMONIDAE	0.004	0.137 *	0.0701	ACR
		CYPRINIDAE	1.270			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
# TEXAS	4	CYPRINIDAE	1.270	0.000 *	0.0100	ACR
		POECILIDAE	3.700			
		CENTRARCHIDAE	3.011			
		COBNAGRONIDAE (AGRONIDAE)	57.000			
UTAH	8	SALMONIDAE	0.004	0.100 *	0.1000	ACR
		CYPRINIDAE	1.270			
		PTERONARCIDAE	2.300			
		CATOSTOMIDAE	3.340			
VERMONT	6	SALMONIDAE	0.004	0.149 *	0.0702	ACR
		CYPRINIDAE	1.270			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
VIRGINIA	6	SALMONIDAE	0.004	0.149 *	0.0702	ACR
		CYPRINIDAE	1.270			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
WASHINGTON	6	SALMONIDAE	0.004	0.103 *	0.0707	ACR
		PTERONARCIDAE	2.300			
		CENTRARCHIDAE	3.011			
		GAMMARIDAE	0.000			
WEST VIRGINIA	5	SALMONIDAE	0.004	0.137 *	0.0701	ACR
		CYPRINIDAE	1.270			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
WISCONSIN	6	SALMONIDAE	0.004	0.149 *	0.0702	ACR
		CYPRINIDAE	1.270			
		CATOSTOMIDAE	3.340			
		CENTRARCHIDAE	3.011			
WYOMING	8	SALMONIDAE	0.004	0.100 *	0.1000	ACR
		CYPRINIDAE	1.270			
		PTERONARCIDAE	2.300			
		CATOSTOMIDAE	3.340			

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 3.7 TO DETERMINE MAXIMUM AND/OR
30-DAY AVERAGE CRITERIA

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

TOXICANT: ENDRIN

STATE	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 (++)
NATIONAL	17	GASTEROSTEIDAE	0.440	0.201 *	0.0020	FRV
		SALMONIDAE	0.499			
		PERLIDAE	0.499			
		PTERONARCIDAE	0.647			
ALABAMA	8	SALMONIDAE	0.594	0.200 *	0.0020	FRV
		CYPRINIDAE	0.722			
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
ARIZONA	10	SALMONIDAE	0.597	0.150 *	0.0020	FRV
		PERLIDAE	0.499			
		PTERONARCIDAE	0.647			
		POECILIDAE	0.840			
ARKANSAS	10	CYPRINIDAE	0.722	0.200 *	0.0020	FRV
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
		PALAEMONIDAE	1.333			
CALIFORNIA	10	GASTEROSTEIDAE	0.440	0.144 *	0.0020	FRV
		SALMONIDAE	0.499			
		PERLIDAE	0.499			
		POECILIDAE	0.840			
COLORADO	9	SALMONIDAE	0.599	0.112 *	0.0020	FRV
		PERLIDAE	0.499			
		PTERONARCIDAE	0.647			
		CENTRARCHIDAE	1.011			
CONNECTICUT	9	GASTEROSTEIDAE	0.440	0.160 *	0.0020	FRV
		SALMONIDAE	0.699			
		CENTRARCHIDAE	1.011			
		CYPRINIDAE	1.699			
DELAWARE	10	GASTEROSTEIDAE	0.440	0.104 *	0.0020	FRV
		SALMONIDAE	0.694			
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
§ FLORIDA	6	COTTOGOBIITIDAE	0.699	0.222 *	0.0020	FRV
		POECILIDAE	0.840			
		CENTRARCHIDAE	1.011			
		CYPRINIDAE	2.199			
GEORGIA	8	SALMONIDAE	0.699	0.170 *	0.0020	FRV
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
		COTTOCAROTIDAE (ASPIRONIDAE)	1.699			
IDAHO	10	SALMONIDAE	0.499	0.101 *	0.0020	FRV
		PERLIDAE	0.499			
		PTERONARCIDAE	0.647			
		POECILIDAE	0.769			
ILLINOIS	11	SALMONIDAE	0.701	0.204 *	0.0020	FRV
		CYPRINIDAE	0.722			
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
INDIANA	7	SALMONIDAE	0.701	0.107 *	0.0020	FRV
		CYPRINIDAE	0.722			
		CENTRARCHIDAE	1.011			
		COTTOCAROTIDAE (ASPIRONIDAE)	1.699			
IOWA	8	CYPRINIDAE	0.722	0.271 *	0.0020	FRV
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
		PALAEMONIDAE	1.333			
§ KANSAS	7	CYPRINIDAE	0.722	0.200 *	0.0020	FRV
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
		COTTOCAROTIDAE (ASPIRONIDAE)	1.699			
KENTUCKY	8	SALMONIDAE	0.694	0.200 *	0.0020	FRV
		CYPRINIDAE	0.722			
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
LOUISIANA	8	SALMONIDAE	0.471	0.160 *	0.0020	FRV
		CYPRINIDAE	0.722			
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
MAINE	8	GASTEROSTEIDAE	0.440	0.088 *	0.0020	FRV
		SALMONIDAE	0.499			
		CYPRINIDAE	0.722			
		COTTOCAROTIDAE (ASPIRONIDAE)	1.699			
MARYLAND	11	GASTEROSTEIDAE	0.440	0.160 *	0.0020	FRV
		SALMONIDAE	0.599			
		CYPRINIDAE	0.722			
		POECILIDAE	0.769			
MASSACHUSETTS	9	GASTEROSTEIDAE	0.440	0.160 *	0.0020	FRV
		SALMONIDAE	0.599			
		CENTRARCHIDAE	1.011			
		CYPRINIDAE	1.699			

TOXICANT: ENDRIN

STATE	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 (++)
MICHIGAN	10	SALMONIDAE	0.625	0.225 *	0.0020	FRV
		CYPRINIDAE	0.722			
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
MINNESOTA	8	SALMONIDAE	0.627	0.275 *	0.0020	FRV
		CYPRINIDAE	0.722			
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
§ MISSISSIPPI	8	CYPRINIDAE	0.722	0.277 *	0.0020	FRV
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
		PALAEMONIDAE	1.333			
MISSOURI	9	CYPRINIDAE	0.722	0.277 *	0.0020	FRV
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
		PALAEMONIDAE	1.333			
MONTANA	9	SALMONIDAE	0.599	0.120 *	0.0020	FRV
		PERLIDAE	0.499			
		PTERONARCIDAE	0.647			
		CENTRARCHIDAE	1.011			
NEBRASKA	8	SALMONIDAE	0.599	0.160 *	0.0020	FRV
		CYPRINIDAE	0.722			
		CENTRARCHIDAE	1.011			
		COTTOCAROTIDAE (ASPIRONIDAE)	1.699			
NEVADA	10	PERLIDAE	0.499	0.099 *	0.0020	FRV
		SALMONIDAE	0.597			
		PTERONARCIDAE	0.647			
		POECILIDAE	0.840			
NEW HAMPSHIRE	8	SALMONIDAE	0.699	0.141 *	0.0020	FRV
		CYPRINIDAE	0.722			
		CENTRARCHIDAE	1.011			
		COTTOCAROTIDAE (ASPIRONIDAE)	1.699			
NEW JERSEY	10	GASTEROSTEIDAE	0.440	0.160 *	0.0020	FRV
		SALMONIDAE	0.699			
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
NEW MEXICO	10	SALMONIDAE	0.597	0.140 *	0.0020	FRV
		PERLIDAE	0.499			
		PTERONARCIDAE	0.647			
		POECILIDAE	0.769			
NEW YORK	11	GASTEROSTEIDAE	0.440	0.225 *	0.0020	FRV
		SALMONIDAE	0.597			
		CYPRINIDAE	0.722			
		POECILIDAE	0.769			
NORTH CAROLINA	9	SALMONIDAE	0.699	0.170 *	0.0020	FRV
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
		COTTOCAROTIDAE (ASPIRONIDAE)	1.699			
NORTH DAKOTA	6	SALMONIDAE	0.694	0.072 *	0.0020	FRV
		CYPRINIDAE	0.722			
		CENTRARCHIDAE	1.011			
		SARCOPTERIDAE	0.694			
OHIO	9	SALMONIDAE	0.699	0.220 *	0.0020	FRV
		CYPRINIDAE	0.722			
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
OKLAHOMA	10	SALMONIDAE	0.694	0.220 *	0.0020	FRV
		CYPRINIDAE	0.722			
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
OREGON	10	PERLIDAE	0.499	0.144 *	0.0020	FRV
		GASTEROSTEIDAE	0.440			
		SALMONIDAE	0.499			
		PTERONARCIDAE	0.647			
PENNSYLVANIA	10	GASTEROSTEIDAE	0.440	0.160 *	0.0020	FRV
		SALMONIDAE	0.699			
		CENTRARCHIDAE	1.011			
		CYPRINIDAE	1.699			
RHODE ISLAND	9	GASTEROSTEIDAE	0.440	0.160 *	0.0020	FRV
		SALMONIDAE	0.699			
		CENTRARCHIDAE	1.011			
		CYPRINIDAE	1.699			
SOUTH CAROLINA	8	SALMONIDAE	0.699	0.170 *	0.0020	FRV
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
		COTTOCAROTIDAE (ASPIRONIDAE)	1.699			
SOUTH DAKOTA	7	PERLIDAE	0.499	0.101 *	0.0020	FRV
		SALMONIDAE	0.694			
		CYPRINIDAE	0.722			
		CENTRARCHIDAE	1.011			

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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

TOXICANT: ENDRIN

STATE	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 (++)
TENNESSEE	9	SALMONIDAE	0.004	0.004 *	0.0000	FRV
		CYPRINIDAE	0.732			
		POECILIDAE	0.769			
		CENTRARCHIDAE	1.011			
# TEXAS	8	POECILIDAE	0.040	0.410 *	0.0000	FRV
		CENTRARCHIDAE	1.011			
		CYPRINIDAE	1.659			
		PALAEMONIDAE	1.300			
UTAH	9	SALMONIDAE	0.097	0.123 *	0.0000	FRV
		PERLIDAE	0.450			
		PTERONARCIDAE	0.647			
		CENTRARCHIDAE	1.011			
VERMONT	8	SALMONIDAE	0.000	0.141 *	0.0000	FRV
		CYPRINIDAE	0.000			
		CENTRARCHIDAE	1.011			
		COGNAGNONIDAE (AGNONIDAE)	1.000			
VIRGINIA	9	SALMONIDAE	0.000	0.176 *	0.0000	FRV
		CYPRINIDAE	0.732			
		CENTRARCHIDAE	1.011			
		COGNAGNONIDAE (AGNONIDAE)	1.000			
WASHINGTON	10	GASTEROSTEIDAE	0.040	0.105 *	0.0000	FRV
		SALMONIDAE	0.450			
		PERLIDAE	0.450			
		PTERONARCIDAE	0.775			
WEST VIRGINIA	6	SALMONIDAE	0.000	0.169 *	0.0000	FRV
		CYPRINIDAE	0.732			
		CENTRARCHIDAE	1.011			
		COGNAGNONIDAE (AGNONIDAE)	1.000			
WISCONSIN	8	SALMONIDAE	0.000	0.201 *	0.0000	FRV
		CYPRINIDAE	0.732			
		CENTRARCHIDAE	1.011			
		PALAEMONIDAE	1.300			
WYOMING	9	SALMONIDAE	0.097	0.123 *	0.0000	FRV
		PERLIDAE	0.450			
		PTERONARCIDAE	0.647			
		CENTRARCHIDAE	1.011			

TOXICANT: HEPTACHLOR

STATE	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 (++)
NATIONAL	10	PTERONARCIDAE	0.000	0.201 *	0.0000	FRV
		PALAEMONIDAE	1.000			
		PERLIDAE	2.000			
		ASTACIDAE	7.000			
ALABAMA	5	PALAEMONIDAE	1.000	0.240 *	0.0000	FRV
		SALMONIDAE	10.000			
		CENTRARCHIDAE	24.771			
		DAPHNIDAE	88.740			
ARIZONA	6	PTERONARCIDAE	0.000	0.142 *	0.0000	FRV
		PERLIDAE	2.000			
		SALMONIDAE	10.000			
		CENTRARCHIDAE	20.000			
ARKANSAS	5	PALAEMONIDAE	1.000	0.200 *	0.0000	FRV
		ASTACIDAE	7.000			
		CENTRARCHIDAE	24.771			
		DAPHNIDAE	88.740			
CALIFORNIA	7	PERLIDAE	2.000	0.000 *	0.0000	FRV
		CENTRARCHIDAE	20.000			
		GAMMARIDAE	20.000			
		SALMONIDAE	20.400			
COLORADO	7	PTERONARCIDAE	0.000	0.125 *	0.0000	FRV
		PERLIDAE	2.000			
		SALMONIDAE	10.000			
		CENTRARCHIDAE	20.000			
CONNECTICUT	5	SALMONIDAE	10.000	3.021 *	0.0000	FRV
		CENTRARCHIDAE	20.000			
		GAMMARIDAE	47.200			
		DAPHNIDAE	88.740			
DELAWARE	6	SALMONIDAE	10.000	3.021 *	0.0000	FRV
		CENTRARCHIDAE	20.000			
		GAMMARIDAE	47.200			
		DAPHNIDAE	88.740			
# FLORIDA	4	CENTRARCHIDAE	24.771	2.073 *	0.0000	FRV
		DAPHNIDAE	88.740			
		POECILIDAE	140.000			
		CYPRINIDAE	310.000			
GEORGIA	4	SALMONIDAE	10.000	0.057 *	0.0000	FRV
		CENTRARCHIDAE	24.771			
		DAPHNIDAE	88.740			
		CYPRINIDAE	310.000			
IDAHO	7	PTERONARCIDAE	0.000	0.117 *	0.0000	FRV
		PERLIDAE	2.000			
		SALMONIDAE	17.700			
		CENTRARCHIDAE	20.000			
ILLINOIS	6	PALAEMONIDAE	1.000	0.311 *	0.0000	FRV
		CENTRARCHIDAE	24.771			
		SALMONIDAE	20.400			
		GAMMARIDAE	47.200			
INDIANA	5	CENTRARCHIDAE	24.771	0.107 *	0.0000	FRV
		SALMONIDAE	20.400			
		GAMMARIDAE	47.200			
		DAPHNIDAE	88.740			
IOWA	5	PALAEMONIDAE	1.000	0.245 *	0.0000	FRV
		CENTRARCHIDAE	20.000			
		GAMMARIDAE	47.200			
		DAPHNIDAE	88.740			
# KANSAS	4	ASTACIDAE	7.000	0.700 *	0.0000	FRV
		CENTRARCHIDAE	20.000			
		DAPHNIDAE	88.740			
		CYPRINIDAE	170.000			
KENTUCKY	4	SALMONIDAE	10.000	1.304 *	0.0000	FRV
		CENTRARCHIDAE	24.771			
		DAPHNIDAE	88.740			
		CYPRINIDAE	170.000			
LOUISIANA	5	PALAEMONIDAE	1.000	0.200 *	0.0000	FRV
		CENTRARCHIDAE	24.771			
		DAPHNIDAE	88.740			
		SALMONIDAE	51.000			
MAINE	4	GAMMARIDAE	20.000	7.775 *	0.0000	FRV
		DAPHNIDAE	88.740			
		SALMONIDAE	51.000			
		CYPRINIDAE	159.000			
MARYLAND	5	CENTRARCHIDAE	20.000	0.109 *	0.0000	FRV
		SALMONIDAE	20.700			
		GAMMARIDAE	47.200			
		DAPHNIDAE	88.740			
MASSACHUSETTS	5	SALMONIDAE	10.000	3.021 *	0.0000	FRV
		CENTRARCHIDAE	20.000			
		GAMMARIDAE	47.200			
		DAPHNIDAE	88.740			

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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

TOXICANT: HEPTACHLOR

STATE	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 (++)
MICHIGAN	6	PALAEMONIDAE	1,[illegible]	0.301 *	0.0038	FRV
		CENTRARCHIDAE	28,[illegible]			
		SALMONIDAE	28,[illegible]			
		GAMMARIDAE	37,[illegible]			
MINNESOTA	6	SALMONIDAE	17,[illegible]	0.374 *	0.0038	FRV
		CENTRARCHIDAE	28,[illegible]			
		GAMMARIDAE	37,[illegible]			
		SAPHIDAE	93,[illegible]			
MISSISSIPPI	4	PALAEMONIDAE	1,[illegible]	0.115 *	0.0038	FRV
		CENTRARCHIDAE	24,771			
		SAPHIDAE	93,[illegible]			
		SIMULIIDAE	175,[illegible]			
MISSOURI	6	PALAEMONIDAE	1,[illegible]	0.302 *	0.0038	FRV
		ASELLIDAE	7,[illegible]			
		CENTRARCHIDAE	24,771			
		SAPHIDAE	93,[illegible]			
MONTANA	7	PTERONARCIDAE	[illegible]	0.101 *	0.0038	FRV
		PERLIDAE	[illegible]			
		CENTRARCHIDAE	[illegible]			
		GAMMARIDAE	[illegible]			
NEBRASKA	4	SALMONIDAE	[illegible]	1.449 *	0.0038	FRV
		CENTRARCHIDAE	[illegible]			
		SAPHIDAE	[illegible]			
		CYPRINIDAE	[illegible]			
NEVADA	7	PTERONARCIDAE	[illegible]	0.109 *	0.0038	FRV
		SALMONIDAE	[illegible]			
		CENTRARCHIDAE	[illegible]			
		CYPRINIDAE	[illegible]			
NEW HAMPSHIRE	5	SALMONIDAE	[illegible]	3.[illegible] *	0.0038	FRV
		CENTRARCHIDAE	[illegible]			
		GAMMARIDAE	[illegible]			
		SAPHIDAE	[illegible]			
NEW JERSEY	5	SALMONIDAE	[illegible]	3.521 *	0.0038	FRV
		CENTRARCHIDAE	[illegible]			
		GAMMARIDAE	[illegible]			
		SAPHIDAE	[illegible]			
NEW MEXICO	7	PTERONARCIDAE	[illegible]	0.123 *	0.0038	FRV
		PERLIDAE	[illegible]			
		SALMONIDAE	[illegible]			
		CENTRARCHIDAE	24,771			
NEW YORK	6	PALAEMONIDAE	1,[illegible]	0.300 *	0.0038	FRV
		SALMONIDAE	17,[illegible]			
		CENTRARCHIDAE	24,771			
		GAMMARIDAE	[illegible]			
NORTH CAROLINA	5	SALMONIDAE	[illegible]	3.449 *	0.0038	FRV
		CENTRARCHIDAE	24,771			
		GAMMARIDAE	[illegible]			
		SAPHIDAE	[illegible]			
NORTH DAKOTA	5	SALMONIDAE	[illegible]	3.[illegible] *	0.0038	FRV
		CENTRARCHIDAE	[illegible]			
		GAMMARIDAE	[illegible]			
		SAPHIDAE	[illegible]			
OHIO	6	PALAEMONIDAE	1,[illegible]	0.300 *	0.0038	FRV
		SALMONIDAE	[illegible]			
		CENTRARCHIDAE	24,771			
		GAMMARIDAE	[illegible]			
OKLAHOMA	7	PALAEMONIDAE	1,[illegible]	0.300 *	0.0038	FRV
		ASELLIDAE	7,[illegible]			
		SALMONIDAE	[illegible]			
		CENTRARCHIDAE	24,771			
OREGON	6	PTERONARCIDAE	[illegible]	0.109 *	0.0038	FRV
		CENTRARCHIDAE	[illegible]			
		GAMMARIDAE	[illegible]			
		SALMONIDAE	[illegible]			
PENNSYLVANIA	6	PALAEMONIDAE	1,[illegible]	0.300 *	0.0038	FRV
		SALMONIDAE	[illegible]			
		CENTRARCHIDAE	24,771			
		GAMMARIDAE	[illegible]			
RHODE ISLAND	5	SALMONIDAE	[illegible]	3.521 *	0.0038	FRV
		CENTRARCHIDAE	[illegible]			
		GAMMARIDAE	[illegible]			
		SAPHIDAE	[illegible]			
SOUTH CAROLINA	4	SALMONIDAE	[illegible]	0.057 *	0.0038	FRV
		CENTRARCHIDAE	24,771			
		SAPHIDAE	[illegible]			
		CYPRINIDAE	[illegible]			
SOUTH DAKOTA	6	PERLIDAE	[illegible]	0.005 *	0.0038	FRV
		SALMONIDAE	[illegible]			
		CENTRARCHIDAE	[illegible]			
		GAMMARIDAE	[illegible]			

TOXICANT: HEPTACHLOR

STATE	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 (++)
TENNESSEE	6	PALAEMONIDAE	1,[illegible]	0.343 *	0.0038	FRV
		SALMONIDAE	[illegible]			
		CENTRARCHIDAE	24,771			
		SAPHIDAE	[illegible]			
§ TEXAS	6	PALAEMONIDAE	1,[illegible]	0.304 *	0.0038	FRV
		ASELLIDAE	7,[illegible]			
		CENTRARCHIDAE	24,771			
		SAPHIDAE	[illegible]			
UTAH	7	PTERONARCIDAE	[illegible]	0.125 *	0.0038	FRV
		PERLIDAE	[illegible]			
		SALMONIDAE	[illegible]			
		CENTRARCHIDAE	[illegible]			
VERMONT	6	SALMONIDAE	[illegible]	3.700 *	0.0038	FRV
		CENTRARCHIDAE	[illegible]			
		GAMMARIDAE	[illegible]			
		SAPHIDAE	[illegible]			
VIRGINIA	5	SALMONIDAE	[illegible]	3.449 *	0.0038	FRV
		CENTRARCHIDAE	24,771			
		GAMMARIDAE	[illegible]			
		SAPHIDAE	[illegible]			
WASHINGTON	7	PTERONARCIDAE	[illegible]	0.112 *	0.0038	FRV
		PERLIDAE	[illegible]			
		CENTRARCHIDAE	[illegible]			
		GAMMARIDAE	[illegible]			
WEST VIRGINIA	4	SALMONIDAE	[illegible]	1.455 *	0.0038	FRV
		CENTRARCHIDAE	[illegible]			
		SAPHIDAE	[illegible]			
		CYPRINIDAE	[illegible]			
WISCONSIN	6	PALAEMONIDAE	1,[illegible]	0.321 *	0.0038	FRV
		CENTRARCHIDAE	[illegible]			
		SALMONIDAE	[illegible]			
		GAMMARIDAE	[illegible]			
WYOMING	7	PTERONARCIDAE	[illegible]	0.125 *	0.0038	FRV
		PERLIDAE	[illegible]			
		SALMONIDAE	[illegible]			
		CENTRARCHIDAE	[illegible]			

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 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 MAXIMUM AND/OR
30-DAY AVERAGE CRITERIA

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: LEAD

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)		FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)		30-DAY (+)	(++)	AVERAGE	
NATIONAL	7	GAMMARIDAE	1.101		0.037	*	0.00003		FCV	
		DAPHNIDAE	4.020							
		SALMONIDAE	69.002							
		CYPRINIDAE	303.702							
ALABAMA	4	SALMONIDAE	103.103		37.202	*	0.00004		FCV	
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
ARIZONA	6	DAPHNIDAE	4.020		0.203	*	0.00003		FCV	
		SALMONIDAE	69.002							
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
ARKANSAS	4	GAMMARIDAE	1.101		0.035	*	0.00003		FCV	
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
CALIFORNIA	6	DAPHNIDAE	4.020		0.203	*	0.00003		FCV	
		SALMONIDAE	69.002							
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
COLORADO	6	DAPHNIDAE	4.020		0.203	*	0.00003		FCV	
		SALMONIDAE	103.103							
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
CONNECTICUT	4	SALMONIDAE	69.002		14.020	*	0.00003		FCV	
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
DELAWARE	4	SALMONIDAE	103.103		30.405	*	0.00004		FCV	
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
		CYPRINIDAE	914.000							
# FLORIDA	4	CENTRARCHIDAE	403.016		103.455	*	4.4479		ACR	
		FOSCILIDAE	603.000							
		PHILODINIDAE	603.043							
		CYPRINIDAE	914.000							
GEORGIA	4	SALMONIDAE	69.002		14.070	*	0.00004		FCV	
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
		CYPRINIDAE	914.000							
IDAHO	5	DAPHNIDAE	4.020		0.207	*	0.00002		FCV	
		ALMONIDAE	69.002							
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
ILLINOIS	5	GAMMARIDAE	1.101		0.030	*	0.00004		FCV	
		SALMONIDAE	103.103							
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
INDIANA	4	SALMONIDAE	103.103		37.202	*	0.00004		FCV	
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
IOWA	4	GAMMARIDAE	1.101		0.035	*	0.00003		FCV	
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
# KANSAS	3	CYPRINIDAE	303.702		0.037	*	0.00003		FCV	
		CENTRARCHIDAE	403.016			**				
		PHILODINIDAE	603.043							
			0.020							
KENTUCKY	5	GAMMARIDAE	1.101		0.030	*	0.00004		FCV	
		SALMONIDAE	103.103							
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
LOUISIANA	3	CYPRINIDAE	303.702		0.037	*	0.00003		FCV	
		CENTRARCHIDAE	403.016			**				
		PHILODINIDAE	603.043							
			0.020							
MAINE	3	SALMONIDAE	49.020		0.037	*	0.00003		FCV	
		CYPRINIDAE	107.201			**				
		PHILODINIDAE	603.043							
			0.020							
MARYLAND	4	SALMONIDAE	69.002		14.020	*	0.00003		FCV	
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
MASSACHUSETTS	4	SALMONIDAE	69.002		14.020	*	0.00004		FCV	
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							

TOXICANT: LEAD

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)		FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)		30-DAY (+)	(++)	AVERAGE	
MICHIGAN	5	GAMMARIDAE	1.101		0.054	*	0.00004		FCV	
		SALMONIDAE	69.002							
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
MINNESOTA	4	SALMONIDAE	69.002		14.020	*	0.00004		FCV	
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
# MISSISSIPPI	4	GAMMARIDAE	1.101		0.035	*	0.0010		ACR	
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
MISSOURI	3	CYPRINIDAE	303.702		0.037	*	0.00003		FCV	
		CENTRARCHIDAE	403.016			**				
		PHILODINIDAE	603.043							
			0.020							
MONTANA	5	DAPHNIDAE	4.020		0.207	*	0.00003		FCV	
		SALMONIDAE	69.002							
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
NEBRASKA	5	DAPHNIDAE	4.020		0.207	*	0.00004		FCV	
		SALMONIDAE	69.002							
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
NEVADA	6	DAPHNIDAE	4.020		0.202	*	0.00003		FCV	
		SALMONIDAE	69.002							
		CENTRARCHIDAE	403.016							
		FOSCILIDAE	603.000							
NEW HAMPSHIRE	4	SALMONIDAE	69.002		10.745	*	0.00003		FCV	
		CYPRINIDAE	107.201							
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
NEW JERSEY	4	SALMONIDAE	69.002		14.070	*	0.00004		FCV	
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
		CYPRINIDAE	914.000							
NEW MEXICO	5	DAPHNIDAE	4.020		0.207	*	0.00004		FCV	
		SALMONIDAE	69.002							
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
NEW YORK	5	GAMMARIDAE	1.101		0.054	*	0.00004		FCV	
		SALMONIDAE	69.002							
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
NORTH CAROLINA	4	SALMONIDAE	69.002		14.070	*	0.00003		FCV	
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
		CYPRINIDAE	914.000							
NORTH DAKOTA	5	DAPHNIDAE	4.020		0.203	*	0.00003		FCV	
		SALMONIDAE	103.103							
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
OHIO	4	SALMONIDAE	69.002		14.020	*	0.00004		FCV	
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
OKLAHOMA	5	GAMMARIDAE	1.101		0.030	*	0.00003		FCV	
		SALMONIDAE	103.103							
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
OREGON	5	DAPHNIDAE	4.020		0.210	*	0.00002		FCV	
		SALMONIDAE	69.002							
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
PENNSYLVANIA	4	SALMONIDAE	69.002		14.020	*	0.00004		FCV	
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
RHODE ISLAND	4	SALMONIDAE	69.002		14.020	*	0.00003		FCV	
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
SOUTH CAROLINA	4	SALMONIDAE	69.002		14.070	*	0.00003		FCV	
		CENTRARCHIDAE	403.016							
		PHILODINIDAE	603.043							
		CYPRINIDAE	914.000							
SOUTH DAKOTA	5	DAPHNIDAE	4.020		0.203	*	0.00003		FCV	
		SALMONIDAE	103.103							
		CYPRINIDAE	303.702							
		CENTRARCHIDAE	403.016							

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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

TOXICANT: LEAD

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	MOST SENSITIVE RESIDENT FAMILY LC50 VALUE (+) ■	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+) ■		30-DAY (+)	AVERAGE (++) ■
TENNESSEE	5	GAMMARIDAE	1.101	0.550	*	0.00004	FCV
		SALMONIDAE	103.100				
		CYPRINIDAE	355.700				
		CENTRARCHIDAE	425.010				
# TEXAS	4	CYPRINIDAE	355.700	113.577	*	3.3400	ACR
		CENTRARCHIDAE	425.010				
		PERCIDAE	555.000				
		PHILOGENIDAE	555.040				
UTAH	5	DAPHNIDAE	4.000	0.257	*	0.00000	FCV
		SALMONIDAE	69.000				
		CYPRINIDAE	355.700				
		CENTRARCHIDAE	425.010				
VERMONT	4	SALMONIDAE	69.000	10.740	*	0.00000	FCV
		CYPRINIDAE	107.001				
		CENTRARCHIDAE	425.010				
		PHILOGENIDAE	555.040				
VIRGINIA	4	SALMONIDAE	69.000	14.000	*	0.00000	FCV
		CYPRINIDAE	355.700				
		CENTRARCHIDAE	425.010				
		PHILOGENIDAE	555.040				
WASHINGTON	5	DAPHNIDAE	4.000	0.210	*	0.00002	FCV
		SALMONIDAE	69.000				
		CENTRARCHIDAE	425.010				
		PHILOGENIDAE	555.040				
WEST VIRGINIA	4	SALMONIDAE	69.000	14.000	*	0.00004	FCV
		CYPRINIDAE	355.700				
		CENTRARCHIDAE	425.010				
		PHILOGENIDAE	555.040				
WISCONSIN	5	GAMMARIDAE	1.101	0.004	*	0.00004	FCV
		SALMONIDAE	69.000				
		CYPRINIDAE	355.700				
		CENTRARCHIDAE	425.010				
WYOMING	5	DAPHNIDAE	4.000	0.257	*	0.00000	FCV
		SALMONIDAE	69.000				
		CYPRINIDAE	355.700				
		CENTRARCHIDAE	425.010				

TOXICANT: LINDANE

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	MOST SENSITIVE RESIDENT FAMILY LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)		30-DAY (+)	AVERAGE (++)
NATIONAL	10	ASELLIDAE	10.000	3.210	*	0.3574	ACR
		SALMONIDAE	21.000				
		GAMMARIDAE	28.457				
		CENTRARCHIDAE	82.571				
ALABAMA	5	SALMONIDAE	32.001	0.701	*	0.7000	ACR
		CENTRARCHIDAE	82.571				
		ICTALURIDAE	93.000				
		CYPRINIDAE	94.000				
ARIZONA	5	SALMONIDAE	14.100	0.110	*	0.4000	ACR
		CENTRARCHIDAE	42.100				
		GAMMARIDAE	49.000				
		ICTALURIDAE	93.000				
ARKANSAS	6	SALMONIDAE	3.000	0.245	*	0.0100	ACR
		ASELLIDAE	10.000				
		CENTRARCHIDAE	82.571				
		ICTALURIDAE	93.000				
CALIFORNIA	7	SALMONIDAE	21.000	0.010	*	0.0014	ACR
		CENTRARCHIDAE	42.100				
		GAMMARIDAE	49.000				
		ICTALURIDAE	93.000				
COLORADO	7	SALMONIDAE	0.004	2.200	*	0.1000	ACR
		CENTRARCHIDAE	42.100				
		GAMMARIDAE	49.000				
		ICTALURIDAE	93.000				
CONNECTICUT	6	GAMMARIDAE	10.400	1.000	*	0.1400	ACR
		SALMONIDAE	14.100				
		CENTRARCHIDAE	42.100				
		PERCIDAE	93.000				
DELAWARE	7	SALMONIDAE	0.004	1.400	*	0.1100	ACR
		GAMMARIDAE	10.400				
		CENTRARCHIDAE	42.100				
		ICTALURIDAE	44.000				
# FLORIDA	5	ICTALURIDAE	44.000	10.700	*	0.0070	ACR
		CENTRARCHIDAE	82.571				
		CYPRINIDAE	110.004				
		PERCIDAE	93.000				
GEORGIA	5	SALMONIDAE	27.000	10.100	*	0.0110	ACR
		CENTRARCHIDAE	82.571				
		ICTALURIDAE	93.000				
		CYPRINIDAE	110.004				
IDAHO	5	SALMONIDAE	10.000	0.000	*	0.0040	ACR
		CENTRARCHIDAE	42.100				
		GAMMARIDAE	49.000				
		ICTALURIDAE	94.000				
ILLINOIS	9	ASELLIDAE	10.000	2.011	*	0.1000	ACR
		GAMMARIDAE	10.400				
		SALMONIDAE	10.400				
		CENTRARCHIDAE	82.571				
INDIANA	8	GAMMARIDAE	10.400	2.000	*	0.2140	ACR
		SALMONIDAE	10.400				
		CENTRARCHIDAE	82.571				
		ICTALURIDAE	93.000				
IOWA	8	SALMONIDAE	3.000	0.202	*	0.0201	ACR
		GAMMARIDAE	10.400				
		CENTRARCHIDAE	42.100				
		ICTALURIDAE	93.000				
# KANSAS	6	CENTRARCHIDAE	42.100	14.301	*	1.1012	ACR
		ICTALURIDAE	93.000				
		PERCIDAE	93.000				
		CYPRINIDAE	94.000				
KENTUCKY	6	SALMONIDAE	0.004	1.100	*	0.0000	ACR
		ASELLIDAE	10.000				
		CENTRARCHIDAE	82.571				
		ICTALURIDAE	93.000				
LOUISIANA	5	SALMONIDAE	45.977	13.000	*	1.1140	ACR
		CENTRARCHIDAE	82.571				
		ICTALURIDAE	93.000				
		CYPRINIDAE	94.000				
MAINE	6	SALMONIDAE	10.000	4.000	*	0.3044	ACR
		CENTRARCHIDAE	82.000				
		GAMMARIDAE	49.000				
		PERCIDAE	93.000				
MARYLAND	7	GAMMARIDAE	10.400	2.473	*	0.1970	ACR
		SALMONIDAE	10.000				
		CENTRARCHIDAE	42.100				
		ICTALURIDAE	94.000				
MASSACHUSETTS	7	GAMMARIDAE	10.400	2.340	*	0.1700	ACR
		SALMONIDAE	14.100				
		CENTRARCHIDAE	42.100				
		ICTALURIDAE	93.000				

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

* — 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 MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

TOXICANT: LINDANE

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
MICHIGAN	8	SALMONIDAE	21.000	0.691 *	0.0831	ACR
		GAMMARIDAE	32.457			
		CENTRARCHIDAE	42.100			
		ICTALURIDAE	93.000			
MINNESOTA	8	SALMONIDAE	10.300	0.616 *	0.0404	ACR
		GAMMARIDAE	32.457			
		CENTRARCHIDAE	42.100			
		ICTALURIDAE	93.000			
# MISSISSIPPI	5	AEOLUIDAE	10.000	2.174 *	0.1730	ACR
		CENTRARCHIDAE	92.571			
		ICTALURIDAE	93.000			
		CYPRINIDAE	94.000			
MISSOURI	6	SALMONIDAE	2.000	0.355 *	0.0000	ACR
		CENTRARCHIDAE	92.571			
		ICTALURIDAE	93.000			
		CYPRINIDAE	94.000			
MONTANA	8	SALMONIDAE	10.000	7.340 *	0.5572	ACR
		CENTRARCHIDAE	42.100			
		GAMMARIDAE	49.000			
		ICTALURIDAE	93.000			
NEBRASKA	6	SALMONIDAE	14.100	4.100 *	0.3000	ACR
		CENTRARCHIDAE	42.100			
		ICTALURIDAE	93.000			
		PERCIDAE	93.000			
NEVADA	9	SALMONIDAE	14.100	5.300 *	0.4012	ACR
		CENTRARCHIDAE	42.100			
		GAMMARIDAE	49.000			
		ICTALURIDAE	93.000			
NEW HAMPSHIRE	6	SALMONIDAE	14.100	4.300 *	0.3070	ACR
		CENTRARCHIDAE	42.100			
		GAMMARIDAE	49.000			
		PERCIDAE	93.000			
NEW JERSEY	7	GAMMARIDAE	10.400	2.403 *	0.1000	ACR
		SALMONIDAE	14.100			
		CENTRARCHIDAE	42.100			
		ICTALURIDAE	44.000			
NEW MEXICO	7	SALMONIDAE	14.100	4.704 *	0.3000	ACR
		GAMMARIDAE	49.000			
		CENTRARCHIDAE	92.571			
		ICTALURIDAE	93.000			
NEW YORK	7	SALMONIDAE	10.300	5.057 *	0.4040	ACR
		GAMMARIDAE	32.457			
		CENTRARCHIDAE	92.571			
		ICTALURIDAE	93.000			
NORTH CAROLINA	7	GAMMARIDAE	10.400	1.002 *	0.1001	ACR
		SALMONIDAE	14.100			
		CENTRARCHIDAE	92.571			
		ICTALURIDAE	94.000			
NORTH DAKOTA	8	SALMONIDAE	32.001	13.075 *	1.1000	ACR
		CENTRARCHIDAE	42.100			
		GAMMARIDAE	49.000			
		ICTALURIDAE	93.000			
OHIO	8	GAMMARIDAE	10.400	2.200 *	0.1012	ACR
		SALMONIDAE	14.100			
		CENTRARCHIDAE	92.571			
		ICTALURIDAE	93.000			
OKLAHOMA	6	SALMONIDAE	32.001	13.400 *	1.0772	ACR
		GAMMARIDAE	49.000			
		CENTRARCHIDAE	92.571			
		ICTALURIDAE	93.000			
OREGON	7	SALMONIDAE	21.000	7.730 *	0.5100	ACR
		CENTRARCHIDAE	42.100			
		GAMMARIDAE	49.000			
		PERCIDAE	93.000			
PENNSYLVANIA	7	GAMMARIDAE	10.400	2.000 *	0.1070	ACR
		SALMONIDAE	14.100			
		CENTRARCHIDAE	92.571			
		ICTALURIDAE	93.000			
RHODE ISLAND	6	GAMMARIDAE	10.400	1.000 *	0.1400	ACR
		SALMONIDAE	14.100			
		CENTRARCHIDAE	42.100			
		PERCIDAE	93.000			
SOUTH CAROLINA	5	SALMONIDAE	37.000	10.000 *	0.0000	ACR
		CENTRARCHIDAE	92.571			
		PERCIDAE	93.000			
		CYPRINIDAE	112.004			
SOUTH DAKOTA	7	SALMONIDAE	0.004	2.200 *	0.1000	ACR
		CENTRARCHIDAE	42.100			
		GAMMARIDAE	49.000			
		ICTALURIDAE	93.000			

TOXICANT: LINDANE

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
TENNESSEE	5	SALMONIDAE	0.004	1.007 *	0.1300	ACR
		CENTRARCHIDAE	92.571			
		ICTALURIDAE	93.000			
		CYPRINIDAE	94.000			
# TEXAS	6	CENTRARCHIDAE	92.571	17.707 *	1.4007	ACR
		ICTALURIDAE	93.000			
		PERCIDAE	93.000			
		CYPRINIDAE	94.000			
UTAH	8	SALMONIDAE	14.100	0.110 *	0.0000	ACR
		CENTRARCHIDAE	42.100			
		GAMMARIDAE	49.000			
		ICTALURIDAE	93.000			
VERMONT	6	SALMONIDAE	14.100	3.302 *	0.2713	ACR
		GAMMARIDAE	32.457			
		CENTRARCHIDAE	42.100			
		PERCIDAE	93.000			
VIRGINIA	6	GAMMARIDAE	10.400	1.740 *	0.1302	ACR
		SALMONIDAE	14.100			
		CENTRARCHIDAE	92.571			
		PERCIDAE	93.000			
WASHINGTON	8	SALMONIDAE	21.000	0.302 *	0.0000	ACR
		CENTRARCHIDAE	42.100			
		GAMMARIDAE	49.000			
		ICTALURIDAE	94.000			
WEST VIRGINIA	5	SALMONIDAE	14.100	3.340 *	0.2570	ACR
		CENTRARCHIDAE	42.100			
		ICTALURIDAE	93.000			
		CYPRINIDAE	94.000			
WISCONSIN	8	SALMONIDAE	21.000	0.691 *	0.0831	ACR
		GAMMARIDAE	32.457			
		CENTRARCHIDAE	42.100			
		ICTALURIDAE	93.000			
WYOMING	8	SALMONIDAE	14.100	0.110 *	0.0000	ACR
		CENTRARCHIDAE	42.100			
		GAMMARIDAE	49.000			
		ICTALURIDAE	93.000			

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
- * – 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 MAXIMUM AND/OR 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 (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	FRESHWATER AQUATIC LIFE CRITERIA 30-DAY (+)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (++)
NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.20	FRV
		GAMMARIDAE	10.000			
		ASTACIDAE	31.000			
		SALMONIDAE	344.000			
ALABAMA	5	GAMMARIDAE	10.000	0.347 *	0.20	FRV
		ASTACIDAE	33.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
ARIZONA	5	DAPHNIDAE	0.000	0.101 *	0.0571	ACR
		GAMMARIDAE	10.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
ARKANSAS	4	GAMMARIDAE	10.000	0.170 *	0.1135	ACR
		ASTACIDAE	33.000			
		PHILOGENIDAE	703.471			
		NAIDIDAE	000.000			
CALIFORNIA	5	DAPHNIDAE	0.000	0.101 *	0.0574	ACR
		GAMMARIDAE	10.000			
		SALMONIDAE	344.000			
		PHILOGENIDAE	703.471			
COLORADO	5	DAPHNIDAE	0.000	0.101 *	0.0571	ACR
		GAMMARIDAE	10.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
CONNECTICUT	5	GAMMARIDAE	10.000	0.000 *	0.20	FRV
		ASTACIDAE	33.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
DELAWARE	5	GAMMARIDAE	10.000	0.000 *	0.20	FRV
		ASTACIDAE	33.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
# FLORIDA	3	ASTACIDAE	33.000	0.470 *	0.20	FRV
		PHILOGENIDAE	703.471	**		
		NAIDIDAE	000.000			
			0.000			
GEORGIA	5	ASTACIDAE	33.000	2.040 *	0.20	FRV
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
		NAIDIDAE	000.000			
IDAHO	5	DAPHNIDAE	0.000	0.101 *	0.0571	ACR
		GAMMARIDAE	10.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
ILLINOIS	6	GAMMARIDAE	10.000	1.000 *	0.20	FRV
		SALMONIDAE	344.000			
		PHILOGENIDAE	703.471			
		NAIDIDAE	000.000			
INDIANA	5	GAMMARIDAE	10.000	0.000 *	0.20	FRV
		SALMONIDAE	344.000			
		PHILOGENIDAE	703.471			
		NAIDIDAE	000.000			
IOWA	3	GAMMARIDAE	10.000	0.470 *	0.20	FRV
		PHILOGENIDAE	703.471	**		
		NAIDIDAE	000.000			
			0.000			
# KANSAS	2	PHILOGENIDAE	703.471	0.470 *	0.20	FRV
		NAIDIDAE	000.000	**		
			0.000			
			0.000			
KENTUCKY	4	GAMMARIDAE	10.000	0.000 *	0.20	FRV
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
		NAIDIDAE	000.000			
LOUISIANA	4	ASTACIDAE	33.000	1.034 *	0.20	FRV
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
		NAIDIDAE	000.000			
MAINE	6	GAMMARIDAE	10.000	0.757 *	0.20	FRV
		ASTACIDAE	33.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
MARYLAND	5	GAMMARIDAE	10.000	0.001 *	0.20	FRV
		ASTACIDAE	33.000			
		SALMONIDAE	344.000			
		PHILOGENIDAE	703.471			
MASSACHUSETTS	5	GAMMARIDAE	10.000	0.000 *	0.20	FRV
		ASTACIDAE	33.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			

TOXICANT: MERCURY

STATE	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 (++)
MICHIGAN	7	GAMMARIDAE	10.000	1.202 *	0.20	FRV
		SALMONIDAE	344.000			
		PHILOGENIDAE	703.471			
		NAIDIDAE	000.000			
MINNESOTA	5	GAMMARIDAE	10.000	0.000 *	0.20	FRV
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
		NAIDIDAE	000.000			
# MISSISSIPPI	4	GAMMARIDAE	10.000	0.170 *	0.1135	ACR
		ASTACIDAE	33.000			
		PHILOGENIDAE	703.471			
		NAIDIDAE	000.000			
MISSOURI	3	GAMMARIDAE	10.000	0.470 *	0.20	FRV
		PHILOGENIDAE	703.471	**		
		NAIDIDAE	000.000			
			0.000			
MONTANA	5	DAPHNIDAE	0.000	0.101 *	0.0574	ACR
		GAMMARIDAE	10.000			
		SALMONIDAE	344.000			
		PHILOGENIDAE	703.471			
NEBRASKA	4	DAPHNIDAE	0.000	0.240 *	0.1002	ACR
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
		NAIDIDAE	000.000			
NEVADA	5	DAPHNIDAE	0.000	0.101 *	0.0571	ACR
		GAMMARIDAE	10.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
NEW HAMPSHIRE	5	GAMMARIDAE	10.000	0.000 *	0.20	FRV
		ASTACIDAE	33.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
NEW JERSEY	4	GAMMARIDAE	10.000	0.000 *	0.20	FRV
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
		NAIDIDAE	000.000			
NEW MEXICO	5	DAPHNIDAE	0.000	0.101 *	0.0571	ACR
		GAMMARIDAE	10.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
NEW YORK	6	GAMMARIDAE	10.000	0.704 *	0.20	FRV
		ASTACIDAE	33.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
NORTH CAROLINA	4	GAMMARIDAE	10.000	0.000 *	0.20	FRV
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
		NAIDIDAE	000.000			
NORTH DAKOTA	5	DAPHNIDAE	0.000	0.101 *	0.0571	ACR
		GAMMARIDAE	10.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
OHIO	6	GAMMARIDAE	10.000	1.000 *	0.20	FRV
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
		NAIDIDAE	000.000			
OKLAHOMA	5	GAMMARIDAE	10.000	0.347 *	0.20	FRV
		ASTACIDAE	33.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
OREGON	5	DAPHNIDAE	0.000	0.101 *	0.0574	ACR
		GAMMARIDAE	10.000			
		SALMONIDAE	344.000			
		PHILOGENIDAE	703.471			
PENNSYLVANIA	7	GAMMARIDAE	10.000	0.010 *	0.20	FRV
		ASTACIDAE	33.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
RHODE ISLAND	5	GAMMARIDAE	10.000	0.000 *	0.20	FRV
		ASTACIDAE	33.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
SOUTH CAROLINA	4	ASTACIDAE	33.000	1.000 *	0.20	FRV
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			
		NAIDIDAE	000.000			
SOUTH DAKOTA	5	DAPHNIDAE	0.000	0.101 *	0.0571	ACR
		GAMMARIDAE	10.000			
		SALMONIDAE	240.000			
		PHILOGENIDAE	703.471			

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 3.7 TO DETERMINE MAXIMUM AND/OR 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 LOSS VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	FRESHWATER AQUATIC LIFE CRITERIA 30-DAY (+)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (++)
TENNESSEE	4	GAMMARIDAE	10.000	0.020 *	0.20	FRV
		SALMONIDAE	245.000			
		PHILODINIDAE	769.471			
		NAIDIDAE	999.000			
# TEXAS	3	ASTACIDAE	20.000	0.470 *	0.20	FRV
		PHILODINIDAE	769.471	**		
		NAIDIDAE	999.000			
UTAH	5	DAPHNIDAE	5.000	0.101 *	0.0571	ACR
		GAMMARIDAE	10.000			
		SALMONIDAE	245.000			
		PHILODINIDAE	769.471			
VERMONT	5	GAMMARIDAE	10.000	0.020 *	0.20	FRV
		ASTACIDAE	20.000			
		SALMONIDAE	245.000			
		PHILODINIDAE	769.471			
VIRGINIA	6	GAMMARIDAE	10.000	0.704 *	0.20	FRV
		ASTACIDAE	20.000			
		SALMONIDAE	245.000			
		PHILODINIDAE	769.471			
WASHINGTON	5	DAPHNIDAE	5.000	0.101 *	0.0574	ACR
		GAMMARIDAE	10.000			
		SALMONIDAE	244.200			
		PHILODINIDAE	769.471			
WEST VIRGINIA	6	GAMMARIDAE	10.000	0.704 *	0.20	FRV
		ASTACIDAE	20.000			
		SALMONIDAE	245.000			
		PHILODINIDAE	769.471			
WISCONSIN	7	GAMMARIDAE	10.000	1.222 *	0.20	FRV
		SALMONIDAE	244.200			
		PHILODINIDAE	769.471			
		NAIDIDAE	999.000			
WYOMING	5	DAPHNIDAE	5.000	0.101 *	0.0571	ACR
		GAMMARIDAE	10.000			
		SALMONIDAE	245.000			
		PHILODINIDAE	769.471			

TOXICANT: NICKEL

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	MOST SENSITIVE RESIDENT FAMILY LOSS VALUE (+) @	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+) @	FRESHWATER AQUATIC LIFE CRITERIA 30-DAY (+)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (++) @
NATIONAL	16	DAPHNIDAE	65.977	30.914 *	3.3991	ACR
		EPHEMERELLIDAE	233.000			
		CENTRARCHIDAE	345.472			
		PHILODINIDAE	491.217			
ALABAMA	11	DAPHNIDAE	78.489	31.016 *	3.3999	ACR
		PERCICHTHYIDAE	391.510			
		CENTRARCHIDAE	355.042			
		PHILODINIDAE	491.217			
ARIZONA	10	DAPHNIDAE	65.977	30.305 *	2.4657	ACR
		PERCICHTHYIDAE	391.510			
		PHILODINIDAE	491.217			
		CHIRONOMIDAE	459.555			
ARKANSAS	10	DAPHNIDAE	78.489	30.204 *	3.0127	ACR
		CENTRARCHIDAE	355.042			
		PHILODINIDAE	491.217			
		CHIRONOMIDAE	459.555			
CALIFORNIA	10	DAPHNIDAE	65.977	30.305 *	2.4657	ACR
		PERCICHTHYIDAE	391.510			
		PHILODINIDAE	491.217			
		CHIRONOMIDAE	459.555			
COLORADO	9	DAPHNIDAE	65.977	21.340 *	2.3999	ACR
		PHILODINIDAE	491.217			
		CHIRONOMIDAE	459.555			
		CENTRARCHIDAE	555.204			
CONNECTICUT	12	DAPHNIDAE	78.489	33.139 *	3.4162	ACR
		PHILODINIDAE	491.217			
		CHIRONOMIDAE	459.555			
		CENTRARCHIDAE	444.717			
DELAWARE	12	DAPHNIDAE	78.489	33.139 *	3.4162	ACR
		PHILODINIDAE	491.217			
		CHIRONOMIDAE	459.555			
		CENTRARCHIDAE	444.717			
# FLORIDA	11	DAPHNIDAE	78.489	30.555 *	3.1791	ACR
		PERCICHTHYIDAE	391.510			
		PHILODINIDAE	491.217			
		CHIRONOMIDAE	459.555			
GEORGIA	10	DAPHNIDAE	78.489	30.555 *	3.5791	ACR
		PERCICHTHYIDAE	391.510			
		CENTRARCHIDAE	355.042			
		PHILODINIDAE	491.217			
IDAHO	8	DAPHNIDAE	65.977	30.557 *	2.5577	ACR
		PHILODINIDAE	491.217			
		CHIRONOMIDAE	459.555			
		CENTRARCHIDAE	444.717			
ILLINOIS	13	DAPHNIDAE	78.489	34.591 *	3.5992	ACR
		EPHEMERELLIDAE	233.000			
		PERCICHTHYIDAE	391.510			
		CENTRARCHIDAE	345.472			
INDIANA	12	DAPHNIDAE	78.489	33.372 *	3.4494	ACR
		PERCICHTHYIDAE	391.510			
		CENTRARCHIDAE	345.472			
		PHILODINIDAE	491.217			
IOWA	11	DAPHNIDAE	78.489	31.555 *	3.3947	ACR
		CENTRARCHIDAE	355.042			
		PHILODINIDAE	491.217			
		CHIRONOMIDAE	459.555			
# KANSAS	10	DAPHNIDAE	78.489	30.555 *	3.5791	ACR
		PERCICHTHYIDAE	391.510			
		CENTRARCHIDAE	355.042			
		PHILODINIDAE	491.217			
KENTUCKY	11	DAPHNIDAE	78.489	31.016 *	3.3999	ACR
		PERCICHTHYIDAE	391.510			
		CENTRARCHIDAE	355.042			
		PHILODINIDAE	491.217			
LOUISIANA	10	DAPHNIDAE	78.489	30.555 *	2.5991	ACR
		PERCICHTHYIDAE	391.510			
		PHILODINIDAE	491.217			
		CHIRONOMIDAE	459.555			
MAINE	13	DAPHNIDAE	78.489	35.555 *	3.6946	ACR
		CENTRARCHIDAE	355.359			
		PHILODINIDAE	491.217			
		CHIRONOMIDAE	459.555			
MARYLAND	12	DAPHNIDAE	78.489	33.139 *	3.4162	ACR
		CENTRARCHIDAE	345.472			
		PHILODINIDAE	491.217			
		CHIRONOMIDAE	459.555			
MASSACHUSETTS	12	DAPHNIDAE	78.489	33.139 *	3.4162	ACR
		CENTRARCHIDAE	345.472			
		PHILODINIDAE	491.217			
		CHIRONOMIDAE	459.555			

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 3.7 TO DETERMINE MAXIMUM AND/OR
30-DAY AVERAGE CRITERIA

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

TOXICANT: NICKEL

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	MOST SENSITIVE RESIDENT FAMILY LOEC VALUE (+) ●	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+) ●		30-DAY (+)		AVERAGE (++) ●
MICHIGAN	13	DAPHNIDAE	78,459	39,589	*	3.4668		ACR
		SPHAERIELLIDAE	253,555					
		CENTRARCHIDAE	345,472					
		PHILOGENIDAE	491,217					
MINNESOTA	11	DAPHNIDAE	78,459	31,589	*	3.3947		ACR
		CENTRARCHIDAE	253,542					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
§ MISSISSIPPI	11	DAPHNIDAE	78,459	31,510		3.3555		ACR
		PERCONTHYIDAE	391,510					
		CENTRARCHIDAE	253,542					
		PHILOGENIDAE	491,217					
MISSOURI	11	DAPHNIDAE	78,459	31,576	*	3.3559		ACR
		PERCONTHYIDAE	391,510					
		CENTRARCHIDAE	345,472					
		PHILOGENIDAE	491,217					
MONTANA	8	DAPHNIDAE	65,977	21,717	*	2.2559		ACR
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
		CENTRARCHIDAE	444,717					
NEBRASKA	10	DAPHNIDAE	65,977	23,355	*	2.4557		ACR
		PERCONTHYIDAE	391,510					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
NEVADA	9	DAPHNIDAE	65,977	21,559	*	2.2557		ACR
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
		POECILIDAE	459,542					
NEW HAMPSHIRE	12	DAPHNIDAE	78,459	33,139	*	3.4169		ACR
		CENTRARCHIDAE	345,472					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
NEW JERSEY	12	DAPHNIDAE	78,459	33,139	*	3.4169		ACR
		CENTRARCHIDAE	345,472					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
NEW MEXICO	11	DAPHNIDAE	65,977	25,017	*	2.5759		ACR
		PERCONTHYIDAE	391,510					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
NEW YORK	13	DAPHNIDAE	78,459	35,555	*	3.6172		ACR
		CENTRARCHIDAE	345,472					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
NORTH CAROLINA	12	DAPHNIDAE	78,459	33,139	*	3.4169		ACR
		CENTRARCHIDAE	345,472					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
NORTH DAKOTA	10	DAPHNIDAE	65,977	23,512	*	2.4559		ACR
		CENTRARCHIDAE	253,542					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
OHIO	12	DAPHNIDAE	78,459	33,139	*	3.4169		ACR
		CENTRARCHIDAE	345,472					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
OKLAHOMA	11	DAPHNIDAE	78,459	31,510	*	3.3559		ACR
		PERCONTHYIDAE	391,510					
		CENTRARCHIDAE	253,542					
		PHILOGENIDAE	491,217					
OREGON	8	DAPHNIDAE	65,977	21,759	*	2.2459		ACR
		PERCONTHYIDAE	391,510					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
PENNSYLVANIA	10	DAPHNIDAE	78,459	33,559	*	3.4559		ACR
		SPHAERIELLIDAE	253,555					
		CENTRARCHIDAE	345,472					
		PHILOGENIDAE	491,217					
RHODE ISLAND	12	DAPHNIDAE	78,459	33,139	*	3.4169		ACR
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
		CENTRARCHIDAE	444,717					
SOUTH CAROLINA	11	DAPHNIDAE	78,459	31,139	*	3.3559		ACR
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
		CENTRARCHIDAE	444,717					
SOUTH DAKOTA	11	DAPHNIDAE	65,977	25,139	*	2.5559		ACR
		CENTRARCHIDAE	253,542					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					

TOXICANT: NICKEL

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	MOST SENSITIVE RESIDENT FAMILY LOEC VALUE (+) ●	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+) ●		30-DAY (+)		AVERAGE (++) ●
TENNESSEE	11	DAPHNIDAE	78,459	31,510	*	3.3559		ACR
		PERCONTHYIDAE	391,510					
		CENTRARCHIDAE	253,542					
		PHILOGENIDAE	491,217					
§ TEXAS	11	DAPHNIDAE	78,459	33,559	*	3.1751		ACR
		PERCONTHYIDAE	391,510					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
UTAH	9	DAPHNIDAE	65,977	21,759	*	2.2459		ACR
		PERCONTHYIDAE	391,510					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
VERMONT	12	DAPHNIDAE	78,459	33,139	*	3.4169		ACR
		CENTRARCHIDAE	345,472					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
VIRGINIA	10	DAPHNIDAE	78,459	35,555	*	3.6172		ACR
		CENTRARCHIDAE	345,472					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
WASHINGTON	9	DAPHNIDAE	65,977	23,557	*	2.5577		ACR
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
		CENTRARCHIDAE	444,717					
WEST VIRGINIA	11	DAPHNIDAE	78,459	31,555	*	3.3947		ACR
		CENTRARCHIDAE	253,542					
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
WISCONSIN	13	DAPHNIDAE	78,459	35,555	*	3.4559		ACR
		SPHAERIELLIDAE	253,555					
		CENTRARCHIDAE	345,472					
		PHILOGENIDAE	491,217					
WYOMING	9	DAPHNIDAE	65,977	21,717	*	2.2559		ACR
		PHILOGENIDAE	491,217					
		CHIRONOMIDAE	459,555					
		CENTRARCHIDAE	444,717					

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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

TOXICANT: PCBS

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	0.011			
		CYPRINIDAE	32.001			
		GAMMARIDAE	69.000			
ALABAMA	4	SALMONIDAE	2.000	0.004 *	0.014	FRV
		CENTRARCHIDAE	0.011			
		CYPRINIDAE	32.001			
		COENAGRIONIDAE (AGRIONIDAE)	202.042			
ARIZONA	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	2.300	**		
		CYPRINIDAE	32.001			
			0.000			
ARKANSAS	4	CENTRARCHIDAE	0.011	0.000 *	0.014	FRV
		CYPRINIDAE	32.001			
		GAMMARIDAE	69.004			
		COENAGRIONIDAE (AGRIONIDAE)	202.042			
CALIFORNIA	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	2.300	**		
		CYPRINIDAE	32.001			
			0.000			
COLORADO	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	2.300	**		
		CYPRINIDAE	32.001			
			0.000			
CONNECTICUT	5	SALMONIDAE	2.000	0.000 *	0.014	FRV
		CENTRARCHIDAE	2.300			
		CYPRINIDAE	32.001			
		GAMMARIDAE	107.004			
DELAWARE	4	SALMONIDAE	2.000	0.000 *	0.014	FRV
		CENTRARCHIDAE	2.300			
		GAMMARIDAE	107.004			
		COENAGRIONIDAE (AGRIONIDAE)	202.042			
# FLORIDA	1	CENTRARCHIDAE	0.011	0.137 *	0.014	FRV
			0.000	**		
			0.000			
			0.000			
GEORGIA	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	0.011	**		
		COENAGRIONIDAE (AGRIONIDAE)	202.042			
			0.000			
IDAHO	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	2.300	**		
		CYPRINIDAE	32.001			
			0.000			
ILLINOIS	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	0.011			
		CYPRINIDAE	32.001			
		GAMMARIDAE	69.000			
INDIANA	5	SALMONIDAE	2.000	0.131 *	0.014	FRV
		CENTRARCHIDAE	0.011			
		CYPRINIDAE	32.001			
		GAMMARIDAE	107.004			
IOWA	4	CENTRARCHIDAE	2.300	0.131 *	0.014	FRV
		CYPRINIDAE	32.001			
		GAMMARIDAE	69.000			
		COENAGRIONIDAE (AGRIONIDAE)	202.042			
# KANSAS	3	CENTRARCHIDAE	2.300	0.137 *	0.014	FRV
		CYPRINIDAE	32.001	**		
		COENAGRIONIDAE (AGRIONIDAE)	202.042			
			0.000			
KENTUCKY	5	SALMONIDAE	2.000	0.144 *	0.014	FRV
		CENTRARCHIDAE	0.011			
		CYPRINIDAE	32.001			
		GAMMARIDAE	69.004			
LOUISIANA	2	CENTRARCHIDAE	0.011	0.137 *	0.014	FRV
		CYPRINIDAE	32.001	**		
			0.000			
			0.000			
MAINE	3	CENTRARCHIDAE	2.300	0.137 *	0.014	FRV
		CYPRINIDAE	32.001	**		
		COENAGRIONIDAE (AGRIONIDAE)	202.042			
			0.000			
MARYLAND	5	SALMONIDAE	2.000	0.000 *	0.014	FRV
		CENTRARCHIDAE	2.300			
		CYPRINIDAE	32.001			
		GAMMARIDAE	107.004			
MASSACHUSETTS	5	SALMONIDAE	2.000	0.000 *	0.014	FRV
		CENTRARCHIDAE	2.300			
		CYPRINIDAE	32.001			
		GAMMARIDAE	107.004			

TOXICANT: PCBS

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
MICHIGAN	5	SALMONIDAE	2.000	0.000 *	0.014	FRV
		CENTRARCHIDAE	2.300			
		CYPRINIDAE	32.001			
		GAMMARIDAE	69.000			
MINNESOTA	5	SALMONIDAE	2.000	0.000 *	0.014	FRV
		CENTRARCHIDAE	2.300			
		CYPRINIDAE	32.001			
		GAMMARIDAE	107.004			
# MISSISSIPPI	4	CENTRARCHIDAE	0.011	0.000 *	0.014	FRV
		CYPRINIDAE	32.001			
		GAMMARIDAE	69.004			
		COENAGRIONIDAE (AGRIONIDAE)	202.042			
MISSOURI	3	CENTRARCHIDAE	0.011	0.137 *	0.014	FRV
		CYPRINIDAE	32.001	**		
		COENAGRIONIDAE (AGRIONIDAE)	202.042			
			0.000			
MONTANA	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	2.300	**		
		CYPRINIDAE	32.001			
			0.000			
NEBRASKA	4	SALMONIDAE	2.000	0.004 *	0.014	FRV
		CENTRARCHIDAE	2.300			
		CYPRINIDAE	32.001			
		COENAGRIONIDAE (AGRIONIDAE)	202.042			
NEVADA	2	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	2.300	**		
			0.000			
			0.000			
NEW HAMPSHIRE	4	SALMONIDAE	2.000	0.004 *	0.014	FRV
		CENTRARCHIDAE	2.300			
		CYPRINIDAE	32.001			
		COENAGRIONIDAE (AGRIONIDAE)	202.042			
NEW JERSEY	4	SALMONIDAE	2.000	0.000 *	0.014	FRV
		CENTRARCHIDAE	2.300			
		GAMMARIDAE	107.004			
		COENAGRIONIDAE (AGRIONIDAE)	202.042			
NEW MEXICO	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	0.011	**		
		CYPRINIDAE	32.001			
			0.000			
NEW YORK	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	0.011			
		CYPRINIDAE	32.001			
		GAMMARIDAE	69.000			
NORTH CAROLINA	4	SALMONIDAE	2.000	0.047 *	0.014	FRV
		CENTRARCHIDAE	0.011			
		GAMMARIDAE	107.004			
		COENAGRIONIDAE (AGRIONIDAE)	202.042			
NORTH DAKOTA	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	2.300	**		
		CYPRINIDAE	32.001			
			0.000			
OHIO	5	SALMONIDAE	2.000	0.131 *	0.014	FRV
		CENTRARCHIDAE	0.011			
		CYPRINIDAE	32.001			
		GAMMARIDAE	107.004			
OKLAHOMA	5	SALMONIDAE	2.000	0.144 *	0.014	FRV
		CENTRARCHIDAE	0.011			
		CYPRINIDAE	32.001			
		GAMMARIDAE	69.004			
OREGON	2	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	2.300	**		
			0.000			
			0.000			
PENNSYLVANIA	5	SALMONIDAE	2.000	0.131 *	0.014	FRV
		CENTRARCHIDAE	0.011			
		CYPRINIDAE	32.001			
		GAMMARIDAE	107.004			
RHODE ISLAND	5	SALMONIDAE	2.000	0.000 *	0.014	FRV
		CENTRARCHIDAE	2.300			
		CYPRINIDAE	32.001			
		GAMMARIDAE	107.004			
SOUTH CAROLINA	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	0.011	**		
		COENAGRIONIDAE (AGRIONIDAE)	202.042			
			0.000			
SOUTH DAKOTA	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	2.300	**		
		CYPRINIDAE	32.001			
			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

* — 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 MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

TOXICANT: PCBS

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	MOST SENSITIVE RESIDENT FAMILY LOEC VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	FRESHWATER AQUATIC LIFE CRITERIA 30-DAY (+)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (++)
TENNESSEE	5	SALMONIDAE	2.000	0.144 *	0.014	FRV
		CENTRARCHIDAE	0.011			
		CYPRINIDAE	32.001			
		SAMMARIDAE	93.004			
§ TEXAS	3	CENTRARCHIDAE	0.011	0.137 *	0.014	FRV
		CYPRINIDAE	32.001	**		
		COBNAGRONIDAE (AGRONIDAE)	202.042			
			0.000			
UTAH	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	2.300	**		
		CYPRINIDAE	32.001			
			0.000			
VERMONT	5	SALMONIDAE	2.000	0.000 *	0.014	FRV
		CENTRARCHIDAE	2.300			
		CYPRINIDAE	32.001			
		SAMMARIDAE	107.004			
VIRGINIA	5	SALMONIDAE	2.000	0.131 *	0.014	FRV
		CENTRARCHIDAE	0.011			
		CYPRINIDAE	32.001			
		SAMMARIDAE	107.004			
WASHINGTON	2	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	2.300	**		
			0.000			
			0.000			
WEST VIRGINIA	4	SALMONIDAE	2.000	0.004 *	0.014	FRV
		CENTRARCHIDAE	2.300			
		CYPRINIDAE	32.001			
		COBNAGRONIDAE (AGRONIDAE)	202.042			
WISCONSIN	5	SALMONIDAE	2.000	0.000 *	0.014	FRV
		CENTRARCHIDAE	2.300			
		CYPRINIDAE	32.001			
		SAMMARIDAE	93.000			
WYOMING	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
		CENTRARCHIDAE	2.300	**		
		CYPRINIDAE	32.001			
			0.000			

TOXICANT: SELENIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	MOST SENSITIVE RESIDENT FAMILY LOEC VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	FRESHWATER AQUATIC LIFE CRITERIA 30-DAY (+)	FRESHWATER AQUATIC LIFE CRITERIA AVERAGE (++)
NATIONAL	10	HYALELLIDAE (TALITRIDAE)	200.000	82.043 *	22.0000	ACR
		DAPHNIDAE	1002.474			
		CYPRINODONTIDAE	0400.070			
		SALMONIDAE	0470.720			
ALABAMA	8	HYALELLIDAE (TALITRIDAE)	200.000	74.102 *	10.7004	ACR
		DAPHNIDAE	2000.000			
		SALMONIDAE	7040.000			
		CYPRINIDAE	0002.400			
ARIZONA	8	HYALELLIDAE (TALITRIDAE)	200.000	69.102 *	10.0431	ACR
		DAPHNIDAE	1002.474			
		SALMONIDAE	0470.720			
		CYPRINIDAE	0002.400			
ARKANSAS	7	HYALELLIDAE (TALITRIDAE)	200.000	69.004 *	10.1011	ACR
		DAPHNIDAE	2000.000			
		CYPRINIDAE	0002.400			
		FOSCILIDAE	12000.040			
CALIFORNIA	8	HYALELLIDAE (TALITRIDAE)	200.000	69.102 *	10.0431	ACR
		DAPHNIDAE	1002.474			
		SALMONIDAE	0470.720			
		CYPRINIDAE	0002.400			
COLORADO	7	HYALELLIDAE (TALITRIDAE)	200.000	54.007 *	14.0004	ACR
		DAPHNIDAE	1002.474			
		SALMONIDAE	7040.000			
		CYPRINIDAE	0002.400			
CONNECTICUT	6	HYALELLIDAE (TALITRIDAE)	200.000	54.300 *	14.4747	ACR
		DAPHNIDAE	2000.000			
		SALMONIDAE	0470.720			
		CYPRINIDAE	0002.400			
DELAWARE	6	HYALELLIDAE (TALITRIDAE)	200.000	67.472 *	17.0000	ACR
		DAPHNIDAE	2000.000			
		SALMONIDAE	7040.000			
		FOSCILIDAE	12000.040			
§ FLORIDA	6	HYALELLIDAE (TALITRIDAE)	200.000	67.000 *	16.0016	ACR
		DAPHNIDAE	2000.000			
		CYPRINODONTIDAE	0400.070			
		FOSCILIDAE	12000.040			
GEORGIA	8	HYALELLIDAE (TALITRIDAE)	200.000	69.300 *	17.0705	ACR
		DAPHNIDAE	2000.000			
		SALMONIDAE	0470.720			
		FOSCILIDAE	12000.040			
IDAHO	7	HYALELLIDAE (TALITRIDAE)	200.000	62.431 *	13.0016	ACR
		DAPHNIDAE	1002.474			
		SALMONIDAE	0470.720			
		CYPRINIDAE	0002.400			
ILLINOIS	8	HYALELLIDAE (TALITRIDAE)	200.000	74.102 *	10.7004	ACR
		DAPHNIDAE	2000.000			
		SALMONIDAE	7040.000			
		CYPRINIDAE	0002.400			
INDIANA	7	HYALELLIDAE (TALITRIDAE)	200.000	64.004 *	17.0000	ACR
		DAPHNIDAE	2000.000			
		SALMONIDAE	7040.000			
		CYPRINIDAE	0002.400			
IOWA	6	HYALELLIDAE (TALITRIDAE)	200.000	69.740 *	17.0000	ACR
		DAPHNIDAE	2000.000			
		CYPRINIDAE	0002.400			
		FOSCILIDAE	12000.040			
§ KANSAS	7	HYALELLIDAE (TALITRIDAE)	200.000	69.004 *	10.1011	ACR
		DAPHNIDAE	2000.000			
		CYPRINIDAE	0002.400			
		FOSCILIDAE	12000.040			
KENTUCKY	8	HYALELLIDAE (TALITRIDAE)	200.000	74.102 *	10.7004	ACR
		DAPHNIDAE	2000.000			
		SALMONIDAE	7040.000			
		CYPRINIDAE	0002.400			
LOUISIANA	7	HYALELLIDAE (TALITRIDAE)	200.000	69.004 *	10.1011	ACR
		DAPHNIDAE	2000.000			
		CYPRINIDAE	0002.400			
		FOSCILIDAE	12000.040			
MAINE	6	HYALELLIDAE (TALITRIDAE)	200.000	40.010 *	12.4000	ACR
		CYPRINIDAE	3100.140			
		DAPHNIDAE	2000.000			
		SALMONIDAE	10400.070			
MARYLAND	7	HYALELLIDAE (TALITRIDAE)	200.000	62.001 *	10.7400	ACR
		DAPHNIDAE	2000.000			
		SALMONIDAE	0470.720			
		CYPRINIDAE	0002.400			
MASSACHUSETTS	7	HYALELLIDAE (TALITRIDAE)	200.000	62.001 *	10.7400	ACR
		DAPHNIDAE	2000.000			
		SALMONIDAE	0470.720			
		CYPRINIDAE	0002.400			

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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: SELENIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
MICHIGAN	8	HYALELLIDAE (TALITRIDAE)	359.000	72.017 *	18.3944	ACR
		DAPHNIDAE	3359.000			
		SALMONIDAE	8470.723			
		CYPRINIDAE	9992.400			
MINNESOTA	8	HYALELLIDAE (TALITRIDAE)	359.000	81.576 *	21.5991	ACR
		DAPHNIDAE	3359.000			
		SALMONIDAE	8470.723			
		CYPRINIDAE	9992.400			
* MISSISSIPPI	7	HYALELLIDAE (TALITRIDAE)	359.000	59.654 *	16.1011	ACR
		DAPHNIDAE	3359.000			
		CYPRINIDAE	9992.400			
		POECILIIDAE	12999.045			
MISSOURI	7	HYALELLIDAE (TALITRIDAE)	359.000	59.654 *	16.1011	ACR
		DAPHNIDAE	3359.000			
		CYPRINIDAE	9992.400			
		POECILIIDAE	12999.045			
MONTANA	7	HYALELLIDAE (TALITRIDAE)	359.000	52.431 *	13.5916	ACR
		DAPHNIDAE	1692.474			
		SALMONIDAE	8470.723			
		CYPRINIDAE	9992.400			
NEBRASKA	7	HYALELLIDAE (TALITRIDAE)	359.000	52.431 *	13.5916	ACR
		DAPHNIDAE	1692.474			
		SALMONIDAE	8470.723			
		CYPRINIDAE	9992.400			
NEVADA	8	HYALELLIDAE (TALITRIDAE)	359.000	54.141 *	14.4376	ACR
		DAPHNIDAE	1692.474			
		SALMONIDAE	8470.723			
		POECILIIDAE	12999.045			
NEW HAMPSHIRE	6	HYALELLIDAE (TALITRIDAE)	359.000	59.744 *	16.6949	ACR
		CYPRINIDAE	3165.149			
		DAPHNIDAE	3359.000			
		SALMONIDAE	8470.723			
NEW JERSEY	8	HYALELLIDAE (TALITRIDAE)	359.000	69.359 *	17.5765	ACR
		DAPHNIDAE	3359.000			
		SALMONIDAE	8470.723			
		POECILIIDAE	12999.045			
NEW MEXICO	8	HYALELLIDAE (TALITRIDAE)	359.000	69.102 *	16.8431	ACR
		DAPHNIDAE	1692.474			
		SALMONIDAE	8470.723			
		CYPRINIDAE	9992.400			
NEW YORK	8	HYALELLIDAE (TALITRIDAE)	359.000	72.017 *	18.3944	ACR
		DAPHNIDAE	3359.000			
		SALMONIDAE	8470.723			
		CYPRINIDAE	9992.400			
NORTH CAROLINA	7	HYALELLIDAE (TALITRIDAE)	359.000	57.359 *	16.3966	ACR
		DAPHNIDAE	3359.000			
		SALMONIDAE	8470.723			
		POECILIIDAE	12999.045			
NORTH DAKOTA	7	HYALELLIDAE (TALITRIDAE)	359.000	54.657 *	14.6394	ACR
		DAPHNIDAE	1692.474			
		SALMONIDAE	7049.699			
		CYPRINIDAE	9992.400			
OHIO	8	HYALELLIDAE (TALITRIDAE)	359.000	81.576 *	21.5991	ACR
		DAPHNIDAE	3359.000			
		SALMONIDAE	8470.723			
		CYPRINIDAE	9992.400			
OKLAHOMA	8	HYALELLIDAE (TALITRIDAE)	359.000	84.888 *	22.4888	ACR
		DAPHNIDAE	3359.000			
		SALMONIDAE	7049.699			
		CYPRINIDAE	9992.400			
OREGON	6	HYALELLIDAE (TALITRIDAE)	359.000	29.698 *	7.5941	ACR
		DAPHNIDAE	1692.474			
		SALMONIDAE	8470.723			
		PHYSIDAE	24999.999			
PENNSYLVANIA	7	HYALELLIDAE (TALITRIDAE)	359.000	62.591 *	16.7469	ACR
		DAPHNIDAE	3359.000			
		SALMONIDAE	8470.723			
		CYPRINIDAE	9992.400			
RHODE ISLAND	6	HYALELLIDAE (TALITRIDAE)	359.000	54.359 *	14.4747	ACR
		DAPHNIDAE	3359.000			
		SALMONIDAE	8470.723			
		CYPRINIDAE	9992.400			
SOUTH CAROLINA	7	HYALELLIDAE (TALITRIDAE)	359.000	57.359 *	16.3966	ACR
		DAPHNIDAE	3359.000			
		SALMONIDAE	8470.723			
		POECILIIDAE	12999.045			
SOUTH DAKOTA	7	HYALELLIDAE (TALITRIDAE)	359.000	54.657 *	14.6394	ACR
		DAPHNIDAE	1692.474			
		SALMONIDAE	7049.699			
		CYPRINIDAE	9992.400			

TOXICANT: SELENIUM

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
TENNESSEE	8	HYALELLIDAE (TALITRIDAE)	359.000	74.162 *	18.7694	ACR
		DAPHNIDAE	3359.000			
		SALMONIDAE	7049.699			
		CYPRINIDAE	9992.400			
# TEXAS	8	HYALELLIDAE (TALITRIDAE)	359.000	65.749 *	17.5989	ACR
		DAPHNIDAE	3359.000			
		CYPRINIDAE	9992.400			
		POECILIIDAE	12999.045			
UTAH	7	HYALELLIDAE (TALITRIDAE)	359.000	52.431 *	13.5916	ACR
		DAPHNIDAE	1692.474			
		SALMONIDAE	8470.723			
		CYPRINIDAE	9992.400			
VERMONT	6	HYALELLIDAE (TALITRIDAE)	359.000	59.744 *	16.6949	ACR
		CYPRINIDAE	3165.149			
		DAPHNIDAE	3359.000			
		SALMONIDAE	8470.723			
VIRGINIA	8	HYALELLIDAE (TALITRIDAE)	359.000	54.359 *	14.4747	ACR
		DAPHNIDAE	3359.000			
		SALMONIDAE	8470.723			
		CYPRINIDAE	9992.400			
WASHINGTON	6	HYALELLIDAE (TALITRIDAE)	359.000	29.698 *	7.5941	ACR
		DAPHNIDAE	1692.474			
		SALMONIDAE	8470.723			
		PHYSIDAE	24999.999			
WEST VIRGINIA	7	HYALELLIDAE (TALITRIDAE)	359.000	62.591 *	16.7469	ACR
		DAPHNIDAE	3359.000			
		SALMONIDAE	8470.723			
		CYPRINIDAE	9992.400			
WISCONSIN	7	HYALELLIDAE (TALITRIDAE)	359.000	62.591 *	16.7469	ACR
		DAPHNIDAE	3359.000			
		SALMONIDAE	8470.723			
		CYPRINIDAE	9992.400			
WYOMING	7	HYALELLIDAE (TALITRIDAE)	359.000	52.431 *	13.5916	ACR
		DAPHNIDAE	1692.474			
		SALMONIDAE	8470.723			
		CYPRINIDAE	9992.400			

FOOTNOTE

* — UNITS IN MICROGRAMS PER LITER

** — PPV 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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

TOXICANT: SILVER

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LOES VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
NATIONAL	9	DAPHNIDAE	0.002	0.00000 *		
		COTTIDAE	0.004			
		CYPRINIDAE	0.009			
		CYPRINODONTIDAE	0.012			
ALABAMA	5	COTTIDAE	0.004	0.00005 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
ARIZONA	5	DAPHNIDAE	0.002	0.00011 *		
		CYPRINIDAE	0.009			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
ARKANSAS	5	COTTIDAE	0.004	0.00002 *		
		CYPRINIDAE	0.011			
		CENTRARCHIDAE	0.112			
		PHILOGENIDAE	0.017			
CALIFORNIA	5	DAPHNIDAE	0.002	0.00011 *		
		CYPRINIDAE	0.009			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
COLORADO	6	DAPHNIDAE	0.002	0.00000 *		
		COTTIDAE	0.004			
		CYPRINIDAE	0.009			
		SALMONIDAE	0.021			
CONNECTICUT	4	CYPRINIDAE	0.011	0.00000 *		
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
		PHILOGENIDAE	0.017			
DELAWARE	3	SALMONIDAE	0.021	0.00003 *		
		CENTRARCHIDAE	0.112	**		
		PHILOGENIDAE	0.017			
			0.009			
# FLORIDA	3	CYPRINODONTIDAE	0.012	0.00000 *		
		CENTRARCHIDAE	0.112	**		
		PHILOGENIDAE	0.017			
			0.009			
GEORGIA	4	COTTIDAE	0.004	0.00002 *		
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
		PHILOGENIDAE	0.017			
IDAHO	6	DAPHNIDAE	0.002	0.00000 *		
		COTTIDAE	0.004			
		CYPRINIDAE	0.009			
		SALMONIDAE	0.021			
ILLINOIS	5	COTTIDAE	0.004	0.00041 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
INDIANA	5	COTTIDAE	0.004	0.00005 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
IOWA	5	CYPRINIDAE	0.011	0.00021 *		
		CENTRARCHIDAE	0.112			
		CHIRONOMIDAE	4.100			
		PHILOGENIDAE	0.017			
# KANSAS	3	CYPRINIDAE	0.011	0.00000 *		
		CENTRARCHIDAE	0.112	**		
		PHILOGENIDAE	0.017			
			0.009			
KENTUCKY	6	COTTIDAE	0.004	0.00041 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
LOUISIANA	3	CYPRINIDAE	0.011	0.00003 *		
		CENTRARCHIDAE	0.112	**		
		PHILOGENIDAE	0.017			
			0.009			
MAINE	2	CYPRINIDAE	0.011	0.00000 *		
		PHILOGENIDAE	0.017	**		
			0.009			
			0.009			
MARYLAND	5	COTTIDAE	0.004	0.00005 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
MASSACHUSETTS	4	CYPRINIDAE	0.011	0.00000 *		
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
		PHILOGENIDAE	0.017			

TOXICANT: SILVER

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LOES VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
MICHIGAN	6	COTTIDAE	0.004	0.00041 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
MINNESOTA	5	CYPRINIDAE	0.011	0.00011 *		
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
		CHIRONOMIDAE	4.100			
# MISSISSIPPI	5	COTTIDAE	0.004	0.00002 *		
		CYPRINIDAE	0.011			
		CENTRARCHIDAE	0.112			
		PHILOGENIDAE	0.017			
MISSOURI	4	COTTIDAE	0.004	0.00001 *		
		CYPRINIDAE	0.011			
		CENTRARCHIDAE	0.112			
		PHILOGENIDAE	0.017			
MONTANA	5	DAPHNIDAE	0.002	0.00016 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
NEBRASKA	5	DAPHNIDAE	0.002	0.00016 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
NEVADA	5	DAPHNIDAE	0.002	0.00000 *		
		CYPRINIDAE	0.004			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
NEW HAMPSHIRE	4	CYPRINIDAE	0.011	0.00000 *		
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
		PHILOGENIDAE	0.017			
NEW JERSEY	3	SALMONIDAE	0.021	0.00000 *		
		CENTRARCHIDAE	0.112	**		
		PHILOGENIDAE	0.017			
			0.009			
NEW MEXICO	6	DAPHNIDAE	0.002	0.00000 *		
		COTTIDAE	0.004			
		CYPRINIDAE	0.009			
		SALMONIDAE	0.021			
NEW YORK	6	COTTIDAE	0.004	0.00041 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
NORTH CAROLINA	3	SALMONIDAE	0.021	0.00000 *		
		CENTRARCHIDAE	0.112	**		
		PHILOGENIDAE	0.017			
			0.009			
NORTH DAKOTA	5	DAPHNIDAE	0.002	0.00016 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
OHIO	6	COTTIDAE	0.004	0.00041 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
OKLAHOMA	6	CYPRINIDAE	0.011	0.00014 *		
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
		CHIRONOMIDAE	4.100			
OREGON	6	DAPHNIDAE	0.002	0.00000 *		
		CYPRINIDAE	0.004			
		COTTIDAE	0.004			
		SALMONIDAE	0.021			
PENNSYLVANIA	6	COTTIDAE	0.004	0.00000 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
RHODE ISLAND	4	CYPRINIDAE	0.011	0.00000 *		
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
		PHILOGENIDAE	0.017			
SOUTH CAROLINA	3	SALMONIDAE	0.021	0.00000 *		
		CENTRARCHIDAE	0.112	**		
		PHILOGENIDAE	0.017			
			0.009			
SOUTH DAKOTA	5	DAPHNIDAE	0.002	0.00016 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			

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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

APPENDIX C

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY CHEMICAL

TOXICANT: SILVER

STATE	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 (++)
TENNESSEE	6	COTTIDAE	0.004	0.00041 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
# TEXAS	4	CYPRINIDAE	0.011	0.00016 *		
		CENTRARCHIDAE	0.112			
		CHIRONOMIDAE	4.100			
		PHILODINIDAE	5.017			
UTAH	6	DAPHNIDAE	0.002	0.00000 *		
		COTTIDAE	0.004			
		CYPRINIDAE	0.009			
		SALMONIDAE	0.021			
VERMONT	4	CYPRINIDAE	0.011	0.00000 *		
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
		PHILODINIDAE	5.017			
VIRGINIA	4	CYPRINIDAE	0.011	0.00000 *		
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
		PHILODINIDAE	5.017			
WASHINGTON	6	DAPHNIDAE	0.002	0.00000 *		
		CYPRINIDAE	0.004			
		COTTIDAE	0.004			
		SALMONIDAE	0.021			
WEST VIRGINIA	6	COTTIDAE	0.004	0.00000 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
WISCONSIN	6	COTTIDAE	0.004	0.00041 *		
		CYPRINIDAE	0.011			
		SALMONIDAE	0.021			
		CENTRARCHIDAE	0.112			
WYOMING	6	DAPHNIDAE	0.002	0.00000 *		
		COTTIDAE	0.004			
		CYPRINIDAE	0.009			
		SALMONIDAE	0.021			

TOXICANT: TOXAPHENE

STATE	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 (++)
NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
		PTERONARCIDAE	2.027			
		ICTALURIDAE	3.047			
		CENTRARCHIDAE	4.725			
ALABAMA	7	ICTALURIDAE	3.047	1.100 *	0.0100	ACR
		CENTRARCHIDAE	4.725			
		CYPRINIDAE	8.000			
		SALMONIDAE	9.100			
ARIZONA	11	PERLIDAE	1.300	0.002 *	0.0001	ACR
		PTERONARCIDAE	2.027			
		CENTRARCHIDAE	2.948			
		ICTALURIDAE	3.047			
ARKANSAS	8	SALMONIDAE	3.000	0.041 *	0.0102	ACR
		ICTALURIDAE	3.047			
		CENTRARCHIDAE	4.725			
		CYPRINIDAE	8.000			
CALIFORNIA	9	PERLIDAE	1.300	0.445 *	0.0072	ACR
		CENTRARCHIDAE	2.948			
		ICTALURIDAE	3.047			
		SALMONIDAE	5.701			
COLORADO	9	PERLIDAE	1.300	0.020 *	0.0003	ACR
		PTERONARCIDAE	2.027			
		CENTRARCHIDAE	2.948			
		ICTALURIDAE	3.047			
CONNECTICUT	7	CENTRARCHIDAE	2.948	0.013 *	0.0140	ACR
		SALMONIDAE	5.970			
		CYPRINIDAE	7.400			
		PERCIDAE	12.000			
DELAWARE	8	CENTRARCHIDAE	2.948	1.004 *	0.0170	ACR
		ICTALURIDAE	4.100			
		SALMONIDAE	5.201			
		CYPRINIDAE	8.782			
# FLORIDA	6	ICTALURIDAE	4.100	0.000 *	0.0100	ACR
		CENTRARCHIDAE	4.725			
		CYPRINIDAE	8.782			
		DAPHNIDAE	14.370			
GEORGIA	6	ICTALURIDAE	3.047	1.000 *	0.0173	ACR
		CENTRARCHIDAE	4.725			
		CYPRINIDAE	8.100			
		SALMONIDAE	9.000			
IDAHO	10	PERLIDAE	1.300	0.004 *	0.0001	ACR
		PTERONARCIDAE	2.027			
		CENTRARCHIDAE	2.948			
		ICTALURIDAE	3.000			
ILLINOIS	9	ICTALURIDAE	3.047	1.201 *	0.0214	ACR
		CENTRARCHIDAE	4.725			
		SALMONIDAE	4.944			
		CYPRINIDAE	8.000			
INDIANA	8	ICTALURIDAE	3.047	1.204 *	0.0000	ACR
		CENTRARCHIDAE	4.725			
		SALMONIDAE	4.944			
		CYPRINIDAE	8.000			
IOWA	9	CENTRARCHIDAE	2.948	0.700 *	0.0120	ACR
		SALMONIDAE	3.000			
		ICTALURIDAE	3.047			
		CYPRINIDAE	8.000			
# KANSAS	8	CENTRARCHIDAE	2.948	0.001 *	0.0102	ACR
		ICTALURIDAE	3.047			
		CYPRINIDAE	8.000			
		PERCIDAE	12.000			
KENTUCKY	7	ICTALURIDAE	3.047	1.200 *	0.0000	ACR
		CENTRARCHIDAE	4.725			
		SALMONIDAE	5.201			
		CYPRINIDAE	8.000			
LOUISIANA	7	ICTALURIDAE	3.047	1.107 *	0.0100	ACR
		CENTRARCHIDAE	4.725			
		CYPRINIDAE	8.000			
		SALMONIDAE	8.072			
MAINE	7	CENTRARCHIDAE	2.000	0.001 *	0.0004	ACR
		CYPRINIDAE	8.100			
		SALMONIDAE	8.000			
		PERCIDAE	12.000			
MARYLAND	8	CENTRARCHIDAE	2.040	0.770 *	0.0120	ACR
		ICTALURIDAE	3.000			
		SALMONIDAE	7.120			
		CYPRINIDAE	8.000			
MASSACHUSETTS	8	CENTRARCHIDAE	2.040	0.010 *	0.0140	ACR
		ICTALURIDAE	3.047			
		SALMONIDAE	5.070			
		CYPRINIDAE	7.400			

FOOTNOTE

* — UNITS IN MICROGRAMS PER LITER
** — PPV PINAL PLANT VALUE
PRV 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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

TOXICANT: TOXAPHENE

STATE	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 (++)
MICHIGAN	9	CENTRARCHIDAE	2.848	0.043 *	0.0168	ACR
		ICTALURIDAE	3.547			
		SALMONIDAE	6.701			
		CYPRINIDAE	8.660			
MINNESOTA	6	CENTRARCHIDAE	2.848	0.037 *	0.0147	ACR
		ICTALURIDAE	3.547			
		SALMONIDAE	6.303			
		CYPRINIDAE	8.660			
# MISSISSIPPI	7	ICTALURIDAE	3.547	0.037 *	0.0147	ACR
		CENTRARCHIDAE	4.725			
		CYPRINIDAE	8.660			
		SAPHNIDAE	14.370			
MISSOURI	7	SALMONIDAE	3.660	0.035 *	0.0147	ACR
		ICTALURIDAE	3.547			
		CENTRARCHIDAE	4.725			
		CYPRINIDAE	8.660			
MONTANA	10	PERLIDAE	1.360	0.043 *	0.0060	ACR
		PTERONARCIDAE	2.027			
		CENTRARCHIDAE	2.848			
		ICTALURIDAE	3.547			
NEBRASKA	7	CENTRARCHIDAE	2.848	0.031 *	0.0133	ACR
		ICTALURIDAE	3.547			
		SALMONIDAE	6.670			
		CYPRINIDAE	8.660			
NEVADA	10	CENTRARCHIDAE	2.848	0.014 *	0.0143	ACR
		PTERONARCIDAE	3.660			
		ICTALURIDAE	3.547			
		SALMONIDAE	6.670			
NEW HAMPSHIRE	7	CENTRARCHIDAE	2.848	0.030 *	0.0144	ACR
		CYPRINIDAE	8.160			
		SALMONIDAE	6.670			
		PERCIDAE	10.660			
NEW JERSEY	8	CENTRARCHIDAE	2.848	1.045 *	0.0169	ACR
		ICTALURIDAE	4.100			
		SALMONIDAE	6.670			
		CYPRINIDAE	8.702			
NEW MEXICO	10	PERLIDAE	1.360	0.404 *	0.0060	ACR
		PTERONARCIDAE	2.027			
		ICTALURIDAE	3.547			
		CENTRARCHIDAE	4.725			
NEW YORK	9	ICTALURIDAE	3.547	1.340 *	0.0217	ACR
		CENTRARCHIDAE	4.725			
		SALMONIDAE	6.303			
		CYPRINIDAE	8.660			
NORTH CAROLINA	8	ICTALURIDAE	3.660	1.000 *	0.0177	ACR
		CENTRARCHIDAE	4.725			
		SALMONIDAE	6.670			
		CYPRINIDAE	8.160			
NORTH DAKOTA	8	CENTRARCHIDAE	2.848	0.030 *	0.0131	ACR
		ICTALURIDAE	3.547			
		CYPRINIDAE	8.660			
		SALMONIDAE	6.160			
OHIO	9	ICTALURIDAE	3.547	1.360 *	0.0200	ACR
		CENTRARCHIDAE	4.725			
		SALMONIDAE	6.670			
		CYPRINIDAE	8.660			
OKLAHOMA	8	ICTALURIDAE	3.547	1.360 *	0.0169	ACR
		CENTRARCHIDAE	4.725			
		CYPRINIDAE	8.660			
		SALMONIDAE	6.160			
OREGON	8	CENTRARCHIDAE	2.848	0.030 *	0.0133	ACR
		PTERONARCIDAE	3.660			
		SALMONIDAE	6.701			
		CYPRINIDAE	7.210			
PENNSYLVANIA	9	ICTALURIDAE	3.547	1.360 *	0.0216	ACR
		CENTRARCHIDAE	4.725			
		SALMONIDAE	6.670			
		CYPRINIDAE	8.460			
RHODE ISLAND	7	CENTRARCHIDAE	2.848	0.013 *	0.0143	ACR
		SALMONIDAE	6.670			
		CYPRINIDAE	7.460			
		PERCIDAE	10.660			
SOUTH CAROLINA	8	CENTRARCHIDAE	4.725	1.700 *	0.0270	ACR
		CYPRINIDAE	8.160			
		SALMONIDAE	6.660			
		PERCIDAE	10.660			
SOUTH DAKOTA	9	PERLIDAE	1.360	0.404 *	0.0070	ACR
		CENTRARCHIDAE	2.848			
		ICTALURIDAE	3.547			
		SALMONIDAE	6.291			

TOXICANT: TOXAPHENE

STATE	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 (++)
TENNESSEE	8	ICTALURIDAE	3.547	1.304 *	0.0210	ACR
		CENTRARCHIDAE	4.725			
		SALMONIDAE	6.291			
		CYPRINIDAE	8.660			
# TEXAS	8	ICTALURIDAE	3.547	1.000 *	0.0172	ACR
		CENTRARCHIDAE	4.725			
		CYPRINIDAE	8.460			
		PERCIDAE	10.660			
UTAH	10	PERLIDAE	1.360	0.040 *	0.0060	ACR
		PTERONARCIDAE	2.027			
		CENTRARCHIDAE	2.848			
		ICTALURIDAE	3.547			
VERMONT	7	CENTRARCHIDAE	2.848	0.030 *	0.0144	ACR
		CYPRINIDAE	8.160			
		SALMONIDAE	6.670			
		PERCIDAE	10.660			
VIRGINIA	7	CENTRARCHIDAE	4.725	1.040 *	0.0257	ACR
		SALMONIDAE	6.670			
		CYPRINIDAE	8.660			
		PERCIDAE	10.660			
WASHINGTON	10	PERLIDAE	1.360	0.034 *	0.0060	ACR
		PTERONARCIDAE	2.200			
		CENTRARCHIDAE	2.848			
		ICTALURIDAE	3.660			
WEST VIRGINIA	6	CENTRARCHIDAE	2.848	0.012 *	0.0132	ACR
		ICTALURIDAE	3.547			
		SALMONIDAE	6.670			
		CYPRINIDAE	8.660			
WISCONSIN	9	CENTRARCHIDAE	2.848	0.040 *	0.0160	ACR
		ICTALURIDAE	3.547			
		SALMONIDAE	6.701			
		CYPRINIDAE	8.660			
WYOMING	10	PERLIDAE	1.360	0.040 *	0.0060	ACR
		PTERONARCIDAE	2.027			
		CENTRARCHIDAE	2.848			
		ICTALURIDAE	3.547			

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 MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

TOXICANT: ZINC

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+) ●	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+) ●	30-DAY (+)	AVERAGE (++)
NATIONAL	16	DAPHNIDAE	13.737	0.148	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	49.891			
		PHILODINIDAE	92.757			
ALABAMA	12	DAPHNIDAE	21.333	0.386	47.5000	SCV
		SALMONIDAE	39.343			
		PHYSIDAE	41.888			
		PERCICHTHYIDAE	49.394			
ARIZONA	11	DAPHNIDAE	13.737	0.600	47.5000	SCV
		PERCICHTHYIDAE	49.394			
		SALMONIDAE	49.899			
		PHILODINIDAE	92.757			
ARKANSAS	10	DAPHNIDAE	21.333	4.600 *	47.5000	SCV
		PHYSIDAE	41.888			
		PHILODINIDAE	92.757			
		CYPRINIDAE	355.000			
CALIFORNIA	11	DAPHNIDAE	13.737	0.043	47.5000	SCV
		SALMONIDAE	47.289			
		PERCICHTHYIDAE	49.394			
		PHILODINIDAE	92.757			
COLORADO	10	DAPHNIDAE	13.737	4.400	47.5000	SCV
		SALMONIDAE	39.572			
		PHYSIDAE	41.888			
		PHILODINIDAE	92.757			
CONNECTICUT	13	DAPHNIDAE	21.333	0.401	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	91.046			
		PHILODINIDAE	92.757			
DELAWARE	13	DAPHNIDAE	21.333	0.027	47.5000	SCV
		SALMONIDAE	39.343			
		PHYSIDAE	41.888			
		PHILODINIDAE	92.757			
# FLORIDA	12	DAPHNIDAE	21.333	0.165 *	47.5000	SCV
		PHYSIDAE	41.888			
		PERCICHTHYIDAE	49.394			
		CYPRINODONTIDAE	84.897			
GEORGIA	11	DAPHNIDAE	21.333	0.400 *	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	49.899			
		PERCICHTHYIDAE	49.394			
IDAHO	9	DAPHNIDAE	13.737	2.702	47.5000	SCV
		SALMONIDAE	41.210			
		PHILODINIDAE	92.757			
		CYPRINIDAE	270.000			
ILLINOIS	13	DAPHNIDAE	21.333	0.600	47.5000	SCV
		SALMONIDAE	39.899			
		PHYSIDAE	41.888			
		PERCICHTHYIDAE	49.394			
INDIANA	13	DAPHNIDAE	21.333	0.600	47.5000	SCV
		SALMONIDAE	39.899			
		PHYSIDAE	41.888			
		PERCICHTHYIDAE	49.394			
IOWA	11	DAPHNIDAE	21.333	4.002 *	47.5000	SCV
		PHYSIDAE	41.888			
		PHILODINIDAE	92.757			
		CYPRINIDAE	355.000			
# KANSAS	10	DAPHNIDAE	21.333	7.300 *	47.5000	SCV
		PHYSIDAE	41.888			
		PERCICHTHYIDAE	49.394			
		PHILODINIDAE	92.757			
KENTUCKY	12	DAPHNIDAE	21.333	0.300	47.5000	SCV
		SALMONIDAE	39.343			
		PHYSIDAE	41.888			
		PERCICHTHYIDAE	49.394			
LOUISIANA	11	DAPHNIDAE	21.333	0.136 *	47.5000	SCV
		PHYSIDAE	41.888			
		PERCICHTHYIDAE	49.394			
		SALMONIDAE	91.416			
MAINE	13	DAPHNIDAE	21.333	0.002	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	73.017			
		PHILODINIDAE	92.757			
MARYLAND	13	DAPHNIDAE	21.333	0.003	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	89.000			
		PHILODINIDAE	92.757			
MASSACHUSETTS	13	DAPHNIDAE	21.333	0.401	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	91.046			
		PHILODINIDAE	92.757			

TOXICANT: ZINC

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+) ●	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+) ●	30-DAY (+)	AVERAGE (++)
MICHIGAN	12	DAPHNIDAE	21.333	7.501	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	44.947			
		PHILODINIDAE	92.757			
MINNESOTA	12	DAPHNIDAE	21.333	7.449	47.5000	SCV
		SALMONIDAE	39.572			
		PHYSIDAE	41.888			
		PHILODINIDAE	92.757			
# MISSISSIPPI	11	DAPHNIDAE	21.333	7.594	47.5000	SCV
		PHYSIDAE	41.888			
		PERCICHTHYIDAE	49.394			
		PHILODINIDAE	92.757			
MISSOURI	11	DAPHNIDAE	21.333	7.594 *	47.5000	SCV
		PHYSIDAE	41.888			
		PERCICHTHYIDAE	49.394			
		PHILODINIDAE	92.757			
MONTANA	10	DAPHNIDAE	13.737	4.677	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	89.489			
		PHILODINIDAE	92.757			
NEBRASKA	11	DAPHNIDAE	13.737	0.769 *	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	49.899			
		PERCICHTHYIDAE	49.394			
NEVADA	10	DAPHNIDAE	13.737	3.340	47.5000	SCV
		SALMONIDAE	49.899			
		PHILODINIDAE	92.757			
		POECILIIDAE	251.401			
NEW HAMPSHIRE	13	DAPHNIDAE	21.333	0.400	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	89.894			
		PHILODINIDAE	92.757			
NEW JERSEY	13	DAPHNIDAE	21.333	0.300	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	49.899			
		PHILODINIDAE	92.757			
NEW MEXICO	12	DAPHNIDAE	13.737	0.055	47.5000	SCV
		PHYSIDAE	41.888			
		PERCICHTHYIDAE	49.394			
		SALMONIDAE	49.899			
NEW YORK	13	DAPHNIDAE	21.333	0.600	47.5000	SCV
		SALMONIDAE	41.276			
		PHYSIDAE	41.888			
		PHILODINIDAE	92.757			
NORTH CAROLINA	13	DAPHNIDAE	21.333	0.300	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	49.899			
		PHILODINIDAE	92.757			
NORTH DAKOTA	11	DAPHNIDAE	13.737	4.140	47.5000	SCV
		SALMONIDAE	39.249			
		PHYSIDAE	41.888			
		PHILODINIDAE	92.757			
OHIO	12	DAPHNIDAE	21.333	7.501	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	49.899			
		PHILODINIDAE	92.757			
OKLAHOMA	12	DAPHNIDAE	21.333	0.305	47.5000	SCV
		SALMONIDAE	39.249			
		PHYSIDAE	41.888			
		PERCICHTHYIDAE	49.394			
OREGON	10	DAPHNIDAE	13.737	4.744	47.5000	SCV
		SALMONIDAE	47.289			
		PERCICHTHYIDAE	49.394			
		PHILODINIDAE	92.757			
PENNSYLVANIA	13	DAPHNIDAE	21.333	0.405	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	49.899			
		PHILODINIDAE	92.757			
RHODE ISLAND	13	DAPHNIDAE	21.333	0.401	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	91.046			
		PHILODINIDAE	92.757			
SOUTH CAROLINA	12	DAPHNIDAE	21.333	7.501 *	47.5000	SCV
		PHYSIDAE	41.888			
		SALMONIDAE	49.899			
		PHILODINIDAE	92.757			
SOUTH DAKOTA	12	DAPHNIDAE	13.737	4.300	47.5000	SCV
		SALMONIDAE	39.249			
		PHYSIDAE	41.888			
		PHILODINIDAE	92.757			

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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

TOXICANT: ZINC

STATE	NUMBER OF FAMILIES TESTED	MOST SENSITIVE RESIDENT FAMILY NAME	LOSS VALUE (+) (■)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+) (■)	30-DAY (+)	AVERAGE (++)
TENNESSEE	12	DAPHNIDAE	21.283	8.385	47.0000	SCV
		SALMONIDAE	38.343			
		PHYSIDAE	41.588			
		PERCICHTHYIDAE	48.284			
# TEXAS	11	DAPHNIDAE	21.283	7.624 *	47.0000	SCV
		PHYSIDAE	41.588			
		PERCICHTHYIDAE	48.284			
		PHILODINIDAE	92.757			
UTAH	10	DAPHNIDAE	13.737	4.789	47.0000	SCV
		PERCICHTHYIDAE	48.284			
		SALMONIDAE	48.588			
		PHILODINIDAE	92.757			
VERMONT	13	DAPHNIDAE	21.283	8.451	47.0000	SCV
		PHYSIDAE	41.588			
		SALMONIDAE	51.845			
		PHILODINIDAE	92.757			
VIRGINIA	13	DAPHNIDAE	21.283	8.385	47.0000	SCV
		PHYSIDAE	41.588			
		SALMONIDAE	48.588			
		PHILODINIDAE	92.757			
WASHINGTON	9	DAPHNIDAE	13.737	2.692	47.0000	SCV
		SALMONIDAE	47.289			
		PHILODINIDAE	92.757			
		GAMMARIDAE	316.621			
WEST VIRGINIA	11	DAPHNIDAE	21.283	7.688	47.0000	SCV
		PHYSIDAE	41.588			
		SALMONIDAE	48.588			
		PHILODINIDAE	92.757			
WISCONSIN	12	DAPHNIDAE	21.283	7.891	47.0000	SCV
		PHYSIDAE	41.588			
		SALMONIDAE	44.947			
		PHILODINIDAE	92.757			
WYOMING	10	DAPHNIDAE	13.737	4.847	47.0000	SCV
		PHYSIDAE	41.588			
		SALMONIDAE	48.588			
		PHILODINIDAE	92.757			

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 3.7 TO DETERMINE MAXIMUM AND/OR 30-DAY AVERAGE CRITERIA

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

STATE: ALABAMA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.461	3.355 *		
			ASELLIDAE	8.699			
			EPHEMERELLIDAE	8.699			
			SALMONIDAE	10.893			
	STATE	7	SALMONIDAE	4.893	1.402 *		
			CENTRARCHIDAE	7.461			
			PERCICHTHYIDAE	10.699			
			ANGUILLIDAE	10.699			
ARSENIC	NATIONAL	8	GAMMARIDAE	976.699	113.393 *		
			DAPHNIDAE	1704.346			
			SALMONIDAE	14128.843			
			ICTALURIDAE	16457.430			
	STATE	5	DAPHNIDAE	1048.139	171.016 *		
			SALMONIDAE	13699.895			
			ICTALURIDAE	16457.430			
			CENTRARCHIDAE	16494.699			
96 CADMIUM	NATIONAL	16	SALMONIDAE	0.849	0.027	0.0004	ACR
			DAPHNIDAE	0.499			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.699			
	STATE	14	SALMONIDAE	0.844	0.013	0.0002	ACR
			PERCICHTHYIDAE	0.103			
			DAPHNIDAE	0.894			
			GAMMARIDAE	1.147			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.269	1.574 *	0.0043	PRV
			PTERONARCIDAE	10.699			
			CYPRINIDAE	33.339			
			GAMMARIDAE	38.349			
	STATE	4	PALAEMONIDAE	0.269	1.232 *	0.0043	PRV
			CYPRINIDAE	33.339			
			SALMONIDAE	38.401			
			CENTRARCHIDAE	54.711			
CHROMIUM	NATIONAL	10	GAMMARIDAE	57.699	12.184	0.3376	ACR
			DAPHNIDAE	6699.570			
			PHILODINIDAE	6699.769			
			PHYSIDAE	34699.699			
	STATE	6	PHILODINIDAE	6699.769	1699.499 *	16.0	PRV
			PHYSIDAE	34699.699			
			PERCICHTHYIDAE	39494.769			
			CYPRINIDAE	57491.672			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.599	0.184	0.46016	PCV
			CHIRONOMIDAE	0.759			
			PHYSIDAE	0.899			
			TUBIFICIDAE	1.349			
	STATE	17	DAPHNIDAE	0.599	0.137	0.43469	PCV
			CHIRONOMIDAE	0.759			
			PHYSIDAE	0.899			
			SALMONIDAE	1.882			
CYANIDE	NATIONAL	10	SALMONIDAE	76.797	31.439 *	4.3472	ACR
			DAPHNIDAE	83.699			
			CENTRARCHIDAE	114.316			
			PERCIDAE	133.121			
	STATE	6	SALMONIDAE	57.699	16.499 *	2.5699	ACR
			DAPHNIDAE	83.699			
			CENTRARCHIDAE	114.316			
			CYPRINIDAE	297.699			
DDT	NATIONAL	20	DAPHNIDAE	1.223	0.699	0.0010	PRV
			PERCIDAE	1.699			
			SISCOIDAE	1.799			
			GAMMARIDAE	2.234			
	STATE	8	DAPHNIDAE	0.979	0.344 *	0.0010	PRV
			ASTACIDAE	3.699			
			PALAEMONIDAE	3.234			
			CENTRARCHIDAE	4.102			
DIELDRIN	NATIONAL	12	FOSCILIIDAE	4.699	1.539 *	0.0019	PRV
			ASELLIDAE	5.699			
			SALMONIDAE	8.402			
			EPHEMERELLIDAE	8.699			
	STATE	5	SALMONIDAE	2.409	0.402 *	0.0010	PRV
			CENTRARCHIDAE	10.011			
			PALAEMONIDAE	29.699			
			CYPRINIDAE	30.102			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.894	0.355 *	0.1004	ACR
			CYPRINIDAE	1.279			
			PTERONARCIDAE	2.399			
			CATOSTOMIDAE	3.349			
	STATE	5	SALMONIDAE	0.894	0.137 *	0.0701	ACR
			CYPRINIDAE	1.279			
			CATOSTOMIDAE	3.349			
			CENTRARCHIDAE	3.011			

STATE: ALABAMA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ENDRIN	NATIONAL	17	GASTEROSTEIDAE	0.449	0.291 *	0.0023	PRV
			SALMONIDAE	0.499			
			PERLIDAE	0.499			
			PTERONARCIDAE	0.647			
	STATE	8	SALMONIDAE	0.894	0.259 *	0.0023	PRV
			CYPRINIDAE	0.732			
			FOSCILIIDAE	0.799			
			CENTRARCHIDAE	1.011			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.999	0.251 *	0.0038	PRV
			PALAEMONIDAE	1.699			
			PERLIDAE	2.699			
			ASTACIDAE	7.699			
	STATE	5	PALAEMONIDAE	1.699	0.243 *	0.0038	PRV
			SALMONIDAE	13.699			
			CENTRARCHIDAE	34.771			
			DAPHNIDAE	59.749			
96 LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.057 *	0.00003	PCV
			DAPHNIDAE	4.699			
			SALMONIDAE	69.692			
			CYPRINIDAE	355.792			
	STATE	4	SALMONIDAE	145.103	37.392 *	0.00004	PCV
			CYPRINIDAE	355.792			
			CENTRARCHIDAE	495.015			
			PHILOGENIDAE	699.843			
LINDANE	NATIONAL	10	ASELLIDAE	10.699	3.216 *	0.2574	ACR
			SALMONIDAE	21.699			
			GAMMARIDAE	32.437			
			CENTRARCHIDAE	62.571			
	STATE	5	SALMONIDAE	32.691	0.751 *	0.7699	ACR
			CENTRARCHIDAE	62.571			
			ICTALURIDAE	69.699			
			CYPRINIDAE	94.699			
MERCURY	NATIONAL	9	DAPHNIDAE	0.699	0.470 *	0.39	PRV
			GAMMARIDAE	10.699			
			ASTACIDAE	31.699			
			SALMONIDAE	244.399			
	STATE	5	GAMMARIDAE	10.699	0.347 *	0.39	PRV
			ASTACIDAE	39.699			
			SALMONIDAE	249.699			
			PHILOGENIDAE	765.471			
96 NICKEL	NATIONAL	10	DAPHNIDAE	65.677	32.914 *	3.3391	ACR
			EPHEMERELLIDAE	339.699			
			CENTRARCHIDAE	349.472			
			PHILOGENIDAE	401.217			
	STATE	11	DAPHNIDAE	75.499	31.010 *	3.3699	ACR
			PERCICHTHYIDAE	391.010			
			CENTRARCHIDAE	395.842			
			PHILOGENIDAE	401.217			
PCBS	NATIONAL	5	SALMONIDAE	2.699	0.137 *	0.014	PRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.691			
			GAMMARIDAE	69.699			
	STATE	4	SALMONIDAE	2.699	0.094 *	0.014	PRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.691			
			COGNAGRONIDAE (AGRONIDAE)	222.042			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	399.699	82.649 *	32.6999	ACR
			DAPHNIDAE	1699.474			
			CYPRINODONTIDAE	6499.979			
			SALMONIDAE	6479.723			
	STATE	8	HYALELLIDAE (TALITRIDAE)	399.699	74.102 *	10.7694	ACR
			DAPHNIDAE	2699.699			
			SALMONIDAE	7049.699			
			CYPRINIDAE	9699.499			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.699	0.00003 *		
			COTTIDAE	0.894			
			CYPRINIDAE	0.699			
			CYPRINODONTIDAE	0.012			
	STATE	5	COTTIDAE	0.894	0.00005 *		
			CYPRINIDAE	0.011			
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.399	0.057 *	0.0037	ACR
			TERONARCIDAE	2.027			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.739			
	STATE	7	ICTALURIDAE	3.047	1.169 *	0.0168	ACR
			CENTRARCHIDAE	4.739			
			CYPRINIDAE	6.699			
			SALMONIDAE	9.169			

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

$ – HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

96 – 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: ALABAMA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
S ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.146	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	48.001			
			PHILODINIDAE	62.757			
	STATE	12	DAPHNIDAE	21.223	0.205	47.0000	SCV
			SALMONIDAE	35.243			
			PHYSIDAE	41.000			
			PERCIONTHYIDAE	48.204			

STATE: ARIZONA

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	3.000 *		
			ASELLIDAE	0.000			
			EPHEMERELLIDAE	0.000			
			SALMONIDAE	10.000			
	STATE	10	SALMONIDAE	4.000	1.000 *		
			CENTRARCHIDAE	7.451			
			EPHEMERELLIDAE	0.000			
			PERCIONTHYIDAE	10.000			
ARSENIC	NATIONAL	8	GAMMARIDAE	570.000	113.300 *		
			DAPHNIDAE	1704.240			
			SALMONIDAE	14100.040			
			ICTALURIDAE	10427.400			
	STATE	6	DAPHNIDAE	1704.240	497.300 *		
			SALMONIDAE	14100.040			
			ICTALURIDAE	10427.400			
			CENTRARCHIDAE	10404.000			
SS CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.027	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	13	SALMONIDAE	0.004	0.010	0.0001	ACR
			PERCIONTHYIDAE	0.103			
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.300	1.574 *	0.0043	PRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	20.000			
			GAMMARIDAE	32.040			
	STATE	7	PTERONARCIDAE	10.000	5.771 *	0.0043	PRV
			CYPRINIDAE	20.000			
			GAMMARIDAE	20.000			
			SALMONIDAE	20.000			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.3370	ACR
			DAPHNIDAE	6000.070			
			PHILODINIDAE	6000.700			
			PHYSIDAE	24000.000			
	STATE	7	DAPHNIDAE	6000.070	1140.047 *	10.0	PRV
			PHILODINIDAE	6000.700			
			POGOLIDAE	20000.007			
			PERCIONTHYIDAE	20404.700			
SS COPPER	NATIONAL	23	DAPHNIDAE	0.300	0.104	0.40010	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	13	DAPHNIDAE	0.300	0.130	3.77400	FCV
			CHIRONOMIDAE	0.700			
			TUBIFICIDAE	1.340			
			PLANORBIDAE	1.404			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *	4.3472	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	125.121			
	STATE	6	SALMONIDAE	70.707	20.000 *	3.0001	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	125.121			
DDT	NATIONAL	20	DAPHNIDAE	1.203	0.000	0.0010	PRV
			PERCIDAE	1.000			
			SCIOIDAE	1.700			
			GAMMARIDAE	2.004			
	STATE	11	DAPHNIDAE	1.203	0.470	0.0010	PRV
			PERCIDAE	1.000			
			GAMMARIDAE	3.000			
			CENTRARCHIDAE	3.202			
DIELDRIN	NATIONAL	12	POGOLIDAE	4.000	1.000 *	0.0010	PRV
			ASELLIDAE	0.000			
			SALMONIDAE	0.002			
			EPHEMERELLIDAE	0.000			
	STATE	9	SALMONIDAE	2.400	0.700 *	0.0010	PRV
			POGOLIDAE	4.000			
			EPHEMERELLIDAE	0.000			
			CENTRARCHIDAE	10.011			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.000 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.240			
	STATE	8	SALMONIDAE	0.004	0.104 *	0.0044	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			POGOLIDAE	3.700			

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

S — 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: ARIZONA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (•)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (•)	30-DAY (•)	AVERAGE (••)
ENDRIN	NATIONAL	17	GASTEROSTEIDAE	0.449	0.201 *	0.0023	FRV
			SALMONIDAE	0.499			
			PERLIDAE	0.499			
			PTERONARCIDAE	0.647			
	STATE	10	SALMONIDAE	0.357	0.130 *	0.0023	FRV
			PERLIDAE	0.499			
			PTERONARCIDAE	0.647			
			POECILIIDAE	0.949			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.999	0.201 *	0.0038	FRV
			PALAEMONIDAE	1.299			
			PERLIDAE	2.699			
			ASTACIDAE	7.299			
	STATE	6	PTERONARCIDAE	0.999	0.142 *	0.0038	FRV
			PERLIDAE	2.699			
			SALMONIDAE	13.099			
			CENTRARCHIDAE	33.099			
96 LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.037 *	0.00003	FCV
			DAPHNIIDAE	4.699			
			SALMONIDAE	69.099			
			CYPRINIDAE	355.799			
	STATE	6	DAPHNIIDAE	4.699	0.369 *	0.00003	FCV
			SALMONIDAE	69.099			
			CYPRINIDAE	355.799			
			CENTRARCHIDAE	455.016			
LINDANE	NATIONAL	10	ASELLIDAE	10.099	2.216 *	0.3574	ACR
			SALMONIDAE	21.099			
			GAMMARIDAE	32.437			
			CENTRARCHIDAE	62.571			
	STATE	8	SALMONIDAE	14.199	0.110 *	0.4095	ACR
			CENTRARCHIDAE	42.199			
			GAMMARIDAE	49.099			
			ICTALURIDAE	69.099			
MERCURY	NATIONAL	9	DAPHNIIDAE	0.099	0.470 *	0.39	FRV
			GAMMARIDAE	10.099			
			ASTACIDAE	31.099			
			SALMONIDAE	344.399			
	STATE	5	DAPHNIIDAE	0.099	0.101 *	0.0071	ACR
			GAMMARIDAE	10.099			
			SALMONIDAE	349.099			
			PHILODINIDAE	769.471			
96 NICKEL	NATIONAL	10	DAPHNIIDAE	65.977	32.914 *	3.3991	ACR
			SPHAERIIDAE	339.999			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	491.217			
	STATE	11	DAPHNIIDAE	76.499	31.016 *	3.3999	ACR
			PERCIDAE	391.519			
			CENTRARCHIDAE	399.042			
			PHILODINIDAE	491.217			
PCBS	NATIONAL	5	SALMONIDAE	2.099	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.991			
			GAMMARIDAE	99.993			
	STATE	4	SALMONIDAE	2.099	0.004 *	0.014	FRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.991			
			COBITIDAE (ASTRONIDAE)	399.042			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	399.999	62.049 *	32.0999	ACR
			DAPHNIIDAE	1999.474			
			CYPRINODONTIDAE	6499.979			
			SALMONIDAE	9479.723			
	STATE	6	HYALELLIDAE (TALITRIDAE)	399.999	74.102 *	19.7994	ACR
			DAPHNIIDAE	3999.999			
			SALMONIDAE	7949.999			
			CYPRINIDAE	9999.435			
5 SILVER	NATIONAL	9	DAPHNIIDAE	0.099	0.00099 *		
			COTTIDAE	0.094			
			CYPRINIDAE	0.099			
			CYPRINODONTIDAE	0.012			
	STATE	5	COTTIDAE	0.094	0.00099 *		
			CYPRINIDAE	0.011			
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.399	0.037 *	0.0037	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.725			
	STATE	7	ICTALURIDAE	3.047	1.199 *	0.0168	ACR
			CENTRARCHIDAE	4.725			
			CYPRINIDAE	8.993			
			SALMONIDAE	9.199			

STATE: ARIZONA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (•)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (•)	30-DAY (•)	AVERAGE (••)
5 ZINC	NATIONAL	16	DAPHNIIDAE	13.737	0.148	47.5999	SCV
			PHYSIDAE	41.999			
			SALMONIDAE	49.991			
			PHILODINIDAE	92.757			
	STATE	12	DAPHNIIDAE	21.399	0.399	47.5999	SCV
			SALMONIDAE	39.343			
			PHYSIDAE	41.999			
			PERCIDCHTHYIDAE	49.294			

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

5 — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA

96 — 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

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	3.388 *		
			ABELLIDAE	8.000			
			SPHAERIIDAE	8.000			
			SALMONIDAE	10.000			
	STATE	6	CENTRARCHIDAE	7.451	2.161 *		
			ABELLIDAE	8.000			
			ANGUILLIDAE	10.000			
			CYPRINIDAE	10.332			
ARSENIC	NATIONAL	8	GAMMARIDAE	978.000	113.383 *		
			DAPHNIDAE	1784.346			
			SALMONIDAE	14133.843			
			ICTALURIDAE	19457.420			
	STATE	5	GAMMARIDAE	978.000	42.377 *		
			DAPHNIDAE	1848.139			
			ICTALURIDAE	19457.420			
			CENTRARCHIDAE	19484.000			
55 CADMIUM	NATIONAL	10	SALMONIDAE	0.045	0.027	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	12	DAPHNIDAE	0.004	0.211 *	0.0004	ACR
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
			PHILOGENIDAE	0.007			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.355	1.574 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	23.330			
			GAMMARIDAE	32.340			
	STATE	3	PALAEMONIDAE	0.355	1.574 *	0.0043	FRV
			CYPRINIDAE	23.330	**		
			CENTRARCHIDAE	94.711			
				0.000			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.3370	ACR
			DAPHNIDAE	6000.570			
			PHILOGENIDAE	6000.700			
			PHYSIDAE	34000.000			
	STATE	5	GAMMARIDAE	67.000	2.005 *	0.0000	ACR
			PHILOGENIDAE	6000.700			
			PHYSIDAE	34000.000			
			CYPRINIDAE	57401.072			
COPPER	NATIONAL	23	DAPHNIDAE	0.300	0.104	0.00010	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	16	DAPHNIDAE	0.300	0.121 *	4.70000	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *	4.3472	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	120.121			
	STATE	6	DAPHNIDAE	80.000	27.007 *	3.7270	ACR
			CENTRARCHIDAE	114.310			
			GAMMARIDAE	167.000			
			CYPRINIDAE	207.000			
DDT	NATIONAL	20	DAPHNIDAE	1.303	0.000	0.0010	FRV
			PERCIDAE	1.000			
			SIGCIDAE	1.700			
			GAMMARIDAE	2.234			
	STATE	9	DAPHNIDAE	0.070	0.305	0.0010	FRV
			ASTACIDAE	2.400			
			PALAEMONIDAE	3.234			
			ABELLIDAE	4.000			
DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *	0.0010	FRV
			ABELLIDAE	8.000			
			SALMONIDAE	8.402			
			SPHAERIIDAE	8.000			
	STATE	6	ABELLIDAE	8.000	1.207 *	0.0010	FRV
			CENTRARCHIDAE	10.011			
			PALAEMONIDAE	20.000			
			CYPRINIDAE	33.102			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	4	CYPRINIDAE	1.270	0.000 *	0.0105	ACR
			CATOSTOMIDAE	3.340			
			CENTRARCHIDAE	3.011			
			COGNAGRONIDAE (AGRONIDAE)	67.000			

STATE: ARKANSAS

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	0.201 *	0.0020	FRV
			SALMONIDAE	0.400			
			PERLIDAE	0.400			
			PTERONARCIDAE	0.047			
	STATE	10	CYPRINIDAE	0.732	0.200 *	0.0020	FRV
			POECILIDAE	0.700			
			CENTRARCHIDAE	1.011			
			PALAEMONIDAE	1.200			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.201 *	0.0000	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	5	PALAEMONIDAE	1.000	0.202 *	0.0000	FRV
			ASTACIDAE	7.000			
			CENTRARCHIDAE	24.771			
			DAPHNIDAE	80.740			
55 LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007 *	0.00000	FCV
			DAPHNIDAE	4.000			
			SALMONIDAE	80.000			
			CYPRINIDAE	200.700			
	STATE	4	GAMMARIDAE	1.101	0.005 *	0.00000	FCV
			CYPRINIDAE	200.700			
			CENTRARCHIDAE	400.010			
			PHILOGENIDAE	000.040			
LINDANE	NATIONAL	10	ABELLIDAE	10.000	3.210 *	0.2574	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	32.457			
			CENTRARCHIDAE	92.571			
	STATE	6	SALMONIDAE	2.000	0.340 *	0.0105	ACR
			ABELLIDAE	10.000			
			CENTRARCHIDAE	92.571			
			ICTALURIDAE	00.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.00	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.000			
			SALMONIDAE	344.200			
	STATE	4	GAMMARIDAE	10.000	0.170 *	0.1130	ACR
			ASTACIDAE	20.000			
			PHILOGENIDAE	700.471			
			NAIDIDAE	000.000			
55 NICKEL	NATIONAL	10	DAPHNIDAE	65.007	32.014 *	3.2001	ACR
			SPHAERIIDAE	000.000			
			CENTRARCHIDAE	345.472			
			PHILOGENIDAE	401.217			
	STATE	10	DAPHNIDAE	70.400	20.004 *	3.0127	ACR
			CENTRARCHIDAE	000.040			
			PHILOGENIDAE	401.217			
			CHIRONOMIDAE	400.000			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	0.011			
			CYPRINIDAE	22.001			
			GAMMARIDAE	00.000			
	STATE	4	CENTRARCHIDAE	0.011	0.000 *	0.014	FRV
			CYPRINIDAE	22.001			
			GAMMARIDAE	00.004			
			COGNAGRONIDAE (AGRONIDAE)	000.040			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	000.000	02.040 *	22.0000	ACR
			DAPHNIDAE	1000.474			
			CYPRINODONTIDAE	0400.070			
			SALMONIDAE	0470.720			
	STATE	7	HYALELLIDAE (TALITRIDAE)	000.000	00.004 *	10.1011	ACR
			DAPHNIDAE	0000.000			
			CYPRINIDAE	0000.400			
			POECILIDAE	10000.040			
5 SILVER	NATIONAL	9	DAPHNIDAE	0.000	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	5	COTTIDAE	0.004	0.00002 *		
			CYPRINIDAE	0.011			
			CENTRARCHIDAE	0.112			
			PHILOGENIDAE	0.017			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.007			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.720			
	STATE	8	SALMONIDAE	3.000	0.041 *	0.0102	ACR
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.720			
			CYPRINIDAE	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

* — FAILED TO MEET MINIMUM DATA REQUIREMENT

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

5 — HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA

55 — 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

TOXICANT		NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$	ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.149 *	47.8999	SCV
				PHYSIDAE	41.999			
				SALMONIDAE	49.891			
				PHILODINIDAE	92.767			
		STATE	10	DAPHNIDAE	21.233	4.999 *	47.8999	SCV
				PHYSIDAE	41.999			
				PHILODINIDAE	92.767			
				CYPRINIDAE	399.999			

STATE: CALIFORNIA

TOXICANT		NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
	ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.491	3.999 *		
				ASELLIDAE	9.999			
				SPHAERIELLIDAE	9.999			
				SALMONIDAE	10.999			
		STATE	9	CENTRARCHIDAE	7.491	3.999 *		
				SPHAERIELLIDAE	9.999			
				PERCICHTHYIDAE	10.999			
				SALMONIDAE	10.999			
	ARSENIC	NATIONAL	8	GAMMARIDAE	979.999	113.999 *		
				DAPHNIDAE	1794.945			
				SALMONIDAE	14199.949			
				ICTALURIDAE	19497.499			
		STATE	6	DAPHNIDAE	1794.945	399.449 *		
				SALMONIDAE	14199.949			
				ICTALURIDAE	19497.499			
				CENTRARCHIDAE	19494.999			
$$	CADMIUM	NATIONAL	10	SALMONIDAE	0.949	0.027	0.0004	ACR
				DAPHNIDAE	0.499			
				GAMMARIDAE	1.147			
				PHYSIDAE	2.999			
		STATE	14	SALMONIDAE	0.949	0.016	0.0002	ACR
				PERCICHTHYIDAE	0.199			
				DAPHNIDAE	0.499			
				GAMMARIDAE	1.147			
	CHLORDANE	NATIONAL	6	PALAEMONIDAE	0.399	1.994 *	0.0043	FRV
				PTERONARCIDAE	10.999			
				CYPRINIDAE	29.999			
				GAMMARIDAE	39.949			
		STATE	6	CYPRINIDAE	29.999	7.044 *	0.0043	FRV
				GAMMARIDAE	39.999			
				SALMONIDAE	49.799			
				CENTRARCHIDAE	84.711			
	CHROMIUM	NATIONAL	10	GAMMARIDAE	97.999	12.184	0.3379	ACR
				DAPHNIDAE	999.979			
				PHILODINIDAE	999.799			
				PHYSIDAE	34999.999			
		STATE	7	DAPHNIDAE	999.979	1149.947 *	10.8	FRV
				PHILODINIDAE	999.799			
				POECILIIDAE	39999.997			
				PERCICHTHYIDAE	39994.799			
$	COPPER	NATIONAL	23	DAPHNIDAE	0.399	0.104	0.49910	FCV
				CHIRONOMIDAE	0.799			
				PHYSIDAE	0.999			
				TUBIFICIDAE	1.349			
		STATE	13	DAPHNIDAE	0.399	0.123	2.74165	FCV
				CHIRONOMIDAE	0.799			
				TUBIFICIDAE	1.349			
				SALMONIDAE	1.491			
	CYANIDE	NATIONAL	10	SALMONIDAE	76.797	31.499 *	4.3472	ACR
				DAPHNIDAE	99.999			
				CENTRARCHIDAE	114.319			
				PERCIDAE	125.121			
		STATE	5	SALMONIDAE	76.797	10.992 *	2.0492	ACR
				DAPHNIDAE	99.999			
				CENTRARCHIDAE	114.319			
				CYPRINIDAE	297.999			
	DDT	NATIONAL	20	DAPHNIDAE	1.399	0.999	0.0010	FRV
				PERCIDAE	1.999			
				ISOCIDAE	1.799			
				GAMMARIDAE	2.394			
		STATE	10	DAPHNIDAE	1.399	0.442 *	0.0010	FRV
				GAMMARIDAE	3.999			
				CENTRARCHIDAE	3.399			
				SALMONIDAE	6.921			
	DIELDRIN	NATIONAL	12	POECILIIDAE	4.999	1.999 *	0.0010	FRV
				ASELLIDAE	5.999			
				SALMONIDAE	6.492			
				SPHAERIELLIDAE	8.999			
		STATE	8	POECILIIDAE	4.999	1.944 *	0.0010	FRV
				SALMONIDAE	6.492			
				SPHAERIELLIDAE	8.999			
				CENTRARCHIDAE	10.011			
	ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.994	0.299 *	0.1004	ACR
				CYPRINIDAE	1.279			
				PTERONARCIDAE	2.399			
				CATOSTOMIDAE	3.949			
		STATE	7	SALMONIDAE	0.994	0.165 *	0.0703	ACR
				CYPRINIDAE	1.279			
				POECILIIDAE	3.799			
				CENTRARCHIDAE	3.011			

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 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- $ — HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
- $$ — 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: CALIFORNIA

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOEC VALUE (*)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (*)	30-DAY (*)	AVERAGE (**)
	ENDRIN	NATIONAL	17	GASTEROSTEIDAE	0.449	0.391 *	0.0023	FRV
				SALMONIDAE	0.499			
				PERLIDAE	0.499			
				PTERONARCIDAE	0.647			
		STATE	10	GASTEROSTEIDAE	0.449	0.144 *	0.0023	FRV
				SALMONIDAE	0.499			
				PERLIDAE	0.499			
				POECILIIDAE	0.649			
	HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.255	0.251 *	0.0038	FRV
				PALAEMONIDAE	1.299			
				PERLIDAE	2.299			
				ASTACIDAE	7.299			
		STATE	7	PERLIDAE	2.299	0.038 *	0.0038	FRV
				CENTRARCHIDAE	20.299			
				GAMMARIDAE	20.299			
				SALMONIDAE	20.499			
55	LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.037 *	0.00038	FCV
				DAPHNIIDAE	4.299			
				SALMONIDAE	69.299			
				CYPRINIDAE	253.799			
		STATE	6	DAPHNIIDAE	4.299	0.339 *	0.00038	FCV
				SALMONIDAE	69.299			
				CYPRINIDAE	253.799			
				CENTRARCHIDAE	499.010			
	LINDANE	NATIONAL	10	AGELLIDAE	10.299	3.216 *	0.2574	ACR
				SALMONIDAE	21.299			
				GAMMARIDAE	32.427			
				CENTRARCHIDAE	69.571			
		STATE	7	SALMONIDAE	21.299	0.010 *	0.0214	ACR
				CENTRARCHIDAE	42.155			
				GAMMARIDAE	49.299			
				ICTALURIDAE	69.299			
	MERCURY	NATIONAL	9	DAPHNIIDAE	0.299	0.470 *	0.39	FRV
				GAMMARIDAE	10.299			
				ASTACIDAE	21.299			
				SALMONIDAE	244.299			
		STATE	5	DAPHNIIDAE	0.299	0.101 *	0.0274	ACR
				GAMMARIDAE	10.299			
				SALMONIDAE	244.299			
				PHILOGENIDAE	799.471			
	NICKEL	NATIONAL	10	DAPHNIIDAE	65.977	32.014 *	3.3991	ACR
				EPHEMERELLIDAE	299.299			
				CENTRARCHIDAE	345.472			
				PHILOGENIDAE	491.217			
		STATE	10	DAPHNIIDAE	65.977	23.399 *	2.4997	ACR
				PERCONTHYIDAE	291.210			
				PHILOGENIDAE	491.217			
				CHIRONOMIDAE	499.299			
	PCBS	NATIONAL	5	SALMONIDAE	2.299	0.137 *	0.014	FRV
				CENTRARCHIDAE	0.011			
				CYPRINIDAE	32.291			
				GAMMARIDAE	69.299			
		STATE	3	SALMONIDAE	2.299	0.137 *	0.014	FRV
				CENTRARCHIDAE	2.299	**		
				CYPRINIDAE	32.291			
					0.299			
	SELENIUM	NATIONA	10	HYALELLIDAE (TALITRIDAE)	299.299	62.049 *	22.0999	ACR
				DAPHNIIDAE	1992.474			
				CYPRINODONTIDAE	6499.970			
				SALMONIDAE	8470.723			
		STATE	6	HYALELLIDAE (TALITRIDAE)	299.299	69.102 *	16.0431	ACR
				DAPHNIIDAE	1992.474			
				SALMONIDAE	8470.723			
				CYPRINIDAE	9992.499			
5	SILVER	NATIONAL	9	DAPHNIIDAE	0.092	0.00039 *		
				COTTIDAE	0.094			
				CYPRINIDAE	0.099			
				CYPRINODONTIDAE	0.012			
		STATE	6	DAPHNIIDAE	0.092	0.00011 *		
				CYPRINIDAE	0.099			
				SALMONIDAE	0.021			
				CENTRARCHIDAE	0.112			
	TOXAPHENE	NATIONAL	12	PERLIDAE	1.299	0.037 *	0.0037	ACR
				PTERONARCIDAE	2.027			
				ICTALURIDAE	3.047			
				CENTRARCHIDAE	4.725			
		STATE	9	PERLIDAE	1.299	0.045 *	0.0072	ACR
				CENTRARCHIDAE	2.049			
				ICTALURIDAE	3.047			
				SALMONIDAE	5.701			

STATE: CALIFORNIA

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOEC VALUE (*)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (*)	30-DAY (*)	AVERAGE (**)
5	ZINC	NATIONAL	16	DAPHNIIDAE	13.737	0.149	47.0999	SCV
				PHYSIDAE	41.999			
				SALMONIDAE	43.591			
				PHILOGENIDAE	92.757			
		STATE	11	DAPHNIIDAE	13.737	0.043	47.0999	SCV
				SALMONIDAE	47.299			
				PERCONTHYIDAE	43.594			
				PHILOGENIDAE	92.757			

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

5 — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

55 — 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

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.461	3.359 *		
			ASELLIDAE	9.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.000			
	STATE	8	SALMONIDAE	4.500	1.433 *		
			CENTRARCHIDAE	7.461			
			EPHEMERELLIDAE	9.000			
			CYPRINIDAE	10.300			
ARSENIC	NATIONAL	8	GAMMARIDAE	675.000	113.359 *		
			DAPHNIDAE	1784.240			
			SALMONIDAE	14129.843			
			ICTALURIDAE	19457.430			
	STATE	6	DAPHNIDAE	1784.240	407.395 *		
			SALMONIDAE	13939.995			
			ICTALURIDAE	19457.430			
			CENTRARCHIDAE	19494.930			
$\$\$$ CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.007 *	0.0004	ACR
			DAPHNIDAE	0.499			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	12	SALMONIDAE	0.044	0.012	0.0002	ACR
			DAPHNIDAE	0.499			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.300	1.574 *	0.0043	PRV
			PTERONARCIDAE	16.000			
			CYPRINIDAE	23.330			
			GAMMARIDAE	32.340			
	STATE	6	PTERONARCIDAE	16.000	0.300 *	0.0043	PRV
			CYPRINIDAE	23.330			
			SALMONIDAE	35.481			
			GAMMARIDAE	35.000			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.3576	ACR
			DAPHNIDAE	6889.979			
			PHILODINIDAE	6898.790			
			PHYSIDAE	34882.000			
	STATE	6	DAPHNIDAE	6889.979	791.000 *	10.0	PRV
			PHILODINIDAE	6898.790			
			PHYSIDAE	34882.000			
			CYPRINIDAE	57491.672			
$ COPPER	NATIONAL	20	DAPHNIDAE	0.300	0.104	0.40016	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.900			
			TUBIFICIDAE	1.340			
	STATE	13	DAPHNIDAE	0.300	0.130	0.00002	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.900			
			SALMONIDAE	1.300			
CYANIDE	NATIONAL	10	SALMONIDAE	76.797	31.429 *	4.3472	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.316			
			PERCIDAE	125.121			
	STATE	6	SALMONIDAE	67.000	16.409 *	2.0000	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.316			
			CYPRINIDAE	207.000			
DDT	NATIONAL	20	DAPHNIDAE	1.323	0.009	0.0010	PRV
			PERCIDAE	1.000			
			ISOCIDAE	1.700			
			GAMMARIDAE	2.234			
	STATE	10	DAPHNIDAE	1.323	0.510 *	0.0010	PRV
			GAMMARIDAE	3.000			
			CENTRARCHIDAE	3.000			
			SALMONIDAE	4.670			
DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *	0.0019	PRV
			ASELLIDAE	5.000			
			SALMONIDAE	5.492			
			EPHEMERELLIDAE	6.000			
	STATE	8	SALMONIDAE	2.400	0.032 *	0.0019	PRV
			EPHEMERELLIDAE	6.000			
			CENTRARCHIDAE	10.011			
			PERLIDAE	24.000			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	8	SALMONIDAE	0.004	0.100 *	0.1000	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			

STATE: COLORADO

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	0.201 *	0.0023	PRV
			SALMONIDAE	0.400			
			PERLIDAE	0.400			
			PTERONARCIDAE	0.047			
	STATE	9	SALMONIDAE	0.300	0.112 *	0.0023	PRV
			PERLIDAE	0.400			
			PTERONARCIDAE	0.047			
			CENTRARCHIDAE	1.011			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.201 *	0.0000	PRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	7	PTERONARCIDAE	0.000	0.125 *	0.0000	PRV
			PERLIDAE	2.000			
			SALMONIDAE	13.000			
			CENTRARCHIDAE	30.000			
LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.037 *	0.00000	FCV
			DAPHNIDAE	4.000			
			SALMONIDAE	69.000			
			CYPRINIDAE	300.700			
	STATE	6	DAPHNIDAE	4.000	0.305 *	0.00000	FCV
			SALMONIDAE	100.100			
			CYPRINIDAE	300.700			
			CENTRARCHIDAE	400.010			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.216 *	0.2574	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	32.457			
			CENTRARCHIDAE	82.071			
	STATE	7	SALMONIDAE	0.004	2.300 *	0.1000	ACR
			CENTRARCHIDAE	42.100			
			GAMMARIDAE	48.000			
			ICTALURIDAE	83.000			
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.20	PRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.000			
			SALMONIDAE	344.000			
	STATE	5	DAPHNIDAE	5.000	0.101 *	0.0071	ACR
			GAMMARIDAE	10.000			
			SALMONIDAE	348.000			
			PHILODINIDAE	703.471			
$\$\$$ NICKEL	NATIONAL	16	DAPHNIDAE	68.077	32.914 *	3.3031	ACR
			EPHEMERELLIDAE	220.000			
			CENTRARCHIDAE	348.472			
			PHILODINIDAE	401.217			
	STATE	9	DAPHNIDAE	68.077	21.349 *	2.2000	ACR
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	430.000			
			CENTRARCHIDAE	800.204			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	PRV
			CENTRARCHIDAE	8.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	68.000			
	STATE	3	SALMONIDAE	2.000	0.137 *	0.014	PRV
			CENTRARCHIDAE	2.300	**		
			CYPRINIDAE	32.001			
				0.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	330.000	82.040 *	22.0000	ACR
			DAPHNIDAE	1002.474			
			CYPRINODONTIDAE	6400.070			
			SALMONIDAE	8470.723			
	STATE	7	HYALELLIDAE (TALITRIDAE)	330.000	54.007 *	14.0004	ACR
			DAPHNIDAE	1002.474			
			SALMONIDAE	7040.000			
			CYPRINIDAE	9002.430			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	6	DAPHNIDAE	0.002	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			SALMONIDAE	0.021			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.007			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.730			
	STATE	9	PERLIDAE	1.300	0.000 *	0.0000	ACR
			PTERONARCIDAE	2.007			
			CENTRARCHIDAE	2.040			
			ICTALURIDAE	3.047			

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

$ — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

$\$\$$ — 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

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ZINC	NATIONAL	16	DAPHNIDAE	13.757	0.148 *	47.5999	SCV
			PHYSIDAE	41.599			
			SALMONIDAE	49.991			
			PHILOGENIDAE	92.757			
	STATE	10	DAPHNIDAE	13.757	4.499 *	47.5999	SCV
			SALMONIDAE	39.972			
			PHYSIDAE	41.599			
			PHILOGENIDAE	92.757			

STATE: CONNECTICUT

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.491	3.599 *		
			ASELLIDAE	9.999			
			EPHEMERELLIDAE	9.999			
			SALMONIDAE	10.999			
	STATE	9	SALMONIDAE	4.999	1.999 *		
			CENTRARCHIDAE	7.491			
			EPHEMERELLIDAE	9.999			
			ASELLIDAE	10.999			
ARSENIC	NATIONAL	8	GAMMARIDAE	999.999	119.999 *		
			DAPHNIDAE	1754.949			
			SALMONIDAE	14999.949			
			ICTALURIDAE	19497.499			
	STATE	4	DAPHNIDAE	1049.199	141.999 *		
			SALMONIDAE	14999.949			
			CENTRARCHIDAE	19494.999			
			CYPRINIDAE	29494.999			
$$ CADMIUM	NATIONAL	16	SALMONIDAE	0.949	0.997 *	0.9994	ACR
			DAPHNIDAE	0.499			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.999			
	STATE	16	SALMONIDAE	0.994	0.919	0.9999	ACR
			DAPHNIDAE	0.994			
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.999			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.999	1.094 *	0.0049	FRV
			PTERONARCIDAE	10.999			
			CYPRINIDAE	29.999			
			GAMMARIDAE	39.949			
	STATE	4	CYPRINIDAE	39.999	7.979 *	0.0049	FRV
			SALMONIDAE	39.999			
			GAMMARIDAE	49.999			
			CENTRARCHIDAE	94.711			
CHROMIUM	NATIONAL	10	GAMMARIDAE	97.999	12.104	0.2979	ACR
			DAPHNIDAE	999.979			
			PHILOGENIDAE	999.799			
			PHYSIDAE	3499.999			
	STATE	6	PHILOGENIDAE	999.799	1099.499 *	10.0	FPV
			PHYSIDAE	3499.999			
			PERCONTHYIDAE	29494.799			
			CYPRINIDAE	97494.972			
$ COPPER	NATIONAL	29	DAPHNIDAE	0.999	0.104	0.49919	FCV
			CHIRONOMIDAE	0.799			
			PHYSIDAE	0.999			
			TUBIFICIDAE	1.349			
	STATE	16	DAPHNIDAE	0.999	0.139	7.49116	FCV
			CHIRONOMIDAE	0.799			
			PHYSIDAE	0.999			
			TUBIFICIDAE	1.349			
CYANIDE	NATIONAL	10	SALMONIDAE	79.797	31.499 *	4.2472	ACR
			DAPHNIDAE	99.999			
			CENTRARCHIDAE	114.316			
			PERCIDAE	169.161			
	STATE	6	SALMONIDAE	79.797	39.999 *	3.9991	ACR
			DAPHNIDAE	99.999			
			CENTRARCHIDAE	114.316			
			PERCIDAE	169.161			
DDT	NATIONAL	29	DAPHNIDAE	1.999	0.999	0.0010	FRV
			PERCIDAE	1.999			
			ESOCIDAE	1.799			
			GAMMARIDAE	2.294			
	STATE	7	DAPHNIDAE	0.979	0.319 *	0.0010	FRV
			PERCIDAE	1.999			
			GAMMARIDAE	1.994			
			CENTRARCHIDAE	3.999			
DIELDRIN	NATIONAL	12	POECILIDAE	4.999	1.999 *	0.0010	FRV
			ASELLIDAE	9.999			
			SALMONIDAE	9.492			
			EPHEMERELLIDAE	9.999			
	STATE	6	SALMONIDAE	2.499	0.471 *	0.0010	FRV
			EPHEMERELLIDAE	9.999			
			CENTRARCHIDAE	14.499			
			CYPRINIDAE	99.199			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.994	0.399 *	0.1994	ACR
			CYPRINIDAE	1.979			
			PTERONARCIDAE	2.399			
			CARDIOCORIDAE	3.399			
	STATE	6	SALMONIDAE	0.994	0.149 *	0.0792	ACR
			CYPRINIDAE	1.279			
			CARDIOCORIDAE	3.349			
			CENTRARCHIDAE	3.511			

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
$ – HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
$$ – 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: CONNECTICUT

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ENDRIN	NATIONAL	17	GASTEROSTEIDAE	0.449	0.001 *	0.0023	FRV
			SALMONIDAE	0.480			
			PERLIDAE	0.480			
			PTERONARCIDAE	0.647			
	STATE	6	GASTEROSTEIDAE	0.449	0.100 *	0.0023	FRV
			SALMONIDAE	0.[illegible]			
			CENTRARCHIDAE	1.011			
			CYPRINIDAE	1.[illegible]			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.[illegible]	0.001 *	0.0000	FRV
			PALAEMONIDAE	1.[illegible]			
			PERLIDAE	2.[illegible]			
			ASTACIDAE	7.[illegible]			
	STATE	5	SALMONIDAE	13.[illegible]	3.021 *	0.0000	FRV
			CENTRARCHIDAE	28.[illegible]			
			GAMMARIDAE	47.[illegible]			
			DAPHNIDAE	60.740			
96 LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.057 *	0.00000	FCV
			DAPHNIDAE	4.[illegible]			
			SALMONIDAE	89.[illegible]			
			CYPRINIDAE	389.792			
	STATE	4	SALMONIDAE	89.[illegible]	14.000 *	0.00000	FCV
			CYPRINIDAE	389.792			
			CENTRARCHIDAE	485.016			
			PHILOGENIDAE	[illegible]			
LINDANE	NATIONAL	10	ABELLIDAE	10.[illegible]	3.210 *	0.3574	ACR
			SALMONIDAE	21.[illegible]			
			GAMMARIDAE	32.437			
			CENTRARCHIDAE	62.671			
	STATE	6	GAMMARIDAE	10.480	1.000 *	0.1400	ACR
			SALMONIDAE	14.100			
			CENTRARCHIDAE	42.100			
			PERCIDAE	65.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.070 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.000			
			SALMONIDAE	244.300			
	STATE	5	GAMMARIDAE	10.000	0.000 *	0.20	FRV
			ASTACIDAE	30.000			
			SALMONIDAE	340.000			
			PHILOGENIDAE	700.471			
96 NICKEL	NATIONAL	10	DAPHNIDAE	65.677	32.014 *	3.3001	ACR
			SPHAERIIDAE	[illegible]			
			CENTRARCHIDAE	340.472			
			PHILOGENIDAE	401.217			
	STATE	12	DAPHNIDAE	70.400	30.120 *	3.4102	ACR
			PHILOGENIDAE	401.217			
			CHIRONOMIDAE	400.000			
			CENTRARCHIDAE	444.717			
PCBS	NATIONAL	9	SALMONIDAE	2.000	0.127 *	0.014	FRV
			CENTRARCHIDAE	0.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	60.000			
	STATE	5	SALMONIDAE	2.000	0.000 *	0.014	FRV
			CENTRARCHIDAE	2.300			
			CYPRINIDAE	32.001			
			GAMMARIDAE	107.004			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	82.045 *	22.0000	ACR
			DAPHNIDAE	1002.474			
			CYPRINODONTIDAE	[illegible]			
			SALMONIDAE	8470.723			
	STATE	6	HYALELLIDAE (TALITRIDAE)	300.000	54.300 *	14.4747	ACR
			DAPHNIDAE	3000.000			
			SALMONIDAE	8470.723			
			CYPRINIDAE	8002.430			
96 SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	4	CYPRINIDAE	0.011	0.00000 *		
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
			PHILOGENIDAE	0.017			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.037 *	0.0007	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.726			
	STATE	7	CENTRARCHIDAE	2.040	0.013 *	0.0140	ACR
			SALMONIDAE	6.070			
			CYPRINIDAE	7.400			
			PERCIDAE	12.000			

STATE: CONNECTICUT

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
5 ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.148 *	47.0000	SCV
			PHYSIDAE	41.300			
			SALMONIDAE	48.001			
			PHILOGENIDAE	92.757			
	STATE	13	DAPHNIDAE	21.323	0.481 *	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	61.045			
			PHILOGENIDAE	92.757			

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

5 – HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

96 – 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: DELAWARE

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.491	3.000 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	8.000			
			SALMONIDAE	10.000			
	STATE	9	SALMONIDAE	4.000	1.700 *		
			CENTRARCHIDAE	7.491			
			EPHEMERELLIDAE	8.000			
			CYPRINIDAE	11.314			
ARSENIC	NATIONAL	8	GAMMARIDAE	850.000	113.000 *		
			DAPHNIDAE	1700.000			
			SALMONIDAE	14120.000			
			TOTALIFIDAE	19487.000			
	STATE	5	DAPHNIDAE	1045.120	171.010 *		
			SALMONIDAE	12000.000			
			TOTALIFIDAE	19487.000			
			CENTRARCHIDAE	19484.000			
55 CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.007	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	17	SALMONIDAE	0.044	0.007	0.0004	ACR
			DAPHNIDAE	0.004			
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.000			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.000	1.574 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	20.000			
			GAMMARIDAE	30.240			
	STATE	4	CYPRINIDAE	10.004	4.120 *	0.0043	FRV
			SALMONIDAE	20.401			
			GAMMARIDAE	40.000			
			CENTRARCHIDAE	84.711			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.3070	ACR
			DAPHNIDAE	6000.000			
			PHILOGENIDAE	6000.700			
			PHYSIDAE	34000.000			
	STATE	6	PHILOGENIDAE	6000.700	1000.742 *	10.0	FPV
			PHYSIDAE	34000.000			
			PERCONTHYIDAE	30404.700			
			SALMONIDAE	60000.701			
5 COPPER	NATIONAL	20	DAPHNIDAE	0.000	0.104	0.00010	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	10	DAPHNIDAE	0.000	0.142	0.00004	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			SALMONIDAE	1.000			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *	4.3472	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	150.121			
	STATE	7	SALMONIDAE	67.000	21.400 *	2.0000	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	150.121			
DDT	NATIONAL	20	DAPHNIDAE	1.000	0.000	0.0010	FRV
			PERCIDAE	1.000			
			ISOCIDAE	1.700			
			GAMMARIDAE	2.004			
	STATE	9	DAPHNIDAE	0.070	0.344 *	0.0010	FRV
			PERCIDAE	1.000			
			GAMMARIDAE	1.004			
			ASTACIDAE	2.000			
DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *	0.0010	FRV
			ASELLIDAE	0.000			
			SALMONIDAE	8.400			
			EPHEMERELLIDAE	0.000			
	STATE	6	SALMONIDAE	2.400	0.302 *	0.0010	FRV
			EPHEMERELLIDAE	0.000			
			CENTRARCHIDAE	10.011			
			CYPRINIDAE	41.000			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.000 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.000			
			CATOSTOMIDAE	3.340			
	STATE	5	SALMONIDAE	0.004	0.147 *	0.0151	ACR
			CATOSTOMIDAE	3.340			
			CENTRARCHIDAE	3.011			
			GAMMARIDAE	0.000			

STATE: DELAWARE

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	0.001 *	0.0000	FRV
			SALMONIDAE	0.400			
			PERLIDAE	0.400			
			PTERONARCIDAE	0.047			
	STATE	10	GASTEROSTEIDAE	0.440	0.104 *	0.0000	FRV
			SALMONIDAE	0.004			
			POECILIDAE	0.700			
			CENTRARCHIDAE	1.011			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.001 *	0.0000	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	5	SALMONIDAE	10.000	3.001 *	0.0000	FRV
			CENTRARCHIDAE	20.000			
			GAMMARIDAE	47.000			
			DAPHNIDAE	80.700			
55 LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007 *	0.00000	FCV
			DAPHNIDAE	4.000			
			SALMONIDAE	60.000			
			CYPRINIDAE	200.700			
	STATE	4	SALMONIDAE	100.100	30.400 *	0.00004	FCV
			CENTRARCHIDAE	400.010			
			PHILOGENIDAE	600.040			
			CYPRINIDAE	804.000			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.2074	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	32.437			
			CENTRARCHIDAE	60.071			
	STATE	7	SALMONIDAE	0.004	1.400 *	0.1100	ACR
			GAMMARIDAE	10.400			
			CENTRARCHIDAE	42.100			
			TOTALIFIDAE	44.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.000			
			SALMONIDAE	244.000			
	STATE	5	GAMMARIDAE	10.000	0.000 *	0.20	FRV
			ASTACIDAE	60.000			
			SALMONIDAE	240.000			
			PHILOGENIDAE	700.471			
55 NICKEL	NATIONAL	10	DAPHNIDAE	60.077	32.014 *	3.2001	ACR
			EPHEMERELLIDAE	200.000			
			CENTRARCHIDAE	340.472			
			PHILOGENIDAE	401.217			
	STATE	12	DAPHNIDAE	70.400	33.120 *	3.4102	ACR
			PHILOGENIDAE	401.217			
			CHIRONOMIDAE	400.000			
			CENTRARCHIDAE	444.717			
POES	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	60.000			
	STATE	4	SALMONIDAE	2.000	0.000 *	0.014	FRV
			CENTRARCHIDAE	2.300			
			GAMMARIDAE	107.004			
			COBITIDAE (AGRONIDAE)	202.040			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	62.040 *	22.0000	ACR
			DAPHNIDAE	1002.474			
			CYPRINODONTIDAE	6000.070			
			SALMONIDAE	6070.723			
	STATE	8	HYALELLIDAE (TALITRIDAE)	300.000	67.472 *	17.0000	ACR
			DAPHNIDAE	3000.000			
			SALMONIDAE	7040.000			
			POECILIDAE	10000.040			
5 SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	3	SALMONIDAE	0.011	0.00000 *		
			CENTRARCHIDAE	0.112	**		
			PHILOGENIDAE	0.017			
				0.000			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.007			
			TOTALIFIDAE	3.047			
			CENTRARCHIDAE	4.730			
	STATE	8	CENTRARCHIDAE	2.040	1.004 *	0.0170	ACR
			TOTALIFIDAE	4.100			
			SALMONIDAE	6.301			
			CYPRINIDAE	0.702			

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

$ — HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

55 — 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: DELAWARE

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ZINC	NATIONAL	15	DAPHNIDAE	13.737	0.148	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	48.001			
			PHILODINIDAE	92.757			
	STATE	13	DAPHNIDAE	21.239	0.007	47.0000	SCV
			SALMONIDAE	35.343			
			PHYSIDAE	41.000			
			PHILODINIDAE	92.757			

STATE: FLORIDA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.461	3.000 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.000			
	STATE	6	CENTRARCHIDAE	7.461	2.000 *		
			PERCICHTHYIDAE	10.000			
			CYPRINIDAE	11.314			
			ANGUILLIDAE	16.000			
ARSENIC	NATIONAL	8	GAMMARIDAE	570.000	113.393 *		
			DAPHNIDAE	1704.245			
			SALMONIDAE	14128.043			
			ICTALURIDAE	16457.439			
	STATE	5	DAPHNIDAE	1040.139	100.000 *		
			ICTALURIDAE	16457.439			
			CENTRARCHIDAE	16454.000			
			CYPRINIDAE	28001.675			
96 CADMIUM	NATIONAL	16	SALMONIDAE	0.045	0.007 *	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	13	PERCICHTHYIDAE	0.100	0.040 *	0.0007	ACR
			DAPHNIDAE	0.004			
			PHYSIDAE	2.000			
			PHILODINIDAE	0.007			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.355	1.574 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	33.333			
			GAMMARIDAE	32.340			
	STATE	3	CYPRINIDAE	10.004	1.574 *	0.0043	FRV
			CENTRARCHIDAE	94.711	**		
			POECILIIDAE	100.000			
				0.000			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.2370	ACR
			DAPHNIDAE	6000.070			
			PHILODINIDAE	6000.700			
			PHYSIDAE	34002.000			
	STATE	6	PHILODINIDAE	6000.700	2124.133 *	10.0	FPV
			PHYSIDAE	34002.000			
			POECILIIDAE	30000.007			
			PERCICHTHYIDAE	30464.700			
6 COPPER	NATIONAL	20	DAPHNIDAE	0.005	0.104 *	0.46010	FVC
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.005			
			TUBIFICIDAE	1.345			
	STATE	16	DAPHNIDAE	0.200	0.127 *	0.20441	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.005			
			TUBIFICIDAE	1.345			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.420 *	4.3472	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	135.121			
	STATE	5	DAPHNIDAE	60.000	16.007 *	2.4414	ACR
			CENTRARCHIDAE	114.310			
			POECILIIDAE	300.404			
			CYPRINIDAE	317.000			
DDT	NATIONAL	20	DAPHNIDAE	1.303	0.000 *	0.0010	FRV
			PERCIDAE	1.005			
			ESOCIDAE	1.700			
			GAMMARIDAE	2.234			
	STATE	7	DAPHNIDAE	0.070	0.100 *	0.0010	FRV
			ASTACIDAE	3.000			
			CENTRARCHIDAE	3.000			
			ICTALURIDAE	17.000			
DIELDRIN	NATIONAL	12	POECILIIDAE	4.000	1.030 *	0.0010	FRV
			ASELLIDAE	0.000			
			SALMONIDAE	0.402			
			EPHEMERELLIDAE	0.000			
	STATE	4	POECILIIDAE	4.000	0.251 *	0.0010	FRV
			CENTRARCHIDAE	14.400			
			CYPRINIDAE	41.000			
			DAPHNIDAE	231.002			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.200 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	3	POECILIIDAE	3.700	0.300 *	0.1004	ACR
			CENTRARCHIDAE	3.011	**		
			COBITIDAE (AGRIONIDAE)	67.000			
				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

* — 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 MAXIMUM CRITERIA

96 — 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: FLORIDA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ENDRIN	NATIONAL	17	EMBIOTOCIDAE	0.449	0.291 *	0.0023	FRV
			SALMONIDAE	0.460			
			PERLIDAE	0.460			
			PTERONARCIDAE	0.647			
	STATE	6	CYPRINODONTIDAE	0.000	0.202 *	0.0023	FRV
			POECILIIDAE	0.040			
			CENTRARCHIDAE	1.011			
			CYPRINIDAE	2.100			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.291 *	0.0023	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			AEROIDAE	7.000			
	STATE	4	CENTRARCHIDAE	24.771	2.573 *	0.0023	FRV
			DAPHNIDAE	83.740			
			POECILIIDAE	140.000			
			CYPRINIDAE	340.000			
88 LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.037 *	0.00020	PCV
			DAPHNIDAE	4.000			
			SALMONIDAE	00.000			
			CYPRINIDAE	333.700			
	STATE	4	CENTRARCHIDAE	400.010	100.400 *	4.4470	ACR
			POECILIIDAE	000.000			
			PHILOSINIDAE	000.040			
			CYPRINIDAE	014.000			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	2.210 *	0.2074	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	30.407			
			CENTRARCHIDAE	00.071			
	STATE	5	ICTALURIDAE	44.000	10.720 *	0.0070	ACR
			CENTRARCHIDAE	00.071			
			CYPRINIDAE	110.004			
			POECILIIDAE	100.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			AEROIDAE	31.000			
			SALMONIDAE	344.000			
	STATE	3	AEROIDAE	00.000	0.470 *	0.20	FRV
			PHILOSINIDAE	700.471	**		
			NAIDIDAE	000.000			
88 NICKEL	NATIONAL	10	DAPHNIDAE	00.077	22.014 *	2.2001	ACR
			EPHEMERELLIDAE	000.000			
			CENTRARCHIDAE	340.472			
			PHILOSINIDAE	451.217			
	STATE	11	DAPHNIDAE	70.400	20.000 *	2.1701	ACR
			PERCOPHYSIDAE	251.010			
			PHILOSINIDAE	451.217			
			CHIRONOMIDAE	400.000			
POSS	NATIONAL	5	SALMONIDAE	0.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	0.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	00.000			
	STATE	1	CENTRARCHIDAE	0.011	0.137 *	0.014	FRV
				0.000	**		
				0.000			
				0.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	000.000	00.040 *	22.0000	ACR
			DAPHNIDAE	1000.474			
			CYPRINODONTIDAE	0400.070			
			SALMONIDAE	0470.700			
	STATE	8	HYALELLIDAE (TALITRIDAE)	000.000	07.000 *	10.0010	ACR
			DAPHNIDAE	0000.000			
			CYPRINODONTIDAE	0400.070			
			POECILIIDAE	10000.040			
5 SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	3	CYPRINODONTIDAE	0.012	0.00000 *		
			CENTRARCHIDAE	0.112	**		
			PHILOSINIDAE	0.017			
				0.000			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.007			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.720			
	STATE	6	ICTALURIDAE	4.100	0.000 *	0.0100	ACR
			CENTRARCHIDAE	4.720			
			CYPRINIDAE	6.702			
			DAPHNIDAE	14.370			

STATE: FLORIDA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
5 ZINC	NATIONAL	16	DAPHNIDAE	13.707	0.140	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	49.001			
			PHILOSINIDAE	02.707			
	STATE	12	DAPHNIDAE	21.000	0.105 *	47.0000	SCV
			PHYSIDAE	41.000			
			PERCOPHYSIDAE	49.204			
			CYPRINODONTIDAE	84.007			

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 4 RESIDENT FAMILIES—NATIONAL VALUE USED

5 — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

88 — 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: GEORGIA

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
	ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.461	3.300 *		
				ABELLIDAE	8.000			
				EPHEMERELLIDAE	9.000			
				SALMONIDAE	10.000			
		STATE	7	SALMONIDAE	4.900	1.700 *		
				CENTRARCHIDAE	7.461			
				EPHEMERELLIDAE	9.000			
				PERCICHTHYIDAE	10.000			
	ARSENIC	NATIONAL	8	GAMMARIDAE	970.000	113.000 *		
				DAPHNIDAE	1704.245			
				SALMONIDAE	14128.543			
				ICTALURIDAE	16457.430			
		STATE	5	DAPHNIDAE	1048.139	171.493 *		
				SALMONIDAE	14128.543			
				ICTALURIDAE	16457.430			
				CENTRARCHIDAE	19454.000			
55	CADMIUM	NATIONAL	18	SALMONIDAE	0.049	0.027	0.0004	ACR
				DAPHNIDAE	0.450			
				GAMMARIDAE	1.147			
				PHYSIDAE	2.000			
		STATE	14	SALMONIDAE	0.004	0.000 *	0.0001	ACR
				PERCICHTHYIDAE	0.103			
				DAPHNIDAE	0.004			
				PHYSIDAE	2.000			
	CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.100	1.574 *	0.0043	PRV
				PTERONARCIDAE	10.000			
				CYPRINIDAE	23.320			
				GAMMARIDAE	32.240			
		STATE	3	CYPRINIDAE	10.004	1.574 * **	0.0043	PRV
				SALMONIDAE	39.002			
				CENTRARCHIDAE	84.711			
	CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.3570	ACR
				DAPHNIDAE	6000.970			
				PHILODINIDAE	6000.700			
				PHYSIDAE	34002.000			
		STATE	6	PHILODINIDAE	6000.700	1004.073 *	10.0	FPV
				PHYSIDAE	34002.000			
				PERCICHTHYIDAE	39484.700			
				SALMONIDAE	63004.140			
5	COPPER	NATIONAL	23	DAPHNIDAE	0.300	0.104	5.40010	PCV
				CHIRONOMIDAE	0.700			
				PHYSIDAE	0.000			
				TUBIFICIDAE	1.340			
		STATE	10	DAPHNIDAE	0.300	0.127 *	0.30044	PCV
				CHIRONOMIDAE	0.700			
				PHYSIDAE	0.000			
				TUBIFICIDAE	1.340			
	CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.439 *	4.3472	ACR
				DAPHNIDAE	83.000			
				CENTRARCHIDAE	114.310			
				PERCIDAE	135.121			
		STATE	6	SALMONIDAE	70.707	14.057 *	1.0000	ACR
				DAPHNIDAE	83.000			
				CENTRARCHIDAE	114.310			
				CYPRINIDAE	317.000			
	DDT	NATIONAL	20	DAPHNIDAE	1.233	0.000	0.0010	PRV
				PERCIDAE	1.000			
				ESOCIDAE	1.700			
				GAMMARIDAE	2.234			
		STATE	7	DAPHNIDAE	0.570	0.240 *	0.0010	PRV
				ASTACIDAE	3.000			
				CENTRARCHIDAE	4.102			
				SALMONIDAE	8.151			
	DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *	0.0019	PRV
				ABELLIDAE	5.000			
				SALMONIDAE	5.402			
				EPHEMERELLIDAE	9.000			
		STATE	5	SALMONIDAE	2.400	0.330 *	0.0019	PRV
				EPHEMERELLIDAE	9.000			
				CENTRARCHIDAE	10.011			
				CYPRINIDAE	41.000			
	ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
				CYPRINIDAE	1.270			
				PTERONARCIDAE	2.300			
				CATOSTOMIDAE	3.340			
		STATE	4	SALMONIDAE	0.004	0.010 *	0.0009	ACR
				CATOSTOMIDAE	3.340			
				CENTRARCHIDAE	3.011			
				COENAGRIONIDAE (AGRIONIDAE)	57.000			

STATE: GEORGIA

	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	0.301 *	0.0003	PRV
				SALMONIDAE	0.400			
				PERLIDAE	0.400			
				PTERONARCIDAE	0.047			
		STATE	8	SALMONIDAE	0.000	0.170 *	0.0003	PRV
				POECILIDAE	0.700			
				CENTRARCHIDAE	1.011			
				COENAGRIONIDAE (AGRIONIDAE)	1.000			
	HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.301 *	0.0000	PRV
				PALAEMONIDAE	1.000			
				PERLIDAE	2.000			
				ASTACIDAE	7.000			
		STATE	4	SALMONIDAE	13.000	0.057 *	0.0000	PRV
				CENTRARCHIDAE	34.771			
				DAPHNIDAE	80.740			
				CYPRINIDAE	310.000			
55	LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.057 *	0.00000	PCV
				DAPHNIDAE	4.000			
				SALMONIDAE	80.002			
				CYPRINIDAE	300.702			
		STATE	4	SALMONIDAE	80.002	14.070 *	0.00004	PCV
				CENTRARCHIDAE	400.010			
				PHILODINIDAE	600.040			
				CYPRINIDAE	914.000			
	LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.3074	ACR
				SALMONIDAE	21.000			
				GAMMARIDAE	32.437			
				CENTRARCHIDAE	82.071			
		STATE	6	SALMONIDAE	37.000	10.120 *	0.0110	ACR
				CENTRARCHIDAE	82.071			
				ICTALURIDAE	89.000			
				CYPRINIDAE	112.004			
	MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.20	PRV
				GAMMARIDAE	10.000			
				ASTACIDAE	31.023			
				SALMONIDAE	344.000			
		STATE	5	ASTACIDAE	20.000	2.040 *	0.20	PRV
				SALMONIDAE	340.000			
				PHILODINIDAE	783.471			
				NAIDIDAE	900.000			
55	NICKEL	NATIONAL	16	DAPHNIDAE	65.077	32.014 *	3.3031	ACR
				EPHEMERELLIDAE	200.000			
				CENTRARCHIDAE	345.472			
				PHILODINIDAE	491.217			
		STATE	10	DAPHNIDAE	70.400	20.000 *	3.0791	ACR
				PERCICHTHYIDAE	391.010			
				CENTRARCHIDAE	300.042			
				PHILODINIDAE	491.217			
	PCBS	NATIONAL	5	SALMONIDAE	2.000	0.127 *	0.014	PRV
				CENTRARCHIDAE	0.011			
				CYPRINIDAE	32.001			
				GAMMARIDAE	90.003			
		STATE	3	SALMONIDAE	2.000	0.127 * **	0.014	PRV
				CENTRARCHIDAE	0.011			
				COENAGRIONIDAE (AGRIONIDAE)	302.042			
					0.000			
	SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	330.000	62.040 *	22.0000	ACR
				DAPHNIDAE	1002.474			
				CYPRINODONTIDAE	6400.070			
				SALMONIDAE	8470.723			
		STATE	8	HYALELLIDAE (TALITRIDAE)	300.000	60.300 *	17.0700	ACR
				DAPHNIDAE	3000.000			
				SALMONIDAE	8470.723			
				POECILIDAE	13000.040			
5	SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00003 *		
				COTTIDAE	0.004			
				CYPRINIDAE	0.000			
				CYPRINODONTIDAE	0.012			
		STATE	4	COTTIDAE	0.004	0.00002 *		
				SALMONIDAE	0.021			
				CENTRARCHIDAE	0.112			
				PHILODINIDAE	0.017			
	TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.057 *	0.0007	ACR
				PTERONARCIDAE	2.027			
				ICTALURIDAE	3.047			
				CENTRARCHIDAE	4.720			
		STATE	6	ICTALURIDAE	3.047	1.000 *	0.0173	ACR
				CENTRARCHIDAE	4.720			
				CYPRINIDAE	8.120			
				SALMONIDAE	9.000			

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

* — FAILED TO MEET MINIMUM DATA REQUIREMENT

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

5 — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

55 — 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: GEORGIA

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$	ZINC	NATIONAL	16	DAPHNIDAE	12.737	0.149	47.0000	SCV
				PHYSIDAE	41.000			
				SALMONIDAE	43.001			
				PHILODINIDAE	52.757			
		STATE	11	DAPHNIDAE	31.000	0.400 *	47.0000	SCV
				PHYSIDAE	41.000			
				SALMONIDAE	43.000			
				PERIONTHYIDAE	49.204			

STATE: IDAHO

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
	ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.401	3.000 *		
				ASELLIDAE	0.000			
				EPHEMERELLIDAE	0.000			
				SALMONIDAE	10.000			
		STATE	6	SALMONIDAE	0.041	1.000 *		
				CENTRARCHIDAE	7.401			
				EPHEMERELLIDAE	0.000			
				CYPRINIDAE	10.000			
	ARSENIC	NATIONAL	8	GAMMARIDAE	[illegible]	113.000 *		
				DAPHNIDAE	1704.000			
				SALMONIDAE	[illegible]			
				ISOPLUMIDAE	[illegible]			
		STATE	6	DAPHNIDAE	1704.000	300.000 *		
				SALMONIDAE	[illegible]			
				CENTRARCHIDAE	[illegible]			
				CYPRINIDAE	[illegible]			
55	CADMIUM	NATIONAL	10	SALMONIDAE	0.000	0.007	0.0004	ACR
				DAPHNIDAE	0.400			
				GAMMARIDAE	1.147			
				PHYSIDAE	2.000			
		STATE	10	SALMONIDAE	0.040	0.013	0.0002	ACR
				DAPHNIDAE	0.400			
				GAMMARIDAE	1.147			
				PHYSIDAE	2.000			
	CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.005	1.574 *	0.0043	PRV
				PTERONARCIDAE	10.000			
				CYPRINIDAE	20.000			
				GAMMARIDAE	22.000			
		STATE	6	PTERONARCIDAE	10.000	0.042 *	0.0043	PRV
				CYPRINIDAE	20.000			
				GAMMARIDAE	20.000			
				SALMONIDAE	40.001			
	CHROMIUM	NATIONAL	10	GAMMARIDAE	[illegible]	12.104	0.2570	ACR
				DAPHNIDAE	[illegible]			
				PHILOBIIDAE	[illegible]			
				PHYSIDAE	[illegible]			
		STATE	5	DAPHNIDAE	[illegible]	340.000 *	10.0	PRV
				PHILOBIIDAE	[illegible]			
				CYPRINIDAE	[illegible]			
				SALMONIDAE	[illegible]			
5	COPPER	NATIONAL	20	DAPHNIDAE	0.000	0.104	0.00010	PCV
				CHIRONOMIDAE	0.700			
				PHYSIDAE	0.000			
				TUBIFICIDAE	1.340			
		STATE	11	DAPHNIDAE	0.000	0.110	0.11000	PCV
				CHIRONOMIDAE	0.700			
				TUBIFICIDAE	1.340			
				PLANORBIDAE	1.401			
	CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *	4.0472	ACR
				DAPHNIDAE	00.000			
				CENTRARCHIDAE	114.310			
				PERCIDAE	100.121			
		STATE	6	SALMONIDAE	70.707	30.000 *	3.0001	ACR
				DAPHNIDAE	00.000			
				CENTRARCHIDAE	114.310			
				PERCIDAE	100.121			
	DDT	NATIONAL	20	DAPHNIDAE	1.000	0.000	0.0010	PRV
				PERCIDAE	1.000			
				ESOCIDAE	1.700			
				GAMMARIDAE	2.004			
		STATE	11	DAPHNIDAE	1.000	0.470 *	0.0010	PRV
				PERCIDAE	1.000			
				GAMMARIDAE	2.000			
				CENTRARCHIDAE	2.002			
	DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *	0.0010	PRV
				ASELLIDAE	0.000			
				SALMONIDAE	0.402			
				EPHEMERELLIDAE	0.000			
		STATE	8	SALMONIDAE	0.070	1.007 *	0.0010	PRV
				EPHEMERELLIDAE	0.000			
				CENTRARCHIDAE	10.011			
				PERLIDAE	24.000			
	ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
				CYPRINIDAE	1.270			
				PTERONARCIDAE	2.300			
				CATOSTOMIDAE	3.340			
		STATE	7	SALMONIDAE	0.004	0.170 *	0.0070	ACR
				CYPRINIDAE	1.270			
				PTERONARCIDAE	2.300			
				CENTRARCHIDAE	3.011			

FOOTNOTE

* – UNITS IN MICROGRAMS PER LITER
* * – PPV FINAL PLANT VALUE
PRV FINAL RESIDUE VALUE
ACR COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
PCV 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 MAXIMUM CRITERIA
55 – 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: IDAHO

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (*)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (*)	30-DAY (*)	AVERAGE (**)
	ENDRIN	NATIONAL	17	GASTEROSTEIDAE	0.449	0.591 *	0.0023	FRV
				SALMONIDAE	0.465			
				PERLIDAE	0.493			
				PTERONARCIDAE	0.647			
		STATE	10	SALMONIDAE	0.465	0.191 *	0.0023	FRV
				PERLIDAE	0.493			
				PTERONARCIDAE	0.647			
				POECILIDAE	0.769			
	HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.565	0.291 *	0.0038	FRV
				PALAEMONIDAE	1.000			
				PERLIDAE	2.000			
				ASTACIDAE	7.000			
		STATE	7	PTERONARCIDAE	0.565	0.117 *	0.0038	FRV
				PERLIDAE	2.000			
				SALMONIDAE	17.700			
				CENTRARCHIDAE	33.000			
SS	LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.037 *	0.00003	FCV
				DAPHNIDAE	4.000			
				SALMONIDAE	69.000			
				CYPRINIDAE	303.700			
		STATE	5	DAPHNIDAE	4.000	0.037 *	0.00003	FCV
				SALMONIDAE	69.000			
				CYPRINIDAE	303.700			
				CENTRARCHIDAE	409.010			
	LINDANE	NATIONAL	10	ASELLIDAE	19.000	3.210 *	0.2574	ACR
				SALMONIDAE	21.000			
				GAMMARIDAE	39.437			
				CENTRARCHIDAE	92.571			
		STATE	8	SALMONIDAE	19.000	0.669 *	0.0343	ACR
				CENTRARCHIDAE	42.100			
				GAMMARIDAE	49.000			
				ICTALURIDAE	94.000			
	MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.39	FRV
				GAMMARIDAE	19.000			
				ASTACIDAE	31.000			
				SALMONIDAE	344.000			
		STATE	5	DAPHNIDAE	5.000	0.101 *	0.0071	ACR
				GAMMARIDAE	19.000			
				SALMONIDAE	345.000			
				PHILOGENIDAE	703.471			
SS	NICKEL	NATIONAL	10	DAPHNIDAE	65.977	32.914 *	3.3991	ACR
				EPHEMERELLIDAE	200.000			
				CENTRARCHIDAE	345.472			
				PHILOGENIDAE	401.217			
		STATE	8	DAPHNIDAE	65.977	20.087 *	2.6977	ACR
				PHILOGENIDAE	401.217			
				CHIRONOMIDAE	409.000			
				CENTRARCHIDAE	444.717			
	PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
				CENTRARCHIDAE	6.011			
				CYPRINIDAE	32.001			
				GAMMARIDAE	99.000			
		STATE	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
				CENTRARCHIDAE	2.300	**		
				CYPRINIDAE	32.001			
					0.000			
	SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	92.040 *	22.0000	ACR
				DAPHNIDAE	1002.474			
				CYPRINODONTIDAE	9400.970			
				SALMONIDAE	9470.733			
		STATE	7	HYALELLIDAE (TALITRIDAE)	300.000	92.431 *	13.0010	ACR
				DAPHNIDAE	1002.474			
				SALMONIDAE	9470.733			
				CYPRINIDAE	9002.430			
$	SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00000 *		
				COTTIDAE	0.004			
				CYPRINIDAE	0.000			
				CYPRINODONTIDAE	0.012			
		STATE	6	DAPHNIDAE	0.002	0.00000 *		
				COTTIDAE	0.004			
				CYPRINIDAE	0.000			
				SALMONIDAE	0.021			
	TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
				PTERONARCIDAE	2.027			
				ICTALURIDAE	3.547			
				CENTRARCHIDAE	4.725			
		STATE	10	PERLIDAE	1.300	0.004 *	0.0001	ACR
				PTERONARCIDAE	2.027			
				CENTRARCHIDAE	2.040			
				ICTALURIDAE	3.000			

STATE: IDAHO

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (*)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (*)	30-DAY (*)	AVERAGE (**)
$	ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.149 *	47.0000	SCV
				PHYSIDAE	41.000			
				SALMONIDAE	49.001			
				PHILOGENIDAE	92.767			
		STATE	9	DAPHNIDAE	13.737	2.702 *	47.0000	SCV
				SALMONIDAE	41.210			
				PHILOGENIDAE	92.767			
				CYPRINIDAE	270.000			

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

* — FAILED TO MEET MINIMUM DATA REQUIREMENT

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

$ — 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: ILLINOIS

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	3.268 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.000			
	STATE	10	CENTRARCHIDAE	7.451	3.268 *		
			ASELLIDAE	8.000			
			PERCONTHYIDAE	10.000			
			SALMONIDAE	10.000			
ARSENIC	NATIONAL	8	GAMMARIDAE	890.000	113.208 *		
			DAPHNIDAE	1704.340			
			SALMONIDAE	14168.040			
			ICTALURIDAE	19487.400			
	STATE	6	GAMMARIDAE	890.000	88.104 *		
			DAPHNIDAE	1048.130			
			SALMONIDAE	13888.000			
			ICTALURIDAE	19487.400			
88 CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.027	0.0024	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	10	SALMONIDAE	0.034	0.009	0.0009	ACR
			PERCONTHYIDAE	0.100			
			DAPHNIDAE	0.034			
			GAMMARIDAE	1.147			
CHLORDANE	NATIONAL	6	PALAEMONIDAE	0.300	1.574 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	22.000			
			GAMMARIDAE	32.000			
	STATE	5	PALAEMONIDAE	0.300	1.457 *	0.0043	FRV
			CYPRINIDAE	22.000			
			GAMMARIDAE	40.000			
			SALMONIDAE	40.327			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.3370	ACR
			DAPHNIDAE	6000.000			
			PHILOGENIDAE	6000.700			
			PHYSIDAE	34000.000			
	STATE	7	GAMMARIDAE	67.000	9.207 *	0.1455	ACR
			PHILOGENIDAE	6000.700			
			PHYSIDAE	34000.000			
			PERCONTHYIDAE	30454.700			
8 COPPER	NATIONAL	20	DAPHNIDAE	0.300	0.104	0.40010	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	10	DAPHNIDAE	0.300	0.149	0.00048	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			SALMONIDAE	1.040			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.489 *	4.2472	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	133.121			
	STATE	8	SALMONIDAE	57.000	22.102 *	2.0000	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	133.121			
DDT	NATIONAL	20	DAPHNIDAE	1.300	0.000	0.0010	FRV
			PERCIDAE	1.000			
			ESOCIDAE	1.700			
			GAMMARIDAE	2.304			
	STATE	14	DAPHNIDAE	0.070	0.400 *	0.0010	FRV
			PERCIDAE	1.000			
			GAMMARIDAE	1.004			
			ESOCIDAE	1.700			
DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *	0.0010	FRV
			ASELLIDAE	8.000			
			SALMONIDAE	8.402			
			EPHEMERELLIDAE	8.000			
	STATE	7	ASELLIDAE	8.000	1.120 *	0.0010	FRV
			SALMONIDAE	8.402			
			CENTRARCHIDAE	10.011			
			PALAEMONIDAE	20.000			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	6	SALMONIDAE	0.004	0.149 *	0.0002	ACR
			CYPRINIDAE	1.270			
			CATOSTOMIDAE	3.340			
			CENTRARCHIDAE	3.011			

STATE: ILLINOIS

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	0.201 *	0.0000	FRV
			SALMONIDAE	0.400			
			PERLIDAE	0.400			
			PTERONARCIDAE	0.047			
	STATE	11	SALMONIDAE	0.701	0.204 *	0.0000	FRV
			CYPRINIDAE	0.722			
			POECILIDAE	0.700			
			CENTRARCHIDAE	1.011			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.201 *	0.0000	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	8	PALAEMONIDAE	1.000	0.211 *	0.0000	FRV
			CENTRARCHIDAE	24.771			
			SALMONIDAE	25.400			
			GAMMARIDAE	47.000			
88 LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.037 *	0.00000	FCV
			DAPHNIDAE	4.000			
			SALMONIDAE	20.000			
			CYPRINIDAE	333.700			
	STATE	6	GAMMARIDAE	1.101	0.009 *	0.00004	FCV
			SALMONIDAE	123.100			
			CYPRINIDAE	333.700			
			CENTRARCHIDAE	400.010			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.2074	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	32.457			
			CENTRARCHIDAE	55.071			
	STATE	9	ASELLIDAE	10.000	2.011 *	0.1000	ACR
			GAMMARIDAE	10.400			
			SALMONIDAE	10.400			
			CENTRARCHIDAE	55.071			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.000			
			SALMONIDAE	344.300			
	STATE	6	GAMMARIDAE	10.000	1.000 *	0.20	FRV
			SALMONIDAE	344.300			
			PHILOGENIDAE	700.471			
			NAIDIDAE	000.000			
88 NICKEL	NATIONAL	10	DAPHNIDAE	65.077	32.014 *	3.2001	ACR
			EPHEMERELLIDAE	300.000			
			CENTRARCHIDAE	345.472			
			PHILOGENIDAE	401.317			
	STATE	10	DAPHNIDAE	70.400	34.001 *	3.0000	ACR
			EPHEMERELLIDAE	300.000			
			PERCONTHYIDAE	331.010			
			CENTRARCHIDAE	345.472			
POSS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	22.001			
			GAMMARIDAE	00.000			
	STATE	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	22.001			
			GAMMARIDAE	00.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	000.000	00.040 *	20.0000	ACR
			DAPHNIDAE	1000.470			
			CYPRINODONTIDAE	0400.070			
			SALMONIDAE	0470.700			
	STATE	8	HYALELLIDAE (TALITRIDAE)	000.000	74.102 *	10.7004	ACR
			DAPHNIDAE	000.000			
			SALMONIDAE	7000.000			
			CYPRINIDAE	0002.400			
8 SILVER	NATIONAL	9	DAPHNIDAE	0.000	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.010			
	STATE	6	COTTIDAE	0.004	0.00041 *		
			CYPRINIDAE	0.011			
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.037 *	0.0037	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.735			
	STATE	9	ICTALURIDAE	3.047	1.321 *	0.0214	ACR
			CENTRARCHIDAE	4.735			
			SALMONIDAE	4.044			
			CYPRINIDAE	0.000			

FOOTNOTE

* — UNITS IN MICROGRAMS PER LITER
** — FPV FINAL PLANT VALUE
PRV 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 3.7 TO DETERMINE MAXIMUM CRITERIA
88 — 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: ILLINOIS

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$	ZINC	NATIONAL	15	DAPHNIDAE	13.737	0.148	47.5000	SCV
				PHYSIDAE	41.000			
				SALMONIDAE	48.881			
				PHILODINIDAE	92.757			
		STATE	13	DAPHNIDAE	21.223	9.529	47.5000	SCV
				SALMONIDAE	30.000			
				PHYSIDAE	41.000			
				PERCICHTHYIDAE	49.204			

STATE: INDIANA

	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	3.300 *		
				AGELLIDAE	0.000			
				EPHEMERELLIDAE	0.000			
				SALMONIDAE	10.000			
		STATE	5	CENTRARCHIDAE	7.451	2.027 *		
				PERCICHTHYIDAE	10.000			
				SALMONIDAE	10.000			
				AMBURLIDAE	10.000			
	ARSENIC	NATIONAL	8	GAMMARIDAE	570.000	113.300 *		
				DAPHNIDAE	1704.340			
				SALMONIDAE	14128.643			
				ICTALURIDAE	19497.430			
		STATE	5	DAPHNIDAE	1040.139	171.010 *		
				SALMONIDAE	13000.000			
				ICTALURIDAE	19497.430			
				CENTRARCHIDAE	19494.000			
$$	CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.007	0.0004	ACR
				DAPHNIDAE	0.400			
				GAMMARIDAE	1.147			
				PHYSIDAE	2.000			
		STATE	14	SALMONIDAE	0.004	0.010	0.0000	ACR
				PERCICHTHYIDAE	0.100			
				DAPHNIDAE	0.004			
				GAMMARIDAE	1.147			
	CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.300	1.004 *	0.0043	FRV
				PTERONARCIDAE	10.000			
				CYPRINIDAE	30.230			
				GAMMARIDAE	32.340			
		STATE	4	CYPRINIDAE	30.230	0.001 *	0.0043	FRV
				GAMMARIDAE	40.000			
				SALMONIDAE	43.307			
				CENTRARCHIDAE	54.711			
	CHROMIUM	NATIONAL	10	GAMMARIDAE	57.000	12.104	0.3376	ACR
				DAPHNIDAE	6000.070			
				PHILODINIDAE	6000.700			
				PHYSIDAE	24000.000			
		STATE	6	PHILODINIDAE	6000.700	1000.400 *	10.0	FPV
				PHYSIDAE	24000.000			
				PERCICHTHYIDAE	20404.700			
				CYPRINIDAE	57401.072			
$	COPPER	NATIONAL	20	DAPHNIDAE	0.300	0.104	0.00010	FCV
				CHIRONOMIDAE	0.700			
				PHYSIDAE	0.000			
				TUBIFICIDAE	1.340			
		STATE	10	DAPHNIDAE	0.300	0.140	0.00400	FCV
				CHIRONOMIDAE	0.700			
				PHYSIDAE	0.000			
				SALMONIDAE	1.040			
	CYANIDE	NATIONAL	10	SALMONIDAE	70.707	21.400 *	4.3472	ACR
				DAPHNIDAE	80.000			
				CENTRARCHIDAE	114.310			
				PERCIDAE	120.121			
		STATE	6	SALMONIDAE	57.000	20.740 *	2.0000	ACR
				DAPHNIDAE	80.000			
				CENTRARCHIDAE	114.310			
				PERCIDAE	120.121			
	DDT	NATIONAL	20	DAPHNIDAE	1.303	0.000	0.0010	FRV
				PERCIDAE	1.000			
				ISOCIDAE	1.700			
				GAMMARIDAE	2.234			
		STATE	10	DAPHNIDAE	0.070	0.357 *	0.0010	FRV
				PERCIDAE	1.000			
				GAMMARIDAE	1.004			
				ASTACIDAE	3.000			
	DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *	0.0010	FRV
				AGELLIDAE	0.000			
				SALMONIDAE	0.402			
				EPHEMERELLIDAE	0.000			
		STATE	5	SALMONIDAE	0.402	0.357 *	0.0010	FRV
				CENTRARCHIDAE	10.011			
				CYPRINIDAE	30.102			
				DAPHNIDAE	331.000			
	ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
				CYPRINIDAE	1.270			
				PTERONARCIDAE	2.300			
				CATOSTOMIDAE	3.340			
		STATE	6	SALMONIDAE	0.004	0.140 *	0.0702	ACR
				CYPRINIDAE	1.270			
				CATOSTOMIDAE	3.340			
				CENTRARCHIDAE	3.011			

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 REQUIREMENT

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

$ — HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

$$ — 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: INDIANA

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	0.201 *	0.0023	FRV
			SALMONIDAE	0.460			
			PERLIDAE	0.460			
			PTERONARCIDAE	0.647			
	STATE	7	SALMONIDAE	0.701	0.107 *	0.0023	FRV
			CYPRINIDAE	0.732			
			CENTRARCHIDAE	1.011			
			COBITIDAE (AGRIONIDAE)	1.030			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.035	0.201 *	0.0038	FRV
			PALAEMONIDAE	1.030			
			PERLIDAE	2.030			
			AGRIONIDAE	7.030			
	STATE	5	CENTRARCHIDAE	34.771	0.107 *	0.0038	FRV
			SALMONIDAE	39.450			
			GAMMARIDAE	47.300			
			DAPHNIDAE	69.740			
88 LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.037 *	0.00025	FCV
			DAPHNIDAE	4.030			
			SALMONIDAE	69.030			
			CYPRINIDAE	303.703			
	STATE	4	SALMONIDAE	103.100	37.202 *	0.00004	FCV
			CYPRINIDAE	303.703			
			CENTRARCHIDAE	403.010			
			PHILOGENIDAE	503.340			
LINDANE	NATIONAL	10	ASELLIDAE	10.030	3.210 *	0.0074	ACR
			SALMONIDAE	21.030			
			GAMMARIDAE	30.407			
			CENTRARCHIDAE	92.071			
	STATE	8	GAMMARIDAE	10.400	2.000 *	0.2140	ACR
			SALMONIDAE	10.700			
			CENTRARCHIDAE	92.071			
			ICTALURIDAE	93.030			
MERCURY	NATIONAL	9	DAPHNIDAE	0.030	0.470 *	0.20	FRV
			GAMMARIDAE	10.030			
			ASELLIDAE	21.030			
			SALMONIDAE	344.030			
	STATE	5	GAMMARIDAE	10.030	0.000 *	0.20	FRV
			SALMONIDAE	344.030			
			PHILOGENIDAE	703.471			
			CAENIDAE	903.030			
88 NICKEL	NATIONAL	10	DAPHNIDAE	93.077	32.014 *	2.2001	ACR
			EPHEMERELLIDAE	303.030			
			CENTRARCHIDAE	343.472			
			PHILOGENIDAE	401.217			
	STATE	12	DAPHNIDAE	70.400	30.372 *	2.4404	ACR
			PERCONTHYIDAE	201.010			
			CENTRARCHIDAE	343.472			
			PHILOGENIDAE	401.217			
PCBS	NATIONAL	8	SALMONIDAE	2.030	0.107 *	0.014	FRV
			CENTRARCHIDAE	0.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	93.030			
	STATE	5	SALMONIDAE	2.030	0.131 *	0.014	FRV
			CENTRARCHIDAE	0.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	107.004			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	303.030	62.040 *	22.0000	ACR
			DAPHNIDAE	1003.474			
			CYPRINODONTIDAE	3403.070			
			SALMONIDAE	3470.733			
	STATE	7	HYALELLIDAE (TALITRIDAE)	303.030	64.004 *	17.2000	ACR
			DAPHNIDAE	3303.030			
			SALMONIDAE	7040.000			
			CYPRINIDAE	3303.400			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.005			
			CYPRINODONTIDAE	0.012			
	STATE	5	COTTIDAE	0.004	0.00000 *		
			CYPRINIDAE	0.011			
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.007			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.720			
	STATE	8	ICTALURIDAE	3.047	1.304 *	0.0000	ACR
			CENTRARCHIDAE	4.720			
			SALMONIDAE	4.944			
			CYPRINIDAE	0.000			

STATE: INDIANA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	16	DAPHNIDAE	10.737	0.140	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	43.001			
			PHILOGENIDAE	93.707			
	STATE	13	DAPHNIDAE	21.000	0.000	47.0000	SCV
			SALMONIDAE	33.000			
			PHYSIDAE	41.000			
			PERCONTHYIDAE	43.204			

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

$ — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

88 — 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: IOWA

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	3.388 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.000			
	STATE	7	CENTRARCHIDAE	7.451	2.773 *		
			ANGUILLIDAE	10.000			
			CYPRINIDAE	10.300			
			CYPRINODONTIDAE	21.000			
ARSENIC	NATIONAL	8	GAMMARIDAE	570.000	113.000 *		
			DAPHNIDAE	1754.345			
			SALMONIDAE	14125.043			
			ICTALURIDAE	10407.430			
	STATE	5	GAMMARIDAE	570.000	42.377 *		
			DAPHNIDAE	1045.139			
			ICTALURIDAE	10407.430			
			CENTRARCHIDAE	10404.000			
§§ CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.027	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	13	DAPHNIDAE	0.004	0.017 *	0.0001	ACR
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.030			
			PHYSIDAE	2.000			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.300	1.574 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	20.200			
			GAMMARIDAE	30.340			
	STATE	4	PALAEMONIDAE	0.300	1.300 *	0.0043	FRV
			CYPRINIDAE	20.200			
			GAMMARIDAE	40.000			
			CENTRARCHIDAE	54.711			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.3370	ACR
			DAPHNIDAE	6000.570			
			PHILODINIDAE	6000.700			
			PHYSIDAE	24000.000			
	STATE	6	GAMMARIDAE	67.000	3.407 *	0.0046	ACR
			PHILODINIDAE	6000.700			
			PHYSIDAE	24000.000			
			CYPRINIDAE	67401.672			
§ COPPER	NATIONAL	23	DAPHNIDAE	0.300	0.104	0.00010	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	17	DAPHNIDAE	0.300	0.133 *	0.00043	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.439 *	4.3472	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	135.121			
	STATE	8	DAPHNIDAE	83.000	30.340 *	4.4000	ACR
			CENTRARCHIDAE	114.310			
			PERCIDAE	135.121			
			GAMMARIDAE	167.000			
DDT	NATIONAL	20	DAPHNIDAE	1.303	0.000 *	0.0010	FRV
			PERCIDAE	1.000			
			SIDOCIDAE	1.700			
			GAMMARIDAE	2.334			
	STATE	12	DAPHNIDAE	0.970	0.402 *	0.0010	FRV
			PERCIDAE	1.000			
			GAMMARIDAE	1.004			
			SIDOCIDAE	1.700			
DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *	0.0010	FRV
			ASELLIDAE	5.000			
			SALMONIDAE	5.402			
			EPHEMERELLIDAE	8.000			
	STATE	5	CENTRARCHIDAE	10.011	0.002 *	0.0010	FRV
			PALAEMONIDAE	20.000			
			CYPRINIDAE	30.102			
			DAPHNIDAE	231.002			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	5	CYPRINIDAE	1.270	0.351 *	0.1000	ACR
			CATOSTOMIDAE	3.340			
			CENTRARCHIDAE	3.011			
			GAMMARIDAE	0.000			

STATE: IOWA

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	0.201 *	0.0003	FRV
			SALMONIDAE	0.400			
			PERLIDAE	0.400			
			PTERONARCIDAE	0.047			
	STATE	8	CYPRINIDAE	0.722	0.271 *	0.0003	FRV
			POECILIDAE	0.700			
			CENTRARCHIDAE	1.011			
			PALAEMONIDAE	1.300			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.201 *	0.0000	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	5	PALAEMONIDAE	1.000	0.345 *	0.0000	FRV
			CENTRARCHIDAE	30.000			
			GAMMARIDAE	47.300			
			DAPHNIDAE	80.740			
§§ LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007 *	0.00000	FCV
			DAPHNIDAE	4.000			
			SALMONIDAE	80.000			
			CYPRINIDAE	300.702			
	STATE	4	GAMMARIDAE	1.101	0.005 *	0.00000	FCV
			CYPRINIDAE	300.702			
			CENTRARCHIDAE	400.010			
			PHILODINIDAE	600.040			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.3374	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	22.407			
			CENTRARCHIDAE	92.271			
	STATE	6	SALMONIDAE	2.000	0.302 *	0.0001	ACR
			GAMMARIDAE	10.400			
			CENTRARCHIDAE	42.100			
			ICTALURIDAE	80.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.30	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.000			
			SALMONIDAE	344.300			
	STATE	3	GAMMARIDAE	10.000	0.470 *	0.30	FRV
			PHILODINIDAE	700.471	**		
			NAIDIDAE	900.000			
				0.000			
§§ NICKEL	NATIONAL	10	DAPHNIDAE	65.077	32.914 *	3.2001	ACR
			EPHEMERELLIDAE	300.000			
			CENTRARCHIDAE	340.472			
			PHILODINIDAE	401.217			
	STATE	11	DAPHNIDAE	70.400	31.000 *	3.2047	ACR
			CENTRARCHIDAE	300.042			
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	430.000			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.127 *	0.014	FRV
			CENTRARCHIDAE	0.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	60.000			
	STATE	4	CENTRARCHIDAE	2.300	0.131 *	0.014	FRV
			CYPRINIDAE	32.001			
			GAMMARIDAE	60.000			
			COBNASFRONIDAE (AGRIONIDAE)	202.042			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	62.040 *	22.0000	ACR
			DAPHNIDAE	1002.474			
			CYPRINODONTIDAE	6400.070			
			SALMONIDAE	6470.723			
	STATE	5	HYALELLIDAE (TALITRIDAE)	300.000	60.740 *	17.0000	ACR
			DAPHNIDAE	3000.000			
			CYPRINIDAE	6002.420			
			POECILIDAE	12000.040			
§ SILVER	NATIONAL	9	DAPHNIDAE	0.000	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	5	CYPRINIDAE	0.011	0.00021 *		
			CENTRARCHIDAE	0.112			
			CHIRONOMIDAE	4.100			
			PHILODINIDAE	0.017			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.720			
	STATE	9	CENTRARCHIDAE	2.040	0.700 *	0.0135	ACR
			SALMONIDAE	3.000			
			ICTALURIDAE	3.047			
			CYPRINIDAE	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

* — 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 MAXIMUM CRITERIA

§§ — 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: IOWA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.146	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	48.001			
			PHILOGENIDAE	92.757			
	STATE	11	DAPHNIDAE	21.323	4.002 *	47.0000	SCV
			PHYSIDAE	41.000			
			PHILOGENIDAE	92.757			
			CYPRINIDAE	300.000			

STATE: KANSAS

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	3.300 *		
			ASELLIDAE	0.000			
			EPHEMERELLIDAE	0.000			
			SALMONIDAE	10.000			
	STATE	5	CENTRARCHIDAE	7.451	2.454 *		
			PERIONTHYIDAE	10.000			
			ANSURLLIDAE	10.000			
			CYPRINIDAE	10.000			
ARSENIC	NATIONAL	6	GAMMARIDAE	570.000	113.000 *		
			DAPHNIDAE	1704.000			
			SALMONIDAE	14100.000			
			ICTALURIDAE	10427.400			
	STATE	4	DAPHNIDAE	1010.100	149.400 *		
			ICTALURIDAE	10427.400			
			CENTRARCHIDAE	10424.000			
			CYPRINIDAE	20104.000			
$$ CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.027	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	12	PERIONTHYIDAE	0.100	0.041 *	0.0006	ACR
			DAPHNIDAE	0.004			
			PHYSIDAE	2.000			
			PHILOGENIDAE	0.027			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.000	1.574 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	20.000			
			GAMMARIDAE	22.040			
	STATE	2	CYPRINIDAE	20.000	1.574 *	0.0043	FRV
			CENTRARCHIDAE	54.711	**		
				0.000			
				0.000			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104 *	0.3570	ACR
			DAPHNIDAE	0000.000			
			PHILOGENIDAE	0000.700			
			PHYSIDAE	24000.000			
	STATE	5	PHILOGENIDAE	0000.700	1040.004 *	10.0	FPV
			PHYSIDAE	24000.000			
			PERIONTHYIDAE	20404.700			
			CYPRINIDAE	07401.072			
$ COPPER	NATIONAL	33	DAPHNIDAE	0.000	0.104	0.00010	PCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	14	DAPHNIDAE	0.000	0.110 *	0.00001	PCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *	4.2472	ACR
			DAPHNIDAE	00.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	100.121			
	STATE	9	DAPHNIDAE	00.000	27.174 *	3.6732	ACR
			CENTRARCHIDAE	114.310			
			PERCIDAE	100.121			
			CYPRINIDAE	207.000			
DDT	NATIONAL	20	DAPHNIDAE	1.000	0.000	0.0010	FRV
			PERCIDAE	1.000			
			SIGOIDAE	1.700			
			GAMMARIDAE	2.004			
	STATE	7	DAPHNIDAE	0.070	0.000 *	0.0010	FRV
			PERCIDAE	1.000			
			ASTACIDAE	2.400			
			CENTRARCHIDAE	3.004			
DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *	0.0010	FRV
			ASELLIDAE	0.000			
			SALMONIDAE	0.400			
			EPHEMERELLIDAE	0.000			
	STATE	4	CENTRARCHIDAE	10.011	0.400 *	0.0010	FRV
			CYPRINIDAE	30.102			
			DAPHNIDAE	100.740			
			ASTACIDAE	720.000			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.000 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	4	CYPRINIDAE	1.270	0.000 *	0.0105	ACR
			CATOSTOMIDAE	3.340			
			CENTRARCHIDAE	3.011			
			COBITIDAE (AGRONIDAE)	07.000			

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

* — 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 MAXIMUM CRITERIA

$$ — 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: KANSAS

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOEC VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ENDRIN	NATIONAL	17	GASTEROSTEIDAE	0.449	0.391 *	0.0023	FRV
			SALMONIDAE	0.489			
			PERLIDAE	0.489			
			PTERONARCIDAE	0.647			
	STATE	7	CYPRINIDAE	0.732	0.398 *	0.0023	FRV
			POECILIIDAE	0.789			
			CENTRARCHIDAE	1.011			
			COBITIDIDAE (ABRIDAE)	1.889			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.391 *	0.0000	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	4	ASTACIDAE	7.000	0.703 *	0.0000	FRV
			CENTRARCHIDAE	39.000			
			DAPHNIDAE	89.749			
			CYPRINIDAE	179.000			
96 LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007 *	0.00000	FCV
			DAPHNIDAE	4.000			
			SALMONIDAE	89.002			
			CYPRINIDAE	203.702			
	STATE	3	CYPRINIDAE	203.702	0.007 *	0.00000	FCV
			CENTRARCHIDAE	455.016	**		
			PHILODINIDAE	800.045			
				0.000			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.3574	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	32.457			
			CENTRARCHIDAE	92.571			
	STATE	6	CENTRARCHIDAE	42.100	14.391 *	1.1612	ACR
			ICTALURIDAE	53.000			
			PERCIDAE	68.000			
			CYPRINIDAE	94.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.000			
			SALMONIDAE	244.000			
	STATE	2	PHILODINIDAE	703.471	0.470 *	0.20	FRV
			NAIDIDAE	900.000	**		
				0.000			
				0.000			
96 NICKEL	NATIONAL	16	DAPHNIDAE	68.977	32.014 *	3.3991	ACR
			EPHEMERELLIDAE	203.000			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	491.217			
	STATE	10	DAPHNIDAE	70.400	28.000 *	3.0701	ACR
			PERCICHTHYIDAE	391.510			
			CENTRARCHIDAE	393.042			
			PHILODINIDAE	491.217			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.127 *	0.014	FRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	99.003			
	STATE	3	CENTRARCHIDAE	2.300	0.127 *	0.014	FRV
			CYPRINIDAE	32.001	**		
			COBITIDIDAE (ABRIDAE)	392.042			
				0.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	82.040 *	22.0000	ACR
			DAPHNIDAE	1002.474			
			CYPRINODONTIDAE	6400.070			
			SALMONIDAE	9470.723			
	STATE	7	HYALELLIDAE (TALITRIDAE)	300.000	55.004 *	15.1011	ACR
			DAPHNIDAE	3000.000			
			CYPRINIDAE	6002.430			
			POECILIIDAE	10000.045			
5 SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	3	CYPRINIDAE	0.011	0.00000 *		
			CENTRARCHIDAE	0.112	**		
			PHILODINIDAE	0.517			
				0.000			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.200	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.735			
	STATE	6	CENTRARCHIDAE	2.040	0.001 *	0.0102	ACR
			ICTALURIDAE	3.547			
			CYPRINIDAE	8.000			
			PERCIDAE	12.000			

STATE: KANSAS

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOEC VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
96 ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.149	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	49.001			
			PHILODINIDAE	92.757			
	STATE	10	DAPHNIDAE	21.000	7.300 *	47.0000	SCV
			PHYSIDAE	41.000			
			PERCICHTHYIDAE	49.004			
			PHILODINIDAE	92.757			

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
5 — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
96 — 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: KENTUCKY

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	3.388 *		
			AGELLIDAE	8.000			
			EPHEMERELLIDAE	8.000			
			SALMONIDAE	10.000			
	STATE	7	SALMONIDAE	4.000	1.774 *		
			CENTRARCHIDAE	7.451			
			AGELLIDAE	8.000			
			PERCIONTHYIDAE	10.000			
ARSENIC	NATIONAL	8	GAMMARIDAE	570.000	113.200 *		
			DAPHNIDAE	1704.345			
			SALMONIDAE	14128.943			
			ICTALURIDAE	10457.439			
	STATE	8	GAMMARIDAE	570.000	88.104 *		
			DAPHNIDAE	1045.139			
			SALMONIDAE	13000.000			
			ICTALURIDAE	10457.439			
SS CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.027	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	14	SALMONIDAE	0.044	0.013	0.0002	ACR
			PERCIONTHYIDAE	0.103			
			DAPHNIDAE	0.204			
			GAMMARIDAE	1.147			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.200	1.574 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	33.320			
			GAMMARIDAE	32.340			
	STATE	3	CYPRINIDAE	33.320	1.574 *	0.0043	FRV
			SALMONIDAE	39.401	**		
			CENTRARCHIDAE	54.711			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.3570	ACR
			DAPHNIDAE	6000.570			
			PHILOGNIDAE	6000.700			
			PHYSIDAE	24000.000			
	STATE	7	GAMMARIDAE	67.000	5.207 *	0.1400	ACR
			PHILOGNIDAE	6000.700			
			PHYSIDAE	24000.000			
			PERCIONTHYIDAE	30454.700			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.300	0.104	0.00010	PCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.240			
	STATE	16	DAPHNIDAE	0.300	0.142	0.00002	PCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			SALMONIDAE	1.000			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *	4.3472	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	120.121			
	STATE	7	SALMONIDAE	57.000	10.001 *	2.0170	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.310			
			GAMMARIDAE	107.000			
DDT	NATIONAL	20	DAPHNIDAE	1.303	0.000 *	0.0010	FRV
			PERCIDAE	1.000			
			ESOCIDAE	1.700			
			GAMMARIDAE	2.304			
	STATE	6	DAPHNIDAE	0.970	0.300 *	0.0010	FRV
			ASTACIDAE	3.000			
			AGELLIDAE	4.000			
			CENTRARCHIDAE	4.102			
DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *	0.0010	FRV
			AGELLIDAE	5.000			
			SALMONIDAE	5.402			
			EPHEMERELLIDAE	8.000			
	STATE	5	SALMONIDAE	2.400	0.300 *	0.0010	FRV
			AGELLIDAE	5.000			
			CENTRARCHIDAE	10.011			
			CYPRINIDAE	30.102			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	5	SALMONIDAE	0.004	0.137 *	0.0701	ACR
			CYPRINIDAE	1.270			
			CATOSTOMIDAE	3.340			
			CENTRARCHIDAE	3.011			

STATE: KENTUCKY

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	0.201 *	0.0020	FRV
			SALMONIDAE	0.400			
			PERLIDAE	0.400			
			PTERONARCIDAE	0.047			
	STATE	8	SALMONIDAE	0.004	0.200 *	0.0020	FRV
			CYPRINIDAE	0.732			
			POECILIDAE	0.700			
			CENTRARCHIDAE	1.011			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.005	0.201 *	0.0000	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	4	SALMONIDAE	10.000	1.204 *	0.0000	FRV
			CENTRARCHIDAE	34.771			
			DAPHNIDAE	80.740			
			CYPRINIDAE	170.000			
SS LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007 *	0.00000	FCV
			DAPHNIDAE	4.000			
			SALMONIDAE	60.002			
			CYPRINIDAE	300.702			
	STATE	5	GAMMARIDAE	1.101	0.000 *	0.00004	FCV
			SALMONIDAE	102.100			
			CYPRINIDAE	300.702			
			CENTRARCHIDAE	425.016			
LINDANE	NATIONAL	10	AGELLIDAE	10.000	3.210 *	0.3574	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	32.407			
			CENTRARCHIDAE	62.071			
	STATE	6	SALMONIDAE	0.004	1.130 *	0.0000	ACR
			AGELLIDAE	10.000			
			CENTRARCHIDAE	62.071			
			ICTALURIDAE	80.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.000			
			SALMONIDAE	504.000			
	STATE	4	GAMMARIDAE	10.000	0.000 *	0.20	FRV
			SALMONIDAE	340.000			
			PHILOGNIDAE	705.471			
			HAIRSNAIL	900.000			
SS NICKEL	NATIONAL	10	DAPHNIDAE	60.077	32.914 *	3.3001	ACR
			EPHEMERELLIDAE	300.000			
			CENTRARCHIDAE	340.472			
			PHILOGNIDAE	401.217			
	STATE	11	DAPHNIDAE	70.400	31.010 *	3.3000	ACR
			PERCIONTHYIDAE	301.010			
			CENTRARCHIDAE	300.042			
			PHILOGNIDAE	401.217			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	0.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	60.000			
	STATE	5	SALMONIDAE	2.000	0.144 *	0.014	FRV
			CENTRARCHIDAE	0.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	60.004			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	82.040 *	22.0000	ACR
			DAPHNIDAE	1000.474			
			CYPRINODONTIDAE	6400.070			
			SALMONIDAE	8470.720			
	STATE	8	HYALELLIDAE (TALITRIDAE)	300.000	74.102 *	10.7004	ACR
			DAPHNIDAE	3000.000			
			SALMONIDAE	7040.000			
			CYPRINIDAE	9000.400			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	6	COTTIDAE	0.004	0.00001 *		
			CYPRINIDAE	0.011			
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.007			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.730			
	STATE	7	ICTALURIDAE	3.047	1.205 *	0.0000	ACR
			CENTRARCHIDAE	4.730			
			SALMONIDAE	5.201			
			CYPRINIDAE	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

* — 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 MAXIMUM CRITERIA

SS — 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: KENTUCKY

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.148	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	48.001			
			PHILODINIDAE	92.757			
	STATE	12	DAPHNIDAE	21.223	0.395	47.0000	SCV
			SALMONIDAE	28.243			
			PHYSIDAE	41.000			
			PERCICHTHYIDAE	48.204			

STATE: LOUISIANA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.401	3.000 *		
			ASELLIDAE	0.000			
			EPHEMERELLIDAE	0.000			
			SALMONIDAE	10.000			
	STATE	7	CENTRARCHIDAE	7.401	2.045 *		
			PERCICHTHYIDAE	10.000			
			ANSURLLIDAE	10.000			
			CYPRINIDAE	10.302			
ARSENIC	NATIONAL	8	GAMMARIDAE	570.000	113.300 *		
			DAPHNIDAE	1704.345			
			SALMONIDAE	14128.043			
			ICTALURIDAE	16457.420			
	STATE	4	DAPHNIDAE	1040.120	149.400 *		
			ICTALURIDAE	16457.420			
			CENTRARCHIDAE	19484.000			
			CYPRINIDAE	20104.300			
$$ CADMIUM	NATIONAL	10	SALMONIDAE	0.045	0.027	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	12	PERCICHTHYIDAE	0.140	0.041 *	0.0000	ACR
			DAPHNIDAE	0.004			
			PHYSIDAE	2.000			
			PHILODINIDAE	0.007			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.300	1.004 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	20.000			
			GAMMARIDAE	32.340			
	STATE	4	PALAEMONIDAE	0.300	1.007 *	0.0043	FRV
			CYPRINIDAE	20.000			
			CENTRARCHIDAE	54.711			
			SALMONIDAE	60.000			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.3070	ACR
			DAPHNIDAE	6000.070			
			PHILODINIDAE	6000.700			
			PHYSIDAE	34002.000			
	STATE	5	PHILODINIDAE	6000.700	16.0 *	16.0	FPV
			PHYSIDAE	34002.000			
			PERCICHTHYIDAE	39484.700			
			CYPRINIDAE	57481.072			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.300	0.104	0.00010	PCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	10	DAPHNIDAE	0.300	0.123 *	0.00072	PCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			SALMONIDAE	1.3304			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *	4.3472	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	120.121			
	STATE	5	DAPHNIDAE	60.000	16.127 *	2.1702	ACR
			CENTRARCHIDAE	114.310			
			CYPRINIDAE	287.000			
			PHYSIDAE	491.400			
DDT	NATIONAL	20	DAPHNIDAE	1.200	0.000	0.0010	FRV
			PERCIDAE	1.000			
			BROOIDAE	1.700			
			GAMMARIDAE	2.204			
	STATE	9	DAPHNIDAE	0.070	0.304 *	0.0010	FRV
			ASTACIDAE	3.000			
			PALAEMONIDAE	3.304			
			CENTRARCHIDAE	4.102			
DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *	0.0010	FRV
			ASELLIDAE	0.000			
			SALMONIDAE	5.402			
			EPHEMERELLIDAE	0.000			
	STATE	5	SALMONIDAE	10.000	2.000 *	0.0010	FRV
			CENTRARCHIDAE	10.011			
			PALAEMONIDAE	20.000			
			CYPRINIDAE	30.102			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.240			
	STATE	3	CYPRINIDAE	1.270	0.300 *	0.1004	ACR
			CENTRARCHIDAE	3.011	**		
			COGNAGRONIDAE (AGRONIDAE)	57.000			
				0.000			

FOOTNOTE

- * – UNITS IN MICROGRAMS PER LITER
- ** – FPV FINAL PLANT VALUE
  - FRV FINAL RESIDUE VALUE
  - ACR COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
  - PCV 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 MAXIMUM CRITERIA

$$ – 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: LOUISIANA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOSS VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ENDRIN	NATIONAL	7	GASTEROSTEIDAE	0.449	0.391 *	0.0023	PRV
			SALMONIDAE	0.450			
			PERLIDAE	0.450			
			PTERONARCIDAE	0.647			
	STATE	6	SALMONIDAE	0.471	0.160 *	0.0023	PRV
			CYPRINIDAE	0.732			
			POECILIDAE	0.750			
			CENTRARCHIDAE	1.011			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.033	0.291 *	0.0038	PRV
			PALAEMONIDAE	1.030			
			PERLIDAE	2.030			
			ASTACIDAE	7.030			
	STATE	5	PALAEMONIDAE	1.030	0.300 *	0.0038	PRV
			CENTRARCHIDAE	34.771			
			DAPHNIDAE	69.740			
			SALMONIDAE	91.030			
96 LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.097 *	0.00030	PCV
			DAPHNIDAE	4.030			
			SALMONIDAE	69.000			
			CYPRINIDAE	333.792			
	STATE	3	CYPRINIDAE	333.792	0.097 *	0.00030	PCV
			CENTRARCHIDAE	400.010	**		
			PHILODINIDAE	600.040			
				0.030			
LINDANE	NATIONAL	10	ASELLIDAE	10.030	3.210 *	0.3574	ACR
			SALMONIDAE	21.030			
			GAMMARIDAE	32.407			
			CENTRARCHIDAE	92.071			
	STATE	6	SALMONIDAE	45.277	13.000 *	1.1140	ACR
			CENTRARCHIDAE	92.071			
			ICTALURIDAE	93.000			
			CYPRINIDAE	94.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.39	PRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.000			
			SALMONIDAE	344.000			
	STATE	4	ASTACIDAE	30.000	1.004 *	0.39	PRV
			SALMONIDAE	340.000			
			PHILODINIDAE	703.471			
			NAMIDAE	900.000			
96 NICKEL	NATIONAL	10	DAPHNIDAE	60.077	32.014 *	3.3001	ACR
			SPHAERIELLIDAE	300.000			
			CENTRARCHIDAE	340.472			
			PHILODINIDAE	491.217			
	STATE	10	DAPHNIDAE	70.000	30.000 *	2.3001	ACR
			PERIONTHYIDAE	301.010			
			PHILODINIDAE	491.217			
			CHIRONOMIDAE	400.000			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	PRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	93.000			
	STATE	2	CENTRARCHIDAE	6.011	0.137 *	0.014	PRV
			CYPRINIDAE	32.001	**		
				0.000			
				0.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	62.040 *	22.0000	ACR
			DAPHNIDAE	1002.474			
			CYPRINODONTIDAE	9400.079			
			SALMONIDAE	9470.723			
	STATE	7	HYALELLIDAE (TALITRIDAE)	300.000	50.004 *	16.1011	ACR
			DAPHNIDAE	3000.000			
			CYPRINIDAE	9000.400			
			POECILIDAE	12000.040			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	3	CYPRINIDAE	0.010	1.00000 *		
			CENTRARCHIDAE	0.112	**		
			PHILODINIDAE	0.017			
				0.000			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.000	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.007			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.735			
	STATE	7	ICTALURIDAE	3.047	1.107 *	0.0105	ACR
			CENTRARCHIDAE	4.735			
			CYPRINIDAE	6.000			
			SALMONIDAE	6.072			

STATE: LOUISIANA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOSS VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.140	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	49.001			
			PHILODINIDAE	92.707			
	STATE	11	DAPHNIDAE	21.000	0.135 *	47.0000	SCV
			PHYSIDAE	41.000			
			PERIONTHYIDAE	49.204			
			SALMONIDAE	401.410			

FOOTNOTE

- * – UNITS IN MICROGRAMS PER LITER
- ** – FPV FINAL PLANT VALUE
  - PRV FINAL RESIDUE VALUE
  - ACR COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
  - PCV 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 MAXIMUM CRITERIA
- 96 – 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: MAINE

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	3.359 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.000			
	STATE	6	EPHEMERELLIDAE	9.000	3.313 *		
			CYPRINIDAE	11.732			
			ANSURLLIDAE	16.000			
			PERCICHTHYIDAE	20.404			
ARSENIC	NATIONAL	8	GAMMARIDAE	890.000	113.280 *		
			DAPHNIDAE	1704.340			
			SALMONIDAE	14128.043			
			ICTALURIDAE	16457.400			
	STATE	3	DAPHNIDAE	1040.130	113.283 *		
			SALMONIDAE	14000.040	**		
			CYPRINIDAE	16000.000			
				0.000			
$$ CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.027	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	10	SALMONIDAE	0.040	0.016	0.0002	ACR
			DAPHNIDAE	0.004			
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.000			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.200	1.574 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	20.200			
			GAMMARIDAE	30.340			
	STATE	3	CYPRINIDAE	12.371	1.574 *	0.0043	FRV
			GAMMARIDAE	30.000	**		
			SALMONIDAE	80.200			
				0.000			
CHROMIUM	NATIONAL	10	GAMMARIDAE	97.000	12.104	0.3970	ACR
			DAPHNIDAE	6000.970			
			PHILODINIDAE	6000.700			
			PHYSIDAE	24000.000			
	STATE	6	PHILODINIDAE	6000.700	1011.100 *	10.0	FPV
			PHYSIDAE	24000.000			
			PERCICHTHYIDAE	20404.700			
			CYPRINIDAE	40000.000			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.300	0.104	0.00010	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	20	DAPHNIDAE	0.300	0.101	7.20000	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *	4.3472	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	123.121			
	STATE	7	DAPHNIDAE	80.000	30.040 *	4.0570	ACR
			CENTRARCHIDAE	102.000			
			SALMONIDAE	103.307			
			PERCIDAE	123.121			
DDT	NATIONAL	20	DAPHNIDAE	1.300	0.000	0.0010	FRV
			PERCIDAE	1.000			
			BIOCIDAE	1.700			
			GAMMARIDAE	3.334			
	STATE	9	DAPHNIDAE	0.970	0.354 *	0.0010	FRV
			PERCIDAE	1.000			
			CENTRARCHIDAE	2.300			
			GAMMARIDAE	3.000			
DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *	0.0010	FRV
			ASELLIDAE	5.000			
			SALMONIDAE	9.400			
			EPHEMERELLIDAE	9.000			
	STATE	5	EPHEMERELLIDAE	9.000	0.300 *	0.0010	FRV
			SALMONIDAE	10.000			
			CYPRINIDAE	22.101			
			DAPHNIDAE	201.002			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.200 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	4	CYPRINIDAE	1.270	0.043 *	0.0210	ACR
			CATOSTOMIDAE	3.340			
			GAMMARIDAE	8.000			
			COENAGRIONIDAE (AGRIONIDAE)	57.000			

STATE: MAINE

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	0.201 *	0.0003	FRV
			SALMONIDAE	0.400			
			PERLIDAE	0.400			
			PTERONARCIDAE	0.047			
	STATE	8	GASTEROSTEIDAE	0.440	0.000 *	0.0003	FRV
			SALMONIDAE	0.400			
			CYPRINIDAE	0.002			
			COENAGRIONIDAE (AGRIONIDAE)	1.000			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.201 *	0.0000	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	4	GAMMARIDAE	20.000	7.775 *	0.0000	FRV
			DAPHNIDAE	80.740			
			SALMONIDAE	81.000			
			CYPRINIDAE	100.007			
$$ LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007 *	0.00000	FCV
			DAPHNIDAE	4.000			
			SALMONIDAE	60.002			
			CYPRINIDAE	300.702			
	STATE	3	SALMONIDAE	40.000	0.007 *	0.00000	FCV
			CYPRINIDAE	107.201	**		
			PHILODINIDAE	000.040			
				0.000			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.2074	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	32.407			
			CENTRARCHIDAE	82.071			
	STATE	6	SALMONIDAE	10.000	4.000 *	0.2044	ACR
			CENTRARCHIDAE	32.000			
			GAMMARIDAE	40.000			
			PERCIDAE	60.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000	*		
			ASTACIDAE	31.000			
			SALMONIDAE	244.200			
	STATE	6	GAMMARIDAE	10.000	0.707 *	0.20	FRV
			ASTACIDAE	60.000			
			SALMONIDAE	240.000			
			PHILODINIDAE	700.471			
$$ NICKEL	NATIONAL	10	DAPHNIDAE	65.077	22.014 *	2.2001	ACR
			EPHEMERELLIDAE	200.000			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	401.217			
	STATE	13	DAPHNIDAE	70.400	35.200 *	3.0045	ACR
			CENTRARCHIDAE	200.200			
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	430.000			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	0.011			
			CYPRINIDAE	30.001			
			GAMMARIDAE	00.000			
	STATE	3	CENTRARCHIDAE	2.300	0.137 *	0.014	FRV
			CYPRINIDAE	30.001	**		
			COENAGRIONIDAE (AGRIONIDAE)	000.042			
				0.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	00.040 *	20.0000	ACR
			DAPHNIDAE	1002.474			
			CYPRINODONTIDAE	0400.070			
			SALMONIDAE	0470.723			
	STATE	8	HYALELLIDAE (TALITRIDAE)	300.000	40.010 *	12.4000	ACR
			CYPRINIDAE	3100.140			
			DAPHNIDAE	3000.000			
			SALMONIDAE	10100.073			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	2	CYPRINIDAE	0.011	0.00000 *		
			PHILODINIDAE	0.017	**		
				0.000			
				0.000			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.720			
	STATE	7	CENTRARCHIDAE	2.000	0.001 *	0.0004	ACR
			CYPRINIDAE	6.105			
			SALMONIDAE	0.000			
			PERCIDAE	12.000			

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

* — FAILED TO MEET MINIMUM DATA REQUIREMENT

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

$ — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA

$$ — 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: MAINE

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOEC VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.148	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	48.001			
			PHILODINIDAE	82.757			
	STATE	13	DAPHNIDAE	21.000	0.002	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	73.017			
			PHILODINIDAE	82.757			

STATE: MARYLAND

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOEC VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.451	3.000 *		
			ASELLIDAE	0.000			
			EPHEMERELLIDAE	0.000			
			SALMONIDAE	0.000			
	STATE	9	CENTRARCHIDAE	7.451	2.749 *		
			EPHEMERELLIDAE	0.000			
			SALMONIDAE	14.577			
			ANGUILLIDAE	19.000			
ARSENIC	NATIONAL	8	GAMMARIDAE	570.000	113.000 *		
			DAPHNIDAE	1704.000			
			SALMONIDAE	14000.000			
			ICTALURIDAE	19697.000			
	STATE	4	DAPHNIDAE	1040.130	141.000 *		
			SALMONIDAE	14000.000			
			CENTRARCHIDAE	19000.000			
			CYPRINIDAE	22104.000			
55 CADMIUM	NATIONAL	18	SALMONIDAE	0.040	0.007		0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	17	SALMONIDAE	0.004	0.021		0.0000	ACR
			DAPHNIDAE	0.004			
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.000			
CHLORDANE	NATIONAL	6	PALAEMONIDAE	0.000	1.004 *		0.0040	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	20.000			
			GAMMARIDAE	22.000			
	STATE	4	CYPRINIDAE	20.000	0.017 *		0.0043	FRV
			GAMMARIDAE	40.000			
			SALMONIDAE	40.044			
			CENTRARCHIDAE	94.711			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104		0.3370	ACR
			DAPHNIDAE	6000.070			
			PHILODINIDAE	6000.700			
			PHYSIDAE	24000.000			
	STATE	6	PHILODINIDAE	6000.700	1002.400 *		10.0	FRV
			PHYSIDAE	24000.000			
			PERCOPHYIDAE	20000.700			
			CYPRINIDAE	67401.072			
5 COPPER	NATIONAL	20	DAPHNIDAE	0.000	0.104		0.00010	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	10	DAPHNIDAE	0.000	0.139		0.00000	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *		4.3472	ACR
			DAPHNIDAE	00.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	165.121			
	STATE	6	SALMONIDAE	70.707	30.210 *		4.0000	ACR
			DAPHNIDAE	00.000			
			CENTRARCHIDAE	114.010			
			PERCIDAE	165.121			
DDT	NATIONAL	20	DAPHNIDAE	1.300	0.000 *		0.0010	FRV
			PERCIDAE	1.000			
			ESOCIDAE	1.700			
			GAMMARIDAE	2.004			
	STATE	10	DAPHNIDAE	0.070	0.307 *		0.0010	FRV
			PERCIDAE	1.000			
			GAMMARIDAE	1.004			
			ASTACIDAE	2.000			
DIELDRIN	NATIONAL	12	FUNDULIDAE	4.000	1.000 *		0.0010	FRV
			ASELLIDAE	0.000			
			SALMONIDAE	0.402			
			EPHEMERELLIDAE	0.000			
	STATE	6	SALMONIDAE	0.104	1.007 *		0.0010	FRV
			EPHEMERELLIDAE	0.000			
			CENTRARCHIDAE	10.011			
			CYPRINIDAE	22.102			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.000 *		0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	6	SALMONIDAE	0.004	0.149 *		0.0702	ACR
			CYPRINIDAE	1.270			
			CATOSTOMIDAE	3.340			
			CENTRARCHIDAE	3.011			

FOOTNOTE

* — UNITS IN MICROGRAMS PER LITER

** — FPV FINAL PLANT VALUE
PRV 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

§ — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA

§§ — 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: MARYLAND

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ENDRIN	NATIONAL	17	GASTEROSTEIDAE	0.449	0.291 *	0.0023	FRV
			SALMONIDAE	0.489			
			PERLIDAE	0.489			
			PTERONARCIDAE	0.847			
	STATE	11	GASTEROSTEIDAE	0.449	0.169 *	0.0023	FRV
			SALMONIDAE	0.889			
			CYPRINIDAE	0.732			
			POECILIIDAE	0.789			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.885	0.291 *	0.0038	FRV
			PALAEMONIDAE	1.889			
			PERLIDAE	2.889			
			ASTACIDAE	7.889			
	STATE	5	CENTRARCHIDAE	28.889	0.169 *	0.0038	FRV
			SALMONIDAE	32.782			
			GAMMARIDAE	47.289			
			DAPHNIDAE	89.745			
96 LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.037 *	0.00003	FCV
			DAPHNIDAE	4.889			
			SALMONIDAE	69.882			
			CYPRINIDAE	288.782			
	STATE	4	SALMONIDAE	69.882	14.889 *	0.00003	FCV
			CYPRINIDAE	288.782			
			CENTRARCHIDAE	489.016			
			PHILOGENIDAE	889.845			
LINDANE	NATIONAL	10	ASELLIDAE	10.889	3.216 *	0.00574	ACR
			SALMONIDAE	21.889			
			GAMMARIDAE	32.437			
			CENTRARCHIDAE	92.871			
	STATE	7	GAMMARIDAE	10.489	2.473 *	0.1070	ACR
			SALMONIDAE	10.889			
			CENTRARCHIDAE	42.169			
			ICTALURIDAE	94.889			
MERCURY	NATIONAL	9	DAPHNIDAE	9.889	0.470 *	0.30	FRV
			GAMMARIDAE	10.889			
			ASTACIDAE	31.889			
			SALMONIDAE	344.889			
	STATE	5	GAMMARIDAE	10.889	0.031 *	0.30	FRV
			ASTACIDAE	69.889			
			SALMONIDAE	344.889			
			PHILOGENIDAE	789.471			
96 NICKEL	NATIONAL	10	DAPHNIDAE	65.677	32.914 *	3.3991	ACR
			EPHEMERELLIDAE	289.889			
			CENTRARCHIDAE	349.472			
			PHILOGENIDAE	491.217			
	STATE	12	DAPHNIDAE	76.489	38.139 *	3.4169	ACR
			CENTRARCHIDAE	349.472			
			PHILOGENIDAE	491.217			
			CHIRONOMIDAE	439.889			
PCBS	NATIONAL	5	SALMONIDAE	2.889	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.611			
			CYPRINIDAE	32.891			
			GAMMARIDAE	99.893			
	STATE	5	SALMONIDAE	2.889	0.069 *	0.014	FRV
			CENTRARCHIDAE	2.389			
			CYPRINIDAE	32.891			
			GAMMARIDAE	197.894			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	289.889	82.049 *	22.9995	ACR
			DAPHNIDAE	1992.474			
			CYPRINODONTIDAE	6489.979			
			SALMONIDAE	8479.723			
	STATE	7	HYALELLIDAE (TALITRIDAE)	289.889	82.891 *	16.7489	ACR
			DAPHNIDAE	2889.889			
			SALMONIDAE	8479.723			
			CYPRINIDAE	9992.489			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.092	0.00089 *		
			COTTIDAE	0.094			
			CYPRINIDAE	0.889			
			CYPRINODONTIDAE	0.012			
	STATE	5	COTTIDAE	0.094	0.00089 *		
			CYPRINIDAE	0.011			
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.389	0.037 *	0.0007	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.947			
			CENTRARCHIDAE	4.726			
	STATE	8	CENTRARCHIDAE	2.049	0.775 *	0.0139	ACR
			ICTALURIDAE	3.889			
			SALMONIDAE	7.139			
			CYPRINIDAE	8.883			

STATE: MARYLAND

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.148 *	47.8889	SCV
			PHYSIDAE	41.889			
			SALMONIDAE	48.891			
			PHILOGENIDAE	92.757			
	STATE	13	DAPHNIDAE	21.389	0.863	47.8889	SCV
			PHYSIDAE	41.889			
			SALMONIDAE	89.889			
			PHILOGENIDAE	92.757			

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

$ – HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

96 – 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: MASSACHUSETTS

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.461	3.388 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.000			
	STATE	9	SALMONIDAE	4.000	1.030 *		
			CENTRARCHIDAE	7.461			
			EPHEMERELLIDAE	9.000			
			ANGUILLIDAE	10.000			
ARSENIC	NATIONAL	8	GAMMARIDAE	979.000	113.383 *		
			DAPHNIDAE	1794.346			
			SALMONIDAE	14128.043			
			ICTALURIDAE	16487.430			
	STATE	5	DAPHNIDAE	1049.139	171.493 *		
			SALMONIDAE	14128.043			
			ICTALURIDAE	16487.430			
			CENTRARCHIDAE	16484.000			
$ CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.027	0.0004	ACR
			DAPHNIDAE	0.499			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	10	SALMONIDAE	0.004	0.010	0.0000	ACR
			DAPHNIDAE	0.004			
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.000			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.300	1.974 *	0.0043	PRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	23.330			
			GAMMARIDAE	32.340			
	STATE	4	CYPRINIDAE	23.330	7.675 *	0.0043	PRV
			SALMONIDAE	33.000			
			GAMMARIDAE	40.000			
			CENTRARCHIDAE	94.711			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.3370	ACR
			DAPHNIDAE	6000.970			
			PHILODINIDAE	6000.700			
			PHYSIDAE	24000.000			
	STATE	6	PHILODINIDAE	6000.700	1002.400 *	10.0	PRV
			PHYSIDAE	24000.000			
			PERCICHTHYIDAE	30464.700			
			CYPRINIDAE	57401.072			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.300	0.104	0.40010	PCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	10	DAPHNIDAE	0.300	0.140	0.47114	PCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.439 *	4.3472	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.316			
			PERCIDAE	125.121			
	STATE	7	SALMONIDAE	70.707	30.003 *	3.0077	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.316			
			PERCIDAE	125.121			
DDT	NATIONAL	20	DAPHNIDAE	1.323	0.000	0.0010	PRV
			PERCIDAE	1.000			
			ESOCIDAE	1.700			
			GAMMARIDAE	2.334			
	STATE	11	DAPHNIDAE	0.970	0.370 *	0.0010	PRV
			PERCIDAE	1.000			
			GAMMARIDAE	1.004			
			ASTACIDAE	3.000			
DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.030 *	0.0010	PRV
			ASELLIDAE	5.000			
			SALMONIDAE	5.402			
			EPHEMERELLIDAE	9.000			
	STATE	6	SALMONIDAE	2.400	0.471 *	0.0010	PRV
			EPHEMERELLIDAE	9.000			
			CENTRARCHIDAE	14.400			
			CYPRINIDAE	30.102			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.240			
	STATE	6	SALMONIDAE	0.004	0.140 *	0.0702	ACR
			CYPRINIDAE	1.270			
			CATOSTOMIDAE	3.240			
			CENTRARCHIDAE	3.011			

STATE: MASSACHUSETTS

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	0.291 *	0.0023	PRV
			SALMONIDAE	0.400			
			PERLIDAE	0.400			
			PTERONARCIDAE	0.047			
	STATE	9	GASTEROSTEIDAE	0.440	0.103 *	0.0023	PRV
			SALMONIDAE	0.000			
			CENTRARCHIDAE	1.011			
			CYPRINIDAE	1.000			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.035	0.251 *	0.0000	PRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	5	SALMONIDAE	13.000	3.021 *	0.0000	PRV
			CENTRARCHIDAE	33.000			
			GAMMARIDAE	47.300			
			DAPHNIDAE	60.700			
$ LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007 *	0.00000	PCV
			DAPHNIDAE	4.000			
			SALMONIDAE	60.000			
			CYPRINIDAE	300.700			
	STATE	4	SALMONIDAE	60.000	14.000 *	0.00004	PCV
			CYPRINIDAE	300.700			
			CENTRARCHIDAE	400.010			
			PHILODINIDAE	600.040			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.2074	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	32.437			
			CENTRARCHIDAE	92.071			
	STATE	7	GAMMARIDAE	10.400	2.340 *	0.1700	ACR
			SALMONIDAE	14.100			
			CENTRARCHIDAE	42.100			
			ICTALURIDAE	93.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.20	PRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.000			
			SALMONIDAE	204.000			
	STATE	5	GAMMARIDAE	10.000	0.000 *	0.20	PRV
			ASTACIDAE	93.000			
			SALMONIDAE	240.000			
			PHILODINIDAE	700.471			
$ NICKEL	NATIONAL	10	DAPHNIDAE	65.077	32.014 *	3.2001	ACR
			EPHEMERELLIDAE	200.000			
			CENTRARCHIDAE	340.472			
			PHILODINIDAE	401.217			
	STATE	12	DAPHNIDAE	76.400	30.120 *	3.4100	ACR
			CENTRARCHIDAE	340.472			
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	400.000			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	PRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	93.000			
	STATE	5	SALMONIDAE	2.000	0.000 *	0.014	PRV
			CENTRARCHIDAE	2.000			
			CYPRINIDAE	32.001			
			GAMMARIDAE	107.004			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	82.040 *	32.0000	ACR
			DAPHNIDAE	1002.474			
			CYPRINODONTIDAE	6400.070			
			SALMONIDAE	8470.723			
	STATE	7	HYALELLIDAE (TALITRIDAE)	300.000	82.001 *	10.7400	ACR
			DAPHNIDAE	3000.000			
			SALMONIDAE	8470.723			
			CYPRINIDAE	8002.400			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.000	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.013			
	STATE	4	CYPRINIDAE	0.011	0.00000 *		
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.113			
			PHILODINIDAE	0.017			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.720			
	STATE	5	CENTRARCHIDAE	2.040	0.010	0.0140	ACR
			ICTALURIDAE	3.047			
			SALMONIDAE	6.070			
			CYPRINIDAE	7.400			

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

$ — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 2.7 TO DETERMINE MAXIMUM CRITERIA

$$ — 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	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	15	DAPHNIDAE	13.737	0.149	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	49.891			
			PHILODINIDAE	92.757			
	STATE	13	DAPHNIDAE	21.233	0.461	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	91.849			
			PHILODINIDAE	92.757			

STATE: MICHIGAN

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	3.000 *		
			ASELLIDAE	9.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.000			
	STATE	9	CENTRARCHIDAE	7.451	2.707 *		
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.000			
			AMBURUIDAE	10.000			
ARSENIC	NATIONAL	8	GAMMARIDAE	575.000	113.000 *		
			DAPHNIDAE	1704.945			
			SALMONIDAE	14125.643			
			ICTALURIDAE	16487.429			
	STATE	6	GAMMARIDAE	575.000	50.000 *		
			DAPHNIDAE	1040.129			
			SALMONIDAE	14125.643			
			ICTALURIDAE	16487.429			
96 CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.027	0.0004	ACR
			DAPHNIDAE	0.499			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	10	SALMONIDAE	0.040	0.023	0.0000	ACR
			DAPHNIDAE	0.004			
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.000			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.300	1.004 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	20.000			
			GAMMARIDAE	32.040			
	STATE	6	PALAEMONIDAE	0.300	1.011 *	0.0043	FRV
			CYPRINIDAE	20.000			
			GAMMARIDAE	32.040			
			SALMONIDAE	40.720			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.0370	ACR
			DAPHNIDAE	0000.070			
			PHILODINIDAE	0000.700			
			PHYSIDAE	34000.000			
	STATE	6	GAMMARIDAE	67.000	3.407 *	0.0040	ACR
			PHILODINIDAE	0000.700			
			PHYSIDAE	34000.000			
			CYPRINIDAE	57401.072			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.000	0.104	0.00010	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	10	DAPHNIDAE	0.000	0.145	4.70000	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			SALMONIDAE	1.000			
CYANIDE	NATIONAL	10	SALMONIDAE	76.707	31.400 *	4.3472	ACR
			DAPHNIDAE	00.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	135.121			
	STATE	8	SALMONIDAE	76.707	30.210 *	4.0000	ACR
			DAPHNIDAE	00.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	135.121			
DDT	NATIONAL	20	DAPHNIDAE	1.000	0.000	0.0010	FRV
			PERCIDAE	1.000			
			ISOCIDAE	1.700			
			GAMMARIDAE	2.334			
	STATE	13	DAPHNIDAE	0.070	0.410 *	0.0010	FRV
			PERCIDAE	1.000			
			GAMMARIDAE	2.334			
			ASTACIDAE	3.000			
DIELDRIN	NATIONAL	12	POECILIIDAE	4.000	1.000 *	0.0010	FRV
			ASELLIDAE	9.000			
			SALMONIDAE	9.400			
			EPHEMERELLIDAE	9.000			
	STATE	7	SALMONIDAE	9.400	1.000 *	0.0010	FRV
			EPHEMERELLIDAE	9.000			
			CENTRARCHIDAE	10.011			
			PALAEMONIDAE	20.000			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.200 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.040			
	STATE	6	SALMONIDAE	0.004	0.140 *	0.0700	ACR
			CYPRINIDAE	1.270			
			CATOSTOMIDAE	3.040			
			CENTRARCHIDAE	3.011			

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 REQUIREMENT

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

$ — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

96 — 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: MICHIGAN

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	0.001 *	0.0003	FRV
			SALMONIDAE	0.468			
			PERLIDAE	0.463			
			PTERONARCIDAE	0.647			
	STATE	10	SALMONIDAE	0.659	0.000 *	0.0003	FRV
			CYPRINIDAE	0.732			
			POECILIIDAE	0.760			
			CENTRARCHIDAE	1.011			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.555	0.001 *	0.0000	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	3.000			
			ASTACIDAE	7.000			
	STATE	8	PALAEMONIDAE	1.000	0.001 *	0.0000	FRV
			CENTRARCHIDAE	20.000			
			SALMONIDAE	23.400			
			GAMMARIDAE	37.040			
$$ LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007 *	0.00000	FCV
			DAPHNIDAE	4.000			
			SALMONIDAE	69.000			
			CYPRINIDAE	355.700			
	STATE	5	GAMMARIDAE	1.101	0.004 *	0.00004	FCV
			SALMONIDAE	69.000			
			CYPRINIDAE	355.700			
			CENTRARCHIDAE	400.010			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.2574	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	32.437			
			CENTRARCHIDAE	92.571			
	STATE	6	SALMONIDAE	21.000	0.001 *	0.0001	ACR
			GAMMARIDAE	32.437			
			CENTRARCHIDAE	42.100			
			ICTALURIDAE	65.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.39	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.000			
			SALMONIDAE	344.300			
	STATE	7	GAMMARIDAE	10.000	1.302 *	0.39	FRV
			SALMONIDAE	344.300			
			PHILODINIDAE	700.471			
			NAIDIDAE	000.000			
$$ NICKEL	NATIONAL	16	DAPHNIDAE	65.077	32.014 *	3.3001	ACR
			EPHEMERELLIDAE	200.000			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	401.317			
	STATE	13	DAPHNIDAE	70.400	32.000 *	3.4000	ACR
			EPHEMERELLIDAE	200.000			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	401.317			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	0.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	93.000			
	STATE	5	SALMONIDAE	2.000	0.003 *	0.014	FRV
			CENTRARCHIDAE	2.300			
			CYPRINIDAE	32.001			
			GAMMARIDAE	93.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	32.040 *	32.0000	ACR
			DAPHNIDAE	1002.474			
			CYPRINODONTIDAE	6400.079			
			SALMONIDAE	6470.723			
	STATE	8	HYALELLIDAE (TALITRIDAE)	300.000	72.017 *	10.2044	ACR
			DAPHNIDAE	3000.000			
			SALMONIDAE	6470.723			
			CYPRINIDAE	6002.430			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.007	0.00002 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	6	COTTIDAE	0.004	0.00041 *		
			CYPRINIDAE	0.011			
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.720			
	STATE	9	CENTRARCHIDAE	2.040	0.043 *	0.0103	ACR
			ICTALURIDAE	3.547			
			SALMONIDAE	5.701			
			CYPRINIDAE	6.033			

STATE: MICHIGAN

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.149 *	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	46.001			
			PHILODINIDAE	92.757			
	STATE	12	DAPHNIDAE	21.000	7.001 *	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	44.947			
			PHILODINIDAE	92.757			

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

$ — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

$$ — 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: MINNESOTA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.461	3.300 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	9.600			
			SALMONIDAE	10.000			
	STATE	7	SALMONIDAE	5.341	1.335 *		
			CENTRARCHIDAE	7.461			
			ANGUILLIDAE	10.000			
			CYPRINIDAE	10.392			
ARSENIC	NATIONAL	8	GAMMARIDAE	576.000	113.393 *		
			DAPHNIDAE	1704.346			
			SALMONIDAE	14125.043			
			ICTALURIDAE	16457.430			
	STATE	5	DAPHNIDAE	1048.139	171.403 *		
			SALMONIDAE	14125.043			
			ICTALURIDAE	16457.430			
			CENTRARCHIDAE	19494.939			
96 CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.027 *	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	14	SALMONIDAE	0.040	0.021	0.0003	ACR
			DAPHNIDAE	0.094			
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.630			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.200	1.974 *	0.0043	FRV
			PTERONARCIDAE	16.000			
			CYPRINIDAE	33.230			
			GAMMARIDAE	38.340			
	STATE	4	CYPRINIDAE	33.230	7.511 *	0.0043	FRV
			GAMMARIDAE	38.340			
			SALMONIDAE	49.281			
			CENTRARCHIDAE	84.711			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.184	0.3376	ACR
			DAPHNIDAE	6000.576			
			PHILODINIDAE	6000.769			
			PHYSIDAE	24000.000			
	STATE	6	PHILODINIDAE	6000.769	1001.460 *	10.0	FPV
			PHYSIDAE	24000.000			
			CYPRINIDAE	57401.672			
			CHIRONOMIDAE	60000.703			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.300	0.104 *	0.40010	FCV
			CHIRONOMIDAE	0.769			
			PHYSIDAE	0.995			
			TUBIFICIDAE	1.345			
	STATE	16	DAPHNIDAE	0.200	0.130	0.57700	FCV
			CHIRONOMIDAE	0.769			
			PHYSIDAE	0.995			
			TUBIFICIDAE	1.345			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.439 *	4.2472	ACR
			DAPHNIDAE	89.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	135.121			
	STATE	8	SALMONIDAE	70.707	30.219 *	4.0030	ACR
			DAPHNIDAE	89.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	135.121			
DDT	NATIONAL	20	DAPHNIDAE	1.323	0.000 *	0.0010	FRV
			PERCIDAE	1.995			
			ISOCIDAE	1.700			
			GAMMARIDAE	2.334			
	STATE	12	DAPHNIDAE	0.976	0.434 *	0.0010	FRV
			PERCIDAE	1.995			
			ISOCIDAE	1.700			
			GAMMARIDAE	2.334			
DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.030 *	0.0019	FRV
			ASELLIDAE	5.000			
			SALMONIDAE	5.462			
			EPHEMERELLIDAE	8.000			
	STATE	5	SALMONIDAE	3.573	0.211 *	0.0019	FRV
			CENTRARCHIDAE	16.011			
			CYPRINIDAE	20.102			
			DAPHNIDAE	231.002			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
			CYPRINIDAE	1.279			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	6	SALMONIDAE	0.004	0.149 *	0.0702	ACR
			CYPRINIDAE	1.279			
			CATOSTOMIDAE	3.340			
			CENTRARCHIDAE	3.011			

STATE: MINNESOTA

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	0.201 *	0.0023	FRV
			SALMONIDAE	0.400			
			PERLIDAE	0.400			
			PTERONARCIDAE	0.047			
	STATE	8	SALMONIDAE	0.057	0.270 *	0.0023	FRV
			CYPRINIDAE	0.732			
			POECILIDAE	0.700			
			CENTRARCHIDAE	1.011			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.500	0.201 *	0.0000	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	5	SALMONIDAE	17.703	5.374 *	0.0035	FRV
			CENTRARCHIDAE	25.000			
			GAMMARIDAE	37.040			
			DAPHNIDAE	50.740			
96 LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.037 *	0.00003	PCV
			DAPHNIDAE	4.000			
			SALMONIDAE	60.002			
			CYPRINIDAE	300.702			
	STATE	4	SALMONIDAE	60.002	14.000 *	0.00004	PCV
			CYPRINIDAE	300.702			
			CENTRARCHIDAE	400.015			
			PHILODINIDAE	600.045			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.3574	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	92.571			
	STATE	8	SALMONIDAE	10.300	5.010 *	0.4404	ACR
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	42.100			
			ICTALURIDAE	63.000			
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.623			
			SALMONIDAE	344.300			
	STATE	5	GAMMARIDAE	10.000	0.000 *	0.20	FRV
			SALMONIDAE	346.000			
			PHILODINIDAE	703.471			
			NAEIDIDAE	900.000			
96 NICKEL	NATIONAL	16	DAPHNIDAE	65.077	32.914 *	3.3001	ACR
			EPHEMERELLIDAE	333.000			
			CENTRARCHIDAE	346.472			
			PHILODINIDAE	401.217			
	STATE	11	DAPHNIDAE	76.400	31.006 *	3.3047	ACR
			CENTRARCHIDAE	300.042			
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	430.000			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	60.023			
	STATE	5	SALMONIDAE	2.000	0.000 *	0.014	FRV
			CENTRARCHIDAE	2.300			
			CYPRINIDAE	32.001			
			GAMMARIDAE	107.004			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	330.000	82.040 *	22.0000	ACR
			DAPHNIDAE	1002.474			
			CYPRINODONTIDAE	8400.570			
			SALMONIDAE	8470.723			
	STATE	9	HYALELLIDAE (TALITRIDAE)	330.000	81.570 *	21.0001	ACR
			DAPHNIDAE	3000.000			
			SALMONIDAE	8470.723			
			CYPRINIDAE	9002.430			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00003 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.030			
			CYPRINODONTIDAE	0.012			
	STATE	5	CYPRINIDAE	0.011	0.00011 *		
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
			CHIRONOMIDAE	4.100			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.037 *	0.0037	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.647			
			CENTRARCHIDAE	4.735			
	STATE	8	CENTRARCHIDAE	2.040	0.037 *	0.0147	ACR
			ICTALURIDAE	3.647			
			SALMONIDAE	5.223			
			CYPRINIDAE	8.003			

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

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

$ — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

96 — 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: MINNESOTA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.148	47.5999	SCV
			PHYSIDAE	41.599			
			SALMONIDAE	43.591			
			PHILOGENIDAE	92.757			
	STATE	12	DAPHNIDAE	21.283	7.449 *	47.5999	SCV
			SALMONIDAE	35.572			
			PHYSIDAE	41.599			
			PHILOGENIDAE	92.757			

STATE: MISSISSIPPI

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	3.300 *		
			ASELLIDAE	0.000			
			EPHEMERELLIDAE	0.000			
			SALMONIDAE	10.000			
	STATE	7	CENTRARCHIDAE	7.451	3.300 *		
			ASELLIDAE	0.000			
			PERIONTHYIDAE	10.000			
			ANSELLIDAE	10.000			
ARSENIC	NATIONAL	8	GAMMARIDAE	[illegible]	113.000 *		
			DAPHNIDAE	[illegible]			
			SALMONIDAE	[illegible]			
			TOTALURIDAE	[illegible]			
	STATE	6	GAMMARIDAE	[illegible]	42.377 *		
			DAPHNIDAE	[illegible]			
			TOTALURIDAE	[illegible]			
			CENTRARCHIDAE	[illegible]			
$$ CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.027	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	10	PERIONTHYIDAE	0.160	0.000 *	0.0000	ACR
			DAPHNIDAE	0.004			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.200	1.574 *	0.0043	PRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	20.000			
			GAMMARIDAE	32.000			
	STATE	3	PALAEMONIDAE	0.200	1.574 *	0.0043	PRV
			CYPRINIDAE	20.000	**		
			CENTRARCHIDAE	64.711			
				0.000			
CHROMIUM	NATIONAL	10	GAMMARIDAE	87.000	12.104	0.3370	ACR
			DAPHNIDAE	[illegible]			
			PHILOGENIDAE	[illegible]			
			PHYSIDAE	[illegible]			
	STATE	6	GAMMARIDAE	87.000	4.165 *	0.1141	ACR
			PHILOGENIDAE	[illegible]			
			PHYSIDAE	[illegible]			
			PERIONTHYIDAE	[illegible]			
$ COPPER	NATIONAL	20	DAPHNIDAE	0.200	0.104	0.00010	PCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	10	DAPHNIDAE	0.200	0.127 *	0.00175	PCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *	4.2472	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	133.121			
	STATE	6	DAPHNIDAE	80.000	27.007 *	3.7370	ACR
			CENTRARCHIDAE	114.310			
			GAMMARIDAE	187.000			
			CYPRINIDAE	207.000			
DDT	NATIONAL	20	DAPHNIDAE	1.300	0.000 *	0.0010	PRV
			PERCIDAE	1.000			
			ESOCIDAE	1.700			
			GAMMARIDAE	2.304			
	STATE	10	DAPHNIDAE	0.070	0.300 *	0.0010	PRV
			ASTACIDAE	3.000			
			PALAEMONIDAE	3.304			
			ASELLIDAE	4.000			
DIELDRIN	NATIONAL	10	FOXOLIDAE	4.000	1.000 *	0.0010	PRV
			ASELLIDAE	0.000			
			SALMONIDAE	0.400			
			EPHEMERELLIDAE	0.000			
	STATE	6	ASELLIDAE	0.000	1.110 *	0.0010	PRV
			CENTRARCHIDAE	10.011			
			PALAEMONIDAE	20.000			
			CYPRINIDAE	30.102			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	3	CYPRINIDAE	1.270	0.300 *	0.1004	ACR
			CENTRARCHIDAE	3.011	**		
			COGNAGRONIDAE (AGRONIDAE)	57.000			
				0.000			

FOOTNOTE

- * — UNITS IN MICROGRAMS PER LITER
- ** — PRV FINAL PLANT VALUE
  - PRV FINAL RESIDUE VALUE
  - ACR COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
  - PCV 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 MAXIMUM CRITERIA

$$ — 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: MISSISSIPPI

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
	ENDRIN	NATIONAL	17	GASTEROSTEIDAE	0.449	0.291	0.0023	PRV
				SALMONIDAE	0.469			
				PERLIDAE	0.493			
				PTERONARCIDAE	0.647			
		STATE	9	CYPRINIDAE	0.732	0.277 *	0.0023	PRV
				POECILIIDAE	0.750			
				CENTRARCHIDAE	1.011			
				PALAEMONIDAE	1.365			
	HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.995	0.251 *	0.0000	PRV
				PALAEMONIDAE	1.000			
				PERLIDAE	2.000			
				ASTACIDAE	7.000			
		STATE	4	PALAEMONIDAE	1.000	0.116 *	0.0000	PRV
				CENTRARCHIDAE	24.771			
				DAPHNIDAE	80.746			
				CYPRINIDAE	170.000			
SS	LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.097 *	0.00003	FCV
				DAPHNIDAE	4.000			
				SALMONIDAE	69.000			
				CYPRINIDAE	350.700			
		STATE	4	GAMMARIDAE	1.101	0.035 *	0.0010	ACR
				CYPRINIDAE	350.700			
				CENTRARCHIDAE	455.616			
				PHILOGINIDAE	800.045			
	LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.0074	ACR
				SALMONIDAE	21.000			
				GAMMARIDAE	22.437			
				CENTRARCHIDAE	62.571			
		STATE	6	ASELLIDAE	10.000	2.174 *	0.1720	ACR
				CENTRARCHIDAE	62.571			
				ICTALURIDAE	83.000			
				CYPRINIDAE	94.000			
	MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.30	PRV
				GAMMARIDAE	10.000			
				ASTACIDAE	31.623			
				SALMONIDAE	944.380			
		STATE	4	GAMMARIDAE	10.000	0.170 *	0.1133	ACR
				ASTACIDAE	20.000			
				PHILOGINIDAE	765.471			
				NAIDIDAE	900.000			
SS	NICKEL	NATIONAL	10	DAPHNIDAE	65.677	32.014 *	3.3001	ACR
				SPHAERIIDAE	330.000			
				CENTRARCHIDAE	345.472			
				PHILOGINIDAE	491.217			
		STATE	11	DAPHNIDAE	70.400	31.010 *	3.2000	ACR
				PERCICHTHYIDAE	391.510			
				CENTRARCHIDAE	350.042			
				PHILOGINIDAE	491.217			
	PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	PRV
				CENTRARCHIDAE	6.011			
				CYPRINIDAE	32.001			
				GAMMARIDAE	60.003			
		STATE	4	CENTRARCHIDAE	6.011	0.030 *	0.014	PRV
				CYPRINIDAE	32.001			
				GAMMARIDAE	92.054			
				COENAGRIONIDAE (AGRIONIDAE)	202.042			
	SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	330.000	62.040 *	22.0000	ACR
				DAPHNIDAE	1002.474			
				CYPRINODONTIDAE	6400.979			
				SALMONIDAE	8479.723			
		STATE	7	HYALELLIDAE (TALITRIDAE)	330.000	60.054 *	15.1011	ACR
				DAPHNIDAE	3000.000			
				CYPRINIDAE	6002.438			
				POECILIIDAE	12000.045			
S	SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00003 *		
				COTTIDAE	0.004			
				CYPRINIDAE	0.006			
				CYPRINODONTIDAE	0.012			
		STATE	5	COTTIDAE	0.004	0.00002 *		
				CYPRINIDAE	0.011			
				CENTRARCHIDAE	0.112			
				PHILOGINIDAE	0.017			
	TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.037 *	0.0007	ACR
				PTERONARCIDAE	2.027			
				ICTALURIDAE	3.047			
				CENTRARCHIDAE	4.726			
		STATE	7	ICTALURIDAE	3.047	0.037 *	0.0147	ACR
				CENTRARCHIDAE	4.726			
				CYPRINIDAE	8.033			
				DAPHNIDAE	14.370			

STATE: MISSISSIPPI

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
S	ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.140	47.0000	SCV
				PHYSIDAE	41.000			
				SALMONIDAE	48.001			
				PHILOGINIDAE	92.757			
		STATE	11	DAPHNIDAE	21.223	7.004 *	47.0000	SCV
				PHYSIDAE	41.000			
				PERCICHTHYIDAE	48.204			
				PHILOGINIDAE	92.757			

FOOTNOTE

- * — UNITS IN MICROGRAMS PER LITER
- ** — FPV FINAL PLANT VALUE
  - PRV 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 3.7 TO DETERMINE MAXIMUM CRITERIA

SS — 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: MISSOURI

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.401	3.200 *		
			AGELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.000			
	STATE	6	CENTRARCHIDAE	7.401	2.591 *		
			PERCIDAE	10.000			
			AMBULLIDAE	10.000			
			CYPRINIDAE	10.200			
ARSENIC	NATIONAL	8	GAMMARIDAE	570.000	113.200 *		
			DAPHNIDAE	1704.340			
			SALMONIDAE	14128.040			
			ICTALURIDAE	10457.400			
	STATE	4	DAPHNIDAE	1040.130	148.400 *		
			ICTALURIDAE	10457.400			
			CENTRARCHIDAE	10404.000			
			CYPRINIDAE	20104.200			
§§ CADMIUM	NATIONAL	16	SALMONIDAE	0.040	0.027 *	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	13	PERCIDONTHYIDAE	0.100	0.000 *	0.0000	ACR
			DAPHNIDAE	0.004			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.200	1.574 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	20.200			
			GAMMARIDAE	32.340			
	STATE	3	PALAEMONIDAE	0.200	1.574 *	0.0043	FRV
			CYPRINIDAE	20.200	**		
			CENTRARCHIDAE	54.711			
				0.000			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.3570	ACR
			DAPHNIDAE	6000.070			
			PHILOGENIDAE	6000.700			
			PHYSIDAE	34000.000			
	STATE	5	PHILOGENIDAE	6000.700	1040.004 *	10.0	FRV
			PHYSIDAE	34000.000			
			PERCIDONTHYIDAE	30404.700			
			CYPRINIDAE	57481.072			
§ COPPER	NATIONAL	23	DAPHNIDAE	0.200	0.104	0.00010	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	10	DAPHNIDAE	0.200	0.127 *	0.00700	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
CYANIDE	NATIONAL	10	SALMONIDAE	70.700	31.400 *	4.3472	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	125.121			
	STATE	5	DAPHNIDAE	80.000	16.127 *	2.1702	ACR
			CENTRARCHIDAE	114.310			
			CYPRINIDAE	207.200			
			PHYSIDAE	491.400			
DDT	NATIONAL	20	DAPHNIDAE	1.200	0.000	0.0010	FRV
			PERCIDAE	1.000			
			SIDCIDAE	1.700			
			GAMMARIDAE	3.204			
	STATE	10	DAPHNIDAE	0.970	0.200 *	0.0010	FRV
			SIDCIDAE	1.700			
			ASTACIDAE	2.400			
			PALAEMONIDAE	3.204			
DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *	0.0010	FRV
			AGELLIDAE	0.000			
			SALMONIDAE	0.400			
			EPHEMERELLIDAE	0.000			
	STATE	6	CENTRARCHIDAE	10.011	0.002 *	0.0010	FRV
			PALAEMONIDAE	20.000			
			CYPRINIDAE	30.102			
			DAPHNIDAE	201.000			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.200 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.240			
	STATE	4	CYPRINIDAE	1.270	0.000 *	0.0100	ACR
			CATOSTOMIDAE	3.240			
			CENTRARCHIDAE	3.011			
			COGNAGRONIDAE (AGRONIDAE)	67.000			

STATE: MISSOURI

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	0.201 *	0.0000	FRV
			SALMONIDAE	0.400			
			PERLIDAE	0.400			
			PTERONARCIDAE	0.047			
	STATE	9	CYPRINIDAE	0.722	0.277 *	0.0000	FRV
			POECILIDAE	0.700			
			CENTRARCHIDAE	1.011			
			PALAEMONIDAE	1.200			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.001 *	0.0000	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	5	PALAEMONIDAE	1.000	0.002 *	0.0000	FRV
			ASTACIDAE	7.000			
			CENTRARCHIDAE	24.771			
			DAPHNIDAE	00.740			
§§ LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007 *	0.00000	FCV
			DAPHNIDAE	4.000			
			SALMONIDAE	00.000			
			CYPRINIDAE	300.700			
	STATE	3	CYPRINIDAE	300.700	0.007 *	0.00000	FCV
			CENTRARCHIDAE	400.045	**		
			PHILOGENIDAE	000.040			
				0.000			
LINDANE	NATIONAL	10	AGELLIDAE	10.000	3.210 *	0.2074	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	22.407			
			CENTRARCHIDAE	02.071			
	STATE	6	SALMONIDAE	2.000	0.200 *	0.0000	ACR
			CENTRARCHIDAE	02.071			
			ICTALURIDAE	00.000			
			CYPRINIDAE	04.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.000			
			SALMONIDAE	344.000			
	STATE	3	GAMMARIDAE	10.000	0.470 *	0.20	FRV
			PHILOGENIDAE	700.471	**		
			NAIDIDAE	000.000			
				0.000			
§§ NICKEL	NATIONAL	10	DAPHNIDAE	00.077	32.014 *	3.2001	ACR
			EPHEMERELLIDAE	000.000			
			CENTRARCHIDAE	340.472			
			PHILOGENIDAE	401.217			
	STATE	11	DAPHNIDAE	70.400	31.570 *	3.2000	ACR
			PERCIDONTHYIDAE	001.010			
			CENTRARCHIDAE	340.472			
			PHILOGENIDAE	401.217			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.107 *	0.014	FRV
			CENTRARCHIDAE	0.011			
			CYPRINIDAE	22.001			
			GAMMARIDAE	00.000			
	STATE	3	CENTRARCHIDAE	0.011	0.127 *	0.014	FRV
			CYPRINIDAE	22.001	**		
			COGNAGRONIDAE (AGRONIDAE)	000.040			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	000.000	02.040 *	32.0000	ACR
			DAPHNIDAE	1000.474			
			GYRINODONTIDAE	0400.070			
			SALMONIDAE	0470.722			
	STATE	7	HYALELLIDAE (TALITRIDAE)	000.000	00.004 *	10.1011	ACR
			DAPHNIDAE	0000.000			
			CYPRINIDAE	0000.400			
			POECILIDAE	10000.040			
§ SILVER	NATIONAL	9	DAPHNIDAE	0.000	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	4	COTTIDAE	0.004	0.00001 *		
			CYPRINIDAE	0.011			
			CENTRARCHIDAE	0.112			
			PHILOGENIDAE	0.017			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.000	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.007			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.720			
	STATE	7	SALMONIDAE	3.000	0.000 *	0.0147	ACR
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.720			
			CYPRINIDAE	0.000			

FOOTNOTE

* — UNITS IN MICROGRAMS PER LITER

** — PPV PRIMAL PLANT VALUE
PRV PRIMAL RESIDUE VALUE
ACR COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
FCV PRIMAL 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 MAXIMUM CRITERIA

§§ — 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: MISSOURI

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	15	DAPHNIDAE	13.737	6.149	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	48.001			
			PHILODINIDAE	92.757			
	STATE	11	DAPHNIDAE	21.220	7.694 *	47.0000	SCV
			PHYSIDAE	41.000			
			PERCICHTHYIDAE	48.004			
			PHILODINIDAE	92.757			

STATE: MONTANA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.491	3.000 *		
			ASELLIDAE	9.000			
			SPHAERIIDAE	9.000			
			SALMONIDAE	10.000			
	STATE	9	CENTRARCHIDAE	7.491	2.000 *		
			SPHAERIIDAE	9.000			
			SALMONIDAE	14.377			
			CYPRINIDAE	16.382			
ARSENIC	NATIONAL	8	GAMMARIDAE	570.000	113.000 *		
			DAPHNIDAE	1704.340			
			SALMONIDAE	14120.043			
			ICTALURIDAE	16457.430			
	STATE	8	DAPHNIDAE	1704.340	407.000 *		
			SALMONIDAE	14120.043			
			ICTALURIDAE	16457.430			
			CENTRARCHIDAE	16484.000			
$$ CADMIUM	NATIONAL	16	SALMONIDAE	0.040	0.027	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	12	SALMONIDAE	0.004	0.000	0.0001	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.385	1.004 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	23.220			
			GAMMARIDAE	32.040			
	STATE	8	PTERONARCIDAE	10.000	0.001 *	0.0043	FRV
			CYPRINIDAE	23.220			
			GAMMARIDAE	30.000			
			SALMONIDAE	40.044			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104 *	0.3370	ACR
			DAPHNIDAE	6000.070			
			PHILODINIDAE	6000.700			
			PHYSIDAE	24000.000			
	STATE	8	DAPHNIDAE	6000.070	701.000 *	10.0	FPV
			PHILODINIDAE	6000.700			
			PHYSIDAE	24000.000			
			CYPRINIDAE	57401.072			
$ · COPPER	NATIONAL	23	DAPHNIDAE	0.300	0.104 *	0.00010	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	13	DAPHNIDAE	0.300	0.132 *	0.01000	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *	4.3472	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	120.121			
	STATE	8	SALMONIDAE	70.707	30.000 *	3.0001	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	120.121			
DDT	NATIONAL	20	DAPHNIDAE	1.303	0.000	0.0010	FRV
			PERCIDAE	1.000			
			ISOCIDAE	1.700			
			GAMMARIDAE	2.334			
	STATE	13	DAPHNIDAE	1.303	0.010 *	0.0010	FRV
			PERCIDAE	1.000			
			ISOCIDAE	1.700			
			GAMMARIDAE	3.000			
DIELDRIN	NATIONAL	12	POECILIIDAE	4.000	1.000 *	0.0010	FRV
			ASELLIDAE	5.000			
			SALMONIDAE	5.400			
			SPHAERIIDAE	9.000			
	STATE	8	SALMONIDAE	5.104	1.301 *	0.0010	FRV
			SPHAERIIDAE	9.000			
			CENTRARCHIDAE	10.011			
			PERLIDAE	24.000			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	8	SALMONIDAE	0.004	0.100 *	0.1000	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			

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
- $ — HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
- $$ — 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: MONTANA

	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	0.091 *	0.0023	FRV
				SALMONIDAE	0.460			
				PERLIDAE	0.460			
				PTERONARCIDAE	0.647			
		STATE	9	SALMONIDAE	0.383	0.130 *	0.0023	FRV
				PERLIDAE	0.460			
				PTERONARCIDAE	0.647			
				CENTRARCHIDAE	1.011			
	HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.088	0.091 *	0.0038	FRV
				PALAEMONIDAE	1.000			
				PERLIDAE	2.000			
				ASTACIDAE	7.000			
		STATE	7	PTERONARCIDAE	0.088	0.101 *	0.0038	FRV
				PERLIDAE	2.000			
				CENTRARCHIDAE	20.000			
				GAMMARIDAE	20.000			
88	LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.037 *	0.00000	FCV
				DAPHNIDAE	4.000			
				SALMONIDAE	50.000			
				CYPRINIDAE	203.700			
		STATE	5	DAPHNIDAE	4.000	0.037 *	0.00000	FCV
				SALMONIDAE	50.000			
				CYPRINIDAE	203.700			
				CENTRARCHIDAE	400.010			
	LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.0374	ACR
				SALMONIDAE	21.000			
				GAMMARIDAE	22.427			
				CENTRARCHIDAE	92.071			
		STATE	6	SALMONIDAE	10.000	7.340 *	0.0372	ACR
				CENTRARCHIDAE	42.100			
				GAMMARIDAE	45.000			
				ICTALURIDAE	93.000			
	MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.50	FRV
				GAMMARIDAE	10.000			
				ASTACIDAE	31.000			
				SALMONIDAE	244.300			
		STATE	6	DAPHNIDAE	5.000	0.101 *	0.0074	ACR
				GAMMARIDAE	10.000			
				SALMONIDAE	244.300			
				PHILOGENIDAE	700.471			
88	NICKEL	NATIONAL	10	DAPHNIDAE	65.077	32.014 *	3.2001	ACR
				SPHAERIIDAE	200.000			
				CENTRARCHIDAE	345.472			
				PHILOGENIDAE	401.217			
		STATE	9	DAPHNIDAE	65.077	21.717 *	2.2000	ACR
				PHILOGENIDAE	401.217			
				CHIRONOMIDAE	400.000			
				CENTRARCHIDAE	444.717			
	PCBS	NATIONAL	5	SALMONIDAE	2.000	0.127 *	0.014	FRV
				CENTRARCHIDAE	5.011			
				CYPRINIDAE	20.001			
				GAMMARIDAE	50.000			
		STATE	3	SALMONIDAE	2.000	0.127 *	0.014	FRV
				CENTRARCHIDAE	2.300	**		
				CYPRINIDAE	20.001			
					0.000			
	SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	82.040 *	32.0000	ACR
				DAPHNIDAE	1002.474			
				CYPRINODONTIDAE	6400.070			
				SALMONIDAE	8470.720			
		STATE	7	HYALELLIDAE (TALITRIDAE)	300.000	82.431 *	13.0010	ACR
				DAPHNIDAE	1002.474			
				SALMONIDAE	8470.720			
				CYPRINIDAE	8000.400			
§	SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00000 *		
				COTTIDAE	0.004			
				CYPRINIDAE	0.000			
				CYPRINODONTIDAE	0.012			
		STATE	5	DAPHNIDAE	0.002	0.00010 *		
				CYPRINIDAE	0.011			
				SALMONIDAE	0.001			
				CENTRARCHIDAE	0.112			
	TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
				PTERONARCIDAE	2.027			
				ICTALURIDAE	3.047			
				CENTRARCHIDAE	4.720			
		STATE	10	PERLIDAE	1.300	0.043 *	0.0000	ACR
				PTERONARCIDAE	2.027			
				CENTRARCHIDAE	2.040			
				ICTALURIDAE	3.047			

STATE: MONTANA

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
§	ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.148	47.0000	SCV
				PHYSIDAE	41.000			
				SALMONIDAE	42.001			
				PHILOGENIDAE	92.707			
		STATE	10	DAPHNIDAE	13.737	4.077	47.0000	SCV
				PHYSIDAE	41.000			
				SALMONIDAE	50.400			
				PHILOGENIDAE	92.707			

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

§ — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

88 — 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: NEBRASKA

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	3.269 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.000			
	STATE	6	SALMONIDAE	4.000	1.333 *		
			CENTRARCHIDAE	7.451			
			PERCICHTHYIDAE	10.000			
			ANGUILLIDAE	10.000			
ARSENIC	NATIONAL	8	GAMMARIDAE	570.000	113.200 *		
			DAPHNIDAE	1704.346			
			SALMONIDAE	14129.043			
			ICTALURIDAE	19457.439			
	STATE	5	DAPHNIDAE	1704.346	303.446 *		
			SALMONIDAE	14129.043			
			ICTALURIDAE	19457.439			
			CENTRARCHIDAE	19484.000			
50 CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.027 *	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	12	SALMONIDAE	0.004	0.005 *	0.0001	ACR
			PERCICHTHYIDAE	0.160			
			DAPHNIDAE	0.400			
			PHYSIDAE	2.000			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.300	1.574 *	0.0043	PRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	23.333			
			GAMMARIDAE	32.340			
	STATE	4	CYPRINIDAE	23.333	7.016 *	0.0043	PRV
			SALMONIDAE	33.000			
			CENTRARCHIDAE	84.711			
			DAPHNIDAE	89.327			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.2570	ACR
			DAPHNIDAE	6000.570			
			PHILOGENIDAE	6000.700			
			PHYSIDAE	24000.000			
	STATE	7	DAPHNIDAE	6000.570	1200.044 *	10.0	PPV
			PHILOGENIDAE	6000.700			
			PHYSIDAE	24000.000			
			PERCICHTHYIDAE	30454.700			
5 COPPER	NATIONAL	20	DAPHNIDAE	0.300	0.104	0.00010	PCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.900			
			TUBIFICIDAE	1.340			
	STATE	10	DAPHNIDAE	0.300	0.100 *	0.00400	PCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.900			
			TUBIFICIDAE	1.340			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.439 *	4.3472	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	135.121			
	STATE	6	SALMONIDAE	70.707	30.000 *	3.0001	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	135.121			
DDT	NATIONAL	20	DAPHNIDAE	1.300	0.000	0.0010	PRV
			PERCIDAE	1.000			
			BROCIDAE	1.700			
			GAMMARIDAE	2.234			
	STATE	9	DAPHNIDAE	1.300	0.432 *	0.0010	PRV
			PERCIDAE	1.000			
			BROCIDAE	1.700			
			CENTRARCHIDAE	3.200			
DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *	0.0010	PRV
			ASELLIDAE	5.000			
			SALMONIDAE	5.400			
			EPHEMERELLIDAE	8.000			
	STATE	4	SALMONIDAE	2.400	0.121 *	0.0010	PRV
			CENTRARCHIDAE	10.011			
			CYPRINIDAE	30.100			
			DAPHNIDAE	100.745			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.200 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.240			
	STATE	6	SALMONIDAE	0.004	0.140 *	0.0702	ACR
			CYPRINIDAE	1.270			
			CATOSTOMIDAE	3.240			
			CENTRARCHIDAE	3.011			

STATE: NEBRASKA

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	0.201 *	0.0003	PRV
			SALMONIDAE	0.400			
			PERLIDAE	0.400			
			PTERONARCIDAE	0.047			
	STATE	6	SALMONIDAE	0.000	0.103 *	0.0003	PRV
			CYPRINIDAE	0.732			
			CENTRARCHIDAE	1.011			
			COBITIDAE (AGRONIDAE)	1.000			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.201 *	0.0000	PRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	4	SALMONIDAE	13.000	1.440 *	0.0000	PRV
			CENTRARCHIDAE	30.000			
			DAPHNIDAE	60.000			
			CYPRINIDAE	170.000			
50 LEAD	NATIONAL	7	GAMMARIDAE	7.107	0.027 *	0.00000	PCV
			DAPHNIDAE	4.000			
			SALMONIDAE	60.002			
			CYPRINIDAE	303.702			
	STATE	5	DAPHNIDAE	4.000	0.327 *	0.00004	PCV
			SALMONIDAE	60.002			
			CYPRINIDAE	303.702			
			CENTRARCHIDAE	403.016			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.216 *	0.3074	ACR
			SALMONIDAE	31.000			
			GAMMARIDAE	32.437			
			CENTRARCHIDAE	92.071			
	STATE	6	SALMONIDAE	14.100	4.100 *	0.3000	ACR
			CENTRARCHIDAE	42.100			
			ICTALURIDAE	53.000			
			PERCIDAE	60.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.20	PRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.000			
			SALMONIDAE	344.000			
	STATE	4	DAPHNIDAE	0.000	0.340 *	0.1002	ACR
			SALMONIDAE	340.000			
			PHILOGENIDAE	700.471			
			NAIDIDAE	900.000			
50 NICKEL	NATIONAL	10	DAPHNIDAE	65.677	32.014 *	3.3001	ACR
			EPHEMERELLIDAE	233.000			
			CENTRARCHIDAE	340.472			
			PHILOGENIDAE	401.217			
	STATE	10	DAPHNIDAE	65.677	23.300 *	2.4007	ACR
			PERCICHTHYIDAE	301.510			
			PHILOGENIDAE	401.217			
			CHIRONOMIDAE	430.000			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	PRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	50.000			
	STATE	4	SALMONIDAE	2.000	0.034 *	0.014	PRV
			CENTRARCHIDAE	2.300			
			CYPRINIDAE	32.001			
			COBITIDAE (AGRONIDAE)	302.042			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	330.000	62.042 *	22.0000	ACR
			DAPHNIDAE	1002.474			
			CYPRINODONTIDAE	8400.570			
			SALMONIDAE	8470.723			
	STATE	7	HYALELLIDAE (TALITRIDAE)	330.000	62.431 *	13.0010	ACR
			DAPHNIDAE	1002.474			
			SALMONIDAE	8470.723			
			CYPRINIDAE	9002.400			
5 SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00003 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.005			
			CYPRINODONTIDAE	0.012			
	STATE	6	DAPHNIDAE	0.002	0.00010 *		
			CYPRINIDAE	0.011			
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.027 *	0.0007	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.755			
	STATE	7	CENTRARCHIDAE	2.045	0.031 *	0.0130	ACR
			ICTALURIDAE	3.047			
			SALMONIDAE	0.070			
			CYPRINIDAE	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

* – FAILED TO MEET MINIMUM DATA REQUIREMENT

** – STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED

S – HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

50 – 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: NEBRASKA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOSS VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
§ ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.149	47.8000	SCV
			PHYSIDAE	41.999			
			SALMONIDAE	49.891			
			PHILODINIDAE	82.757			
	STATE	11	DAPHNIDAE	13.737	0.759 *	47.8000	SCV
			PHYSIDAE	41.999			
			SALMONIDAE	49.890			
			PERICHITHYIDAE	49.294			

STATE: NEVADA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOSS VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.461	3.000 *		
			ASELLIDAE	9.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.000			
	STATE	6	SALMONIDAE	4.000	1.730 *		
			CENTRARCHIDAE	7.461			
			EPHEMERELLIDAE	9.000			
			CYPRINIDAE	11.314			
ARSENIC	NATIONAL	8	GAMMARIDAE	870.000	113.000 *		
			DAPHNIDAE	1704.348			
			SALMONIDAE	14120.048			
			ICTALURIDAE	19487.400			
	STATE	5	DAPHNIDAE	1704.348	355.440 *		
			SALMONIDAE	14120.048			
			ICTALURIDAE	19487.400			
			CENTRARCHIDAE	19884.000			
§§ CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.027 *	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	12	SALMONIDAE	0.004	0.000	0.0001	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.000	1.574 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	20.000			
			GAMMARIDAE	20.240			
	STATE	6	CYPRINIDAE	10.004	4.000 *	0.0043	FRV
			GAMMARIDAE	20.000			
			SALMONIDAE	20.000			
			CENTRARCHIDAE	84.711			
CHROMIUM	NATIONAL	10	GAMMARIDAE	97.000	12.104 *	0.2070	ACR
			DAPHNIDAE	[illegible]			
			PHILOGENIDAE	[illegible]			
			PHYSIDAE	[illegible]			
	STATE	6	DAPHNIDAE	[illegible]	710.004 *	10.0	FPV
			PHILOGENIDAE	[illegible]			
			POGOLIDAE	[illegible]			
			SALMONIDAE	[illegible]			
§ COPPER	NATIONAL	20	DAPHNIDAE	0.300	0.104	0.00010	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	12	DAPHNIDAE	0.300	0.121	0.007713	FCV
			CHIRONOMIDAE	0.700			
			TUBIFICIDAE	1.340			
			PLANORBIDAE	1.404			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *	4.3472	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	120.121			
	STATE	6	SALMONIDAE	70.707	30.400 *	3.0400	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	121.000			
			PERCIDAE	120.121			
DDT	NATIONAL	20	DAPHNIDAE	1.300	0.000	0.0010	FRV
			PERCIDAE	1.000			
			ISOCIDAE	1.700			
			GAMMARIDAE	2.304			
	STATE	11	DAPHNIDAE	1.300	0.001 *	0.0010	FRV
			PERCIDAE	1.000			
			PTERONARCIDAE	1.000			
			GAMMARIDAE	3.000			
DIELDRIN	NATIONAL	12	POGOLIDAE	4.000	1.000 *	0.0010	FRV
			ASELLIDAE	9.000			
			SALMONIDAE	9.400			
			EPHEMERELLIDAE	9.000			
	STATE	8	SALMONIDAE	2.400	0.740 *	0.0010	FRV
			POGOLIDAE	4.000			
			EPHEMERELLIDAE	9.000			
			CENTRARCHIDAE	10.011			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.200 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	3.300			
			CATOSTOMIDAE	3.340			
	STATE	6	SALMONIDAE	0.004	0.100 *	0.0044	ACR
			POGOLIDAE	3.700			
			CENTRARCHIDAE	3.011			
			GAMMARIDAE	9.000			

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
- * – 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 MAXIMUM CRITERIA
- §§ – 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: NEVADA

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	0.251 *	0.0023	FRV
			SALMONIDAE	0.460			
			PERLIDAE	0.460			
			PTERONARCIDAE	0.647			
	STATE	10	PERLIDAE	0.380	0.050 *	0.0023	FRV
			SALMONIDAE	0.357			
			PTERONARCIDAE	0.646			
			POECILIIDAE	0.849			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.251 *	0.0000	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	7	PTERONARCIDAE	0.000	0.140 *	0.0000	FRV
			SALMONIDAE	13.000			
			CENTRARCHIDAE	30.000			
			GAMMARIDAE	30.000			
85 LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.057 *	0.00003	FCV
			DAPHNIDAE	4.000			
			SALMONIDAE	60.000			
			CYPRINIDAE	300.700			
	STATE	6	DAPHNIDAE	4.000	0.302 *	0.00000	FCV
			SALMONIDAE	60.002			
			CENTRARCHIDAE	400.016			
			POECILIIDAE	600.000			
LINDANE	NATIONAL	10	ASELLIIDAE	10.000	3.210 *	0.2574	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	32.437			
			CENTRARCHIDAE	50.071			
	STATE	9	SALMONIDAE	14.100	0.350 *	0.4312	ACR
			CENTRARCHIDAE	42.100			
			GAMMARIDAE	43.000			
			ICTALURIDAE	55.000			
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.623			
			SALMONIDAE	244.200			
	STATE	6	DAPHNIDAE	5.000	0.101 *	0.0071	ACR
			GAMMARIDAE	10.000			
			SALMONIDAE	240.000			
			PHILOGENIDAE	783.471			
85 NICKEL	NATIONAL	16	DAPHNIDAE	65.977	32.914 *	3.3501	ACR
			EPHEMERELLIDAE	200.000			
			CENTRARCHIDAE	345.472			
			PHILOGENIDAE	491.217			
	STATE	9	DAPHNIDAE	65.977	21.000 *	2.3327	ACR
			PHILOGENIDAE	491.217			
			CHIRONOMIDAE	430.000			
			POECILIIDAE	480.042			
PCBS	NATIONAL	9	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	90.003			
	STATE	2	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	2.300	**		
				5.000			
				9.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	62.040 *	22.0000	ACR
			DAPHNIDAE	1002.474			
			CYPRINODONTIDAE	8400.970			
			SALMONIDAE	8479.723			
	STATE	5	HYALELLIDAE (TALITRIDAE)	300.000	34.141 *	14.4370	ACR
			DAPHNIDAE	1002.474			
			SALMONIDAE	8479.723			
			POECILIIDAE	12000.546			
5 SILVER	NATIONAL	9	DAPHNIDAE	0.000	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	5	DAPHNIDAE	0.000	0.00000 *		
			CYPRINIDAE	0.004			
			SALMONIDAE	0.001			
			CENTRARCHIDAE	0.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.007			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.720			
	STATE	10	CENTRARCHIDAE	2.040	0.014 *	0.0140	ACR
			PTERONARCIDAE	3.000			
			ICTALURIDAE	3.047			
			SALMONIDAE	5.570			

STATE: NEVADA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
5 ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.148	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	49.001			
			PHILOGENIDAE	92.757			
	STATE	10	DAPHNIDAE	13.737	3.346	47.0000	SCV
			SALMONIDAE	49.000			
			PHILOGENIDAE	92.757			
			POECILIIDAE	551.461			

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

5 — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

85 — 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: NEW HAMPSHIRE

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
	ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.481	3.388 *		
				ASELLIDAE	8.000			
				EPHEMERELLIDAE	8.000			
				SALMONIDAE	10.000			
		STATE	9	SALMONIDAE	4.000	1.770 *		
				CENTRARCHIDAE	7.481			
				EPHEMERELLIDAE	8.000			
				CYPRINIDAE	11.732			
	ARSENIC	NATIONAL	8	GAMMARIDAE	670.000	113.280 *		
				DAPHNIDAE	1704.340			
				SALMONIDAE	14120.043			
		STATE	4	ICTALURIDAE	16457.430			
				DAPHNIDAE	1040.130	148.002 *		
				SALMONIDAE	14120.043			
				CYPRINIDAE	16000.000			
				CENTRARCHIDAE	19404.000			
96	CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.027	0.0004	ACR
				DAPHNIDAE	0.400			
				GAMMARIDAE	1.147			
				PHYSIDAE	2.000			
		STATE	16	SALMONIDAE	0.034	0.017	0.0002	ACR
				DAPHNIDAE	0.054			
				GAMMARIDAE	1.147			
				CYPRINODONTIDAE	1.000			
	CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.380	1.974 *	0.0043	PRV
				PTERONARCIDAE	10.000			
				CYPRINIDAE	23.200			
				GAMMARIDAE	32.340			
		STATE	4	CYPRINIDAE	12.371	3.113 *	0.0043	PRV
				GAMMARIDAE	30.000			
				SALMONIDAE	30.000			
				CENTRARCHIDAE	84.711			
	CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.164	0.3378	ACR
				DAPHNIDAE	6300.070			
				PHILODINIDAE	6000.700			
				PHYSIDAE	34000.000			
		STATE	6	PHILODINIDAE	6000.700	1000.336 *	10.0	PPV
				PHYSIDAE	34000.000			
				PERCICHTHYIDAE	30404.700			
				CYPRINIDAE	40007.000			
6	COPPER	NATIONAL	23	DAPHNIDAE	0.300	0.104	0.40010	PCV
				CHIRONOMIDAE	0.700			
				PHYSIDAE	0.000			
				TUBIFICIDAE	1.340			
		STATE	10	DAPHNIDAE	0.300	0.139	7.43116	PCV
				CHIRONOMIDAE	0.700			
				PHYSIDAE	0.000			
				TUBIFICIDAE	1.340			
	CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.439 *	4.3472	ACR
				DAPHNIDAE	80.000			
				CENTRARCHIDAE	114.310			
				PERCIDAE	120.121			
		STATE	6	SALMONIDAE	70.707	20.000 *	3.0001	ACR
				DAPHNIDAE	80.000			
				CENTRARCHIDAE	114.310			
				PERCIDAE	120.121			
	DDT	NATIONAL	20	DAPHNIDAE	1.303	0.000	0.0010	PRV
				PERCIDAE	1.000			
				SIDOIDAE	1.700			
				GAMMARIDAE	2.234			
		STATE	8	DAPHNIDAE	0.070	0.303 *	0.0010	PRV
				PERCIDAE	1.000			
				GAMMARIDAE	3.000			
				CENTRARCHIDAE	3.000			
	DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.030 *	0.0010	PRV
				ASELLIDAE	8.000			
				SALMONIDAE	9.402			
				EPHEMERELLIDAE	8.000			
		STATE	6	SALMONIDAE	2.400	0.040 *	0.0010	PRV
				EPHEMERELLIDAE	8.000			
				CENTRARCHIDAE	14.400			
				CYPRINIDAE	22.101			
	ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
				CYPRINIDAE	1.370			
				PTERONARCIDAE	2.300			
				CATOSTOMIDAE	3.340			
		STATE	6	SALMONIDAE	0.004	0.140 *	0.0102	ACR
				CYPRINIDAE	1.370			
				CATOSTOMIDAE	3.340			
				CENTRARCHIDAE	3.011			

STATE: NEW HAMPSHIRE

	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	0.301 *	0.0003	PRV
				SALMONIDAE	0.400			
				PERLIDAE	0.400			
				PTERONARCIDAE	0.047			
		STATE	6	SALMONIDAE	0.000	0.141 *	0.0003	PRV
				CYPRINIDAE	0.000			
				CENTRARCHIDAE	1.011			
				COENAGRIONIDAE (AGRIONIDAE)	1.000			
	HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.301 *	0.0000	PRV
				PALAEMONIDAE	1.000			
				PERLIDAE	3.000			
				ASTACIDAE	7.000			
		STATE	5	SALMONIDAE	10.000	3.000 *	0.0000	PRV
				CENTRARCHIDAE	20.000			
				GAMMARIDAE	20.000			
				DAPHNIDAE	30.740			
96	LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.057 *	0.00000	PCV
				DAPHNIDAE	4.000			
				SALMONIDAE	80.000			
				CYPRINIDAE	303.700			
		STATE	4	SALMONIDAE	80.000	10.740 *	0.00000	PCV
				CYPRINIDAE	107.501			
				CENTRARCHIDAE	400.010			
				PHILOGENIDAE	600.040			
	LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.216 *	0.3574	ACR
				SALMONIDAE	21.000			
				GAMMARIDAE	32.407			
				CENTRARCHIDAE	80.071			
		STATE	6	SALMONIDAE	14.100	4.300 *	0.3370	ACR
				CENTRARCHIDAE	42.100			
				GAMMARIDAE	40.000			
				PERCIDAE	60.000			
	MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.30	PRV
				GAMMARIDAE	10.000			
				ASTACIDAE	31.000			
				SALMONIDAE	244.300			
		STATE	5	GAMMARIDAE	10.000	0.000 *	0.30	PRV
				ASTACIDAE	30.000			
				SALMONIDAE	240.000			
				PHILOGENIDAE	700.471			
96	NICKEL	NATIONAL	10	DAPHNIDAE	65.077	32.014 *	3.3001	ACR
				EPHEMERELLIDAE	200.000			
				CENTRARCHIDAE	340.472			
				PHILOGENIDAE	401.217			
		STATE	12	DAPHNIDAE	70.400	33.130 *	3.4100	ACR
				CENTRARCHIDAE	340.472			
				PHILOGENIDAE	401.217			
				CHIRONOMIDAE	400.000			
	PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	PRV
				CENTRARCHIDAE	8.011			
				CYPRINIDAE	30.001			
				GAMMARIDAE	80.000			
		STATE	4	SALMONIDAE	2.000	0.004 *	0.014	PRV
				CENTRARCHIDAE	2.300			
				CYPRINIDAE	30.001			
				COENAGRIONIDAE (AGRIONIDAE)	302.042			
	SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	82.040 *	22.0000	ACR
				DAPHNIDAE	1002.474			
				CYPRINODONTIDAE	8400.070			
				SALMONIDAE	8470.720			
		STATE	6	HYALELLIDAE (TALITRIDAE)	300.000	80.744 *	10.0040	ACR
				CYPRINIDAE	3100.140			
				DAPHNIDAE	3000.000			
				SALMONIDAE	8470.720			
6	SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00000 *		
				COTTIDAE	0.004			
				CYPRINIDAE	0.000			
				CYPRINODONTIDAE	0.012			
		STATE	4	CYPRINIDAE	0.011	0.00000 *		
				SALMONIDAE	0.021			
				CENTRARCHIDAE	0.112			
				PHILOGENIDAE	0.017			
	TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
				PTERONARCIDAE	2.027			
				ICTALURIDAE	3.047			
				CENTRARCHIDAE	4.720			
		STATE	7	CENTRARCHIDAE	2.040	0.000 *	0.0144	ACR
				CYPRINIDAE	6.100			
				SALMONIDAE	8.070			
				PERCIDAE	12.000			

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

* — FAILED TO MEET MINIMUM DATA REQUIREMENT

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

6 — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

96 — 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: NEW HAMPSHIRE

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	15	DAPHNIIDAE	13.737	0.149	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	48.891			
			PHILODINIDAE	92.757			
	STATE	13	DAPHNIIDAE	21.000	0.400	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	60.004			
			PHILODINIDAE	92.757			

STATE: NEW JERSEY

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.481	3.000 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.000			
	STATE	9	SALMONIDAE	4.000	1.700 *		
			CENTRARCHIDAE	7.481			
			EPHEMERELLIDAE	9.000			
			CYPRINIDAE	11.314			
ARSENIC	NATIONAL	5	GAMMARIDAE	570.000	113.000 *		
			DAPHNIIDAE	1784.345			
			SALMONIDAE	14128.043			
			ICTALURIDAE	19457.439			
	STATE	5	DAPHNIIDAE	1045.139	171.400 *		
			SALMONIDAE	14128.043			
			ICTALURIDAE	19457.439			
			CENTRARCHIDAE	19454.000			
$$ CADMIUM	NATIONAL	10	SALMONIDAE	0.045	0.027	0.0004	ACR
			DAPHNIIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	17	SALMONIDAE	0.004	0.021	0.0000	ACR
			DAPHNIIDAE	0.004			
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.000			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.300	1.574 *	0.0043	PRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	33.000			
			GAMMARIDAE	32.340			
	STATE	4	CYPRINIDAE	10.004	4.000 *	0.0043	PRV
			SALMONIDAE	33.002			
			GAMMARIDAE	40.000			
			CENTRARCHIDAE	54.711			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.3370	ACR
			DAPHNIIDAE	[illegible]			
			PHILODINIDAE	[illegible]			
			PHYSIDAE	[illegible]			
	STATE	6	PHILODINIDAE	[illegible]	1004.573 *	10.0	PRV
			PHYSIDAE	[illegible]			
			PERCONTHYIDAE	30454.700			
			SALMONIDAE	[illegible]			
$ COPPER	NATIONAL	23	DAPHNIIDAE	0.300	0.104	0.40010	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	16	DAPHNIIDAE	0.300	0.130	0.30004	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *	4.3472	ACR
			DAPHNIIDAE	80.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	139.121			
	STATE	8	SALMONIDAE	70.707	30.210 *	4.0000	ACR
			DAPHNIIDAE	80.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	139.121			
DDT	NATIONAL	20	DAPHNIIDAE	1.300	0.000	0.0010	PRV
			PERCIDAE	1.000			
			ESOCIDAE	1.700			
			GAMMARIDAE	2.334			
	STATE	9	DAPHNIIDAE	0.570	0.344 *	0.0010	PRV
			PERCIDAE	1.000			
			GAMMARIDAE	1.004			
			ASTACIDAE	3.000			
DIELDRIN	NATIONAL	12	POECILIIDAE	4.000	1.000 *	0.0010	PRV
			ASELLIDAE	0.000			
			SALMONIDAE	8.402			
			EPHEMERELLIDAE	0.000			
	STATE	6	SALMONIDAE	2.400	0.302 *	0.0010	PRV
			EPHEMERELLIDAE	0.000			
			CENTRARCHIDAE	10.011			
			CYPRINIDAE	41.000			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	5	SALMONIDAE	0.004	0.147 *	0.0751	ACR
			CATOSTOMIDAE	3.340			
			CENTRARCHIDAE	3.011			
			GAMMARIDAE	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

* — 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 MAXIMUM CRITERIA

$$ — 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: NEW JERSEY

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOSS VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ENDRIN	NATIONAL	17	GASTEROSTEIDAE	0.449	0.201 *	0.0003	FRV
			SALMONIDAE	0.469			
			PERLIDAE	0.493			
			PTERONARCIDAE	0.647			
	STATE	10	GASTEROSTEIDAE	0.449	0.100 *	0.0003	FRV
			SALMONIDAE	0.569			
			POECILIDAE	0.759			
			CENTRARCHIDAE	1.011			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.569	0.251 *	0.0035	FRV
			PALAEMONIDAE	1.269			
			PERLIDAE	2.569			
			ASTACIDAE	7.269			
	STATE	5	SALMONIDAE	13.569	3.581 *	0.0035	FRV
			CENTRARCHIDAE	25.569			
			GAMMARIDAE	47.269			
			DAPHNIDAE	69.749			
95 LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007 *	0.00009	PCV
			DAPHNIDAE	4.669			
			SALMONIDAE	69.669			
			CYPRINIDAE	369.769			
	STATE	4	SALMONIDAE	69.669	14.679 *	0.00004	PCV
			CENTRARCHIDAE	455.016			
			PHILOGENIDAE	569.845			
			CYPRINIDAE	514.669			
LINDANE	NATIONAL	10	ASELLIDAE	10.669	3.216 *	0.2574	ACR
			SALMONIDAE	21.669			
			GAMMARIDAE	32.437			
			CENTRARCHIDAE	69.271			
	STATE	7	GAMMARIDAE	10.469	2.433 *	0.1669	ACR
			SALMONIDAE	14.169			
			CENTRARCHIDAE	42.169			
			ICTALURIDAE	44.669			
MERCURY	NATIONAL	9	DAPHNIDAE	0.669	0.470 *	0.20	FRV
			GAMMARIDAE	10.669			
			ASTACIDAE	21.669			
			SALMONIDAE	344.269			
	STATE	4	GAMMARIDAE	10.669	0.669 *	0.20	FRV
			SALMONIDAE	345.669			
			PHILOGENIDAE	769.471			
			NAEIDAE	969.669			
95 NICKEL	NATIONAL	16	DAPHNIDAE	69.677	32.914 *	3.3991	ACR
			EPHEMERELLIDAE	269.669			
			CENTRARCHIDAE	345.472			
			PHILOGENIDAE	491.217			
	STATE	12	DAPHNIDAE	70.469	33.139 *	3.4193	ACR
			CENTRARCHIDAE	345.472			
			PHILOGENIDAE	491.217			
			CHIRONOMIDAE	469.669			
PCBS	NATIONAL	6	SALMONIDAE	2.669	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.691			
			GAMMARIDAE	69.663			
	STATE	4	SALMONIDAE	2.669	0.669 *	0.014	FRV
			CENTRARCHIDAE	2.369			
			GAMMARIDAE	107.694			
			COENAGRIONIDAE (AGRIONIDAE)	269.842			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	369.669	62.049 *	22.6669	ACR
			DAPHNIDAE	1069.474			
			CYPRINODONTIDAE	6469.679			
			SALMONIDAE	6479.723			
	STATE	8	HYALELLIDAE (TALITRIDAE)	369.669	69.269 *	17.6769	ACR
			DAPHNIDAE	3069.669			
			SALMONIDAE	6479.723			
			POECILIDAE	10069.846			
§ SILVER	NATIONAL	9	DAPHNIDAE	0.692	0.00069 *		
			COTTIDAE	0.694			
			CYPRINIDAE	0.699			
			CYPRINODONTIDAE	0.012			
	STATE	3	SALMONIDAE	0.021	0.00069 *		
			CENTRARCHIDAE	0.112	**		
			PHILOGENIDAE	0.517			
				0.669			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.269	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.647			
			CENTRARCHIDAE	4.726			
	STATE	8	CENTRARCHIDAE	2.849	1.046 *	0.0169	ACR
			ICTALURIDAE	4.169			
			SALMONIDAE	6.679			
			CYPRINIDAE	6.792			

STATE: NEW JERSEY

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LOSS VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
§ ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.149	47.6669	SCV
			PHYSIDAE	41.669			
			SALMONIDAE	49.691			
			PHILOGENIDAE	92.757			
	STATE	13	DAPHNIDAE	21.269	0.269	47.6669	SCV
			PHYSIDAE	41.669			
			SALMONIDAE	49.669			
			PHILOGENIDAE	92.757			

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
- § — HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
- 95 — 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: NEW MEXICO

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.461	3.000 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.000			
	STATE	10	SALMONIDAE	4.000	1.000 *		
			CENTRARCHIDAE	7.461			
			EPHEMERELLIDAE	9.000			
			PERCICHTHYIDAE	10.000			
ARSENIC	NATIONAL	9	GAMMARIDAE	570.000	113.000 *		
			DAPHNIDAE	1784.345			
			SALMONIDAE	14128.043			
			ICTALURIDAE	16457.430			
	STATE	6	DAPHNIDAE	1784.345	407.000 *		
			SALMONIDAE	14128.043			
			ICTALURIDAE	16457.430			
			CENTRARCHIDAE	19484.000			
96 CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.027	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	15	SALMONIDAE	0.034	0.012	0.0002	ACR
			PERCICHTHYIDAE	0.163			
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.360	1.574 *	0.0043	PRV
			PTERONARCIDAE	16.000			
			CYPRINIDAE	33.330			
			GAMMARIDAE	32.340			
	STATE	6	PTERONARCIDAE	16.000	5.000 *	0.0043	PRV
			CYPRINIDAE	33.330			
			GAMMARIDAE	39.000			
			SALMONIDAE	39.002			
CHROMIUM	NATIONAL	10	GAMMARIDAE	57.000	12.104 *	0.3570	ACR
			DAPHNIDAE	6000.570			
			PHILODINIDAE	6000.760			
			PHYSIDAE	34002.000			
	STATE	7	DAPHNIDAE	6000.570	1300.044 *	10.0	PRV
			PHILODINIDAE	6000.760			
			PHYSIDAE	34002.000			
			PERCICHTHYIDAE	39454.760			
5 COPPER	NATIONAL	23	DAPHNIDAE	0.300	0.104	0.00016	PCV
			CHIRONOMIDAE	0.750			
			PHYSIDAE	0.900			
			TUBIFICIDAE	1.340			
	STATE	16	DAPHNIDAE	0.300	0.100	0.00002	PCV
			CHIRONOMIDAE	0.750			
			PHYSIDAE	0.900			
			TUBIFICIDAE	1.340			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.420 *	4.24724	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	130.121			
	STATE	7	SALMONIDAE	70.707	20.000 *	3.0077	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	130.121			
DDT	NATIONAL	20	DAPHNIDAE	1.300	0.000	0.0010	PRV
			PERCIDAE	1.000			
			ISOCIDAE	1.700			
			GAMMARIDAE	2.234			
	STATE	12	DAPHNIDAE	1.300	0.400 *	0.0010	PRV
			PERCIDAE	1.000			
			GAMMARIDAE	3.000			
			CENTRARCHIDAE	4.102			
DIELDRIN	NATIONAL	12	FOSCILIDAE	4.000	1.000 *	0.0019	PRV
			ASELLIDAE	8.000			
			SALMONIDAE	8.402			
			EPHEMERELLIDAE	8.000			
	STATE	8	SALMONIDAE	2.400	0.002 *	0.0019	PRV
			EPHEMERELLIDAE	8.000			
			CENTRARCHIDAE	10.011			
			PERLIDAE	24.000			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.200 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	6	SALMONIDAE	0.004	0.100 *	0.1003	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			

STATE: NEW MEXICO

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	0.201 *	0.0023	PRV
			SALMONIDAE	0.455			
			PERLIDAE	0.460			
			PTERONARCIDAE	0.647			
	STATE	10	SALMONIDAE	0.357	0.140 *	0.0023	PRV
			PERLIDAE	0.460			
			PTERONARCIDAE	0.647			
			POECILIIDAE	0.700			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.201 *	0.0038	PRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	7	PTERONARCIDAE	0.000	0.120 *	0.0038	PRV
			PERLIDAE	2.000			
			SALMONIDAE	13.000			
			CENTRARCHIDAE	34.771			
96 LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.037 *	0.00003	PCV
			DAPHNIDAE	4.000			
			SALMONIDAE	89.002			
			CYPRINIDAE	388.702			
	STATE	6	DAPHNIDAE	4.000	0.007 *	0.00004	PCV
			SALMONIDAE	89.002			
			CYPRINIDAE	388.702			
			CENTRARCHIDAE	405.015			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.216 *	0.2574	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	32.457			
			CENTRARCHIDAE	82.071			
	STATE	7	SALMONIDAE	14.100	4.704 *	0.2035	ACR
			GAMMARIDAE	46.000			
			CENTRARCHIDAE	82.071			
			ICTALURIDAE	93.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.20	PRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.623			
			SALMONIDAE	244.300			
	STATE	5	DAPHNIDAE	0.000	0.101 *	0.0071	ACR
			GAMMARIDAE	10.000			
			SALMONIDAE	346.000			
			PHILODINIDAE	703.471			
96 NICKEL	NATIONAL	16	DAPHNIDAE	65.677	32.914 *	3.3001	ACR
			EPHEMERELLIDAE	223.000			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	401.217			
	STATE	11	DAPHNIDAE	65.677	25.017 *	2.5799	ACR
			PERCICHTHYIDAE	301.510			
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	439.000			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	PRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	93.003			
	STATE	3	SALMONIDAE	2.000	0.137 *	0.014	PRV
			CENTRARCHIDAE	6.011	**		
			CYPRINIDAE	32.001			
				0.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	82.046 *	22.0000	ACR
			DAPHNIDAE	1002.474			
			CYPRINODONTIDAE	8400.570			
			SALMONIDAE	8470.723			
	STATE	8	HYALELLIDAE (TALITRIDAE)	300.000	60.102 *	16.0431	ACR
			DAPHNIDAE	1002.474			
			SALMONIDAE	8470.723			
			CYPRINIDAE	9002.430			
5 SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00003 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	6	DAPHNIDAE	0.002	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			SALMONIDAE	0.021			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.037 *	0.0037	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.735			
	STATE	10	PERLIDAE	1.300	0.004 *	0.0030	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.735			

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
- 5 – HARDNESS EFFECT INTERCEPT VALUE
  - APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
- 96 – 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: NEW MEXICO

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
6 ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.149	47.8889	SCV
			PHYSIDAE	41.999			
			SALMONIDAE	49.991			
			PHILODINIDAE	62.757			
	STATE	12	DAPHNIDAE	13.737	0.888	47.8889	SCV
			PHYSIDAE	41.999			
			PERCICHTHYIDAE	49.394			
			SALMONIDAE	49.999			

STATE: NEW YORK

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.491	3.999 *		
			ASELLIDAE	9.999			
			EPHEMERELLIDAE	9.999			
			SALMONIDAE	10.999			
	STATE	10	SALMONIDAE	5.341	1.999 *		
			CENTRARCHIDAE	7.491			
			EPHEMERELLIDAE	9.999			
			ANSELLIDAE	10.999			
ARSENIC	NATIONAL	8	GAMMARIDAE	875.999	110.999 *		
			DAPHNIDAE	1794.349			
			SALMONIDAE	14169.949			
			TOTALIMIDAE	19497.499			
	STATE	8	GAMMARIDAE	875.999	99.999 *		
			DAPHNIDAE	1849.199			
			SALMONIDAE	14169.949			
			TOTALIMIDAE	19497.499			
55 CADMIUM	NATIONAL	10	SALMONIDAE	9.949	0.027	0.0004	ACR
			DAPHNIDAE	9.499			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.999			
	STATE	17	SALMONIDAE	9.949	0.999	0.0004	ACR
			DAPHNIDAE	9.994			
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.999			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.399	1.574 *	0.0043	FRV
			PTERONARCIDAE	10.999			
			CYPRINIDAE	20.999			
			GAMMARIDAE	22.249			
	STATE	8	PALAEMONIDAE	0.399	1.999 *	0.0043	FRV
			CYPRINIDAE	20.999			
			GAMMARIDAE	22.249			
			SALMONIDAE	40.591			
CHROMIUM	NATIONAL	10	GAMMARIDAE	97.999	12.104	0.3570	ACR
			DAPHNIDAE	6999.576			
			PHILODINIDAE	6999.799			
			PHYSIDAE	24999.999			
	STATE	7	GAMMARIDAE	97.999	5.397 *	0.1499	ACR
			PHILODINIDAE	6999.799			
			PHYSIDAE	24999.999			
			PERCICHTHYIDAE	29494.799			
6 COPPER	NATIONAL	20	DAPHNIDAE	0.399	0.104	0.00010	FCV
			CHIRONOMIDAE	0.799			
			PHYSIDAE	0.999			
			TUBIFICIDAE	1.249			
	STATE	20	DAPHNIDAE	0.999	0.101	0.00764	FCV
			CHIRONOMIDAE	0.799			
			PHYSIDAE	0.999			
			TUBIFICIDAE	1.249			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.499 *	4.3472	ACR
			DAPHNIDAE	99.999			
			CENTRARCHIDAE	114.210			
			PERCIDAE	125.121			
	STATE	8	SALMONIDAE	70.707	30.210 *	4.0999	ACR
			DAPHNIDAE	99.999			
			CENTRARCHIDAE	114.210			
			PERCIDAE	125.121			
DDT	NATIONAL	20	DAPHNIDAE	1.399	0.999	0.0010	FRV
			PERCIDAE	1.999			
			ISOPIDAE	1.799			
			GAMMARIDAE	2.394			
	STATE	14	DAPHNIDAE	0.979	0.499 *	0.0010	FRV
			PERCIDAE	1.999			
			ISOPIDAE	1.799			
			GAMMARIDAE	2.394			
DIELDRIN	NATIONAL	12	POECILIDAE	4.999	1.999 *	0.0010	FRV
			ASELLIDAE	9.999			
			SALMONIDAE	9.499			
			EPHEMERELLIDAE	9.999			
	STATE	7	SALMONIDAE	3.973	1.999 *	0.0010	FRV
			EPHEMERELLIDAE	9.999			
			CENTRARCHIDAE	10.011			
			PALAEMONIDAE	20.999			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.994	0.399 *	0.1094	ACR
			CYPRINIDAE	1.279			
			PTERONARCIDAE	2.399			
			CATOSTOMIDAE	3.349			
	STATE	6	SALMONIDAE	0.994	0.149 *	0.0702	ACR
			CYPRINIDAE	1.279			
			CATOSTOMIDAE	3.349			
			CENTRARCHIDAE	3.011			

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 REQUIREMENT

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

6 — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

55 — 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: NEW YORK

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ENDRIN	NATIONAL	17	GASTEROSTEIDAE	0.449	0.201 *	0.0023	FRV
			SALMONIDAE	0.469			
			PERLIDAE	0.493			
			PTERONARCIDAE	0.647			
	STATE	11	GASTEROSTEIDAE	0.449	0.200 *	0.0023	FRV
			SALMONIDAE	0.667			
			CYPRINIDAE	0.732			
			POECILIIDAE	0.750			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.995	0.251 *	0.0038	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	6	PALAEMONIDAE	1.000	0.333 *	0.0038	FRV
			SALMONIDAE	17.703			
			CENTRARCHIDAE	24.771			
			GAMMARIDAE	37.046			
96 LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.057 *	0.00003	FCV
			DAPHNIDAE	4.000			
			SALMONIDAE	69.002			
			CYPRINIDAE	359.702			
	STATE	5	GAMMARIDAE	1.161	0.054 *	0.00004	FCV
			SALMONIDAE	69.002			
			CYPRINIDAE	359.702			
			CENTRARCHIDAE	455.016			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.2574	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	52.571			
	STATE	7	SALMONIDAE	10.000	0.057 *	0.4046	ACR
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	52.571			
			ICTALURIDAE	93.000			
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.623			
			SALMONIDAE	944.000			
	STATE	6	GAMMARIDAE	10.000	0.764 *	0.20	FRV
			ASTACIDAE	50.000			
			SALMONIDAE	949.000			
			PHILOGENIDAE	785.471			
96 NICKEL	NATIONAL	16	DAPHNIDAE	68.077	32.914 *	3.3991	ACR
			EPHEMERELLIDAE	239.000			
			CENTRARCHIDAE	349.472			
			PHILOGENIDAE	491.217			
	STATE	13	DAPHNIDAE	78.400	35.000 *	3.6172	ACR
			CENTRARCHIDAE	349.472			
			PHILOGENIDAE	491.217			
			CHIRONOMIDAE	439.000			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	99.003			
	STATE	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	99.003			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	330.000	62.040 *	22.0000	ACR
			DAPHNIDAE	1000.474			
			CYPRINODONTIDAE	6400.979			
			SALMONIDAE	8470.723			
	STATE	8	HYALELLIDAE (TALITRIDAE)	330.000	72.017 *	19.2044	ACR
			DAPHNIDAE	3000.000			
			SALMONIDAE	8470.723			
			CYPRINIDAE	9000.439			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.000	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.009			
			CYPRINODONTIDAE	0.012			
	STATE	6	COTTIDAE	0.004	0.00041 *		
			CYPRINIDAE	0.011			
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.726			
	STATE	9	ICTALURIDAE	3.547	1.340 *	0.0017	ACR
			CENTRARCHIDAE	4.726			
			SALMONIDAE	5.223			
			CYPRINIDAE	8.033			

STATE: NEW YORK

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.140 *	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	48.001			
			PHILOGENIDAE	92.757			
	STATE	13	DAPHNIDAE	21.320	0.000	47.0000	SCV
			SALMONIDAE	41.276			
			PHYSIDAE	41.000			
			PHILOGENIDAE	92.757			

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

$ — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

96 — 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: NORTH CAROLINA

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)		30-DAY (+)	AVERAGE (++)
	ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.461	3.280	*		
				ASELLIDAE	9.000				
				EPHEMERELLIDAE	9.000				
				SALMONIDAE	10.000				
		STATE	9	SALMONIDAE	4.000	1.760	*		
				CENTRARCHIDAE	7.461				
				EPHEMERELLIDAE	9.000				
				CYPRINIDAE	11.314				
	ARSENIC	NATIONAL	8	GAMMARIDAE	573.000	113.000	*		
				DAPHNIDAE	1764.045				
				SALMONIDAE	14125.043				
				ICTALURIDAE	16457.400				
		STATE	4	DAPHNIDAE	1045.130	132.340	*		
				SALMONIDAE	14125.043				
				CENTRARCHIDAE	16451.000				
				CYPRINIDAE	25941.575				
SS	CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.007		0.0004	ACR
				DAPHNIDAE	0.400				
				GAMMARIDAE	1.147				
				PHYSIDAE	2.000				
		STATE	10	SALMONIDAE	0.004	0.010		0.0000	ACR
				DAPHNIDAE	0.004				
				GAMMARIDAE	1.147				
				CYPRINODONTIDAE	1.000				
	CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.300	1.574	*	0.0043	FRV
				PTERONARCIDAE	10.000				
				CYPRINIDAE	23.000				
				GAMMARIDAE	32.340				
		STATE	4	CYPRINIDAE	10.004	4.000	*	0.0043	FRV
				SALMONIDAE	20.000				
				GAMMARIDAE	40.000				
				CENTRARCHIDAE	84.711				
	CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104		0.3570	ACR
				DAPHNIDAE	6000.070				
				PHILOGENIDAE	6000.700				
				PHYSIDAE	24000.000				
		STATE	6	PHILOGENIDAE	6000.700	1004.573	*	10.0	FPV
				PHYSIDAE	24000.000				
				PERCONTHYIDAE	30464.700				
				SALMONIDAE	60004.140				
S	COPPER	NATIONAL	23	DAPHNIDAE	0.300	0.104		0.40010	FCV
				CHIRONOMIDAE	0.700				
				PHYSIDAE	0.000				
				TUBIFICIDAE	1.340				
		STATE	10	DAPHNIDAE	0.300	0.130		7.00000	FCV
				CHIRONOMIDAE	0.700				
				PHYSIDAE	0.000				
				TUBIFICIDAE	1.340				
	CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400	*	4.3472	ACR
				DAPHNIDAE	80.000				
				CENTRARCHIDAE	114.310				
				PERCIDAE	125.121				
		STATE	7	SALMONIDAE	70.707	20.000	*	3.0077	ACR
				DAPHNIDAE	80.000				
				CENTRARCHIDAE	114.310				
				PERCIDAE	125.121				
	DDT	NATIONAL	20	DAPHNIDAE	1.300	0.000		0.0010	FRV
				PERCIDAE	1.000				
				ISOCIDAE	1.700				
				GAMMARIDAE	2.334				
		STATE	9	DAPHNIDAE	0.070	0.344		0.0010	FRV
				PERCIDAE	1.000				
				GAMMARIDAE	1.004				
				ASTACIDAE	3.000				
	DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000	*	0.0010	FRV
				ASELLIDAE	6.000				
				SALMONIDAE	8.400				
				EPHEMERELLIDAE	8.000				
		STATE	6	SALMONIDAE	2.400	0.300	*	0.0010	FRV
				EPHEMERELLIDAE	8.000				
				CENTRARCHIDAE	10.011				
				CYPRINIDAE	41.000				
	ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300	*	0.1004	ACR
				CYPRINIDAE	1.270				
				PTERONARCIDAE	2.300				
				CATOSTOMIDAE	3.340				
		STATE	5	SALMONIDAE	0.004	0.147	*	0.0701	ACR
				CATOSTOMIDAE	3.340				
				CENTRARCHIDAE	3.011				
				GAMMARIDAE	6.000				

STATE: NORTH CAROLINA

	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	0.201	*	0.0020	FRV
				SALMONIDAE	0.400				
				PERLIDAE	0.400				
				PTERONARCIDAE	0.047				
		STATE	9	SALMONIDAE	0.000	0.170	*	0.0020	FRV
				POECILIDAE	0.700				
				CENTRARCHIDAE	1.011				
				ODONATA(ANISONIDAE)	1.000				
	HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.201	*	0.0000	FRV
				PALAEMONIDAE	1.000				
				PERLIDAE	2.000				
				ASTACIDAE	7.000				
		STATE	6	SALMONIDAE	10.000	3.440	*	0.0000	FRV
				CENTRARCHIDAE	24.771				
				GAMMARIDAE	47.000				
				DAPHNIDAE	60.740				
SS	LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007	*	0.00000	FCV
				DAPHNIDAE	4.000				
				SALMONIDAE	60.000				
				CYPRINIDAE	202.700				
		STATE	4	SALMONIDAE	60.000	14.070	*	0.00000	FCV
				CENTRARCHIDAE	400.010				
				PHILOGENIDAE	600.040				
				CYPRINIDAE	914.000				
	LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210	*	0.3574	ACR
				SALMONIDAE	21.000				
				GAMMARIDAE	32.437				
				CENTRARCHIDAE	60.571				
		STATE	7	GAMMARIDAE	10.400	1.002	*	0.1001	ACR
				SALMONIDAE	14.100				
				CENTRARCHIDAE	60.571				
				ICTALURIDAE	84.000				
	MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470	*	0.20	FRV
				GAMMARIDAE	10.000				
				ASTACIDAE	31.000				
				SALMONIDAE	244.300				
		STATE	4	GAMMARIDAE	10.000	0.000	*	0.20	FRV
				SALMONIDAE	240.000				
				PHILOGENIDAE	700.471				
				NAEMIDAE	000.000				
SS	NICKEL	NATIONAL	10	DAPHNIDAE	60.077	32.014	*	3.3001	ACR
				EPHEMERELLIDAE	200.000				
				CENTRARCHIDAE	345.472				
				PHILOGENIDAE	401.217				
		STATE	12	DAPHNIDAE	70.400	30.120	*	3.4100	ACR
				CENTRARCHIDAE	345.472				
				PHILOGENIDAE	401.217				
				CHIRONOMIDAE	400.000				
	PCBS	NATIONAL	6	SALMONIDAE	2.000	0.137	*	0.014	FRV
				CENTRARCHIDAE	6.011				
				CYPRINIDAE	30.001				
				GAMMARIDAE	60.000				
		STATE	4	SALMONIDAE	2.000	0.047	*	0.014	FRV
				CENTRARCHIDAE	6.011				
				GAMMARIDAE	107.004				
				ODONATA(ANISONIDAE)	200.040				
	SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	200.000	00.040	*	20.0000	ACR
				DAPHNIDAE	1002.474				
				CYPRINODONTIDAE	0400.070				
				SALMONIDAE	0470.720				
		STATE	7	HYALELLIDAE (TALITRIDAE)	200.000	57.300	*	10.0000	ACR
				DAPHNIDAE	2000.000				
				SALMONIDAE	0470.720				
				POECILIDAE	10000.040				
S	SILVER	NATIONAL	9	DAPHNIDAE	0.000	0.00000	*		
				COTTIDAE	0.004				
				CYPRINIDAE	0.000				
				CYPRINODONTIDAE	0.012				
		STATE	3	SALMONIDAE	0.021	0.00000	*		
				CENTRARCHIDAE	0.113		**		
				PHILOGENIDAE	0.017				
					0.000				
	TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007	*	0.0007	ACR
				PTERONARCIDAE	2.027				
				ICTALURIDAE	3.047				
				CENTRARCHIDAE	4.720				
		STATE	8	ICTALURIDAE	3.000	1.000	*	0.0177	ACR
				CENTRARCHIDAE	4.720				
				SALMONIDAE	6.070				
				CYPRINIDAE	8.120				

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

S — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

SS — 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: NORTH CAROLINA

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
§	ZINC	NATIONAL	15	DAPHNIDAE	13.737	6.148	47.0000	SCV
				PHYSIDAE	41.500			
				SALMONIDAE	49.881			
				PHILODINIDAE	92.757			
		STATE	13	DAPHNIDAE	21.223	6.200	47.0000	SCV
				PHYSIDAE	41.500			
				SALMONIDAE	49.880			
				PHILODINIDAE	92.757			

STATE: NORTH DAKOTA

	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	3.388 *		
				ASELLIDAE	8.000			
				EPHEMERELLIDAE	9.000			
				SALMONIDAE	10.000			
		STATE	6	SALMONIDAE	4.000	1.000 *		
				CENTRARCHIDAE	7.451			
				CYPRINIDAE	10.300			
				CYPRINODONTIDAE	21.000			
	ARSENIC	NATIONAL	8	GAMMARIDAE	576.000	113.300 *		
				DAPHNIDAE	1764.346			
				SALMONIDAE	14120.043			
				ICTALURIDAE	16497.420			
		STATE	5	DAPHNIDAE	1764.346	393.001 *		
				SALMONIDAE	12320.000			
				ICTALURIDAE	16497.420			
				CENTRARCHIDAE	16494.000			
36	CADMIUM	NATIONAL	16	SALMONIDAE	0.040	0.027	0.0004	ACR
				DAPHNIDAE	0.400			
				GAMMARIDAE	1.147			
				PHYSIDAE	2.000			
		STATE	12	SALMONIDAE	0.044	0.014	0.0002	ACR
				DAPHNIDAE	0.400			
				GAMMARIDAE	1.147			
				CYPRINODONTIDAE	1.030			
	CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.300	1.574 *	0.0043	FRV
				PTERONARCIDAE	10.000			
				CYPRINIDAE	23.320			
				GAMMARIDAE	32.340			
		STATE	5	CYPRINIDAE	23.320	0.004 *	0.0043	FRV
				SALMONIDAE	25.401			
				GAMMARIDAE	32.000			
				CENTRARCHIDAE	54.711			
	CHROMIUM	NATIONAL	10	GAMMARIDAE	57.000	12.104	0.3370	ACR
				DAPHNIDAE	6000.570			
				PHILODINIDAE	6000.700			
				PHYSIDAE	24000.000			
		STATE	6	DAPHNIDAE	6000.570	701.000 *	10.0	FPV
				PHILODINIDAE	6000.700			
				PHYSIDAE	24000.000			
				CYPRINIDAE	57401.672			
§	COPPER	NATIONAL	23	DAPHNIDAE	0.300	0.104	0.00010	FCV
				CHIRONOMIDAE	0.700			
				PHYSIDAE	0.000			
				TUBIFICIDAE	1.340			
		STATE	15	DAPHNIDAE	0.300	0.100	0.00000	FCV
				CHIRONOMIDAE	0.700			
				PHYSIDAE	0.000			
				SALMONIDAE	1.002			
	CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.430 *	4.3472	ACR
				DAPHNIDAE	83.000			
				CENTRARCHIDAE	114.310			
				PERCIDAE	135.121			
		STATE	6	SALMONIDAE	57.000	20.740 *	2.0000	ACR
				DAPHNIDAE	83.000			
				CENTRARCHIDAE	114.310			
				PERCIDAE	135.121			
	DDT	NATIONAL	20	DAPHNIDAE	1.303	0.000	0.0010	FRV
				PERCIDAE	1.000			
				ISOCIDAE	1.700			
				GAMMARIDAE	2.334			
		STATE	10	DAPHNIDAE	1.303	0.472 *	0.0010	FRV
				PERCIDAE	1.000			
				ISOCIDAE	1.700			
				GAMMARIDAE	3.000			
	DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.030 *	0.0010	FRV
				ASELLIDAE	5.000			
				SALMONIDAE	5.402			
				EPHEMERELLIDAE	8.000			
		STATE	9	SALMONIDAE	2.400	0.140 *	0.0010	FRV
				CENTRARCHIDAE	10.011			
				CYPRINIDAE	30.102			
				DAPHNIDAE	103.740			
	ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.200 *	0.1004	ACR
				CYPRINIDAE	1.270			
				PTERONARCIDAE	2.300			
				CATOSTOMIDAE	3.340			
		STATE	7	SALMONIDAE	0.004	0.101 *	0.0003	ACR
				CYPRINIDAE	1.270			
				CATOSTOMIDAE	3.340			
				CENTRARCHIDAE	3.011			

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 REQUIREMENT

** – STATE HAS LESS THAN 4 RESIDENT FAMILIES—NATIONAL VALUE USED

§ – HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

36 – 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: NORTH DAKOTA

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
	ENDRIN	NATIONAL	17	GASTEROSTEIDAE	0.449	0.201 *	0.0020	FRV
				SALMONIDAE	0.450			
				PERLIDAE	0.450			
				PTERONARCIDAE	0.647			
		STATE	9	SALMONIDAE	0.604	0.072 *	0.0020	FRV
				CYPRINIDAE	0.732			
				CENTRARCHIDAE	1.011			
				GAMMARIDAE	5.574			
	HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.201 *	0.0000	FRV
				PALAEMONIDAE	1.000			
				PERLIDAE	2.000			
				ASTACIDAE	7.000			
		STATE	5	SALMONIDAE	13.000	3.200 *	0.0000	FRV
				CENTRARCHIDAE	20.000			
				GAMMARIDAE	23.000			
				DAPHNIDAE	60.000			
66	LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007 *	0.00000	FCV
				DAPHNIDAE	4.000			
				SALMONIDAE	69.000			
				CYPRINIDAE	300.702			
		STATE	9	DAPHNIDAE	4.000	0.200 *	0.00000	FCV
				SALMONIDAE	100.100			
				CYPRINIDAE	300.700			
				CENTRARCHIDAE	400.010			
	LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.2074	ACR
				SALMONIDAE	21.000			
				GAMMARIDAE	22.427			
				CENTRARCHIDAE	62.071			
		STATE	8	SALMONIDAE	32.001	13.075 *	1.1000	ACR
				CENTRARCHIDAE	42.100			
				GAMMARIDAE	42.000			
				ICTALURIDAE	63.000			
	MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.20	FRV
				GAMMARIDAE	10.000			
				ASTACIDAE	31.000			
				SALMONIDAE	344.000			
		STATE	5	DAPHNIDAE	0.000	0.101 *	0.0071	ACR
				GAMMARIDAE	10.000			
				SALMONIDAE	340.000			
				PHILOGENIDAE	705.471			
33	NICKEL	NATIONAL	10	DAPHNIDAE	65.077	32.014 *	3.2001	ACR
				EPHEMERELLIDAE	200.000			
				CENTRARCHIDAE	340.472			
				PHILOGENIDAE	491.317			
		STATE	10	DAPHNIDAE	65.077	20.012 *	2.4000	ACR
				CENTRARCHIDAE	200.040			
				PHILOGENIDAE	491.317			
				CHIRONOMIDAE	400.000			
	POSS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
				CENTRARCHIDAE	6.011			
				CYPRINIDAE	32.001			
				GAMMARIDAE	60.000			
		STATE	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
				CENTRARCHIDAE	2.200	**		
				CYPRINIDAE	32.001			
					0.000			
	SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	200.000	82.040 *	22.0000	ACR
				DAPHNIDAE	1000.474			
				CYPRINODONTIDAE	0400.070			
				SALMONIDAE	0470.723			
		STATE	7	HYALELLIDAE (TALITRIDAE)	200.000	54.007 *	14.0004	ACR
				DAPHNIDAE	1000.474			
				SALMONIDAE	7040.000			
				CYPRINIDAE	0000.400			
5	SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00000 *		
				COTTIDAE	0.004			
				CYPRINIDAE	0.000			
				CYPRINODONTIDAE	0.012			
		STATE	5	DAPHNIDAE	0.002	0.00010 *		
				CYPRINIDAE	0.011			
				SALMONIDAE	0.021			
				CENTRARCHIDAE	0.112			
	TOXAPHENE	NATIONAL	12	PERLIDAE	1.200	0.007 *	0.0007	ACR
				PTERONARCIDAE	2.007			
				ICTALURIDAE	3.047			
				CENTRARCHIDAE	4.720			
		STATE	8	CENTRARCHIDAE	2.040	0.000 *	0.0131	ACR
				ICTALURIDAE	3.047			
				CYPRINIDAE	0.000			
				SALMONIDAE	9.100			

STATE: NORTH DAKOTA

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
8	ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.148	47.0000	SCV
				PHYSIDAE	41.000			
				SALMONIDAE	49.001			
				PHILOGENIDAE	92.757			
		STATE	11	DAPHNIDAE	13.737	4.148	47.0000	SCV
				SALMONIDAE	20.040			
				PHYSIDAE	41.000			
				PHILOGENIDAE	92.757			

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
- 8 – HARDNESS EFFECT INTERCEPT VALUE
  APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
- 66 – 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: OHIO

	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	3.388 *		
				ASELLIDAE	8.000			
				EPHEMERELLIDAE	9.000			
				SALMONIDAE	10.000			
		STATE	8	SALMONIDAE	4.000	1.389 *		
				CENTRARCHIDAE	7.451			
				ANGUILLIDAE	16.000			
				CYPRINIDAE	16.388			
	ARSENIC	NATIONAL	8	GAMMARIDAE	676.000	113.383 *		
				DAPHNIDAE	1794.346			
				SALMONIDAE	14128.043			
				ICTALURIDAE	16457.430			
		STATE	5	DAPHNIDAE	1045.139	171.488 *		
				SALMONIDAE	14128.043			
				ICTALURIDAE	16457.430			
				CENTRARCHIDAE	16484.000			
SS	CADMIUM	NATIONAL	16	SALMONIDAE	0.048	0.007	0.0004	ACR
				DAPHNIDAE	0.499			
				GAMMARIDAE	1.147			
				PHYSIDAE	2.000			
		STATE	14	SALMONIDAE	0.004	0.015	0.0002	ACR
				DAPHNIDAE	0.004			
				GAMMARIDAE	1.147			
				CYPRINODONTIDAE	1.000			
	CHLORDANE	NATIONAL	6	PALAEMONIDAE	0.388	1.974 *	0.0043	PRV
				PTERONARCIDAE	16.000			
				CYPRINIDAE	33.338			
				GAMMARIDAE	32.340			
		STATE	5	PALAEMONIDAE	0.388	1.000 *	0.0043	PRV
				CYPRINIDAE	33.338			
				SALMONIDAE	38.002			
				GAMMARIDAE	49.000			
	CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.3378	ACR
				DAPHNIDAE	6000.570			
				PHILODINIDAE	6000.700			
				PHYSIDAE	24000.000			
		STATE	6	PHILODINIDAE	6000.700	1031.400 *	10.0	PPV
				PHYSIDAE	24000.000			
				CYPRINIDAE	57481.572			
				CHIRONOMIDAE	60000.700			
S	COPPER	NATIONAL	20	DAPHNIDAE	0.388	0.104	5.48010	PCV
				CHIRONOMIDAE	0.700			
				PHYSIDAE	0.000			
				TUBIFICIDAE	1.340			
		STATE	10	DAPHNIDAE	0.388	0.145	9.57700	PCV
				CHIRONOMIDAE	0.700			
				PHYSIDAE	0.000			
				TUBIFICIDAE	1.340			
	CYANIDE	NATIONAL	10	SALMONIDAE	76.707	31.439 *	4.3472	ACR
				DAPHNIDAE	83.000			
				CENTRARCHIDAE	114.310			
				PERCIDAE	135.121			
		STATE	8	SALMONIDAE	76.707	30.210 *	4.0038	ACR
				DAPHNIDAE	83.000			
				CENTRARCHIDAE	114.310			
				PERCIDAE	135.121			
	DDT	NATIONAL	20	DAPHNIDAE	1.303	0.000	0.0010	PRV
				PERCIDAE	1.000			
				ISOCIDAE	1.700			
				GAMMARIDAE	2.234			
		STATE	13	DAPHNIDAE	0.970	0.471 *	0.0010	PRV
				PERCIDAE	1.000			
				GAMMARIDAE	1.004			
				ISOCIDAE	1.700			
	DIELDRIN	NATIONAL	12	POECILIIDAE	4.000	1.030 *	0.0019	PRV
				ASELLIDAE	5.000			
				SALMONIDAE	5.402			
				EPHEMERELLIDAE	6.000			
		STATE	6	SALMONIDAE	2.400	0.000 *	0.0010	PRV
				CENTRARCHIDAE	10.011			
				PALAEMONIDAE	20.000			
				CYPRINIDAE	30.102			
	ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
				CYPRINIDAE	1.279			
				PTERONARCIDAE	2.300			
				CATOSTOMIDAE	3.340			
		STATE	6	SALMONIDAE	0.004	0.140 *	0.0102	ACR
				CYPRINIDAE	1.279			
				CATOSTOMIDAE	3.340			
				CENTRARCHIDAE	3.011			

STATE: OHIO

	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	0.391 *	0.0003	PRV
				SALMONIDAE	0.400			
				PERLIDAE	0.400			
				PTERONARCIDAE	0.047			
		STATE	9	SALMONIDAE	0.000	0.333 *	0.0003	PRV
				CYPRINIDAE	0.732			
				POECILIIDAE	0.760			
				CENTRARCHIDAE	1.011			
	HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.351 *	0.0000	PRV
				PALAEMONIDAE	1.000			
				PERLIDAE	2.000			
				ASTACIDAE	7.000			
		STATE	6	PALAEMONIDAE	1.000	0.300 *	0.0000	PRV
				SALMONIDAE	13.000			
				CENTRARCHIDAE	24.771			
				GAMMARIDAE	47.300			
SS	LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007 *	0.00003	PCV
				DAPHNIDAE	4.000			
				SALMONIDAE	80.002			
				CYPRINIDAE	300.702			
		STATE	4	SALMONIDAE	80.002	14.000 *	0.00004	PCV
				CYPRINIDAE	300.702			
				CENTRARCHIDAE	400.016			
				PHILODINIDAE	600.845			
	LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.2074	ACR
				SALMONIDAE	21.000			
				GAMMARIDAE	22.437			
				CENTRARCHIDAE	92.571			
		STATE	8	GAMMARIDAE	10.400	2.300 *	0.1012	ACR
				SALMONIDAE	14.100			
				CENTRARCHIDAE	92.571			
				ICTALURIDAE	93.000			
	MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.20	PRV
				GAMMARIDAE	10.000			
				ASTACIDAE	31.623			
				SALMONIDAE	344.300			
		STATE	6	GAMMARIDAE	10.000	1.000 *	0.20	PRV
				SALMONIDAE	340.000			
				PHILODINIDAE	783.471			
				NAIDIDAE	000.000			
SS	NICKEL	NATIONAL	10	DAPHNIDAE	68.977	32.014 *	3.3001	ACR
				EPHEMERELLIDAE	233.000			
				CENTRARCHIDAE	346.472			
				PHILODINIDAE	401.217			
		STATE	12	DAPHNIDAE	70.400	33.120 *	3.4103	ACR
				CENTRARCHIDAE	346.472			
				PHILODINIDAE	401.217			
				CHIRONOMIDAE	438.000			
	PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	PRV
				CENTRARCHIDAE	6.011			
				CYPRINIDAE	32.001			
				GAMMARIDAE	99.000			
		STATE	5	SALMONIDAE	2.000	0.131 *	0.014	PRV
				CENTRARCHIDAE	6.011			
				CYPRINIDAE	32.001			
				GAMMARIDAE	107.004			
	SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	330.000	82.040 *	22.0000	ACR
				DAPHNIDAE	1002.474			
				CYPRINODONTIDAE	6400.070			
				SALMONIDAE	8470.723			
		STATE	9	HYALELLIDAE (TALITRIDAE)	330.000	81.070 *	21.0001	ACR
				DAPHNIDAE	3000.000			
				SALMONIDAE	8470.723			
				CYPRINIDAE	9002.430			
S	SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00003 *		
				COTTIDAE	0.004			
				CYPRINIDAE	0.000			
				CYPRINODONTIDAE	0.012			
		STATE	6	COTTIDAE	0.004	0.00041 *		
				CYPRINIDAE	0.011			
				SALMONIDAE	0.021			
				CENTRARCHIDAE	0.112			
	TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.007 *	0.0007	ACR
				PTERONARCIDAE	2.027			
				ICTALURIDAE	3.047			
				CENTRARCHIDAE	4.720			
		STATE	9	ICTALURIDAE	3.047	1.300 *	0.0020	ACR
				CENTRARCHIDAE	4.720			
				SALMONIDAE	6.070			
				CYPRINIDAE	8.003			

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

S – HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

SS – 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: OHIO

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
S	ZINC	NATIONAL	16	DAPHNIDAE	13.737	6.149	47.5969	SCV
				PHYSIDAE	41.569			
				SALMONIDAE	49.591			
				PHILODINIDAE	92.757			
		STATE	12	DAPHNIDAE	21.569	7.551	47.5969	SCV
				PHYSIDAE	41.569			
				SALMONIDAE	49.569			
				PHILODINIDAE	92.757			

STATE: OKLAHOMA

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
	ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.491	3.269 *		
				ASELLIDAE	8.569			
				EPHEMERELLIDAE	8.569			
				SALMONIDAE	10.569			
		STATE	8	SALMONIDAE	4.569	1.470 *		
				CENTRARCHIDAE	7.491			
				PERCICHTHYIDAE	10.569			
				ASELLIDAE	10.569			
	ARSENIC	NATIONAL	8	GAMMARIDAE	69.569	113.569 *		
				DAPHNIDAE	1704.569			
				SALMONIDAE	14569.569			
				ISOPLUTIDAE	10457.459			
		STATE	6	GAMMARIDAE	69.569	69.104 *		
				DAPHNIDAE	1045.159			
				SALMONIDAE	10569.569			
				ISOPLUTIDAE	10457.459			
35	CADMIUM	NATIONAL	10	SALMONIDAE	0.045	0.027		0.0004 ACR
				DAPHNIDAE	0.459			
				GAMMARIDAE	1.147			
				PHYSIDAE	2.569			
		STATE	14	SALMONIDAE	0.044	0.013		0.0002 ACR
				PERCICHTHYIDAE	0.169			
				DAPHNIDAE	0.594			
				GAMMARIDAE	1.147			
	CHLORDANE	NATIONAL	6	PALAEMONIDAE	0.265	1.574 *		0.0043 PRV
				PTERONARCIDAE	10.569			
				CYPRINIDAE	33.569			
				GAMMARIDAE	38.249			
		STATE	5	PALAEMONIDAE	0.265	1.265 *		0.0043 PRV
				CYPRINIDAE	33.569			
				SALMONIDAE	38.491			
				GAMMARIDAE	38.569			
	CHROMIUM	NATIONAL	10	GAMMARIDAE	67.569	12.104		0.2570 ACR
				DAPHNIDAE	6553.579			
				PHILOGENIDAE	6553.769			
				PHYSIDAE	34569.569			
		STATE	6	GAMMARIDAE	67.569	5.049 *		0.1669 ACR
				PHILOGENIDAE	6553.769			
				PHYSIDAE	34569.569			
				PERCICHTHYIDAE	39454.769			
5	COPPER	NATIONAL	20	DAPHNIDAE	0.265	6.104		0.45010 PCV
				CHIRONOMIDAE	0.769			
				PHYSIDAE	0.569			
				TUBIFICIDAE	1.245			
		STATE	17	DAPHNIDAE	0.269	6.127		4.62475 PCV
				CHIRONOMIDAE	0.769			
				PHYSIDAE	0.569			
				SALMONIDAE	1.662			
	CYANIDE	NATIONAL	10	SALMONIDAE	78.797	31.469 *		4.3472 ACR
				DAPHNIDAE	69.569			
				CENTRARCHIDAE	114.310			
				PERCIDAE	155.121			
		STATE	6	SALMONIDAE	67.569	10.497 *		2.5555 ACR
				DAPHNIDAE	69.569			
				CENTRARCHIDAE	114.310			
				GAMMARIDAE	167.569			
	DDT	NATIONAL	20	DAPHNIDAE	1.265	0.569		0.0010 PRV
				PERCIDAE	1.265			
				ISOPODAE	1.769			
				GAMMARIDAE	2.594			
		STATE	9	DAPHNIDAE	0.570	0.377 *		0.0010 PRV
				ASTACIDAE	2.469			
				GAMMARIDAE	3.569			
				PALAEMONIDAE	9.594			
	DIELDRIN	NATIONAL	12	POECILIDAE	4.569	1.269 *		0.0010 PRV
				ASELLIDAE	8.569			
				SALMONIDAE	8.469			
				EPHEMERELLIDAE	8.569			
		STATE	7	SALMONIDAE	2.469	0.591 *		0.0010 PRV
				CENTRARCHIDAE	10.011			
				PALAEMONIDAE	33.569			
				CYPRINIDAE	38.102			
	ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.594	0.265 *		0.1004 ACR
				CYPRINIDAE	1.279			
				PTERONARCIDAE	2.269			
				CHYDORIDAE	3.249			
		STATE	8	SALMONIDAE	0.594	0.103 *		0.0045 ACR
				CYPRINIDAE	1.279			
				CENTRARCHIDAE	3.011			
				GAMMARIDAE	5.269			

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

S — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

35 — 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: OKLAHOMA

	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	0.201 *	0.0023	FRV
				SALMONIDAE	0.488			
				PERLIDAE	0.480			
				PTERONARCIDAE	0.847			
		STATE	10	SALMONIDAE	0.694	0.288 *	0.0023	FRV
				CYPRINIDAE	0.732			
				POECILIIDAE	0.780			
				CENTRARCHIDAE	1.011			
	HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.888	0.251 *	0.0038	FRV
				PALAEMONIDAE	1.880			
				PERLIDAE	2.000			
				ASTACIDAE	7.880			
		STATE	7	PALAEMONIDAE	1.880	0.300 *	0.0038	FRV
				ASTACIDAE	7.880			
				SALMONIDAE	13.088			
				CENTRARCHIDAE	34.771			
86	LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.037 *	0.00003	PCV
				DAPHNIDAE	4.080			
				SALMONIDAE	50.082			
				CYPRINIDAE	350.782			
		STATE	5	GAMMARIDAE	1.161	0.080 *	0.00003	PCV
				SALMONIDAE	169.169			
				CYPRINIDAE	350.782			
				CENTRARCHIDAE	459.016			
	LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.2574	ACR
				SALMONIDAE	21.000			
				GAMMARIDAE	32.437			
				CENTRARCHIDAE	52.571			
		STATE	6	SALMONIDAE	32.001	13.496 *	1.0772	ACR
				GAMMARIDAE	45.000			
				CENTRARCHIDAE	52.571			
				ICTALURIDAE	53.000			
	MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.30	FRV
				GAMMARIDAE	10.000			
				ASTACIDAE	21.023			
				SALMONIDAE	244.200			
		STATE	5	GAMMARIDAE	10.000	0.347 *	0.30	FRV
				ASTACIDAE	20.000			
				SALMONIDAE	240.000			
				PHILODINIDAE	783.471			
86	NICKEL	NATIONAL	16	DAPHNIDAE	65.977	32.914 *	3.3001	ACR
				EPHEMERELLIDAE	200.000			
				CENTRARCHIDAE	345.472			
				PHILODINIDAE	491.217			
		STATE	11	DAPHNIDAE	70.400	31.010 *	3.3000	ACR
				PERCICHTHYIDAE	301.510			
				CENTRARCHIDAE	350.042			
				PHILODINIDAE	491.217			
	PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
				CENTRARCHIDAE	6.011			
				CYPRINIDAE	32.001			
				GAMMARIDAE	98.000			
		STATE	5	SALMONIDAE	2.000	0.144 *	0.014	FRV
				CENTRARCHIDAE	6.011			
				CYPRINIDAE	32.001			
				GAMMARIDAE	92.084			
	SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	82.040 *	22.0000	ACR
				DAPHNIDAE	1002.474			
				CYPRINODONTIDAE	6400.570			
				SALMONIDAE	6470.723			
		STATE	9	HYALELLIDAE (TALITRIDAE)	300.000	84.000 *	22.4220	ACR
				DAPHNIDAE	3000.000			
				SALMONIDAE	7040.000			
				CYPRINIDAE	9000.430			
$	SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00003 *		
				COTTIDAE	0.004			
				CYPRINIDAE	0.006			
				CYPRINODONTIDAE	0.012			
		STATE	6	CYPRINIDAE	0.011	0.00014 *		
				SALMONIDAE	0.021			
				CENTRARCHIDAE	0.112			
				CHIRONOMIDAE	4.165			
	TOXAPHENE	NATIONAL	12	PERLIDAE	1.200	0.037 *	0.0007	ACR
				PTERONARCIDAE	2.027			
				ICTALURIDAE	3.047			
				CENTRARCHIDAE	4.726			
		STATE	8	ICTALURIDAE	3.047	1.200 *	0.0166	ACR
				CENTRARCHIDAE	4.726			
				CYPRINIDAE	6.033			
				SALMONIDAE	9.160			

STATE: OKLAHOMA

	TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$	ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.148	47.0000	SCV
				PHYSIDAE	41.000			
				SALMONIDAE	48.001			
				PHILODINIDAE	92.757			
		STATE	12	DAPHNIDAE	21.223	0.300	47.0000	SCV
				SALMONIDAE	30.343			
				PHYSIDAE	41.000			
				PERCICHTHYIDAE	48.204			

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
- $ – HARDNESS EFFECT INTERCEPT VALUE
  APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
- 86 – 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: OREGON

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	3.333 *		
			ASELLIDAE	9.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.000			
	STATE	8	CENTRARCHIDAE	7.451	3.337 *		
			EPHEMERELLIDAE	9.000			
			PERCONTHYIDAE	10.000			
			SALMONIDAE	10.000			
ARSENIC	NATIONAL	8	GAMMARIDAE	570.000	113.333 *		
			DAPHNIDAE	1704.340			
			SALMONIDAE	14133.043			
			ICTALURIDAE	16457.430			
	STATE	4	DAPHNIDAE	1704.340	333.000 *		
			SALMONIDAE	14133.043			
			CENTRARCHIDAE	16454.000			
			CYPRINIDAE	33041.575			
** CADMIUM	NATIONAL	16	SALMONIDAE	0.040	0.007	0.0004	ACR
			DAPHNIDAE	0.430			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	13	SALMONIDAE	0.040	0.014	0.0002	ACR
			PERCONTHYIDAE	0.123			
			DAPHNIDAE	0.430			
			GAMMARIDAE	1.147			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.330	1.574 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	33.330			
			GAMMARIDAE	33.040			
	STATE	5	CYPRINIDAE	10.004	4.357 *	0.0043	FRV
			GAMMARIDAE	33.000			
			SALMONIDAE	43.730			
			CENTRARCHIDAE	94.711			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.104	0.3370	ACR
			DAPHNIDAE	0000.070			
			PHILOGENIDAE	0000.700			
			PHYSIDAE	34000.000			
	STATE	6	DAPHNIDAE	0000.070	710.704 *	10.0	FRV
			PHILOGENIDAE	0000.700			
			PERCONTHYIDAE	39484.700			
			SALMONIDAE	00004.140			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.333	0.104	0.00016	FCV
			OWRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.345			
	STATE	12	DAPHNIDAE	0.333	0.122	0.01447	FCV
			OWRONOMIDAE	0.700			
			TUBIFICIDAE	1.345			
			SALMONIDAE	1.401			
CYANIDE	NATIONAL	10	SALMONIDAE	78.707	31.400 *	4.3472	ACR
			DAPHNIDAE	00.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	120.121			
	STATE	5	SALMONIDAE	78.707	20.333 *	3.0141	ACR
			DAPHNIDAE	00.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	120.121			
DDT	NATIONAL	20	DAPHNIDAE	1.333	0.000	0.0010	FRV
			PERCIDAE	1.000			
			SECCIDAE	1.700			
			GAMMARIDAE	2.334			
	STATE	11	DAPHNIDAE	1.333	0.001 *	0.0010	FRV
			PERCIDAE	1.000			
			PTERONARCIDAE	1.000			
			GAMMARIDAE	3.000			
DIELDRIN	NATIONAL	12	FOSCILIDAE	4.000	1.000 *	0.0010	FRV
			ASELLIDAE	5.000			
			SALMONIDAE	5.492			
			EPHEMERELLIDAE	9.000			
	STATE	7	SALMONIDAE	5.492	1.370 *	0.0010	FRV
			EPHEMERELLIDAE	9.000			
			CENTRARCHIDAE	10.011			
			PERLIDAE	34.000			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.333 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	3.300			
			CATOSTOMIDAE	3.340			
	STATE	5	SALMONIDAE	0.004	0.000 *	0.0140	ACR
			CENTRARCHIDAE	3.011			
			GAMMARIDAE	9.000			
			COENAGRIONIDAE (AGRIONIDAE)	07.000			

STATE: OREGON

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
ENDRIN	NATIONAL	17	GASTEROSTEIDAE	0.449	0.331 *	0.0003	FRV
			SALMONIDAE	0.450			
			PERLIDAE	0.450			
			PTERONARCIDAE	0.047			
	STATE	10	PERLIDAE	0.330	0.144 *	0.0003	FRV
			GASTEROSTEIDAE	0.449			
			SALMONIDAE	0.450			
			PTERONARCIDAE	0.049			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.330	0.331 *	0.0003	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	6	PTERONARCIDAE	0.000	0.133 *	0.0003	FRV
			CENTRARCHIDAE	30.000			
			GAMMARIDAE	30.000			
			SALMONIDAE	30.450			
** LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.007 *	0.00030	FCV
			DAPHNIDAE	4.000			
			SALMONIDAE	00.000			
			CYPRINIDAE	330.700			
	STATE	6	DAPHNIDAE	4.000	0.210 *	0.00002	FCV
			SALMONIDAE	00.000			
			CENTRARCHIDAE	420.010			
			PHILOGENIDAE	000.040			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.210 *	0.0374	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	32.407			
			CENTRARCHIDAE	02.071			
	STATE	7	SALMONIDAE	21.000	7.730 *	0.0100	ACR
			CENTRARCHIDAE	42.100			
			GAMMARIDAE	43.000			
			PERCIDAE	00.000			
MERCURY	NATIONAL	9	DAPHNIDAE	0.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.000			
			SALMONIDAE	304.300			
	STATE	6	DAPHNIDAE	0.000	0.101 *	0.0074	ACR
			GAMMARIDAE	10.000			
			SALMONIDAE	304.300			
			PHILOGENIDAE	700.471			
** NICKEL	NATIONAL	10	DAPHNIDAE	00.077	32.014 *	3.3301	ACR
			EPHEMERELLIDAE	000.000			
			CENTRARCHIDAE	340.472			
			PHILOGENIDAE	401.217			
	STATE	9	DAPHNIDAE	00.077	21.700 *	2.3400	ACR
			PERCONTHYIDAE	301.010			
			PHILOGENIDAE	401.217			
			CHIRONOMIDAE	400.000			
PCBS	NATIONAL	6	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	0.011			
			CYPRINIDAE	33.001			
			GAMMARIDAE	00.000			
	STATE	2	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	2.300	**		
				0.000			
				0.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	00.040 *	32.0000	ACR
			DAPHNIDAE	1000.474			
			CYPRINODONTIDAE	0400.070			
			SALMONIDAE	0470.730			
	STATE	6	HYALELLIDAE (TALITRIDAE)	300.000	30.000 *	7.0041	ACR
			DAPHNIDAE	1000.474			
			SALMONIDAE	0470.730			
			PHYSIDAE	34000.000			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00000 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	6	DAPHNIDAE	0.002	0.00000 *		
			CYPRINIDAE	0.004			
			COTTIDAE	0.004			
			SALMONIDAE	0.021			
TOXAPHENE	NATIONAL	10	PERLIDAE	1.300	0.007 *	0.0007	ACR
			PTERONARCIDAE	2.007			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.730			
	STATE	8	CENTRARCHIDAE	2.040	0.000 *	0.0130	ACR
			PTERONARCIDAE	3.000			
			SALMONIDAE	5.701			
			CYPRINIDAE	7.210			

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

$ — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

** — 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: OREGON

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	10	DAPHNIDAE	13.737	0.148	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	48.881			
			PHILODINIDAE	92.757			
	STATE	10	DAPHNIDAE	13.737	4.744	47.0000	SCV
			SALMONIDAE	47.229			
			PERCICHTHYIDAE	48.284			
			PHILODINIDAE	92.757			

STATE: PENNSYLVANIA

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	3.388 *		
			ASELLIDAE	0.000			
			EPHEMERELLIDAE	0.000			
			SALMONIDAE	10.000			
	STATE	10	SALMONIDAE	4.000	1.585 *		
			CENTRARCHIDAE	7.451			
			EPHEMERELLIDAE	0.000			
			ANGUILLIDAE	10.000			
ARSENIC	NATIONAL	8	GAMMARIDAE	570.000	113.200 *		
			DAPHNIDAE	1704.340			
			SALMONIDAE	14128.043			
			ICTALURIDAE	19457.420			
	STATE	8	DAPHNIDAE	1040.139	171.400 *		
			SALMONIDAE	14128.043			
			ICTALURIDAE	19457.420			
			CENTRARCHIDAE	19484.000			
** CADMIUM	NATIONAL	16	SALMONIDAE	0.040	0.007 *	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	16	SALMONIDAE	0.004	0.010	0.0000	ACR
			DAPHNIDAE	0.004			
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.000			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.300	1.574 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	20.300			
			GAMMARIDAE	22.040			
	STATE	8	PALAEMONIDAE	0.300	1.000 *	0.0043	FRV
			CYPRINIDAE	20.230			
			SALMONIDAE	20.002			
			GAMMARIDAE	40.000			
CHROMIUM	NATIONAL	10	GAMMARIDAE	07.000	12.104	0.2370	ACR
			DAPHNIDAE	0000.070			
			PHILODINIDAE	0000.700			
			PHYSIDAE	24000.000			
	STATE	6	PHILODINIDAE	0000.700	1000.400 *	10.0	FRV
			PHYSIDAE	24000.000			
			PERCICHTHYIDAE	30404.700			
			CYPRINIDAE	07401.072			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.300	0.104	0.00010	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	10	DAPHNIDAE	0.300	0.145	0.00000	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *	4.3472	ACR
			DAPHNIDAE	00.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	125.121			
	STATE	7	SALMONIDAE	70.707	20.000 *	3.0077	ACR
			DAPHNIDAE	00.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	125.121			
DDT	NATIONAL	20	DAPHNIDAE	1.300	0.000	0.0010	FRV
			PERCIDAE	1.000			
			ISOCIDAE	1.700			
			GAMMARIDAE	2.234			
	STATE	12	DAPHNIDAE	0.070	0.402 *	0.0010	FRV
			PERCIDAE	1.000			
			GAMMARIDAE	1.004			
			ISOCIDAE	1.700			
DIELDRIN	NATIONAL	12	PORCELLIDAE	4.000	1.000 *	0.0010	FRV
			ASELLIDAE	0.000			
			SALMONIDAE	0.402			
			EPHEMERELLIDAE	0.000			
	STATE	7	SALMONIDAE	2.400	0.007 *	0.0010	FRV
			EPHEMERELLIDAE	0.000			
			CENTRARCHIDAE	10.011			
			PALAEMONIDAE	20.000			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	6	SALMONIDAE	0.004	0.145 *	0.0702	ACR
			CYPRINIDAE	1.270			
			CATOSTOMIDAE	3.340			
			CENTRARCHIDAE	3.011			

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 REQUIREMENT

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

$ — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

** — 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: PENNSYLVANIA

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	0.201 *	0.0023	FRV
			SALMONIDAE	0.499			
			PERLIDAE	0.493			
			PTERONARCIDAE	0.647			
	STATE	10	GASTEROSTEIDAE	0.440	0.169 *	0.0023	FRV
			SALMONIDAE	0.899			
			CENTRARCHIDAE	1.011			
			CYPRINIDAE	1.899			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.035	0.251 *	0.0038	FRV
			PALAEMONIDAE	1.899			
			PERLIDAE	2.899			
			ASTACIDAE	7.899			
	STATE	6	PALAEMONIDAE	1.899	0.269 *	0.0038	FRV
			SALMONIDAE	13.899			
			CENTRARCHIDAE	24.771			
			GAMMARIDAE	47.399			
§§ LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.057 *	0.00098	PCV
			DAPHNIDAE	4.899			
			SALMONIDAE	69.692			
			CYPRINIDAE	399.792			
	STATE	4	SALMONIDAE	69.692	14.899 *	0.00094	PCV
			CYPRINIDAE	399.792			
			CENTRARCHIDAE	499.916			
			PHILOGENIDAE	899.845			
LINDANE	NATIONAL	10	AGELLIDAE	10.899	3.216 *	0.3574	ACR
			SALMONIDAE	21.899			
			GAMMARIDAE	32.437			
			CENTRARCHIDAE	69.671			
	STATE	7	GAMMARIDAE	10.499	2.899 *	0.1679	ACR
			SALMONIDAE	14.169			
			CENTRARCHIDAE	62.671			
			ICTALURIDAE	99.899			
MERCURY	NATIONAL	9	DAPHNIDAE	5.899	0.470 *	0.39	FRV
			GAMMARIDAE	10.899			
			ASTACIDAE	31.899			
			SALMONIDAE	244.899			
	STATE	7	GAMMARIDAE	10.899	0.016 *	0.39	FRV
			ASTACIDAE	69.899			
			SALMONIDAE	249.899			
			PHILOGENIDAE	799.471			
§§ NICKEL	NATIONAL	10	DAPHNIDAE	69.977	32.914 *	3.3991	ACR
			SPHAERIELLIDAE	399.899			
			CENTRARCHIDAE	345.472			
			PHILOGENIDAE	491.217			
	STATE	13	DAPHNIDAE	79.499	33.899 *	3.4899	ACR
			SPHAERIELLIDAE	399.899			
			CENTRARCHIDAE	345.472			
			PHILOGENIDAE	491.217			
PCBS	NATIONAL	5	SALMONIDAE	2.899	0.137 *	0.014	FRV
			CENTRARCHIDAE	9.011			
			CYPRINIDAE	32.991			
			GAMMARIDAE	69.899			
	STATE	5	SALMONIDAE	2.899	0.131 *	0.014	FRV
			CENTRARCHIDAE	9.011			
			CYPRINIDAE	32.991			
			GAMMARIDAE	107.894			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	399.899	62.040 *	32.9899	ACR
			DAPHNIDAE	1692.474			
			CYPRINODONTIDAE	9499.979			
			SALMONIDAE	9479.723			
	STATE	7	HYALELLIDAE (TALITRIDAE)	399.899	62.091 *	16.7499	ACR
			DAPHNIDAE	3899.899			
			SALMONIDAE	9479.723			
			CYPRINIDAE	9899.499			
§ SILVER	NATIONAL	9	DAPHNIDAE	0.092	0.00099 *		
			COTTIDAE	0.094			
			CYPRINIDAE	0.099			
			CYPRINODONTIDAE	0.012			
	STATE	5	COTTIDAE	0.094	0.00099 *		
			CYPRINIDAE	0.011			
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.399	0.037 *	0.0037	ACR
			PTERONARCIDAE	2.027			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.736			
	STATE	9	ICTALURIDAE	3.547	1.339 *	0.0216	ACR
			CENTRARCHIDAE	4.736			
			SALMONIDAE	6.679			
			CYPRINIDAE	8.439			

STATE: PENNSYLVANIA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
§ ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.148	47.0000	SCV
			PHYSIDAE	41.999			
			SALMONIDAE	49.691			
			PHILOGENIDAE	92.757			
	STATE	13	DAPHNIDAE	21.235	0.466	47.0000	SCV
			PHYSIDAE	41.999			
			SALMONIDAE	49.999			
			PHILOGENIDAE	92.757			

FOOTNOTE

- * – UNITS IN MICROGRAMS PER LITER
- ** – FPV FINAL PLANT VALUE
  - FRV FINAL RESIDUE VALUE
  - ACR COMPUTED BY ACUTE TO CHRONIC RATIO METHOD
  - PCV 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 MAXIMUM CRITERIA
- §§ – 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: RHODE ISLAND

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	3.280 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	8.000			
			SALMONIDAE	10.000			
	STATE	9	SALMONIDAE	4.000	1.000 *		
			CENTRARCHIDAE	7.451			
			EPHEMERELLIDAE	8.000			
			AMBULLIDAE	10.000			
ARSENIC	NATIONAL	8	GAMMARIDAE	570.000	113.200 *		
			DAPHNIDAE	1704.245			
			SALMONIDAE	14128.843			
			ICTALURIDAE	16457.420			
	STATE	4	DAPHNIDAE	1045.139	141.000 *		
			SALMONIDAE	14128.843			
			CENTRARCHIDAE	16454.000			
			CYPRINIDAE	20104.303			
** CADMIUM	NATIONAL	16	SALMONIDAE	0.045	0.027	0.0004	ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	16	SALMONIDAE	0.034	0.010	0.0008	ACR
			DAPHNIDAE	0.004			
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.000			
CHLORDANE	NATIONAL	6	PALAEMONIDAE	0.355	1.574 *	0.0043	FRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	33.330			
			GAMMARIDAE	32.340			
	STATE	4	CYPRINIDAE	33.330	7.575 *	0.0043	FRV
			SALMONIDAE	39.000			
			GAMMARIDAE	49.000			
			CENTRARCHIDAE	54.711			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.164	0.3370	ACR
			DAPHNIDAE	6000.570			
			PHILODINIDAE	6000.760			
			PHYSIDAE	34000.000			
	STATE	6	PHILODINIDAE	6000.760	1002.400 *	10.0	FRV
			PHYSIDAE	34000.000			
			PERCICHTHYIDAE	35454.760			
			CYPRINIDAE	57401.572			
§ COPPER	NATIONAL	20	DAPHNIDAE	0.355	0.164	0.46016	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.345			
	STATE	16	DAPHNIDAE	0.200	0.139	7.43116	FCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.345			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *	4.3472	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.316			
			PERCIDAE	125.121			
	STATE	6	SALMONIDAE	70.707	20.000 *	3.0001	ACR
			DAPHNIDAE	80.000			
			CENTRARCHIDAE	114.316			
			PERCIDAE	125.121			
DDT	NATIONAL	20	DAPHNIDAE	1.303	0.000	0.0010	FRV
			PERCIDAE	1.005			
			ISOCIDAE	1.700			
			GAMMARIDAE	2.334			
	STATE	8	DAPHNIDAE	0.070	0.331 *	0.0010	FRV
			PERCIDAE	1.005			
			GAMMARIDAE	1.004			
			ASTACIDAE	3.000			
DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *	0.0019	FRV
			ASELLIDAE	5.000			
			SALMONIDAE	5.402			
			EPHEMERELLIDAE	6.000			
	STATE	6	SALMONIDAE	2.400	0.471 *	0.0019	FRV
			EPHEMERELLIDAE	6.000			
			CENTRARCHIDAE	14.400			
			CYPRINIDAE	30.102			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.200 *	0.1004	ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.240			
	STATE	6	SALMONIDAE	0.004	0.140 *	0.0102	ACR
			CYPRINIDAE	1.270			
			CATOSTOMIDAE	3.240			
			CENTRARCHIDAE	3.011			

STATE: RHODE ISLAND

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	0.201 *	0.0003	FRV
			SALMONIDAE	0.400			
			PERLIDAE	0.400			
			PTERONARCIDAE	0.047			
	STATE	9	GASTEROSTEIDAE	0.440	0.103 *	0.0003	FRV
			SALMONIDAE	0.000			
			CENTRARCHIDAE	1.011			
			CYPRINIDAE	1.000			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.000	0.201 *	0.0000	FRV
			PALAEMONIDAE	1.000			
			PERLIDAE	2.000			
			ASTACIDAE	7.000			
	STATE	5	SALMONIDAE	13.000	3.021 *	0.0000	FRV
			CENTRARCHIDAE	20.000			
			GAMMARIDAE	47.300			
			DAPHNIDAE	80.740			
** LEAD	NATIONAL	7	GAMMARIDAE	1.101	0.037 *	0.00000	PCV
			DAPHNIDAE	4.000			
			SALMONIDAE	80.002			
			CYPRINIDAE	300.702			
	STATE	4	SALMONIDAE	80.002	14.000 *	0.00000	PCV
			CYPRINIDAE	300.702			
			CENTRARCHIDAE	400.016			
			PHILODINIDAE	600.040			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.216 *	0.2074	ACR
			SALMONIDAE	21.000			
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	82.071			
	STATE	6	GAMMARIDAE	10.400	1.000 *	0.1400	ACR
			SALMONIDAE	14.100			
			CENTRARCHIDAE	42.100			
			PERCIDAE	60.000			
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.30	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.000			
			SALMONIDAE	344.300			
	STATE	5	GAMMARIDAE	10.000	0.000 *	0.30	FRV
			ASTACIDAE	00.000			
			SALMONIDAE	340.000			
			PHILODINIDAE	702.471			
** NICKEL	NATIONAL	16	DAPHNIDAE	65.077	32.014 *	3.3031	ACR
			EPHEMERELLIDAE	223.000			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	401.217			
	STATE	12	DAPHNIDAE	75.400	33.130 *	3.4102	ACR
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	435.000			
			CENTRARCHIDAE	444.717			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.011			
			CYPRINIDAE	32.001			
			GAMMARIDAE	00.000			
	STATE	5	SALMONIDAE	2.000	0.000 *	0.014	FRV
			CENTRARCHIDAE	2.300			
			CYPRINIDAE	32.001			
			GAMMARIDAE	107.004			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	300.000	02.040 *	22.0300	ACR
			DAPHNIDAE	1002.474			
			CYPRINODONTIDAE	8400.070			
			SALMONIDAE	8470.723			
	STATE	6	HYALELLIDAE (TALITRIDAE)	300.000	54.200 *	14.4747	ACR
			DAPHNIDAE	3000.000			
			SALMONIDAE	8470.723			
			CYPRINIDAE	0000.430			
§ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00003 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.000			
			CYPRINODONTIDAE	0.012			
	STATE	4	CYPRINIDAE	0.011	0.00000 *		
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
			PHILODINIDAE	0.517			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.037 *	0.0037	ACR
			PTERONARCIDAE	2.007			
			ICTALURIDAE	3.047			
			CENTRARCHIDAE	4.730			
	STATE	7	CENTRARCHIDAE	2.040	0.013 *	0.0140	ACR
			SALMONIDAE	0.070			
			CYPRINIDAE	7.420			
			PERCIDAE	12.000			

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

* — 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 MAXIMUM CRITERIA
** — HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM AND
30-DAY AVERAGE CRITERIA

TOXICITY DATA FOR FRESHWATER AQUATIC LIFE CRITERIA, BY STATE

STATE: RHODE ISLAND

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (•)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (•)	30-DAY (•)	AVERAGE (••)
$ ZINC	NATIONAL	16	DAPHNIDAE	13.737	0.148	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	48.001			
			PHILODINIDAE	92.757			
	STATE	13	DAPHNIDAE	21.323	0.481	47.0000	SCV
			PHYSIDAE	41.000			
			SALMONIDAE	91.045			
			PHILODINIDAE	92.757			

STATE: SOUTH CAROLINA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (•)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (•)	30-DAY (•)	AVERAGE (••)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.481	3.000 *		
			ASELLIDAE	0.000			
			EPHEMERELLIDAE	0.000			
			SALMONIDAE	10.000			
	STATE	8	SALMONIDAE	4.000	1.720 *		
			CENTRARCHIDAE	7.481			
			EPHEMERELLIDAE	0.000			
			CYPRINIDAE	11.314			
ARSENIC	NATIONAL	8	GAMMARIDAE	570.000	113.200 *		
			DAPHNIDAE	1794.245			
			SALMONIDAE	14128.043			
			ICTALURIDAE	19487.400			
	STATE	4	DAPHNIDAE	1045.139	132.243 *		
			SALMONIDAE	14128.043			
			CENTRARCHIDAE	19484.000			
			CYPRINIDAE	28941.570			
96 CADMIUM	NATIONAL	10	SALMONIDAE	0.040	0.007		0.0004 ACR
			DAPHNIDAE	0.400			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.000			
	STATE	10	SALMONIDAE	0.004	0.010 *		0.0002 ACR
			DAPHNIDAE	0.004			
			CYPRINODONTIDAE	1.000			
			PHYSIDAE	2.000			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	0.320	1.574 *		0.0043 PRV
			PTERONARCIDAE	10.000			
			CYPRINIDAE	20.000			
			GAMMARIDAE	22.040			
	STATE	3	CYPRINIDAE	10.004	1.574 *		0.0043 PRV
			SALMONIDAE	20.002	**		
			CENTRARCHIDAE	64.711			
				0.000			
CHROMIUM	NATIONAL	10	GAMMARIDAE	07.000	12.104		0.3070 ACR
			DAPHNIDAE	0000.070			
			PHILODINIDAE	0000.700			
			PHYSIDAE	54000.000			
	STATE	6	PHILODINIDAE	0000.700	1004.073 *	10.0	PRV
			PHYSIDAE	54000.000			
			PERICHOTHYIDAE	20404.700			
			SALMONIDAE	00004.140			
$ COPPER	NATIONAL	20	DAPHNIDAE	0.320	0.104		0.00010 PCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
	STATE	17	DAPHNIDAE	0.000	0.130 *		0.04143 PCV
			CHIRONOMIDAE	0.700			
			PHYSIDAE	0.000			
			TUBIFICIDAE	1.340			
CYANIDE	NATIONAL	10	SALMONIDAE	70.707	31.400 *		4.2472 ACR
			DAPHNIDAE	00.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	100.121			
	STATE	7	SALMONIDAE	70.707	20.000 *		3.0077 ACR
			DAPHNIDAE	00.000			
			CENTRARCHIDAE	114.310			
			PERCIDAE	100.121			
DDT	NATIONAL	20	DAPHNIDAE	1.000	0.000		0.0010 PRV
			PERCIDAE	1.000			
			SIDCIDAE	1.700			
			GAMMARIDAE	2.304			
	STATE	8	DAPHNIDAE	0.070	0.300 *		0.0010 PRV
			PERCIDAE	1.000			
			ASTACIDAE	3.000			
			CENTRARCHIDAE	3.070			
DIELDRIN	NATIONAL	12	POECILIDAE	4.000	1.000 *		0.0010 PRV
			ASELLIDAE	0.000			
			SALMONIDAE	0.400			
			EPHEMERELLIDAE	0.000			
	STATE	5	SALMONIDAE	2.400	0.300 *		0.0010 PRV
			EPHEMERELLIDAE	0.000			
			CENTRARCHIDAE	10.011			
			CYPRINIDAE	41.000			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.004	0.300 *		0.1004 ACR
			CYPRINIDAE	1.270			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.340			
	STATE	4	SALMONIDAE	0.004	0.010 *		0.0000 ACR
			CATOSTOMIDAE	3.340			
			CENTRARCHIDAE	3.011			
			COENAGRIONIDAE (AGRIONIDAE)	07.000			

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

- * — 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 MAXIMUM CRITERIA
- 96 — 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: SOUTH CAROLINA

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	0.201 *	0.0023	FRV
			SALMONIDAE	0.468			
			PERLIDAE	0.493			
			PTERONARCIDAE	0.647			
	STATE	8	SALMONIDAE	0.556	0.170 *	0.0023	FRV
			POECILIIDAE	0.750			
			CENTRARCHIDAE	1.011			
			COENAGRIONIDAE (AGRIONIDAE)	1.800			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.995	0.251 *	0.0038	FRV
			PALAEMONIDAE	1.800			
			PERLIDAE	2.800			
			ASTACIDAE	7.800			
	STATE	4	SALMONIDAE	13.058	0.857 *	0.0038	FRV
			CENTRARCHIDAE	24.771			
			DAPHNIDAE	50.748			
			CYPRINIDAE	319.999			
$$ LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.037 *	0.00003	FCV
			DAPHNIDAE	4.020			
			SALMONIDAE	80.062			
			CYPRINIDAE	358.792			
	STATE	4	SALMONIDAE	80.062	14.070 *	0.00003	FCV
			CENTRARCHIDAE	455.015			
			PHILODINIDAE	803.845			
			CYPRINIDAE	814.803			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.218 *	0.2574	ACR
			SALMONIDAE	21.988			
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	52.871			
	STATE	5	SALMONIDAE	37.669	10.825 *	0.8660	ACR
			CENTRARCHIDAE	52.871			
			PERCIDAE	68.000			
			CYPRINIDAE	112.694			
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.623			
			SALMONIDAE	244.259			
	STATE	4	ASTACIDAE	20.000	1.680 *	0.20	FRV
			SALMONIDAE	248.595			
			PHILODINIDAE	783.471			
			NAIDIDAE	999.998			
$$ NICKEL	NATIONAL	16	DAPHNIDAE	65.077	32.914 *	3.3931	ACR
			EPHEMERELLIDAE	233.565			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	401.217			
	STATE	11	DAPHNIDAE	78.456	31.123 *	3.2085	ACR
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	439.825			
			CENTRARCHIDAE	444.717			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.611			
			CYPRINIDAE	32.601			
			GAMMARIDAE	99.563			
	STATE	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.611	**		
			COENAGRIONIDAE (AGRIONIDAE)	282.842			
				0.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	339.999	82.648 *	22.0385	ACR
			DAPHNIDAE	1982.474			
			CYPRINODONTIDAE	6499.979			
			SALMONIDAE	8479.723			
	STATE	7	HYALELLIDAE (TALITRIDAE)	339.999	57.358 *	15.2955	ACR
			DAPHNIDAE	3889.989			
			SALMONIDAE	8479.723			
			POECILIIDAE	12599.945			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00053 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.008			
			CYPRINODONTIDAE	0.012			
	STATE	3	SALMONIDAE	0.021	0.00053 *		
			CENTRARCHIDAE	0.112	**		
			PHILODINIDAE	5.517			
				0.000			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.537 *	0.0087	ACR
			PTERONARCIDAE	2.627			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.725			
	STATE	6	CENTRARCHIDAE	4.725	1.700 *	0.0278	ACR
			CYPRINIDAE	8.129			
			SALMONIDAE	9.963			
			PERCIDAE	12.000			

STATE: SOUTH CAROLINA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	15	DAPHNIDAE	13.737	6.148	47.0000	SCV
			PHYSIDAE	41.988			
			SALMONIDAE	46.861			
			PHILODINIDAE	92.757			
	STATE	12	DAPHNIDAE	21.223	7.951 *	47.0000	SCV
			PHYSIDAE	41.988			
			SALMONIDAE	46.550			
			PHILODINIDAE	92.757			

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 4 RESIDENT FAMILIES—NATIONAL VALUE USED
- $ HARDNESS EFFECT INTERCEPT VALUE
  - APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
- $$ 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: SOUTH DAKOTA

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	3.389 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.803			
	STATE	8	SALMONIDAE	4.503	1.389 *		
			CENTRARCHIDAE	7.451			
			ANGUILLIDAE	16.000			
			CYPRINIDAE	16.382			
ARSENIC	NATIONAL	6	GAMMARIDAE	879.999	113.263 *		
			DAPHNIDAE	1794.245			
			SALMONIDAE	14128.643			
			ICTALURIDAE	16487.430			
	STATE	5	DAPHNIDAE	1794.245	383.801 *		
			SALMONIDAE	13339.985			
			ICTALURIDAE	16487.430			
			CENTRARCHIDAE	19484.938			
$$ CADMIUM	NATIONAL	18	SALMONIDAE	0.048	0.027	0.0004	ACR
			DAPHNIDAE	0.498			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.880			
	STATE	13	SALMONIDAE	0.044	0.016	0.0002	ACR
			DAPHNIDAE	0.498			
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.830			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	8.325	1.974 *	0.0043	FRV
			PTERONARCIDAE	15.000			
			CYPRINIDAE	23.238			
			GAMMARIDAE	32.249			
	STATE	5	CYPRINIDAE	23.238	6.084 *	0.0043	FRV
			SALMONIDAE	25.481			
			GAMMARIDAE	26.000			
			CENTRARCHIDAE	54.711			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.164	0.3378	ACR
			DAPHNIDAE	6389.976			
			PHILODINIDAE	6998.790			
			PHYSIDAE	24892.828			
	STATE	6	DAPHNIDAE	6389.976	781.036 *	10.0	FPV
			PHILODINIDAE	6998.790			
			PHYSIDAE	24892.828			
			CYPRINIDAE	57461.672			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.305	0.194	5.46618	FCV
			CHIRONOMIDAE	0.759			
			PHYSIDAE	0.995			
			TUBIFICIDAE	1.345			
	STATE	15	DAPHNIDAE	0.305	0.150	9.82408	FCV
			CHIRONOMIDAE	0.759			
			PHYSIDAE	0.995			
			SALMONIDAE	1.022			
CYANIDE	NATIONAL	10	SALMONIDAE	76.707	31.429 *	4.2472	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.318			
			PERCIDAE	125.121			
	STATE	6	SALMONIDAE	57.000	20.746 *	2.8035	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.318			
			PERCIDAE	125.121			
DDT	NATIONAL	20	DAPHNIDAE	1.323	0.660	0.0010	FRV
			PERCIDAE	1.595			
			ESOCIDAE	1.700			
			GAMMARIDAE	2.234			
	STATE	11	DAPHNIDAE	1.323	0.485 *	0.0010	FRV
			PERCIDAE	1.595			
			ESOCIDAE	1.700			
			GAMMARIDAE	3.000			
DIELDRIN	NATIONAL	12	POECILIIDAE	4.503	1.830 *	0.0019	FRV
			ASELLIDAE	5.000			
			SALMONIDAE	5.452			
			EPHEMERELLIDAE	8.000			
	STATE	6	SALMONIDAE	2.459	0.490 *	0.0019	FRV
			CENTRARCHIDAE	10.811			
			PERLIDAE	24.000			
			CYPRINIDAE	30.102			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.664	0.208 *	0.1084	ACR
			CYPRINIDAE	1.279			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.240			
	STATE	7	SALMONIDAE	0.664	0.161 *	0.0823	ACR
			CYPRINIDAE	1.279			
			CATOSTOMIDAE	3.240			
			CENTRARCHIDAE	3.811			

STATE: SOUTH DAKOTA

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	0.201 *	0.0023	FRV
			SALMONIDAE	0.488			
			PERLIDAE	0.493			
			PTERONARCIDAE	0.647			
	STATE	7	PERLIDAE	0.493	0.191 *	0.0023	FRV
			SALMONIDAE	0.684			
			CYPRINIDAE	0.732			
			CENTRARCHIDAE	1.011			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.986	0.291 *	0.0038	FRV
			PALAEMONIDAE	1.800			
			PERLIDAE	2.800			
			ASTACIDAE	7.800			
	STATE	8	PERLIDAE	2.800	0.805 *	0.0038	FRV
			SALMONIDAE	13.058			
			CENTRARCHIDAE	26.000			
			GAMMARIDAE	29.000			
$$ LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.037 *	0.00003	FCV
			DAPHNIDAE	4.020			
			SALMONIDAE	80.082			
			CYPRINIDAE	366.792			
	STATE	5	DAPHNIDAE	4.020	0.325 *	0.00003	FCV
			SALMONIDAE	158.156			
			CYPRINIDAE	366.792			
			CENTRARCHIDAE	465.015			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.218 *	0.2574	ACR
			SALMONIDAE	21.988			
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	52.871			
	STATE	7	SALMONIDAE	8.004	2.320 *	0.1856	ACR
			CENTRARCHIDAE	42.198			
			GAMMARIDAE	46.000			
			ICTALURIDAE	53.086			
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.623			
			SALMONIDAE	244.259			
	STATE	5	DAPHNIDAE	5.000	0.101 *	0.0671	ACR
			GAMMARIDAE	10.000			
			SALMONIDAE	248.585			
			PHILODINIDAE	783.471			
$$ NICKEL	NATIONAL	18	DAPHNIDAE	85.077	32.914 *	3.3831	ACR
			EPHEMERELLIDAE	233.555			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	401.217			
	STATE	11	DAPHNIDAE	85.077	25.188 *	2.5986	ACR
			CENTRARCHIDAE	325.842			
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	439.825			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.811			
			CYPRINIDAE	32.601			
			GAMMARIDAE	99.563			
	STATE	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	2.300	**		
			CYPRINIDAE	32.601			
				0.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	339.999	82.848 *	22.0385	ACR
			DAPHNIDAE	1982.474			
			CYPRINODONTIDAE	6499.879			
			SALMONIDAE	6478.723			
	STATE	7	HYALELLIDAE (TALITRIDAE)	339.999	54.887 *	14.6384	ACR
			DAPHNIDAE	1982.474			
			SALMONIDAE	7049.808			
			CYPRINIDAE	9002.438			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00053 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.006			
			CYPRINODONTIDAE	0.012			
	STATE	5	DAPHNIDAE	0.002	0.00015 *		
			CYPRINIDAE	0.011			
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.537 *	0.0087	ACR
			PTERONARCIDAE	2.827			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.725			
	STATE	9	PERLIDAE	1.300	0.484 *	0.0075	ACR
			CENTRARCHIDAE	2.848			
			ICTALURIDAE	3.547			
			SALMONIDAE	5.251			

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
- $ HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
- $$ 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: SOUTH DAKOTA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	15	DAPHNIDAE	13.737	6.148	47.0000	SCV
			PHYSIDAE	41.986			
			SALMONIDAE	48.861			
			PHILODINIDAE	92.757			
	STATE	12	DAPHNIDAE	13.737	4.399	47.0000	SCV
			SALMONIDAE	26.243			
			PHYSIDAE	41.986			
			PHILODINIDAE	92.757			

STATE: TENNESSEE

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	3.388 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.803			
	STATE	7	SALMONIDAE	4.503	1.402 *		
			CENTRARCHIDAE	7.451			
			PERCICHTHYIDAE	10.000			
			ANGUILLIDAE	16.000			
ARSENIC	NATIONAL	8	GAMMARIDAE	878.989	113.283 *		
			DAPHNIDAE	1794.245			
			SALMONIDAE	14128.843			
			ICTALURIDAE	16487.430			
	STATE	6	GAMMARIDAE	878.989	58.104 *		
			DAPHNIDAE	1046.139			
			SALMONIDAE	13339.986			
			ICTALURIDAE	16487.430			
$$ CADMIUM	NATIONAL	18	SALMONIDAE	0.048	0.027	0.0004	ACR
			DAPHNIDAE	0.488			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.880			
	STATE	14	SALMONIDAE	0.044	0.013	0.0002	ACR
			PERCICHTHYIDAE	0.163			
			DAPHNIDAE	0.864			
			GAMMARIDAE	1.147			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	6.325	1.974 *	0.0043	FRV
			PTERONARCIDAE	15.000			
			CYPRINIDAE	23.238			
			GAMMARIDAE	32.249			
	STATE	4	PALAEMONIDAE	6.325	1.232 *	0.0043	FRV
			CYPRINIDAE	23.238			
			SALMONIDAE	25.481			
			CENTRARCHIDAE	54.711			
CHROMIUM	NATIONAL	10	GAMMARIDAE	87.000	12.184	0.3378	ACR
			DAPHNIDAE	6389.976			
			PHILODINIDAE	6988.790			
			PHYSIDAE	24882.828			
	STATE	7	GAMMARIDAE	87.000	5.387 *	0.1498	ACR
			PHILODINIDAE	6988.790			
			PHYSIDAE	24882.828			
			PERCICHTHYIDAE	30454.750			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.305	0.194	5.46818	FCV
			CHIRONOMIDAE	0.759			
			PHYSIDAE	0.995			
			TUBIFICIDAE	1.345			
	STATE	17	DAPHNIDAE	0.256	0.137	4.79332	FCV
			CHIRONOMIDAE	0.759			
			PHYSIDAE	0.995			
			SALMONIDAE	1.022			
CYANIDE	NATIONAL	10	SALMONIDAE	76.707	31.429 *	4.2472	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.316			
			PERCIDAE	125.121			
	STATE	7	SALMONIDAE	57.000	18.631 *	2.5178	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.316			
			GAMMARIDAE	167.000			
DDT	NATIONAL	20	DAPHNIDAE	1.323	0.650	0.0010	FRV
			PERCIDAE	1.595			
			ESOCIDAE	1.700			
			GAMMARIDAE	2.234			
	STATE	9	DAPHNIDAE	0.976	0.364 *	0.0010	FRV
			ASTACIDAE	3.000			
			PALAEMONIDAE	3.234			
			CENTRARCHIDAE	4.102			
DIELDRIN	NATIONAL	12	POECILIIDAE	4.503	1.830 *	0.0019	FRV
			ASELLIDAE	5.000			
			SALMONIDAE	5.452			
			EPHEMERELLIDAE	8.000			
	STATE	5	SALMONIDAE	2.459	0.452 *	0.0019	FRV
			CENTRARCHIDAE	10.811			
			PALAEMONIDAE	20.000			
			CYPRINIDAE	30.102			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.864	0.208 *	0.1064	ACR
			CYPRINIDAE	1.279			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.240			
	STATE	5	SALMONIDAE	0.864	0.137 *	0.0701	ACR
			CYPRINIDAE	1.279			
			CATOSTOMIDAE	3.240			
			CENTRARCHIDAE	3.811			

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
- $ HARDNESS EFFECT INTERCEPT VALUE
  - APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
- $$ 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: TENNESSEE

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	0.201 *	0.0023	FRV
			SALMONIDAE	0.488			
			PERLIDAE	0.483			
			PTERONARCIDAE	0.647			
	STATE	9	SALMONIDAE	0.684	0.284 *	0.0023	FRV
			CYPRINIDAE	0.732			
			POECILIDAE	0.750			
			CENTRARCHIDAE	1.011			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.985	0.251 *	0.0038	FRV
			PALAEMONIDAE	1.800			
			PERLIDAE	2.800			
			ASTACIDAE	7.800			
	STATE	5	PALAEMONIDAE	1.800	0.243 *	0.0038	FRV
			SALMONIDAE	13.058			
			CENTRARCHIDAE	24.771			
			DAPHNIDAE	50.748			
$$ LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.037 *	0.00003	FCV
			DAPHNIDAE	4.020			
			SALMONIDAE	60.062			
			CYPRINIDAE	356.792			
	STATE	5	GAMMARIDAE	1.161	0.058 *	0.00004	FCV
			SALMONIDAE	158.158			
			CYPRINIDAE	356.792			
			CENTRARCHIDAE	466.015			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.218 *	0.2574	ACR
			SALMONIDAE	21.988			
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	52.871			
	STATE	5	SALMONIDAE	8.004	1.807 *	0.1286	ACR
			CENTRARCHIDAE	52.871			
			ICTALURIDAE	53.088			
			CYPRINIDAE	94.805			
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.623			
			SALMONIDAE	244.259			
	STATE	4	GAMMARIDAE	10.000	0.639 *	0.20	FRV
			SALMONIDAE	248.585			
			PHILODINIDAE	783.471			
			NAIDIDAE	989.988			
$$ NICKEL	NATIONAL	18	DAPHNIDAE	65.077	32.914 *	3.3831	ACR
			EPHEMERELLIDAE	233.566			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	401.217			
	STATE	11	DAPHNIDAE	78.456	31.618 *	3.2588	ACR
			PERCICHTHYIDAE	301.510			
			CENTRARCHIDAE	325.842			
			PHILODINIDAE	401.217			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	8.811			
			CYPRINIDAE	32.801			
			GAMMARIDAE	99.563			
	STATE	5	SALMONIDAE	2.000	0.144 *	0.014	FRV
			CENTRARCHIDAE	8.811			
			CYPRINIDAE	32.801			
			GAMMARIDAE	92.054			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	339.999	82.648 *	22.0385	ACR
			DAPHNIDAE	1982.474			
			CYPRINODONTIDAE	6499.979			
			SALMONIDAE	8479.723			
	STATE	8	HYALELLIDAE (TALITRIDAE)	339.999	74.102 *	19.7804	ACR
			DAPHNIDAE	3888.889			
			SALMONIDAE	7049.608			
			CYPRINIDAE	9002.438			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00053 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.008			
			CYPRINODONTIDAE	0.012			
	STATE	6	COTTIDAE	0.004	0.00041 *		
			CYPRINIDAE	0.011			
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.537 *	0.0087	ACR
			PTERONARCIDAE	2.627			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.725			
	STATE	8	ICTALURIDAE	3.547	1.304 *	0.0212	ACR
			CENTRARCHIDAE	4.725			
			SALMONIDAE	5.251			
			CYPRINIDAE	8.033			

STATE: TENNESSEE

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	15	DAPHNIDAE	13.737	8.146	47.0000	SCV
			PHYSIDAE	41.988			
			SALMONIDAE	48.861			
			PHILODINIDAE	92.757			
	STATE	12	DAPHNIDAE	21.223	8.386	47.0000	SCV
			SALMONIDAE	26.243			
			PHYSIDAE	41.988			
			PERCICHTHYIDAE	49.264			

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 4 RESIDENT FAMILIES - NATIONAL VALUE USED
- $ HARDNESS EFFECT INTERCEPT VALUE
  - APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
- $$ 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: 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	3.388 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.803			
	STATE	7	CENTRARCHIDAE	7.451	2.646 *		
			PERCICHTHYIDAE	10.000			
			ANGUILLIDAE	16.000			
			CYPRINIDAE	16.392			
ARSENIC	NATIONAL	8	GAMMARIDAE	878.999	113.283 *		
			DAPHNIDAE	1794.245			
			SALMONIDAE	14128.643			
			ICTALURIDAE	16487.430			
	STATE	4	DAPHNIDAE	1046.139	140.493 *		
			ICTALURIDAE	16487.430			
			CENTRARCHIDAE	19484.938			
			CYPRINIDAE	20194.383			
$$ CADMIUM	NATIONAL	18	SALMONIDAE	0.048	0.027	0.0004	ACR
			DAPHNIDAE	0.498			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.880			
	STATE	12	PERCICHTHYIDAE	0.183	0.041 *	0.0008	ACR
			DAPHNIDAE	0.864			
			PHYSIDAE	2.880			
			PHILODINIDAE	6.987			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	6.325	1.974 *	0.0043	FRV
			PTERONARCIDAE	15.000			
			CYPRINIDAE	23.238			
			GAMMARIDAE	32.249			
	STATE	4	PALAEMONIDAE	6.325	0.558 *	0.0043	FRV
			CYPRINIDAE	23.238			
			CENTRARCHIDAE	54.711			
			POECILIIDAE	190.000			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.184	0.3378	ACR
			DAPHNIDAE	6399.976			
			PHILODINIDAE	8888.790			
			PHYSIDAE	24892.828			
	STATE	7	PHILODINIDAE	8888.790	2271.128 *	10.0	FPV
			PHYSIDAE	24892.828			
			POECILIIDAE	29999.867			
			PERCICHTHYIDAE	30454.750			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.305	0.194	5.46818	FCV
			CHIRONOMIDAE	0.759			
			PHYSIDAE	0.995			
			TUBIFICIDAE	1.345			
	STATE	15	DAPHNIDAE	0.256	0.121 *	8.56591	FCV
			CHIRONOMIDAE	0.759			
			PHYSIDAE	0.995			
			TUBIFICIDAE	1.345			
CYANIDE	NATIONAL	10	SALMONIDAE	78.707	31.429 *	4.2472	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.316			
			PERCIDAE	125.121			
	STATE	7	DAPHNIDAE	83.000	28.174 *	3.8072	ACR
			CENTRARCHIDAE	114.316			
			PERCIDAE	125.121			
			CYPRINIDAE	207.958			
DDT	NATIONAL	20	DAPHNIDAE	1.323	0.850	0.0010	FRV
			PERCIDAE	1.595			
			ESOCIDAE	1.700			
			GAMMARIDAE	2.234			
	STATE	10	DAPHNIDAE	0.976	0.357 *	0.0010	FRV
			PERCIDAE	1.595			
			ASTACIDAE	2.409			
			PALAEMONIDAE	3.234			
DIELDRIN	NATIONAL	12	POECILIIDAE	4.503	1.830 *	0.0019	FRV
			ASELLIDAE	5.000			
			SALMONIDAE	5.452			
			EPHEMERELLIDAE	8.000			
	STATE	6	POECILIIDAE	4.503	1.086 *	0.0019	FRV
			CENTRARCHIDAE	10.811			
			PALAEMONIDAE	20.000			
			CYPRINIDAE	30.102			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.664	0.208 *	0.1084	ACR
			CYPRINIDAE	1.279			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.240			
	STATE	4	CYPRINIDAE	1.279	0.039 *	0.0198	ACR
			POECILIIDAE	3.700			
			CENTRARCHIDAE	3.811			
			COENAGRIONIDAE (AGRIONIDAE)	87.650			

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	0.201 *	0.0023	FRV
			SALMONIDAE	0.468			
			PERLIDAE	0.493			
			PTERONARCIDAE	0.647			
	STATE	8	POECILIIDAE	0.949	0.418 *	0.0023	FRV
			CENTRARCHIDAE	1.011			
			CYPRINIDAE	1.088			
			PALAEMONIDAE	1.286			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.995	0.251 *	0.0038	FRV
			PALAEMONIDAE	1.800			
			PERLIDAE	2.800			
			ASTACIDAE	7.800			
	STATE	6	PALAEMONIDAE	1.800	0.234 *	0.0038	FRV
			ASTACIDAE	7.800			
			CENTRARCHIDAE	24.771			
			DAPHNIDAE	50.748			
$$ LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.037 *	0.00003	FCV
			DAPHNIDAE	4.020			
			SALMONIDAE	80.082			
			CYPRINIDAE	358.792			
	STATE	4	CYPRINIDAE	358.792	113.577 *	3.2466	ACR
			CENTRARCHIDAE	455.015			
			POECILIIDAE	532.858			
			PHILODINIDAE	803.845			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.218 *	0.2574	ACR
			SALMONIDAE	21.988			
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	52.871			
	STATE	6	CENTRARCHIDAE	52.871	17.797 *	1.4237	ACR
			ICTALURIDAE	53.088			
			PERCIDAE	88.000			
			CYPRINIDAE	94.805			
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.623			
			SALMONIDAE	244.259			
	STATE	3	ASTACIDAE	20.000	0.470 *	0.20	FRV
			PHILODINIDAE	783.471	**		
			NAIDIDAE	999.999			
				0.000			
$$ NICKEL	NATIONAL	16	DAPHNIDAE	65.077	32.914 *	3.3931	ACR
			EPHEMERELLIDAE	233.565			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	401.217			
	STATE	11	DAPHNIDAE	78.456	30.838 *	3.1791	ACR
			PERCICHTHYIDAE	301.510			
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	439.825			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.611			
			CYPRINIDAE	32.801			
			GAMMARIDAE	99.563			
	STATE	3	CENTRARCHIDAE	6.611	0.137 *	0.014	FRV
			CYPRINIDAE	32.801	**		
			COENAGRIONIDAE (AGRIONIDAE)	262.842			
				0.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	339.999	82.648 *	22.0385	ACR
			DAPHNIDAE	1992.474			
			CYPRINODONTIDAE	6499.979			
			SALMONIDAE	8479.723			
	STATE	8	HYALELLIDAE (TALITRIDAE)	339.999	65.749 *	17.5329	ACR
			DAPHNIDAE	3889.999			
			CYPRINIDAE	9002.438			
			POECILIIDAE	12599.945			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00053 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.008			
			CYPRINODONTIDAE	0.012			
	STATE	4	CYPRINIDAE	0.011	0.00015 *		
			CENTRARCHIDAE	0.112			
			CHIRONOMIDAE	4.108			
			PHILODINIDAE	5.517			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.537 *	0.0087	ACR
			PTERONARCIDAE	2.627			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.725			
	STATE	8	ICTALURIDAE	3.547	1.059 *	0.0172	ACR
			CENTRARCHIDAE	4.725			
			CYPRINIDAE	8.433			
			PERCIDAE	12.000			

+ 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
- NCV 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 MAXIMUM CRITERIA
$$ 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: TEXAS

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (*)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (*)	30-DAY (*)	AVERAGE (**)
$ ZINC	NATIONAL	15	DAPHNIDAE	13 737	6 146 •	47 0000	SCV
			PHYSIDAE	41 886			
			SALMONIDAE	46 881			
			PHILODINIDAE	92 757			
	STATE	11	DAPHNIDAE	21 223	7 684 •	47 0000	SCV
			PHYSIDAE	41 886			
			PERCICHTHYIDAE	49 264			
			PHILODINIDAE	92 757			

STATE: UTAH

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	3 388 •		
			ABELLIDAE	8 000			
			EPHEMERELLIDAE	9 000			
			SALMONIDAE	10 803			
	STATE	9	SALMONIDAE	4 503	1 874 •		
			CENTRARCHIDAE	7 451			
			EPHEMERELLIDAE	9 000			
			PERCICHTHYIDAE	10 000			
ARSENIC	NATIONAL	8	GAMMARIDAE	878 889	113 283 •		
			DAPHNIDAE	1794 246			
			SALMONIDAE	14128 843			
			ICTALURIDAE	16487 430			
	STATE	6	DAPHNIDAE	1794 246	407 358 •		
			SALMONIDAE	14128 843			
			ICTALURIDAE	16487 430			
			CENTRARCHIDAE	19484 936			
$$ CADMIUM	NATIONAL	18	SALMONIDAE	0 048	0 027	0 0004	ACR
			DAPHNIDAE	0 488			
			GAMMARIDAE	1 147			
			PHYSIDAE	2 880			
	STATE	12	SALMONIDAE	0 034	0 009	0 0001	ACR
			PERCICHTHYIDAE	0 163			
			DAPHNIDAE	0 488			
			GAMMARIDAE	1 147			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	6 326	1 874 •	0 0043	FRV
			PTERONARCIDAE	15 000			
			CYPRINIDAE	23 238			
			GAMMARIDAE	32 249			
	STATE	6	PTERONARCIDAE	15 000	5 588 •	0 0043	FRV
			CYPRINIDAE	23 238			
			GAMMARIDAE	28 000			
			SALMONIDAE	33 882			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67 000	12 164	0 3378	ACR
			DAPHNIDAE	6389 976			
			PHILODINIDAE	6888 780			
			PHYSIDAE	24882 828			
	STATE	6	DAPHNIDAE	6389 976	784 448 •	10 0	FPV
			PHILODINIDAE	6888 780			
			PERCICHTHYIDAE	30464 790			
			CYPRINIDAE	57481 672			
$ COPPER	NATIONAL	23	DAPHNIDAE	0 306	0 194	5 48818	FCV
			CHIRONOMIDAE	0 759			
			PHYSIDAE	0 888			
			TUBIFICIDAE	1 346			
	STATE	12	DAPHNIDAE	0 306	0 121	2 88135	FCV
			CHIRONOMIDAE	0 759			
			TUBIFICIDAE	1 346			
			PLANORBIDAE	1 424			
CYANIDE	NATIONAL	10	SALMONIDAE	76 707	31 429 •	4 2472	ACR
			DAPHNIDAE	83 000			
			CENTRARCHIDAE	114 316			
			PERCIDAE	125 121			
	STATE	5	SALMONIDAE	76 707	28 225 •	3 8141	ACR
			DAPHNIDAE	83 000			
			CENTRARCHIDAE	114 316			
			PERCIDAE	125 121			
DDT	NATIONAL	20	DAPHNIDAE	1 323	0 650	0 0010	FRV
			PERCIDAE	1 586			
			ESOCIDAE	1 700			
			GAMMARIDAE	2 234			
	STATE	12	DAPHNIDAE	1 323	0 503 •	0 0010	FRV
			PERCIDAE	1 586			
			GAMMARIDAE	3 000			
			CENTRARCHIDAE	3 088			
DIELDRIN	NATIONAL	12	POECILIDAE	4 503	1 830 •	0 0019	FRV
			ABELLIDAE	5 000			
			SALMONIDAE	5 452			
			EPHEMERELLIDAE	8 000			
	STATE	8	SALMONIDAE	2 488	0 632 •	0 0019	FRV
			EPHEMERELLIDAE	8 000			
			CENTRARCHIDAE	10 811			
			PERLIDAE	24 000			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0 884	0 208 •	0 1084	ACR
			CYPRINIDAE	1 278			
			PTERONARCIDAE	2 300			
			CATOSTOMIDAE	3 240			
	STATE	8	SALMONIDAE	0 884	0 198 •	0 1003	ACR
			CYPRINIDAE	1 278			
			PTERONARCIDAE	2 300			
			CATOSTOMIDAE	3 240			

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
- $ HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 3 7 TO DETERMINE MAXIMUM CRITERIA
- $$ 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: UTAH

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	0.201 *	0.0023	FRV
			SALMONIDAE	0.488			
			PERLIDAE	0.493			
			PTERONARCIDAE	0.647			
	STATE	9	SALMONIDAE	0.357	0.125 *	0.0023	FRV
			PERLIDAE	0.493			
			PTERONARCIDAE	0.647			
			CENTRARCHIDAE	1.011			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.985	0.251 *	0.0038	FRV
			PALAEMONIDAE	1.800			
			PERLIDAE	2.800			
			ASTACIDAE	7.800			
	STATE	7	PTERONARCIDAE	0.985	0.125 *	0.0038	FRV
			PERLIDAE	2.800			
			SALMONIDAE	13.058			
			CENTRARCHIDAE	26.000			
$$ LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.037 *	0.00003	FCV
			DAPHNIDAE	4.020			
			SALMONIDAE	80.082			
			CYPRINIDAE	358.792			
	STATE	5	DAPHNIDAE	4.020	0.287 *	0.00003	FCV
			SALMONIDAE	80.082			
			CYPRINIDAE	358.792			
			CENTRARCHIDAE	455.015			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.218 *	0.2574	ACR
			SALMONIDAE	21.988			
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	52.871			
	STATE	8	SALMONIDAE	14.158	5.119 *	0.4095	ACR
			CENTRARCHIDAE	42.198			
			GAMMARIDAE	46.000			
			ICTALURIDAE	53.086			
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.623			
			SALMONIDAE	244.259			
	STATE	5	DAPHNIDAE	5.000	0.101 *	0.0671	ACR
			GAMMARIDAE	10.000			
			SALMONIDAE	248.585			
			PHILODINIDAE	783.471			
$$ NICKEL	NATIONAL	16	DAPHNIDAE	65.077	32.914 *	3.3931	ACR
			EPHEMERELLIDAE	233.566			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	401.217			
	STATE	9	DAPHNIDAE	65.077	21.753 *	2.2425	ACR
			PERCICHTHYIDAE	301.510			
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	439.825			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.611			
			CYPRINIDAE	32.801			
			GAMMARIDAE	99.563			
	STATE	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	2.300	**		
			CYPRINIDAE	32.801			
				0.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	339.999	82.648 *	22.0385	ACR
			DAPHNIDAE	1992.474			
			CYPRINODONTIDAE	6499.979			
			SALMONIDAE	8479.723			
	STATE	7	HYALELLIDAE (TALITRIDAE)	339.999	52.431 *	13.9816	ACR
			DAPHNIDAE	1992.474			
			SALMONIDAE	8479.723			
			CYPRINIDAE	9002.438			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00053 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.008			
			CYPRINODONTIDAE	0.012			
	STATE	6	DAPHNIDAE	0.002	0.00030 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.008			
			SALMONIDAE	0.021			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.537 *	0.0087	ACR
			PTERONARCIDAE	2.627			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.725			
	STATE	10	PERLIDAE	1.300	0.543 *	0.0088	ACR
			PTERONARCIDAE	2.627			
			CENTRARCHIDAE	2.848			
			ICTALURIDAE	3.547			

STATE: UTAH

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	15	DAPHNIDAE	13.737	6.148	47.0000	SCV
			PHYSIDAE	41.988			
			SALMONIDAE	48.861			
			PHILODINIDAE	92.757			
	STATE	10	DAPHNIDAE	13.737	4.780	47.0000	SCV
			PERCICHTHYIDAE	48.264			
			SALMONIDAE	49.969			
			PHILODINIDAE	92.757			

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 4 RESIDENT FAMILIES – NATIONAL VALUE USED
- $ – HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
- $$ 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: VERMONT

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	3.388	*		
			ASELLIDAE	8.000				
			EPHEMERELLIDAE	9.000				
			SALMONIDAE	10.803				
	STATE	9	SALMONIDAE	4.503	1.770	*		
			CENTRARCHIDAE	7.451				
			EPHEMERELLIDAE	9.000				
			CYPRINIDAE	11.732				
ARSENIC	NATIONAL	6	GAMMARIDAE	878.999	113.263	*		
			DAPHNIDAE	1784.245				
			SALMONIDAE	14128.843				
			ICTALURIDAE	16487.430				
	STATE	4	DAPHNIDAE	1046.139	146.092	*		
			SALMONIDAE	14128.843				
			CYPRINIDAE	15869.938				
			CENTRARCHIDAE	19484.938				
$$ CADMIUM	NATIONAL	18	SALMONIDAE	0.048	0.027		0.0004	ACR
			DAPHNIDAE	0.498				
			GAMMARIDAE	1.147				
			PHYSIDAE	2.880				
	STATE	15	SALMONIDAE	0.034	0.017		0.0002	ACR
			DAPHNIDAE	0.884				
			GAMMARIDAE	1.147				
			CYPRINODONTIDAE	1.630				
CHLORDANE	NATIONAL	8	PALAEMONIDAE	6.325	1.974	*	0.0043	FRV
			PTERONARCIDAE	15.000				
			CYPRINIDAE	23.238				
			GAMMARIDAE	32.249				
	STATE	4	CYPRINIDAE	12.371	3.272	*	0.0043	FRV
			GAMMARIDAE	32.249				
			SALMONIDAE	33.882				
			CENTRARCHIDAE	54.711				
CHROMIUM	NATIONAL	10	GAMMARIDAE	87.000	12.164		0.3378	ACR
			DAPHNIDAE	6389.979				
			PHILODINIDAE	6888.780				
			PHYSIDAE	24882.828				
	STATE	5	PHILODINIDAE	6888.780	1448.932	*	10.0	FPV
			PHYSIDAE	24882.828				
			CYPRINIDAE	40837.608				
			SALMONIDAE	63804.148				
$ COPPER	NATIONAL	23	DAPHNIDAE	0.305	0.194		5.48618	FCV
			CHIRONOMIDAE	0.758				
			PHYSIDAE	0.995				
			TUBIFICIDAE	1.345				
	STATE	18	DAPHNIDAE	0.256	0.138		7.63485	FCV
			CHIRONOMIDAE	0.758				
			PHYSIDAE	0.995				
			TUBIFICIDAE	1.345				
CYANIDE	NATIONAL	10	SALMONIDAE	76.707	31.429	*	4.2472	ACR
			DAPHNIDAE	83.000				
			CENTRARCHIDAE	114.316				
			PERCIDAE	125.121				
	STATE	7	SALMONIDAE	76.707	29.583	*	3.9977	ACR
			DAPHNIDAE	83.000				
			CENTRARCHIDAE	114.316				
			PERCIDAE	125.121				
DDT	NATIONAL	20	DAPHNIDAE	1.323	0.850		0.0010	FRV
			PERCIDAE	1.595				
			ESOCIDAE	1.700				
			GAMMARIDAE	2.234				
	STATE	9	DAPHNIDAE	0.976	0.401	*	0.0010	FRV
			PERCIDAE	1.595				
			ESOCIDAE	1.700				
			GAMMARIDAE	2.234				
DIELDRIN	NATIONAL	12	POECILIIDAE	4.503	1.830	*	0.0019	FRV
			ASELLIDAE	5.000				
			SALMONIDAE	5.452				
			EPHEMERELLIDAE	8.000				
	STATE	6	SALMONIDAE	2.459	0.549	*	0.0019	FRV
			EPHEMERELLIDAE	8.000				
			CENTRARCHIDAE	14.480				
			CYPRINIDAE	22.101				
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.884	0.208	*	0.1084	ACR
			CYPRINIDAE	1.279				
			PTERONARCIDAE	2.300				
			CATOSTOMIDAE	3.240				
	STATE	6	SALMONIDAE	0.884	0.149	*	0.0782	ACR
			CYPRINIDAE	1.279				
			CATOSTOMIDAE	3.240				
			CENTRARCHIDAE	3.811				

STATE: VERMONT

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	0.201	*	0.0023	FRV
			SALMONIDAE	0.488				
			PERLIDAE	0.483				
			PTERONARCIDAE	0.647				
	STATE	8	SALMONIDAE	0.556	0.141	*	0.0023	FRV
			CYPRINIDAE	0.582				
			CENTRARCHIDAE	1.011				
			COENAGRIONIDAE (AGRIONIDAE)	1.800				
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.986	0.261	*	0.0038	FRV
			PALAEMONIDAE	1.800				
			PERLIDAE	2.800				
			ASTACIDAE	7.800				
	STATE	5	SALMONIDAE	13.058	3.705	*	0.0038	FRV
			CENTRARCHIDAE	28.000				
			GAMMARIDAE	37.048				
			DAPHNIDAE	50.748				
$$ LEAD	NATIONAL	7	GAMMARIDAE	1.181	0.037	*	0.00003	FCV
			DAPHNIDAE	4.020				
			SALMONIDAE	80.082				
			CYPRINIDAE	368.792				
	STATE	4	SALMONIDAE	80.082	10.748	*	0.00003	FCV
			CYPRINIDAE	157.991				
			CENTRARCHIDAE	466.015				
			PHILODINIDAE	803.845				
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.218	*	0.2574	ACR
			SALMONIDAE	21.988				
			GAMMARIDAE	22.437				
			CENTRARCHIDAE	52.871				
	STATE	6	SALMONIDAE	14.158	3.382	*	0.2713	ACR
			GAMMARIDAE	22.437				
			CENTRARCHIDAE	42.198				
			PERCIDAE	68.000				
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470	*	0.20	FRV
			GAMMARIDAE	10.000				
			ASTACIDAE	31.623				
			SALMONIDAE	244.258				
	STATE	5	GAMMARIDAE	10.000	0.629	*	0.20	FRV
			ASTACIDAE	50.000				
			SALMONIDAE	248.595				
			PHILODINIDAE	783.471				
$$ NICKEL	NATIONAL	16	DAPHNIDAE	85.077	32.914	*	3.3831	ACR
			EPHEMERELLIDAE	233.555				
			CENTRARCHIDAE	345.472				
			PHILODINIDAE	401.217				
	STATE	12	DAPHNIDAE	78.458	33.129	*	3.4153	ACR
			CENTRARCHIDAE	345.472				
			PHILODINIDAE	401.217				
			CHIRONOMIDAE	438.825				
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137	*	0.014	FRV
			CENTRARCHIDAE	8.611				
			CYPRINIDAE	32.801				
			GAMMARIDAE	98.553				
	STATE	5	SALMONIDAE	2.000	0.080	*	0.014	FRV
			CENTRARCHIDAE	2.300				
			CYPRINIDAE	32.801				
			GAMMARIDAE	107.864				
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	339.999	82.648	*	22.0385	ACR
			DAPHNIDAE	1982.474				
			CYPRINODONTIDAE	6488.979				
			SALMONIDAE	8479.723				
	STATE	6	HYALELLIDAE (TALITRIDAE)	339.999	58.744	*	15.6649	ACR
			CYPRINIDAE	3105.149				
			DAPHNIDAE	3888.989				
			SALMONIDAE	8479.723				
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00053	*		
			COTTIDAE	0.004				
			CYPRINIDAE	0.006				
			CYPRINODONTIDAE	0.012				
	STATE	4	CYPRINIDAE	0.011	0.00008	*		
			SALMONIDAE	0.021				
			CENTRARCHIDAE	0.112				
			PHILODINIDAE	5.517				
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.537	*	0.0087	ACR
			PTERONARCIDAE	2.827				
			ICTALURIDAE	3.547				
			CENTRARCHIDAE	4.725				
	STATE	7	CENTRARCHIDAE	2.848	0.888	*	0.0144	ACR
			CYPRINIDAE	6.165				
			SALMONIDAE	6.678				
			PERCIDAE	12.000				

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 4 RESIDENT FAMILIES – NATIONAL VALUE USED
- $ HARDNESS EFFECT INTERCEPT VALUE
- APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
- $$ 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: VERMONT

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (*)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (*)	30-DAY (*)	AVERAGE (**)
$ ZINC	NATIONAL	15	DAPHNIDAE	13.737	6.148	47.0000	SCV
			PHYSIDAE	41.986			
			SALMONIDAE	48.861			
			PHILODINIDAE	92.757			
	STATE	13	DAPHNIDAE	21.223	8.451	47.0000	SCV
			PHYSIDAE	41.986			
			SALMONIDAE	51.845			
			PHILODINIDAE	92.757			

STATE: VIRGINIA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (*)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (*)	30-DAY (*)	AVERAGE (**)
ALDRIN	NATIONAL	14	CENTRARCHIDAE	7.461	3.388 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.803			
	STATE	9	SALMONIDAE	4.503	1.520 *		
			CENTRARCHIDAE	7.461			
			EPHEMERELLIDAE	9.000			
			ANGURILLIDAE	16.000			
ARSENIC	NATIONAL	8	GAMMARIDAE	878.989	113.263 *		
			DAPHNIDAE	1784.246			
			SALMONIDAE	14128.843			
			ICTALURIDAE	16487.430			
	STATE	4	DAPHNIDAE	1048.139	141.620 *		
			SALMONIDAE	14128.843			
			CENTRARCHIDAE	19484.938			
			CYPRINIDAE	20194.383			
$$ CADMIUM	NATIONAL	18	SALMONIDAE	0.048	0.027	0.0004	ACR
			DAPHNIDAE	0.488			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.880			
	STATE	15	SALMONIDAE	0.034	0.017	0.0002	ACR
			DAPHNIDAE	0.884			
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.830			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	6.325	1.974 *	0.0043	FRV
			PTERONARCIDAE	15.000			
			CYPRINIDAE	23.238			
			GAMMARIDAE	32.249			
	STATE	4	CYPRINIDAE	23.238	7.675 *	0.0043	FRV
			SALMONIDAE	33.882			
			GAMMARIDAE	40.000			
			CENTRARCHIDAE	54.711			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.164	0.3378	ACR
			DAPHNIDAE	6389.978			
			PHILODINIDAE	6888.780			
			PHYSIDAE	24882.828			
	STATE	8	PHILODINIDAE	6888.780	1882.468	10.0	FPV
			PHYSIDAE	24882.828			
			PERCICHTHYIDAE	30454.750			
			CYPRINIDAE	57461.672			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.305	0.194	5.48818	FCV
			CHIRONOMIDAE	0.759			
			PHYSIDAE	0.986			
			TUBIFICIDAE	1.345			
	STATE	19	DAPHNIDAE	0.256	0.145	8.38360	FCV
			CHIRONOMIDAE	0.759			
			PHYSIDAE	0.986			
			TUBIFICIDAE	1.345			
CYANIDE	NATIONAL	10	SALMONIDAE	78.707	31.429 *	4.2472	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.318			
			PERCIDAE	125.121			
	STATE	8	SALMONIDAE	78.707	28.920 *	3.9081	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.318			
			PERCIDAE	125.121			
DDT	NATIONAL	20	DAPHNIDAE	1.323	0.660	0.0010	FRV
			PERCIDAE	1.595			
			ESOCIDAE	1.700			
			GAMMARIDAE	2.234			
	STATE	8	DAPHNIDAE	0.978	0.331 *	0.0010	FRV
			PERCIDAE	1.595			
			GAMMARIDAE	1.664			
			ASTACIDAE	3.000			
DIELDRIN	NATIONAL	12	POECILIIDAE	4.503	1.830 *	0.0019	FRV
			ASELLIDAE	5.000			
			SALMONIDAE	5.452			
			EPHEMERELLIDAE	8.000			
	STATE	6	SALMONIDAE	2.458	0.465 *	0.0019	FRV
			EPHEMERELLIDAE	8.000			
			CENTRARCHIDAE	10.811			
			CYPRINIDAE	30.102			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.664	0.208 *	0.1084	ACR
			CYPRINIDAE	1.279			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.240			
	STATE	6	SALMONIDAE	0.664	0.149 *	0.0762	ACR
			CYPRINIDAE	1.279			
			CATOSTOMIDAE	3.240			
			CENTRARCHIDAE	3.811			

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

$ HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

$$ – 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: VIRGINIA

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	0.201 *	0.0023	FRV
			SALMONIDAE	0.488			
			PERLIDAE	0.493			
			PTERONARCIDAE	0.647			
	STATE	9	SALMONIDAE	0.556	0.175 *	0.0023	FRV
			CYPRINIDAE	0.732			
			CENTRARCHIDAE	1.011			
			COENAGRIONIDAE (AGRIONIDAE)	1.800			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.995	0.251 *	0.0038	FRV
			PALAEMONIDAE	1.800			
			PERLIDAE	2.800			
			ASTACIDAE	7.800			
	STATE	5	SALMONIDAE	13.058	3.446 *	0.0038	FRV
			CENTRARCHIDAE	24.771			
			GAMMARIDAE	47.329			
			DAPHNIDAE	50.748			
$$ LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.037 *	0.00003	FCV
			DAPHNIDAE	4.020			
			SALMONIDAE	80.082			
			CYPRINIDAE	358.792			
	STATE	4	SALMONIDAE	80.082	14.989 *	0.00003	FCV
			CYPRINIDAE	358.792			
			CENTRARCHIDAE	455.015			
			PHILODINIDAE	803.845			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.218 *	0.2574	ACR
			SALMONIDAE	21.988			
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	52.871			
	STATE	6	GAMMARIDAE	10.488	1.740 *	0.1392	ACR
			SALMONIDAE	14.158			
			CENTRARCHIDAE	52.871			
			PERCIDAE	88.000			
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.623			
			SALMONIDAE	244.259			
	STATE	6	GAMMARIDAE	10.000	0.764 *	0.20	FRV
			ASTACIDAE	50.000			
			SALMONIDAE	248.595			
			PHILODINIDAE	783.471			
$$ NICKEL	NATIONAL	16	DAPHNIDAE	85.077	32.914 *	3.3831	ACR
			EPHEMERELLIDAE	233.555			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	401.217			
	STATE	13	DAPHNIDAE	78.456	35.088 *	3.6172	ACR
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	438.825			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.611			
			CYPRINIDAE	32.801			
			GAMMARIDAE	99.553			
	STATE	5	SALMONIDAE	2.000	0.131	0.014	FRV
			CENTRARCHIDAE	6.811			
			CYPRINIDAE	32.801			
			GAMMARIDAE	107.864			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	339.999	82.648 *	22.0385	ACR
			DAPHNIDAE	1992.474			
			CYPRINODONTIDAE	6488.979			
			SALMONIDAE	8479.723			
	STATE	6	HYALELLIDAE (TALITRIDAE)	339.999	54.280 *	14.4747	ACR
			DAPHNIDAE	3888.989			
			SALMONIDAE	8479.723			
			CYPRINIDAE	9002.438			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00053 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.008			
			CYPRINODONTIDAE	0.012			
	STATE	4	CYPRINIDAE	0.011	0.00008 *		
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
			PHILODINIDAE	5.517			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.537 *	0.0087	ACR
			PTERONARCIDAE	2.827			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.725			
	STATE	7	CENTRARCHIDAE	4.725	1.843 *	0.0267	ACR
			SALMONIDAE	6.878			
			CYPRINIDAE	8.033			
			PERCIDAE	12.000			

STATE: VIRGINIA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	15	DAPHNIDAE	13.737	6.148	47.0000	SCV
			PHYSIDAE	41.986			
			SALMONIDAE	46.881			
			PHILODINIDAE	92.757			
	STATE	13	DAPHNIDAE	21.223	8.298	47.0000	SCV
			PHYSIDAE	41.986			
			SALMONIDAE	46.550			
			PHILODINIDAE	92.757			

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 4 RESIDENT FAMILIES NATIONAL VALUE USED
- $ HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
- $$ 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: WASHINGTON

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	3.388 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.803			
	STATE	8	CENTRARCHIDAE	7.451	3.242 *		
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.803			
			CYPRINIDAE	11.314			
ARSENIC	NATIONAL	8	GAMMARIDAE	878.999	113.263 *		
			DAPHNIDAE	1794.245			
			SALMONIDAE	14128.843			
			ICTALURIDAE	16487.430			
	STATE	5	DAPHNIDAE	1794.245	343.846 *		
			SALMONIDAE	14128.843			
			CENTRARCHIDAE	19484.938			
			PTERONARCIDAE	22039.902			
$$ CADMIUM	NATIONAL	18	SALMONIDAE	0.048	0.027	0.0004	ACR
			DAPHNIDAE	0.496			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.880			
	STATE	12	SALMONIDAE	0.048	0.013	0.0002	ACR
			DAPHNIDAE	0.496			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.880			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	8.325	1.974 *	0.0043	FRV
			PTERONARCIDAE	15.000			
			CYPRINIDAE	23.238			
			GAMMARIDAE	32.249			
	STATE	6	PTERONARCIDAE	15.000	3.775 *	0.0043	FRV
			CYPRINIDAE	15.684			
			GAMMARIDAE	26.000			
			SALMONIDAE	43.739			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.164	0.3378	ACR
			DAPHNIDAE	6399.976			
			PHILODINIDAE	6998.790			
			PHYSIDAE	24892.828			
	STATE	5	DAPHNIDAE	6399.976	466.809 *	10.0	FPV
			PHILODINIDAE	6998.790			
			SALMONIDAE	63804.148			
			CYPRINIDAE	81251.078			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.305	0.194	5.46618	FCV
			CHIRONOMIDAE	0.759			
			PHYSIDAE	0.995			
			TUBIFICIDAE	1.345			
	STATE	11	DAPHNIDAE	0.305	0.116	9.64928	FCV
			CHIRONOMIDAE	0.759			
			TUBIFICIDAE	1.345			
			SALMONIDAE	1.401			
CYANIDE	NATIONAL	10	SALMONIDAE	76.707	31.429 *	4.2472	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.316			
			PERCIDAE	125.121			
	STATE	6	SALMONIDAE	76.707	28.920 *	3.9081	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.316			
			PERCIDAE	125.121			
DDT	NATIONAL	20	DAPHNIDAE	1.323	0.650	0.0010	FRV
			PERCIDAE	1.595			
			ESOCIDAE	1.700			
			GAMMARIDAE	2.234			
	STATE	11	DAPHNIDAE	1.323	0.479 *	0.0010	FRV
			PERCIDAE	1.595			
			GAMMARIDAE	3.000			
			CENTRARCHIDAE	3.282			
DIELDRIN	NATIONAL	12	POECILIIDAE	4.503	1.830 *	0.0019	FRV
			ASELLIDAE	5.000			
			SALMONIDAE	5.452			
			EPHEMERELLIDAE	8.000			
	STATE	8	SALMONIDAE	5.452	1.456 *	0.0019	FRV
			EPHEMERELLIDAE	8.000			
			CENTRARCHIDAE	10.811			
			PERLIDAE	24.000			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.664	0.208 *	0.1064	ACR
			CYPRINIDAE	1.279			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.240			
	STATE	6	SALMONIDAE	0.664	0.153 *	0.0787	ACR
			PTERONARCIDAE	2.300			
			CENTRARCHIDAE	3.811			
			GAMMARIDAE	5.800			

STATE: WASHINGTON

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	0.201 *	0.0023	FRV
			SALMONIDAE	0.468			
			PERLIDAE	0.493			
			PTERONARCIDAE	0.647			
	STATE	10	GASTEROSTEIDAE	0.440	0.165 *	0.0023	FRV
			SALMONIDAE	0.468			
			PERLIDAE	0.493			
			PTERONARCIDAE	0.775			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.985	0.251 *	0.0038	FRV
			PALAEMONIDAE	1.800			
			PERLIDAE	2.800			
			ASTACIDAE	7.800			
	STATE	7	PTERONARCIDAE	1.100	0.112 *	0.0038	FRV
			PERLIDAE	2.800			
			CENTRARCHIDAE	26.000			
			GAMMARIDAE	29.000			
$$ LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.037 *	0.00003	FCV
			DAPHNIDAE	4.020			
			SALMONIDAE	80.082			
			CYPRINIDAE	358.792			
	STATE	5	DAPHNIDAE	4.020	0.219 *	0.00002	FCV
			SALMONIDAE	80.082			
			CENTRARCHIDAE	455.015			
			PHILODINIDAE	803.845			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.218 *	0.2574	ACR
			SALMONIDAE	21.988			
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	52.871			
	STATE	8	SALMONIDAE	21.988	8.282 *	0.6625	ACR
			CENTRARCHIDAE	42.198			
			GAMMARIDAE	48.000			
			ICTALURIDAE	64.000			
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.623			
			SALMONIDAE	244.259			
	STATE	5	DAPHNIDAE	5.000	0.101 *	0.0674	ACR
			GAMMARIDAE	10.000			
			SALMONIDAE	244.259			
			PHILODINIDAE	783.471			
$$ NICKEL	NATIONAL	16	DAPHNIDAE	65.077	32.914 *	3.3931	ACR
			EPHEMERELLIDAE	233.555			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	401.217			
	STATE	8	DAPHNIDAE	65.077	20.057 *	2.0677	ACR
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	439.825			
			CENTRARCHIDAE	444.717			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.611			
			CYPRINIDAE	32.801			
			GAMMARIDAE	99.563			
	STATE	2	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	2.300	**		
				0.000			
				0.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	339.999	82.648 *	22.0395	ACR
			DAPHNIDAE	1992.474			
			CYPRINODONTIDAE	6499.979			
			SALMONIDAE	8479.723			
	STATE	6	HYALELLIDAE (TALITRIDAE)	339.999	29.803 *	7.8941	ACR
			DAPHNIDAE	1992.474			
			SALMONIDAE	8479.723			
			PHYSIDAE	24099.883			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00053 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.008			
			CYPRINODONTIDAE	0.012			
	STATE	6	DAPHNIDAE	0.002	0.00026 *		
			CYPRINIDAE	0.004			
			COTTIDAE	0.004			
			SALMONIDAE	0.021			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.537 *	0.0087	ACR
			PTERONARCIDAE	2.627			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.725			
	STATE	10	PERLIDAE	1.300	0.554 *	0.0080	ACR
			PTERONARCIDAE	2.300			
			CENTRARCHIDAE	2.848			
			ICTALURIDAE	3.000			

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
- * 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 MAXIMUM CRITERIA
- $$ 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: WASHINGTON

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (*)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (*)	30-DAY (*)	AVERAGE (**)
ZINC	NATIONAL	15	DAPHNIDAE	13.737	6.148	47.0000	SCV
			PHYSIDAE	41.986			
			SALMONIDAE	46.861			
			PHILODINIDAE	92.757			
	STATE	9	DAPHNIDAE	13.737	2.652	47.0000	SCV
			SALMONIDAE	47.229			
			PHILODINIDAE	92.757			
			GAMMARIDAE	315.021			

STATE: WEST VIRGINIA

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	3.388 *		
			ABELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.803			
	STATE	5	SALMONIDAE	4.503	1.144 *		
			CENTRARCHIDAE	7.451			
			ANGURILLIDAE	16.000			
			CYPRINIDAE	16.382			
ARSENIC	NATIONAL	8	GAMMARIDAE	876.999	113.263 *		
			DAPHNIDAE	1784.246			
			SALMONIDAE	14128.643			
			ICTALURIDAE	16487.430			
	STATE	5	DAPHNIDAE	1049.139	171.483 *		
			SALMONIDAE	14128.643			
			ICTALURIDAE	16487.430			
			CENTRARCHIDAE	19484.938			
$$ CADMIUM	NATIONAL	18	SALMONIDAE	0.048	0.027	0.0004	ACR
			DAPHNIDAE	0.466			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.880			
	STATE	12	SALMONIDAE	0.034	0.011	0.0001	ACR
			DAPHNIDAE	0.884			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.880			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	6.325	1.974 *	0.0043	FRV
			PTERONARCIDAE	15.000			
			CYPRINIDAE	23.238			
			GAMMARIDAE	32.249			
	STATE	3	CYPRINIDAE	23.238	1.974 *	0.0043	FRV
			SALMONIDAE	33.882	**		
			CENTRARCHIDAE	54.711			
				0.000			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.164	0.3378	ACR
			DAPHNIDAE	6389.976			
			PHILODINIDAE	6888.780			
			PHYSIDAE	24880.828			
	STATE	5	PHILODINIDAE	6888.780	1352.297 *	10.0	FPV
			PHYSIDAE	24880.828			
			CYPRINIDAE	57481.872			
			SALMONIDAE	63804.148			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.305	0.194	5.48818	FCV
			CHIRONOMIDAE	0.759			
			PHYSIDAE	0.986			
			TUBIFICIDAE	1.346			
	STATE	17	DAPHNIDAE	0.256	0.133	9.42403	FCV
			CHIRONOMIDAE	0.759			
			PHYSIDAE	0.986			
			TUBIFICIDAE	1.346			
CYANIDE	NATIONAL	10	SALMONIDAE	78.707	31.429 *	4.2472	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.316			
			PERCIDAE	125.121			
	STATE	6	SALMONIDAE	78.707	20.508 *	2.7713	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.316			
			CYPRINIDAE	307.966			
DDT	NATIONAL	20	DAPHNIDAE	1.323	0.860	0.0010	FRV
			PERCIDAE	1.585			
			ESOCIDAE	1.700			
			GAMMARIDAE	2.234			
	STATE	6	DAPHNIDAE	0.976	0.210 *	0.0010	FRV
			CENTRARCHIDAE	3.904			
			SALMONIDAE	7.840			
			SCIAENIDAE	10.000			
DIELDRIN	NATIONAL	12	POECILIIDAE	4.503	1.830 *	0.0019	FRV
			ABELLIDAE	5.000			
			SALMONIDAE	5.452			
			EPHEMERELLIDAE	8.000			
	STATE	4	SALMONIDAE	2.459	0.106 *	0.0019	FRV
			CENTRARCHIDAE	10.811			
			CYPRINIDAE	30.102			
			DAPHNIDAE	231.052			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.884	0.208 *	0.1084	ACR
			CYPRINIDAE	1.279			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.240			
	STATE	5	SALMONIDAE	0.884	0.137 *	0.0701	ACR
			CYPRINIDAE	1.279			
			CATOSTOMIDAE	3.240			
			CENTRARCHIDAE	3.811			

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
- $ HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
- $$ 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: WEST VIRGINIA

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	0.201 *	0.0023	FRV
			SALMONIDAE	0.468			
			PERLIDAE	0.493			
			PTERONARCIDAE	0.647			
	STATE	6	SALMONIDAE	0.556	0.153 *	0.0023	FRV
			CYPRINIDAE	0.732			
			CENTRARCHIDAE	1.011			
			COENAGRIONIDAE (AGRIONIDAE)	1.800			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.995	0.251 *	0.0038	FRV
			PALAEMONIDAE	1.800			
			PERLIDAE	2.800			
			ASTACIDAE	7.800			
	STATE	4	SALMONIDAE	13.058	1.425 *	0.0038	FRV
			CENTRARCHIDAE	26.000			
			DAPHNIDAE	50.748			
			CYPRINIDAE	179.508			
$$ LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.037 *	0.00003	FCV
			DAPHNIDAE	4.020			
			SALMONIDAE	80.062			
			CYPRINIDAE	358.792			
	STATE	4	SALMONIDAE	80.062	14.989 *	0.00004	FCV
			CYPRINIDAE	358.792			
			CENTRARCHIDAE	456.015			
			PHILODINIDAE	803.845			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.218 *	0.2574	ACR
			SALMONIDAE	21.988			
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	52.871			
	STATE	5	SALMONIDAE	14.158	3.348 *	0.2676	ACR
			CENTRARCHIDAE	42.198			
			ICTALURIDAE	53.088			
			CYPRINIDAE	94.805			
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.623			
			SALMONIDAE	244.259			
	STATE	6	GAMMARIDAE	10.000	0.764 *	0.20	FRV
			ASTACIDAE	50.000			
			SALMONIDAE	248.585			
			PHILODINIDAE	783.471			
$$ NICKEL	NATIONAL	16	DAPHNIDAE	65.077	32.914 *	3.3931	ACR
			EPHEMERELLIDAE	233.565			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	401.217			
	STATE	11	DAPHNIDAE	78.456	31.086 *	3.2047	ACR
			CENTRARCHIDAE	325.842			
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	438.825			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.611			
			CYPRINIDAE	32.601			
			GAMMARIDAE	99.553			
	STATE	4	SALMONIDAE	2.000	0.024 *	0.014	FRV
			CENTRARCHIDAE	2.300			
			CYPRINIDAE	32.601			
			COENAGRIONIDAE (AGRIONIDAE)	282.842			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	339.999	82.648 *	22.0395	ACR
			DAPHNIDAE	1992.474			
			CYPRINODONTIDAE	6409.979			
			SALMONIDAE	8479.723			
	STATE	7	HYALELLIDAE (TALITRIDAE)	339.999	82.801 *	16.7469	ACR
			DAPHNIDAE	3999.999			
			SALMONIDAE	8479.723			
			CYPRINIDAE	9002.438			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00053 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.008			
			CYPRINODONTIDAE	0.012			
	STATE	5	COTTIDAE	0.004	0.00035 *		
			CYPRINIDAE	0.011			
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.537 *	0.0087	ACR
			PTERONARCIDAE	2.627			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.725			
	STATE	6	CENTRARCHIDAE	2.848	0.812 *	0.0132	ACR
			ICTALURIDAE	3.547			
			SALMONIDAE	6.678			
			CYPRINIDAE	8.033			

STATE: WEST VIRGINIA

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	15	DAPHNIDAE	13.737	6.148	47.0000	SCV
			PHYSIDAE	41.986			
			SALMONIDAE	46.861			
			PHILODINIDAE	92.757			
	STATE	11	DAPHNIDAE	21.223	7.606 *	47.0000	SCV
			PHYSIDAE	41.986			
			SALMONIDAE	46.550			
			PHILODINIDAE	92.757			

FOOTNOTE

- \+ UNITS: NANOGRAMS 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 4 RESIDENT FAMILIES NATIONAL VALUE USED
$ HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA
$$ 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: WISCONSIN

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	3.388 *		
			ASELLIDAE	8.000			
			EPHEMERELLIDAE	9.000			
			SALMONIDAE	10.803			
	STATE	8	CENTRARCHIDAE	7.451	2.844 *		
			SALMONIDAE	10.803			
			ANGUILLIDAE	16.000			
			CYPRINIDAE	16.382			
ARSENIC	NATIONAL	8	GAMMARIDAE	878.999	113.283 *		
			DAPHNIDAE	1794.245			
			SALMONIDAE	14128.843			
			ICTALURIDAE	16487.430			
	STATE	6	GAMMARIDAE	878.999	56.980 *		
			DAPHNIDAE	1046.139			
			SALMONIDAE	14128.843			
			ICTALURIDAE	16487.430			
$$ CADMIUM	NATIONAL	18	SALMONIDAE	0.048	0.027	0.0004	ACR
			DAPHNIDAE	0.466			
			GAMMARIDAE	1.147			
			PHYSIDAE	2.880			
	STATE	13	SALMONIDAE	0.048	0.019	0.0003	ACR
			DAPHNIDAE	0.864			
			GAMMARIDAE	1.147			
			CYPRINODONTIDAE	1.630			
CHLORDANE	NATIONAL	8	PALAEMONIDAE	6.325	1.974 *	0.0043	FRV
			PTERONARCIDAE	15.000			
			CYPRINIDAE	23.238			
			GAMMARIDAE	32.249			
	STATE	5	PALAEMONIDAE	6.325	1.511 *	0.0043	FRV
			CYPRINIDAE	23.238			
			GAMMARIDAE	32.249			
			SALMONIDAE	43.738			
CHROMIUM	NATIONAL	10	GAMMARIDAE	67.000	12.164	0.3378	ACR
			DAPHNIDAE	6389.978			
			PHILODINIDAE	6888.790			
			PHYSIDAE	24882.828			
	STATE	6	GAMMARIDAE	67.000	3.407 *	0.0946	ACR
			PHILODINIDAE	6888.790			
			PHYSIDAE	24882.828			
			CYPRINIDAE	57481.672			
$ COPPER	NATIONAL	23	DAPHNIDAE	0.305	0.194	5.48618	FCV
			CHIRONOMIDAE	0.759			
			PHYSIDAE	0.985			
			TUBIFICIDAE	1.345			
	STATE	19	DAPHNIDAE	0.256	0.145	4.78332	FCV
			CHIRONOMIDAE	0.759			
			PHYSIDAE	0.985			
			SALMONIDAE	1.339			
CYANIDE	NATIONAL	10	SALMONIDAE	76.707	31.429 *	4.2472	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.316			
			PERCIDAE	125.121			
	STATE	7	SALMONIDAE	76.707	29.583 *	3.9877	ACR
			DAPHNIDAE	83.000			
			CENTRARCHIDAE	114.316			
			PERCIDAE	125.121			
DDT	NATIONAL	20	DAPHNIDAE	1.323	0.850	0.0010	FRV
			PERCIDAE	1.595			
			ESOCIDAE	1.700			
			GAMMARIDAE	2.234			
	STATE	12	DAPHNIDAE	0.976	0.397 *	0.0010	FRV
			PERCIDAE	1.595			
			GAMMARIDAE	2.234			
			ASTACIDAE	3.000			
DIELDRIN	NATIONAL	12	POECILIIDAE	4.503	1.830 *	0.0019	FRV
			ASELLIDAE	5.000			
			SALMONIDAE	5.452			
			EPHEMERELLIDAE	8.000			
	STATE	6	SALMONIDAE	5.452	1.335 *	0.0019	FRV
			CENTRARCHIDAE	10.811			
			PALAEMONIDAE	20.000			
			CYPRINIDAE	30.102			
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0.884	0.208 *	0.1084	ACR
			CYPRINIDAE	1.279			
			PTERONARCIDAE	2.300			
			CATOSTOMIDAE	3.240			
	STATE	6	SALMONIDAE	0.884	0.149 *	0.0782	ACR
			CYPRINIDAE	1.279			
			CATOSTOMIDAE	3.240			
			CENTRARCHIDAE	3.811			

STATE: WISCONSIN

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	0.201 *	0.0023	FRV
			SALMONIDAE	0.466			
			PERLIDAE	0.463			
			PTERONARCIDAE	0.847			
	STATE	6	SALMONIDAE	0.625	0.231 *	0.0023	FRV
			CYPRINIDAE	0.732			
			CENTRARCHIDAE	1.011			
			PALAEMONIDAE	1.285			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.985	0.251 *	0.0038	FRV
			PALAEMONIDAE	1.800			
			PERLIDAE	2.800			
			ASTACIDAE	7.800			
	STATE	6	PALAEMONIDAE	1.800	0.331 *	0.0038	FRV
			CENTRARCHIDAE	26.000			
			SALMONIDAE	29.468			
			GAMMARIDAE	37.046			
$$ LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.037 *	0.00003	FCV
			DAPHNIDAE	4.020			
			SALMONIDAE	80.082			
			CYPRINIDAE	388.792			
	STATE	5	GAMMARIDAE	1.161	0.054 *	0.00004	FCV
			SALMONIDAE	80.082			
			CYPRINIDAE	388.792			
			CENTRARCHIDAE	465.015			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.218 *	0.2574	ACR
			SALMONIDAE	21.988			
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	52.871			
	STATE	8	SALMONIDAE	21.988	6.601 *	0.5281	ACR
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	42.188			
			ICTALURIDAE	53.088			
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.623			
			SALMONIDAE	244.258			
	STATE	7	GAMMARIDAE	10.000	1.222 *	0.20	FRV
			SALMONIDAE	244.258			
			PHILODINIDAE	783.471			
			NAIDIDAE	999.999			
$$ NICKEL	NATIONAL	16	DAPHNIDAE	65.077	32.914 *	3.3831	ACR
			EPHEMERELLIDAE	233.566			
			CENTRARCHIDAE	346.472			
			PHILODINIDAE	401.217			
	STATE	13	DAPHNIDAE	78.456	33.880 *	3.4808	ACR
			EPHEMERELLIDAE	233.566			
			CENTRARCHIDAE	346.472			
			PHILODINIDAE	401.217			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	6.611			
			CYPRINIDAE	32.801			
			GAMMARIDAE	98.563			
	STATE	5	SALMONIDAE	2.000	0.083 *	0.014	FRV
			CENTRARCHIDAE	2.300			
			CYPRINIDAE	32.801			
			GAMMARIDAE	98.563			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	339.999	82.648 *	22.0385	ACR
			DAPHNIDAE	1992.474			
			CYPRINODONTIDAE	6499.979			
			SALMONIDAE	8479.723			
	STATE	7	HYALELLIDAE (TALITRIDAE)	339.999	82.801 *	16.7489	ACR
			DAPHNIDAE	3999.999			
			SALMONIDAE	8479.723			
			CYPRINIDAE	9002.438			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00053 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.008			
			CYPRINODONTIDAE	0.012			
	STATE	6	COTTIDAE	0.004	0.00041 *		
			CYPRINIDAE	0.011			
			SALMONIDAE	0.021			
			CENTRARCHIDAE	0.112			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.537 *	0.0087	ACR
			PTERONARCIDAE	2.627			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.725			
	STATE	9	CENTRARCHIDAE	2.848	0.943 *	0.0153	ACR
			ICTALURIDAE	3.547			
			SALMONIDAE	5.781			
			CYPRINIDAE	8.033			

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

$ HARDNESS EFFECT INTERCEPT VALUE
APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

$$ 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: WISCONSIN

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	15	DAPHNIDAE	13 737	6 148	47 0000	SCV
			PHYSIDAE	41 986			
			SALMONIDAE	48 861			
			PHILODINIDAE	92 757			
	STATE	12	DAPHNIDAE	21 223	7 891	47 0000	SCV
			PHYSIDAE	41 986			
			SALMONIDAE	44 947			
			PHILODINIDAE	92 757			

STATE: WYOMING

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	3 388	*		
			ASELLIDAE	8 000				
			EPHEMERELLIDAE	9 000				
			SALMONIDAE	10 803				
	STATE	8	SALMONIDAE	4 503	1 433	*		
			CENTRARCHIDAE	7 451				
			EPHEMERELLIDAE	9 000				
			CYPRINIDAE	16 392				
ARSENIC	NATIONAL	8	GAMMARIDAE	878 999	113 263	*		
			DAPHNIDAE	1794 245				
			SALMONIDAE	14128 643				
			ICTALURIDAE	16487 430				
	STATE	6	DAPHNIDAE	1794 245	407 358	*		
			SALMONIDAE	14128 643				
			ICTALURIDAE	16487 430				
			CENTRARCHIDAE	19484 938				
$$ CADMIUM	NATIONAL	18	SALMONIDAE	0 048	0 027		0 0004	ACR
			DAPHNIDAE	0 498				
			GAMMARIDAE	1 147				
			PHYSIDAE	2 880				
	STATE	12	SALMONIDAE	0 034	0 009		0 0001	ACR
			DAPHNIDAE	0 498				
			GAMMARIDAE	1 147				
			PHYSIDAE	2 880				
CHLORDANE	NATIONAL	8	PALAEMONIDAE	6 325	1 974	*	0 0043	FRV
			PTERONARCIDAE	15 000				
			CYPRINIDAE	23 238				
			GAMMARIDAE	32 249				
	STATE	6	PTERONARCIDAE	15 000	5 588	*	0 0043	FRV
			CYPRINIDAE	23 238				
			GAMMARIDAE	26 000				
			SALMONIDAE	33 882				
CHROMIUM	NATIONAL	10	GAMMARIDAE	67 000	12 164		0 3378	ACR
			DAPHNIDAE	6389 976				
			PHILODINIDAE	6666 790				
			PHYSIDAE	24882 828				
	STATE	6	DAPHNIDAE	6389 976	781 038	*	10 0	FPV
			PHILODINIDAE	6666 790				
			PHYSIDAE	24882 828				
			CYPRINIDAE	57461 672				
$ COPPER	NATIONAL	23	DAPHNIDAE	0 305	0 194		5 46818	FCV
			CHIRONOMIDAE	0 759				
			PHYSIDAE	0 995				
			TUBIFICIDAE	1 345				
	STATE	13	DAPHNIDAE	0 305	0 132		9 85882	FCV
			CHIRONOMIDAE	0 759				
			PHYSIDAE	0 995				
			TUBIFICIDAE	1 345				
CYANIDE	NATIONAL	10	SALMONIDAE	76 707	31 429	*	4 2472	ACR
			DAPHNIDAE	83 000				
			CENTRARCHIDAE	114 316				
			PERCIDAE	125 121				
	STATE	6	SALMONIDAE	76 707	26 920	*	3 9081	ACR
			DAPHNIDAE	83 000				
			CENTRARCHIDAE	114 316				
			PERCIDAE	125 121				
DDT	NATIONAL	20	DAPHNIDAE	1 323	0 850		0 0010	FRV
			PERCIDAE	1 585				
			ESOCIDAE	1 700				
			GAMMARIDAE	2 234				
	STATE	10	DAPHNIDAE	1 323	0 463	*	0 0010	FRV
			PERCIDAE	1 585				
			GAMMARIDAE	3 000				
			CENTRARCHIDAE	3 282				
DIELDRIN	NATIONAL	12	POECILIDAE	4 503	1 830	*	0 0019	FRV
			ASELLIDAE	5 000				
			SALMONIDAE	5 452				
			EPHEMERELLIDAE	8 000				
	STATE	8	SALMONIDAE	2 459	0 632	*	0 0019	FRV
			EPHEMERELLIDAE	8 000				
			CENTRARCHIDAE	10 811				
			PERLIDAE	24 000				
ENDOSULFAN	NATIONAL	9	SALMONIDAE	0 864	0 208	*	0 1084	ACR
			CYPRINIDAE	1 279				
			PTERONARCIDAE	2 300				
			CATOSTOMIDAE	3 240				
	STATE	8	SALMONIDAE	0 864	0 198	*	0 1003	ACR
			CYPRINIDAE	1 279				
			PTERONARCIDAE	2 300				
			CATOSTOMIDAE	3 240				

FOOTNOTE

- + IN MICROGRAMS PER LITER
- ++ FP, FINAL PLANT VALUE
- FR, 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
- $ HARDNESS EFFECT INTERCEPT VALUE
  APPLY EQUATION 3 7 TO DETERMINE MAXIMUM CRITERIA
- $$ 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: WYOMING

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	0.201 *	0.0023	FRV
			SALMONIDAE	0.466			
			PERLIDAE	0.493			
			PTERONARCIDAE	0.647			
	STATE	9	SALMONIDAE	0.357	0.125 *	0.0023	FRV
			PERLIDAE	0.493			
			PTERONARCIDAE	0.647			
			CENTRARCHIDAE	1.011			
HEPTACHLOR	NATIONAL	10	PTERONARCIDAE	0.986	0.251 *	0.0038	FRV
			PALAEMONIDAE	1.800			
			PERLIDAE	2.800			
			ASTACIDAE	7.800			
	STATE	7	PTERONARCIDAE	0.986	0.125 *	0.0038	FRV
			PERLIDAE	2.800			
			SALMONIDAE	13.058			
			CENTRARCHIDAE	28.000			
$$ LEAD	NATIONAL	7	GAMMARIDAE	1.161	0.037 *	0.00003	FCV
			DAPHNIDAE	4.020			
			SALMONIDAE	80.082			
			CYPRINIDAE	398.792			
	STATE	5	DAPHNIDAE	4.020	0.287 *	0.00003	FCV
			SALMONIDAE	80.082			
			CYPRINIDAE	398.792			
			CENTRARCHIDAE	465.015			
LINDANE	NATIONAL	10	ASELLIDAE	10.000	3.218 *	0.2574	ACR
			SALMONIDAE	21.999			
			GAMMARIDAE	22.437			
			CENTRARCHIDAE	52.871			
	STATE	8	SALMONIDAE	14.158	5.119 *	0.4095	ACR
			CENTRARCHIDAE	42.199			
			GAMMARIDAE	48.000			
			ICTALURIDAE	53.099			
MERCURY	NATIONAL	9	DAPHNIDAE	5.000	0.470 *	0.20	FRV
			GAMMARIDAE	10.000			
			ASTACIDAE	31.623			
			SALMONIDAE	244.259			
	STATE	5	DAPHNIDAE	5.000	0.101 *	0.0871	ACR
			GAMMARIDAE	10.000			
			SALMONIDAE	248.595			
			PHILODINIDAE	783.471			
$$ NICKEL	NATIONAL	16	DAPHNIDAE	65.077	32.914 *	3.3831	ACR
			EPHEMERELLIDAE	233.566			
			CENTRARCHIDAE	345.472			
			PHILODINIDAE	401.217			
	STATE	9	DAPHNIDAE	65.077	21.717 *	2.2388	ACR
			PHILODINIDAE	401.217			
			CHIRONOMIDAE	439.825			
			CENTRARCHIDAE	444.717			
PCBS	NATIONAL	5	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	8.611			
			CYPRINIDAE	32.801			
			GAMMARIDAE	98.563			
	STATE	3	SALMONIDAE	2.000	0.137 *	0.014	FRV
			CENTRARCHIDAE	2.300	**		
			CYPRINIDAE	32.801			
				0.000			
SELENIUM	NATIONAL	10	HYALELLIDAE (TALITRIDAE)	339.999	82.848 *	22.0385	ACR
			DAPHNIDAE	1982.474			
			CYPRINODONTIDAE	6499.979			
			SALMONIDAE	8479.723			
	STATE	7	HYALELLIDAE (TALITRIDAE)	339.999	52.431 *	13.9816	ACR
			DAPHNIDAE	1982.474			
			SALMONIDAE	8479.723			
			CYPRINIDAE	9002.438			
$ SILVER	NATIONAL	9	DAPHNIDAE	0.002	0.00053 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.008			
			CYPRINODONTIDAE	0.012			
	STATE	6	DAPHNIDAE	0.002	0.00030 *		
			COTTIDAE	0.004			
			CYPRINIDAE	0.008			
			SALMONIDAE	0.021			
TOXAPHENE	NATIONAL	12	PERLIDAE	1.300	0.537 *	0.0087	ACR
			PTERONARCIDAE	2.627			
			ICTALURIDAE	3.547			
			CENTRARCHIDAE	4.725			
	STATE	10	PERLIDAE	1.300	0.543 *	0.0088	ACR
			PTERONARCIDAE	2.627			
			CENTRARCHIDAE	2.848			
			ICTALURIDAE	3.547			

STATE: WYOMING

TOXICANT	NUMBER OF FAMILIES TESTED		MOST SENSITIVE RESIDENT FAMILY NAME	LC50 VALUE (+)	FRESHWATER AQUATIC LIFE CRITERIA MAXIMUM (+)	30-DAY (+)	AVERAGE (++)
$ ZINC	NATIONAL	15	DAPHNIDAE	13.737	6.148	47.0000	SCV
			PHYSIDAE	41.999			
			SALMONIDAE	46.861			
			PHILODINIDAE	92.757			
	STATE	10	DAPHNIDAE	13.737	4.647 *	47.0000	SCV
			PHYSIDAE	41.999			
			SALMONIDAE	46.999			
			PHILODINIDAE	92.757			

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 4 RESIDENT FAMILIES NATIONAL VALUE USED

$ HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 3.7 TO DETERMINE MAXIMUM CRITERIA

$$ HARDNESS EFFECT INTERCEPT VALUE APPLY EQUATION 3.7 TO DETERMINE MAXIMUM AND 30 DAY AVERAGE CRITERIA

APPENDIX E
RECALCULATION RESULTS

ALDRIN

A	B	C	D	E	F	G			
1	1	14	8.17644	0 0 0 0 0 0 7 8	48 24 29 38	7.45080	7.99999	8.99999	10.80319
1	1	8	6.62517	0 0 0 0 0 0 7 8	29 40 37 47	8.99999	11.73188	15.99998	20.49388
1	2	9	3.53950	0 0 0 0 0 0 7 8	38 48 29 40	4.50313	7.45080	8.99999	11.73188
1	3	9	3.53950	0 0 0 0 0 0 7 8	38 48 29 40	4.50313	7.45080	8.99999	11.73188
1	4	9	3.03909	0 0 0 0 0 0 7 8	38 48 29 37	4.50313	7.45080	8.99999	15.99998
1	5	9	3.03909	0 0 0 0 0 0 7 8	38 48 29 37	4.50313	7.45080	8.99999	15.99998
1	6	9	3.03909	0 0 0 0 0 0 7 8	38 48 29 37	4.50313	7.45080	8.99999	15.99998
1	7	12	3.65814	0 0 0 0 0 0 7 8	38 48 29 37	5.24109	7.45080	8.99999	15.99998
1	8	10	3.16941	0 0 0 0 0 0 7 8	38 48 29 37	4.50313	7.45080	8.99999	15.99998
1	9	9	3.59180	0 0 0 0 0 0 7 8	38 48 29 40	4.50313	7.45080	8.99999	11.31370
1	10	9	3.59180	0 0 0 0 0 0 7 8	38 48 29 40	4.50313	7.45080	8.99999	11.31370
1	11	9	5.49744	0 0 0 0 0 0 7 8	48 29 38 37	7.45080	8.99999	14.37883	15.99998
1	12	9	3.03909	0 0 0 0 0 0 7 8	38 48 29 37	4.50313	7.45080	8.99999	15.99998
1	13	9	3.59180	0 0 0 0 0 0 7 8	38 48 29 40	4.50313	7.45080	8.99999	11.31370
1	14	8	1.47503	0 0 0 0 5 0 7 8	38 48 29 40	4.50313	7.45080	8.99999	11.31370
1	15	7	1.52705	0 0 0 0 5 0 7 8	38 48 29 47	4.50313	7.45080	8.99999	9.99999
1	16	6	5.38018	1 0 0 0 5 6 7 8	48 47 40 37	7.45080	9.99999	11.31370	15.99998
1	17	5	2.28722	0 0 0 0 5 6 7 8	38 48 37 40	4.50313	7.45080	15.99998	16.39186
1	18	7	3.54744	0 0 0 0 0 6 7 8	38 48 24 47	4.50313	7.45080	7.99999	9.99999
1	19	7	2.80346	0 0 0 0 0 6 7 8	38 48 47 37	4.50313	7.45080	9.99999	15.99998
1	20	7	2.80346	0 0 0 0 0 6 7 8	38 48 47 37	4.50313	7.45080	9.99999	15.99998
1	21	8	2.73738	0 0 0 0 0 6 7 8	38 48 37 40	4.50313	7.45080	15.99998	16.39186
1	22	9	4.53449	0 0 0 0 0 0 7 8	48 29 38 37	7.45080	8.99999	10.80319	15.99998
1	23	8	5.65470	0 0 0 0 0 6 7 8	48 47 38 37	7.45080	9.99999	10.80319	15.99998
1	24	7	4.78954	1 0 0 0 0 6 7 8	48 24 47 37	7.45080	7.99999	9.99999	15.99998
1	25	8	5.68878	0 0 0 0 0 6 7 8	48 38 37 40	7.45080	10.80319	15.99998	16.39186
1	26	10	6.46080	0 0 0 0 0 6 7 8	48 24 47 38	7.45080	7.99999	9.99999	10.80319
1	27	7	3.04911	0 0 0 0 0 6 7 8	38 48 37 40	5.24109	7.45080	15.99998	16.39186
1	28	7	5.54667	1 0 0 0 0 6 7 8	48 37 40 44	7.45080	15.99998	16.39186	20.99998
1	29	6	5.10268	1 0 0 0 0 6 7 8	48 47 37 40	7.45080	9.99999	15.99998	16.39186
1	30	6	4.36192	1 0 0 0 0 6 7 8	48 24 37 40	7.45080	7.99999	15.99998	16.39186
1	31	7	5.29145	0 0 0 0 0 6 7 8	48 47 37 40	7.45080	9.99999	15.99998	16.39186
1	32	6	2.18099	0 0 0 0 0 6 7 8	38 48 40 44	4.50313	7.45080	16.39186	20.99998
1	33	8	2.73738	0 0 0 0 0 0 7 8	38 48 37 40	4.50313	7.45080	15.99998	16.39186
1	34	6	2.66557	0 0 0 0 5 6 7 8	38 48 47 37	4.50313	7.45080	9.99999	15.99998
1	35	5	4.90740	1 0 0 0 5 6 7 8	48 47 37 40	7.45080	9.99999	15.99998	16.39186
1	36	8	2.93943	0 0 0 0 0 6 7 8	38 48 47 37	4.50313	7.45080	9.99999	15.99998
1	37	7	5.29145	1 0 0 0 0 6 7 8	48 47 37 40	7.45080	9.99999	15.99998	16.39186
1	38	8	5.27813	0 0 0 0 0 0 7 0	48 29 38 40	7.45080	8.99999	14.37883	16.39186
1	39	8	2.86675	0 0 0 0 0 0 7 0	38 48 29 40	4.50313	7.45080	8.99999	16.39186
1	40	8	2.86675	0 0 0 0 0 0 7 0	38 48 29 40	4.50313	7.45080	8.99999	16.39186
1	41	10	3.85605	0 0 0 0 0 0 7 0	38 48 29 47	4.50313	7.45080	8.99999	9.99999
1	42	8	3.13824	0 0 0 0 0 0 7 0	38 48 29 40	5.24109	7.45080	8.99999	16.39186
1	43	9	3.74818	0 0 0 0 0 0 7 0	38 48 29 47	4.50313	7.45080	8.99999	9.99999
1	44	10	3.85605	0 0 0 0 0 0 7 0	38 48 29 47	4.50313	7.45080	8.99999	9.99999
1	45	8	6.48464	0 0 0 0 0 0 7 0	48 29 38 40	7.45080	8.99999	10.80319	11.31370
1	46	8	6.67460	0 0 0 0 0 0 7 0	48 29 47 38	7.45080	8.99999	9.99999	10.80319
1	47	8	1.47503	0 0 0 0 0 0 7 0	38 48 29 40	4.50313	7.45080	8.99999	11.31370
1	48	9	6.78577	0 0 0 0 0 0 7 0	48 29 47 38	7.45080	8.99999	9.99999	10.80319

ARSENIC

A	B	C	D	E	F	G			
12	1	8	226.72585	0 0 0 0 0 0 7 8	25 19 38 42	878.99878	1794.24536	14128.644	16487.433
12	1	3	0.00000	0 0 0 3 0 5 6 7 8	19 38 40 3	1046.13916	1498.1941	15659.937	0.00000
12	2	4	298.18.865	0 0 0 0 0 5 6 7 8	19 38 40 48	1046.13916	14128.644	15659.937	19484.941
12	3	4	298.18.865	0 0 0 0 0 5 6 7 8	19 38 40 48	1046.13916	14128.644	15659.937	19484.941
12	4	4	342.98663	0 0 0 0 0 5 6 7 8	19 38 42 48	1046.13916	14128.644	16487.433	19484.941
12	5	4	283.23920	0 0 0 0 0 5 6 7 8	19 38 48 40	1046.13916	14128.644	19484.941	20194.386
12	6	4	283.23920	0 0 0 0 0 5 6 7 8	19 38 48 40	1046.13916	14128.644	19484.941	20194.386
12	7	6	113.95972	0 0 0 0 0 0 6 7 8	25 19 38 42	878.99878	1046.13916	14128.644	16487.433
12	8	5	342.98663	0 0 0 0 0 5 6 7 8	19 38 42 48	1046.13916	14128.644	16487.433	19484.941
12	9	4	342.98663	0 0 0 0 0 5 6 7 8	19 38 42 48	1046.13916	14128.644	16487.433	19484.941
12	10	4	343.63538	0 0 0 0 0 5 6 7 8	19 38 42 48	1046.13916	13339.986	16487.433	19484.941
12	11	4	283.23920	0 0 0 0 0 5 6 7 8	19 38 48 40	1046.13916	14128.644	19484.941	20194.386
12	12	4	283.23920	0 0 0 0 0 5 6 7 8	19 38 48 40	1046.13916	14128.644	19484.941	20194.386
12	13	4	264.68555	0 0 0 0 0 5 6 7 8	19 38 48 40	1046.13916	14128.644	19484.941	26041.878
12	14	4	264.68555	0 0 0 0 0 5 6 7 8	19 38 48 40	1046.13916	14128.644	19484.941	26041.878
12	15	5	342.98663	0 0 0 0 0 5 6 7 8	19 38 42 48	1046.13916	14128.644	16487.433	19484.941
12	16	5	312.07068	1 0 0 0 0 5 6 7 8	19 42 48 40	1046.13916	16487.433	19484.941	26041.878
12	17	5	342.98663	0 0 0 0 0 5 6 7 8	19 38 42 48	1046.13916	14128.644	16487.433	19484.941
12	18	6	116.29842	0 0 0 0 0 0 6 7 8	25 19 38 42	878.99878	1046.13916	13339.986	16487.433
12	19	6	116.29842	0 0 0 0 0 0 6 7 8	25 19 38 42	878.99878	1046.13916	13339.986	16487.433
12	20	5	343.63538	0 0 0 0 0 5 6 7 8	19 38 42 48	1046.13916	13339.986	16487.433	19484.941
12	21	5	342.98663	0 0 0 0 0 5 6 7 8	19 38 42 48	1046.13916	14128.644	16487.433	19484.941
12	22	6	113.95972	0 0 0 0 0 0 6 7 8	25 19 38 42	878.99878	1046.13916	14128.644	16487.433
12	23	5	343.63538	0 0 0 0 0 5 6 7 8	19 38 42 48	1046.13916	13339.986	16487.433	19484.941
12	24	5	84.75481	1 0 0 0 0 0 6 7 8	25 19 42 48	878.99878	1046.13916	16487.433	19484.941
12	25	6	113.95972	0 0 0 0 0 0 6 7 8	25 19 38 42	878.99878	1046.13916	14128.644	16487.433
12	26	6	116.29842	0 0 0 0 0 0 6 7 8	25 19 38 42	878.99878	1046.13916	13339.986	16487.433
12	27	5	342.98663	1 0 0 0 0 5 6 7 8	19 38 42 48	1046.13916	14128.644	16487.433	19484.941
12	28	5	84.75481	1 0 0 0 0 0 6 7 8	25 19 42 48	878.99878	1046.13916	16487.433	19484.941
12	29	4	280.98662	1 0 0 0 0 5 6 7 8	19 42 48 40	1046.13916	16487.433	19484.941	20194.386
12	30	5	84.75481	1 0 0 0 0 0 6 7 8	25 19 42 48	878.99878	1046.13916	16487.433	19484.941
12	31	4	280.98662	1 0 0 0 0 5 6 7 8	19 42 48 40	1046.13916	16487.433	19484.941	20194.386

ARSENIC (Continued)

A	B	C	D	E	F	G			
12	32	5	727.20288	0 0 0 0 5 6 7 8	19 38 42 48	1794.24536	13339.986	16487.433	19484.941
12	33	5	727.20288	0 0 0 0 5 6 7 8	19 38 42 48	1794.24536	13339.986	16487.433	19484.941
12	34	5	726.89221	0 0 0 0 5 6 7 8	19 38 42 48	1794.24536	14128.644	16487.433	19484.941
12	35	4	280.98802	1 0 0 0 5 6 7 8	19 42 48 40	1046.13916	16487.433	19484.941	20194.386
12	36	6	118.20842	0 0 0 0 0 6 7 8	25 19 38 42	878.99878	1046.13916	13339.986	16487.433
12	37	4	280.98802	1 0 0 0 5 6 7 8	19 42 48 40	1046.13916	16487.433	19484.941	20194.386
12	38	6	814.71533	0 0 0 0 5 0 7 8	19 38 42 48	1794.24536	14128.644	16487.433	19484.941
12	39	6	814.71533	0 0 0 0 5 0 7 8	19 38 42 48	1794.24536	14128.644	16487.433	19484.941
12	40	6	814.52979	0 0 0 0 5 0 7 8	19 38 42 48	1794.24536	13339.986	16487.433	19484.941
12	41	6	814.71533	0 0 0 0 5 0 7 8	19 38 42 48	1794.24536	14128.644	16487.433	19484.941
12	42	5	701.91382	0 0 0 0 5 0 7 8	19 38 48 40	1794.24536	14128.644	19484.941	20194.386
12	43	6	814.71533	0 0 0 0 5 0 7 8	19 38 42 48	1794.24536	14128.644	16487.433	19484.941
12	44	6	814.71533	0 0 0 0 5 0 7 8	19 38 42 48	1794.24536	14128.644	16487.433	19484.941
12	45	5	687.89226	0 0 0 0 5 0 7 8	19 38 48 32	1794.24536	14128.644	19484.941	22039.906
12	46	4	573.39880	0 0 0 0 5 6 7 8	19 38 48 40	1794.24536	14128.644	19484.941	26041.878
12	47	5	726.89221	0 0 0 0 5 6 7 8	19 38 42 48	1794.24536	14128.644	16487.433	19484.941
12	48	5	726.89221	0 0 0 0 5 6 7 8	19 38 42 48	1794.24536	14128.644	16487.433	19484.941

CADMIUM

A	B	C	D	E	F	G			
13	0	18	0.04331	0 0 0 0 0 0 0 0	38 19 25 16	0.04761	0.49564	1.14678	2.88002
13	1	16	0.02957	0 0 0 0 0 0 0 0 0	38 19 25 44	0.02644	0.86438	1.14678	1.63031
13	2	15	0.03361	0 0 0 0 0 0 0 0 0	38 19 25 44	0.03407	0.86438	1.14678	1.63031
13	3	15	0.03361	0 0 0 0 0 0 0 0 0	38 19 25 44	0.03407	0.86438	1.14678	1.63031
13	4	16	0.03788	0 0 0 0 0 0 0 0 0	38 19 25 44	0.03407	0.86438	1.14678	1.63031
13	5	16	0.03788	0 0 0 0 0 0 0 0 0	38 19 25 44	0.03407	0.86438	1.14678	1.63031
13	6	16	0.03788	0 0 0 0 0 0 0 0 0	38 19 25 44	0.03407	0.86438	1.14678	1.63031
13	7	17	0.05738	0 0 0 0 0 0 0 0 0	38 19 25 44	0.04761	0.86438	1.14678	1.63031
13	8	16	0.03788	0 0 0 0 0 0 0 0 0	38 19 25 44	0.03407	0.86438	1.14678	1.63031
13	9	17	0.04210	0 0 0 0 0 0 0 0 0	38 19 25 44	0.03407	0.86438	1.14678	1.63031
13	10	17	0.05323	0 0 0 0 0 0 0 0 0	38 19 25 44	0.04389	0.86438	1.14678	1.63031
13	11	17	0.04210	0 0 0 0 0 0 0 0 0	38 19 25 44	0.03407	0.86438	1.14678	1.63031
13	12	15	0.03361	0 0 0 0 0 0 0 0 0	38 19 25 44	0.03407	0.86438	1.14678	1.63031
13	13	16	0.03788	0 0 0 0 0 0 0 0 0	38 19 25 44	0.03407	0.86438	1.14678	1.63031
13	14	15	0.03159	0 0 0 0 5 0 0 0 0	38 19 44 16	0.03407	0.86438	1.63031	2.88002
13	15	14	0.01678	0 0 0 0 5 0 0 0 0	38 47 19 16	0.03407	0.16279	0.86438	2.88002
13	16	13	0.09204	1 0 0 0 5 0 0 0 0	47 19 16 7	0.16279	0.86438	2.88002	6.98678
13	17	12	0.02102	0 0 0 0 0 0 0 0 0	38 19 25 16	0.03407	0.86438	1.14678	2.88002
13	18	14	0.02695	0 0 0 0 0 0 0 0 0	38 47 19 25	0.04389	0.16279	0.86438	1.14678
13	19	14	0.02695	0 0 0 0 0 0 0 0 0	38 47 19 25	0.04389	0.16279	0.86438	1.14678
13	20	14	0.02695	0 0 0 0 0 0 0 0 0	38 47 19 25	0.04389	0.16279	0.86438	1.14678
13	21	14	0.02986	0 0 0 0 0 0 0 0 0	38 19 25 44	0.03407	0.86438	1.14678	1.63031
13	22	15	0.04677	0 0 0 0 0 0 0 0 0	38 19 25 44	0.04761	0.86438	1.14678	1.63031
13	23	14	0.03744	0 0 0 0 0 0 0 0 0	38 47 19 25	0.06389	0.16279	0.86438	1.14678
13	24	13	0.11793	1 0 0 0 0 0 0 0 0	47 19 25 16	0.16279	0.86438	1.14678	2.88002
13	25	13	0.03781	0 0 0 0 0 0 0 0 0	38 19 25 44	0.04761	0.86438	1.14678	1.63031
13	26	15	0.04099	0 0 0 0 0 0 0 0 0	38 47 19 25	0.06389	0.16279	0.86438	1.14678
13	27	14	0.04202	0 0 0 0 0 0 0 0 0	38 19 25 44	0.04761	0.86438	1.14678	1.63031
13	28	13	0.63411	1 0 0 0 0 0 0 0 0	19 25 44 16	0.86438	1.14678	1.63031	2.88002
13	29	13	0.11793	1 0 0 0 0 0 0 0 0	47 19 25 16	0.16279	0.86438	1.14678	2.88002
13	30	12	0.42257	1 0 0 0 0 0 0 0 0	19 25 16 7	0.86438	1.14678	2.88002	6.98678
13	31	12	0.08204	1 0 0 0 5 0 0 0 0	47 19 16 7	0.16279	0.86438	2.88002	6.98678
13	32	12	0.02832	0 0 0 0 0 0 0 0 0	38 19 25 44	0.04389	0.49564	1.14678	1.63031
13	33	13	0.03178	0 0 0 0 0 0 0 0 0	38 19 25 44	0.04389	0.49564	1.14678	1.63031
13	34	12	0.01256	0 0 0 0 5 0 0 0 0	38 47 19 16	0.03407	0.16279	0.49564	2.88002
13	35	12	0.08204	1 0 0 0 5 0 0 0 0	47 19 16 7	0.16279	0.86438	2.88002	6.98678
13	36	14	0.02695	0 0 0 0 0 0 0 0 0	38 47 19 25	0.04389	0.16279	0.86438	1.14678
13	37	12	0.08204	1 0 0 0 5 0 0 0 0	47 19 16 7	0.16279	0.86438	2.88002	6.98678
13	38	12	0.01899	0 0 0 0 0 0 0 0 0	38 19 25 16	0.03407	0.49564	1.14678	2.88002
13	39	12	0.01899	0 0 0 0 0 0 0 0 0	38 19 25 16	0.03407	0.49564	1.14678	2.88002
13	40	12	0.02467	0 0 0 0 0 0 0 0 0	38 19 25 16	0.04389	0.49564	1.14678	2.88002
13	41	15	0.02453	0 0 0 0 0 0 0 0 0	38 47 19 25	0.03407	0.16279	0.49564	1.14678
13	42	12	0.02682	0 0 0 0 0 0 0 0 0	38 19 25 16	0.04761	0.49564	1.14678	2.88002
13	43	12	0.01797	0 0 0 0 0 0 0 0 0	38 47 19 25	0.03407	0.16279	0.49564	1.14678
13	44	13	0.02000	0 0 0 0 0 0 0 0 0	38 47 19 25	0.03407	0.16279	0.49564	1.14678
13	45	12	0.02682	0 0 0 0 0 0 0 0 0	38 19 25 16	0.04761	0.49564	1.14678	2.88002
13	46	13	0.02729	0 0 0 0 0 0 0 0 0	38 47 19 25	0.04761	0.16279	0.49564	1.14678
13	47	12	0.01899	0 0 0 0 0 0 0 0 0	38 19 25 16	0.03407	0.49564	1.14678	2.88002
13	48	14	0.02999	0 0 0 0 0 0 0 0 0	38 47 19 25	0.04761	0.16279	0.49564	1.14678

CHLORDANE

A	B	C	D	E	F	G			
2	0	8	3.94886	0 0 0 0 0 0 7 8	27 32 40 25	6.32455	14.99999	23.23838	32.24899
2	1	3	0.00000	0 0 3 4 0 6 7 8	40 25 38 0	12.37083	25.99997	50.19954	0.00000
2	2	4	8.22610	0 0 0 4 0 6 7 8	40 25 38 48	12.37083	25.99997	33.86198	54.71104
2	3	4	6.54425	0 0 0 4 0 6 7 8	40 25 38 48	12.37083	32.24899	33.86198	54.71104
2	4	4	15.34912	0 0 0 4 0 6 7 8	40 38 25 48	23.23838	33.86198	39.99995	54.71104
2	5	4	15.34912	0 0 0 4 0 6 7 8	40 38 25 48	23.23838	33.86198	39.99995	54.71104
2	6	4	15.34912	0 0 0 4 0 6 7 8	40 38 25 48	23.23838	33.86198	39.99995	54.71104
2	7	5	3.11714	0 0 0 4 0 6 7 8	27 40 25 38	6.32455	23.23838	32.24899	40.28093
2	8	5	3.08837	0 0 0 4 0 6 7 8	27 40 38 25	6.32455	23.23838	33.86198	39.99995
2	9	4	9.13705	0 0 0 4 0 6 7 8	40 38 25 48	15.88437	33.86198	39.99995	54.71104
2	10	4	8.24052	0 0 0 4 0 6 7 8	40 38 25 48	15.88437	25.48079	39.99995	54.71104

COLUMN KEY
A CHEMICAL ID
B STATE ID
C NO. OF RESIDENT FAMILIES
D FINAL ACUTE VALUE (FAV)

E EIGHT CRITERIA (A NUMBER SIGNIFIES A CRITERIA NOT SATISFIED)
F FOUR MOST SENSITIVE RESIDENT FAMILIES
G FAMILY MEAN ACUTE VALUE FOR FOUR MOST SENSITIVE SPECIES

APPENDIX E
RECALCULATION RESULTS

CHLORDANE (Continued)

A	B	C	D	E								F				G			
2	11	4	16 03408	0	0	0	4	0	6	7	8	40	25	38	48	23 23838	39 99995	40 04399	54 71104
2	12	4	15 34912	0	0	0	4	0	6	7	8	40	38	25	48	23 23838	33 86198	39 99995	54 71104
2	13	4	9 13705	0	0	0	4	0	6	7	8	40	38	25	48	15 68437	33 86198	39 99995	54 71104
2	14	3	0 00000	0	0	0	4	5	6	7	8	40	38	48	0	15 68437	33 86198	54 71104	0 00000
2	15	3	0 00000	0	0	0	4	5	6	7	8	40	38	48	0	15 68437	33 86198	54 71104	0 00000
2	16	3	0 00000	1	0	0	4	5	6	7	8	40	48	45	0	15 68437	54 71104	189 99986	0 00000
2	17	3	0 00000	0	0	0	4	5	6	7	8	40	38	48	0	23 23838	33 86198	54 71104	0 00000
2	18	3	0 00000	0	0	0	4	5	6	7	8	40	38	48	0	23 23838	25 48079	54 71104	0 00000
2	19	4	2 46420	0	0	0	4	0	6	7	8	27	40	38	48	6 32455	23 23838	25 48079	54 71104
2	20	4	2 46420	0	0	0	4	0	6	7	8	27	40	38	48	6 32455	23 23838	25 48079	54 71104
2	21	5	1 09917	0	0	0	4	0	6	7	8	27	40	38	25	6 32455	23 23838	33 86198	39 99995
2	22	5	1 02199	0	0	0	4	0	6	7	8	27	40	25	38	6 32455	23 23838	32 24899	43 73926
2	23	4	16 10177	0	0	0	4	0	6	7	8	40	25	38	48	23 23838	39 99995	43 32093	54 71104
2	24	3	0 00000	1	0	0	4	0	6	7	8	27	40	48	0	6 32455	23 23838	54 71104	0 00000
2	25	5	1 02199	0	0	0	4	0	6	7	8	27	40	25	38	6 32455	23 23838	32 24899	43 73926
2	26	5	2 91111	0	0	0	4	0	6	7	8	27	40	25	38	6 32455	23 23838	39 99995	43 32093
2	27	4	15 02123	0	0	0	4	0	6	7	8	40	25	38	48	23 23838	32 24899	40 28093	54 71104
2	28	4	2 40522	1	0	0	4	0	6	7	8	27	40	25	48	6 32455	23 23838	39 99995	54 71104
2	29	3	0 00000	1	0	0	4	0	6	7	8	27	40	48	0	6 32455	23 23838	54 71104	0 00000
2	30	3	0 00000	1	0	0	4	0	6	7	8	27	40	48	0	6 32455	23 23838	54 71104	0 00000
2	31	4	2 19117	0	0	0	4	0	6	7	8	27	40	48	38	6 32455	23 23838	54 71104	55 99992
2	32	5	12 16771	0	0	0	0	0	6	7	8	40	38	25	48	23 23838	25 48079	25 99997	54 71104
2	33	5	12 16771	0	0	0	0	0	6	7	8	40	38	25	48	23 23838	25 48079	25 99997	54 71104
2	34	4	14 03268	0	0	0	0	5	6	7	8	40	38	48	19	33 23838	33 86198	54 71104	58 20653
2	35	2	0 00000	1	0	0	4	5	6	7	8	40	48	0	0	23 23838	54 71104	0 00000	0 00000
2	36	5	1 64929	0	0	0	4	0	6	7	8	27	40	38	25	6 32455	23 23838	25 48079	25 99997
2	37	4	1 11655	1	0	0	4	0	6	7	8	27	40	48	45	6 32455	23 23838	54 71104	189 99986
2	38	6	10 12206	0	0	0	0	0	0	7	8	32	40	25	38	14 99996	23 23838	25 99997	40 04399
2	39	6	11 17580	0	0	0	0	0	0	7	8	32	40	25	38	14 99996	23 23838	25 99997	33 86198
2	40	6	12 45222	0	0	0	0	0	0	7	8	32	40	38	25	14 99996	23 23838	25 48079	25 99997
2	41	6	11 17580	0	0	0	0	0	0	7	8	32	40	25	38	14 99996	23 23838	25 99997	33 86198
2	42	6	10 08393	0	0	0	0	0	0	7	8	32	40	25	38	14 99996	23 23838	25 99997	40 28093
2	43	6	11 17580	0	0	0	0	0	0	7	8	32	40	25	38	14 99996	23 23838	25 99997	33 86198
2	44	7	11 54149	0	0	0	0	0	0	7	8	32	40	25	38	14 99996	23 23838	25 99997	33 86198
2	45	6	7 55015	0	0	0	0	0	0	7	8	32	40	25	38	14 99996	15 68437	25 99997	43 73926
2	46	5	8 71353	0	0	0	0	0	6	7	8	40	25	38	48	15 68437	25 99997	43 73926	54 71104
2	47	6	9 38545	0	0	0	0	0	6	7	8	40	25	38	48	15 68437	25 99997	33 86198	54 71104
2	48	6	14 06880	0	0	0	0	0	6	7	8	40	25	38	48	23 23838	25 99997	41 73926	54 71104

CHROMIUM

A	B	C	D	E								F				G			
14	0	10	24 32748	0	0	0	0	0	0	0	0	25	19	7	16	66 99988	6399 97559	6998 79004	24892 832
14	1	5	3622 37207	0	0	0	4	5	6	0	0	7	16	47	40	6998 79004	24892 832	30454 753	40637 617
14	2	6	3920 66992	0	0	0	4	5	6	0	0	7	16	47	40	6998 79004	24892 832	30454 753	40637 617
14	3	5	2897 86377	0	0	0	4	5	6	0	0	7	16	40	38	6998 79004	24892 832	40637 617	63804 156
14	4	6	3384 91846	0	0	0	4	5	6	0	0	7	16	47	40	6998 79004	24892 832	30454 753	57461 679
14	5	6	3384 91846	0	0	0	4	5	6	0	0	7	16	47	40	6998 79004	24892 832	30454 753	57461 679
14	6	6	3384 91846	0	0	0	4	5	6	0	0	7	16	47	40	6998 79004	24892 832	30454 753	57461 679
14	7	7	10 77488	0	0	0	4	0	6	0	0	25	7	16	47	66 99988	6998 79004	24892 832	30454 753
14	8	6	3384 91846	0	0	0	4	5	6	0	0	7	16	47	40	6998 79004	24892 832	30454 753	57461 679
14	9	6	3209 34570	0	0	0	4	5	6	0	0	7	16	47	38	6998 79004	24892 832	30454 753	63804 156
14	10	6	3077 48486	0	0	0	4	5	6	0	0	7	16	47	38	6998 79004	24892 832	30454 753	68999 798
14	11	6	3384 91846	0	0	0	4	5	6	0	0	7	16	47	40	6998 79004	24892 832	30454 753	57461 679
14	12	6	3384 91846	0	0	0	4	5	6	0	0	7	16	47	40	6998 79004	24892 832	30454 753	57461 679
14	13	6	3209 34570	0	0	0	4	5	6	0	0	7	16	47	38	6998 79004	24892 832	30454 753	63804 156
14	14	6	3209 34570	0	0	0	4	5	6	0	0	7	16	47	38	6998 79004	24892 832	30454 753	63804 156
14	15	6	3209 34570	0	0	0	4	5	6	0	0	7	16	47	38	6998 79004	24892 832	30454 753	63804 156
14	16	6	4248 24512	1	0	0	4	5	6	0	0	7	16	45	47	6998 79004	24892 832	29999 871	30454 753
14	17	5	2704 59375	0	0	0	4	5	6	0	0	7	16	40	38	6998 79004	24892 832	57461 679	63804 156
14	18	7	10 77488	0	0	0	4	0	6	0	0	25	7	16	47	66 99988	6998 79004	24892 832	30454 753
14	19	7	10 77488	0	0	0	4	0	6	0	0	25	7	16	47	66 99988	6998 79004	24892 832	30454 753
14	20	6	3384 91846	0	0	0	4	5	6	0	0	7	16	47	40	6998 79004	24892 832	30454 753	57461 679
14	21	6	3062 98096	0	0	0	4	5	0	0	0	7	16	40	35	6998 79004	24892 832	57461 679	59899 710
14	22	6	6 81313	0	0	0	4	0	6	0	0	25	7	16	40	66 99988	6998 79004	24892 832	57461 679
14	23	6	3384 91846	0	0	0	4	5	6	0	0	7	16	47	40	6998 79004	24892 832	30454 753	57461 679
14	24	8	8 21866	1	0	0	4	0	6	0	0	25	7	16	47	66 99988	6998 79004	24892 832	30454 753
14	25	8	6 81313	0	0	0	4	0	6	0	0	25	7	16	40	66 99988	6998 79004	24892 832	57461 679
14	26	7	10 77488	0	0	0	4	0	6	0	0	25	7	16	47	66 99988	6998 79004	24892 832	30454 753
14	27	6	3062 98096	0	0	0	4	5	0	0	0	7	16	40	35	6998 79004	24892 832	57461 679	59899 710
14	28	6	6 81313	1	0	0	4	0	0	0	0	25	7	16	40	66 99988	6998 79004	24892 832	57461 679
14	29	5	3093 64844	1	0	0	4	5	6	0	0	7	16	47	40	6998 79004	24892 832	30454 753	57461 679
14	30	5	5 01090	1	0	0	4	0	6	0	0	25	7	16	40	66 99988	6998 79004	24892 832	57461 679
14	31	5	3093 64844	1	0	0	4	5	6	0	0	7	16	47	40	6998 79004	24892 832	30454 753	57461 679
14	32	6	1562 07568	0	0	0	0	5	6	0	0	19	7	16	40	6399 97559	6998 79004	24892 832	57461 679
14	33	6	1562 07568	0	0	0	0	5	6	0	0	19	7	16	40	6399 97559	6998 79004	24892 832	57461 679
14	34	7	2417 28809	0	0	0	0	5	6	0	0	19	7	16	47	6399 97559	6998 79004	24892 832	30454 753
14	35	5	3093 64844	1	0	0	4	5	6	0	0	7	16	47	40	6998 79004	24892 832	30454 753	57461 679
14	36	8	13 89817	0	0	0	4	0	0	0	0	25	7	16	47	66 99988	6998 79004	24892 832	30454 753
14	37	7	4542 25586	1	0	0	4	5	0	0	0	7	16	45	47	6998 79004	24892 832	29999 871	30454 753
14	38	5	1562 07568	0	0	0	0	5	6	0	0	19	7	16	40	6399 97559	6998 79004	24892 832	57461 679
14	39	5	1562 07568	0	0	0	0	5	6	0	0	19	7	16	40	6399 97559	6998 79004	24892 832	57461 679
14	40	6	1562 07568	0	0	0	0	5	6	0	0	19	7	16	40	6399 97559	6998 79004	24892 832	57461 679
14	41	7	2417 28809	0	0	0	0	5	6	0	0	19	7	16	47	6399 97559	6998 79004	24892 832	30454 753
14	42	5	1081 [illegible]	0	0	0	0	5	6	0	8	19	7	40	38	6399 97559	6998 79004	57461 679	63804 156

CHROMIUM (Continued)

A	B	C	D	E								F				G			
14	43	6	1528 89502	0	0	0	0	5	6	0	8	19	7	47	40	6399 97559	6998 79004	30454 753	57461 679
14	44	7	2281 69336	0	0	0	0	5	6	0	8	19	7	45	47	6399 97559	6998 79004	29999 871	30454 753
14	45	5	931 21777	0	0	0	0	5	6	0	8	19	7	38	40	6399 97559	6998 79004	63804 156	81251 093
14	46	6	1437 40889	0	0	0	0	5	6	0	8	19	7	47	38	6399 97559	6998 79004	30454 753	63804 156
14	47	6	1438 90771	0	0	0	0	5	6	0	8	19	7	45	38	6399 97559	6998 79004	29999 871	63804 156
14	48	7	2281 69336	0	0	0	0	5	6	0	8	19	7	45	47	6399 97559	6998 79004	29999 871	30454 753

COPPER

A	B	C	D	E								F				G			
15	0	23	0 38709	0	0	0	0	0	0	0	0	19	35	16	9	0 30511	0 75873	0 99528	1 34462
15	1	20	0 30222	0	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	2	18	0 27787	0	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	3	18	0 27787	0	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	4	19	0 28994	0	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	5	18	0 27787	0	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	6	18	0 27787	0	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	7	20	0 30222	0	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	8	19	0 28994	0	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	9	18	0 27787	0	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	10	18	0 28446	0	0	0	0	0	0	0	0	19	35	16	38	0 25587	0 75873	0 99528	1 02215
15	11	18	0 27787	0	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	12	19	0 28994	0	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	13	18	0 27787	0	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	14	17	0 26800	0	0	0	0	5	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	15	16	0 25432	0	0	0	0	5	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	16	16	0 25432	1	0	0	0	5	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	17	17	0 26800	0	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	18	18	0 28446	0	0	0	0	0	0	0	0	19	35	16	38	0 25587	0 75873	0 99528	1 02215
15	19	17	0 27347	0	0	0	0	0	0	0	0	19	35	16	38	0 25587	0 75873	0 99528	1 02215
15	20	17	0 27347	0	0	0	0	0	0	0	0	19	35	16	38	0 25587	0 75873	0 99528	1 02215
15	21	19	0 28994	0	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	22	19	0 29007	0	0	0	0	0	0	0	0	19	35	16	38	0 25587	0 75873	0 99528	1 33946
15	23	19	0 29539	0	0	0	0	0	0	0	0	19	35	16	38	0 25587	0 75873	0 99528	1 04852
15	24	16	0 25432	1	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	25	19	0 29007	0	0	0	0	0	0	0	0	19	35	16	38	0 25587	0 75873	0 99528	1 33946
15	26	19	0 29539	0	0	0	0	0	0	0	0	19	35	16	38	0 25587	0 75873	0 99528	1 04852
15	27	18	0 27787	0	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	28	17	0 26800	1	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	29	16	0 25432	1	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	30	15	0 24283	1	0	0	0	0	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	31	15	0 24635	0	0	0	0	5	0	0	0	19	35	16	38	0 25587	0 75873	0 99528	1 23598
15	32	15	0 29916	0	0	0	0	0	0	0	0	19	35	16	38	0 30511	0 75873	0 99528	1 02215
15	33	15	0 29916	0	0	0	0	0	0	0	0	19	35	16	38	0 30511	0 75873	0 99528	1 02215
15	34	16	0 29905	0	0	0	0	5	0	0	0	19	35	16	9	0 30511	0 75873	0 99528	1 34462
15	35	14	0 23152	1	0	0	0	5	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	36	17	0 27347	0	0	0	0	0	0	0	0	19	35	16	38	0 25587	0 75873	0 99528	1 02215
15	37	15	0 24283	1	0	0	0	5	0	0	0	19	35	16	9	0 25587	0 75873	0 99528	1 34462
15	38	13	0 26342	0	0	0	0	0	0	0	0	19	35	16	9	0 30511	0 75873	0 99528	1 34462
15	39	13	0 26342	0	0	0	0	0	0	0	0	19	35	16	9	0 30511	0 75873	0 99528	1 34462
15	40	13	0 26513	0	0	0	0	0	0	0	0	19	35	16	38	0 30511	0 75873	0 99528	1 30928
15	41	16	0 29905	0	0	0	0	0	0	0	0	19	35	16	9	0 30511	0 75873	0 99528	1 34462
15	42	11	0 23026	0	0	0	0	0	0	0	0	19	35	9	15	0 30511	0 75873	1 34462	1 42372
15	43	12	0 24267	0	0	0	0	0	0	0	0	19	35	9	15	0 30511	0 75873	1 34462	1 42372
15	44	13	0 25525	0	0	0	0	0	0	0	0	19	35	9	15	0 30511	0 75873	1 34462	1 42372
15	45	11	0 23102	0	0	0	0	0	0	0	0	19	35	9	38	0 30511	0 75873	1 34462	1 40105
15	46	12	0 24340	0	0	0	0	0	0	0	0	19	35	9	38	0 30511	0 75873	1 34462	1 40105
15	47	12	0 24267	0	0	0	0	0	0	0	0	19	35	9	15	0 30511	0 75873	1 34462	1 42372
15	48	13	0 25594	0	0	0	0	0	0	0	0	19	35	9	38	0 30511	0 75873	1 34462	1 40105

CYANIDE

A	B	C	D	E								F				G			
11	0	10	82 85880	0	0	0	0	0	0	0	8	38	19	48	49	76 70867	82 99980	114 31555	125 12128
11	1	7	71 88795	0	0	0	0	0	6	0	8	19	48	38	49	82 99980	101 99974	103 22879	125 12128
11	2	6	57 84081	0	0	0	0	5	6	0	8	38	19	48	49	76 70867	82 99980	114 31555	125 12128
11	3	7	59 16801	0	0	0	0	0	6	0	8	38	19	48	49	76 70867	82 99980	114 31555	125 12128
11	4	7	59 16801	0	0	0	0	0	6	0	8	38	19	48	49	76 70867	82 99980	114 31555	125 12128
11	5	6	57 84081	0	0	0	0	5	6	0	8	38	19	48	49	76 70867	82 99980	114 31555	125 12128
11	6	6	57 84081	0	0	0	0	5	6	0	8	38	19	48	49	76 70867	82 99980	114 31555	125 12128
11	7	8	60 43829	0	0	0	0	0	6	0	8	38	19	48	49	76 70867	82 99980	114 31555	125 12128
11	8	7	59 16801	0	0	0	0	0	6	0	8	38	19	48	49	76 70867	82 99980	114 31555	125 12128
11	9	8	60 43829	0	0	0	0	0	6	0	8	38	19	48	49	76 70867	82 99980	114 31555	125 12128
11	10	7	42 91940	0	0	0	0	5	6	0	8	38	19	48	49	56 99990	82 99980	114 31555	125 12128
11	11	8	60 43829	0	0	0	0	0	6	0	8	38	19	48	49	76 70867	82 99980	114 31555	125 12128
11	12	6	57 84081	0	0	0	0	5	6	0	8	38	19	48	49	76 70867	82 99980	114 31555	125 12128
11	13	7	59 16801	0	0	0	0	5	6	0	8	38	19	48	49	76 70867	82 99980	114 31555	125 12128
11	14	7	59 16801	0	0	0	0	5	6	0	8	38	19	48	49	76 70867	82 99980	114 31555	125 12128
11	15	6	29 31423	0	0	0	0	5	6	0	8	38	19	48	40	76 70867	82 99980	114 31555	317 99931
11	16	5	38 13332	1	0	0	0	5	6	0	8	19	48	45	40	82 99980	114 31555	308 48419	317 99931
11	17	6	41 01585	0	0	0	0	0	6	0	8	38	19	48	40	76 70867	82 99980	114 31555	207 95767
11	18	7	37 28158	0	0	0	0	0	6	0	8	38	19	48	25	56 99990	82 99980	114 31555	186 99973
11	19	7	37 28158	0	0	0	0	0	6	0	8	38	19	48	25	56 99990	82 99980	114 31555	186 99973
11	20	6	30 91743	0	0	0	0	5	6	0	8	38	19	48	40	56 99990	82 99980	114 31555	207 95767
11	21	8	60 43829	0	0	0	0	5	0	0	8	38	19	48	49	76 70867	82 99980	114 31555	125 12128
11	22	8	60 43829	0	0	0	0	0	6	0	8	38	19	48	49	76 70867	82 99980	114 31555	125 12128

COLUMN KEY
A CHEMICAL ID
B STATE ID
C NO. OF RESIDENT FAMILIES
D FINAL ACUTE VALUE (FAV)
E EIGHT CRITERIA (A NUMBER SIGNIFIES A CRITERIA NOT SATISFIED)
F FOUR MOST SENSITIVE RESIDENT FAMILIES
G FAMILY MEAN ACUTE VALUE FOR FOUR MOST SENSITIVE SPECIES

APPENDIX E
RECALCULATION RESULTS

CYANIDE (Continued)

A	B	C	D	E	F	G			
11	23	6	41.49268	0 0 0 0 5 6 0 8	38 19 48 49	56.99990	82.99980	114.31555	125.12128
11	24	6	55.17302	1 0 0 0 0 0 6 0 8	19 48 25 40	82.99980	114.31555	166.99973	207.95767
11	25	7	59.16601	0 0 0 0 0 6 0 8	38 19 48 49	76.70867	82.99980	114.31555	125.12128
11	26	8	44.10383	0 0 0 0 0 6 0 8	38 19 48 49	56.99990	82.99980	114.31555	125.12128
11	27	8	60.43829	0 0 0 0 5 0 0 8	38 19 48 49	76.70867	82.99980	114.31555	125.12128
11	28	8	66.49722	1 0 0 0 0 0 0 8	19 48 49 25	82.99980	114.31555	125.12128	166.99973
11	29	5	32.25383	1 0 0 0 5 6 0 8	19 48 40 16	82.99980	114.31555	207.95767	431.49866
11	30	6	55.17302	1 0 0 0 0 6 0 8	19 48 25 40	82.99980	114.31555	166.99973	207.95767
11	31	5	32.25383	1 0 0 0 5 6 0 8	19 48 40 16	82.99980	114.31555	207.95767	431.49866
11	32	6	41.49268	0 0 0 0 5 6 0 8	38 19 48 49	56.99990	82.99980	114.31555	125.12128
11	33	6	41.49268	0 0 0 0 5 6 0 8	38 19 48 49	56.99990	82.99980	114.31555	125.12128
11	34	6	57.84061	0 0 0 0 5 6 0 8	38 19 48 49	76.70867	82.99980	114.31555	125.12128
11	35	6	54.14859	1 0 0 0 5 6 0 8	19 48 49 40	82.99980	114.31555	125.12128	207.95767
11	36	8	38.81360	0 0 0 0 0 0 0 8	38 19 48 25	56.99990	82.99980	114.31555	166.99973
11	37	7	56.34795	1 0 0 0 5 0 0 8	19 48 49 40	82.99980	114.31555	125.12128	207.95767
11	38	6	57.84061	0 0 0 0 5 6 0 8	38 19 48 49	76.70867	82.99980	114.31555	125.12128
11	39	6	57.84061	0 0 0 0 5 6 0 8	38 19 48 49	76.70867	82.99980	114.31555	125.12128
11	40	6	30.91743	0 0 0 0 0 6 0 8	38 19 48 40	56.99990	82.99980	114.31555	207.95767
11	41	7	59.16601	0 0 0 0 5 6 0 8	38 19 48 49	76.70867	82.99980	114.31555	125.12128
11	42	6	57.84061	0 0 0 0 5 6 7 8	38 19 48 49	76.70867	82.99980	114.31555	125.12128
11	43	5	56.44991	0 0 0 0 5 6 7 8	38 19 48 49	76.70867	82.99980	114.31555	125.12128
11	44	6	57.84061	0 0 0 0 5 6 7 8	38 19 48 49	76.70867	82.99980	114.31555	125.12128
11	45	6	57.84061	0 0 0 0 0 6 7 8	38 19 48 49	76.70867	82.99980	114.31555	125.12128
11	46	5	56.44991	0 0 0 0 5 6 7 8	38 19 48 49	76.70867	82.99980	114.31555	125.12128
11	47	6	56.91849	0 0 0 0 5 6 7 8	38 19 48 49	76.70867	82.99980	121.02043	125.12128
11	48	5	19.16409	0 0 0 0 5 6 7 8	38 19 48 40	76.70867	82.99980	114.31555	207.95767

DDT

A	B	C	D	E	F	G			
4	0	20	1.30035	0 0 0 0 0 0 0 0	19 49 39 25	1.32334	1.59549	1.70000	2.23432
4	1	9	0.70781	0 0 0 0 0 0 7 8	19 49 48 25	0.97595	1.59549	2.35804	3.00000
4	2	8	0.64651	0 0 0 0 0 0 7 8	19 49 25 48	0.97595	1.59549	3.00000	3.00557
4	3	9	0.80225	0 0 0 0 0 0 7 8	19 49 39 25	0.97595	1.59549	1.70000	2.23432
4	4	11	0.74011	0 0 0 0 0 0 7 8	19 49 25 28	0.97595	1.59549	1.66407	3.00000
4	5	8	0.66248	0 0 0 0 0 0 7 8	19 49 25 28	0.97595	1.59549	1.66407	3.00000
4	6	7	0.63513	0 0 0 0 0 0 7 8	19 49 25 48	0.97595	1.59549	1.66407	3.00557
4	7	14	0.91121	0 0 0 0 0 0 7 8	19 49 39 25	0.97595	1.59549	1.70000	2.23432
4	8	12	0.92461	0 0 0 0 0 0 7 8	19 49 25 39	0.97595	1.59549	1.66407	1.70000
4	9	9	0.68865	0 0 0 0 0 0 7 8	19 49 25 28	0.97595	1.59549	1.66407	3.00000
4	10	9	0.68865	0 0 0 0 0 0 7 8	19 49 25 28	0.97595	1.59549	1.66407	3.00000
4	11	10	0.71450	0 0 0 0 0 0 7 8	19 49 25 28	0.97595	1.59549	1.66407	3.00000
4	12	8	0.66248	0 0 0 0 0 0 7 8	19 49 25 28	0.97595	1.59549	1.66407	3.00000
4	13	9	0.68865	0 0 0 0 0 0 7 8	19 49 25 28	0.97595	1.59549	1.66407	3.00000
4	14	8	0.60945	0 0 0 0 0 0 7 8	19 49 28 48	0.97595	1.59549	3.00000	3.57033
4	15	7	0.49017	0 0 0 0 0 0 7 8	19 28 48 38	0.97595	3.00000	4.10227	8.15109
4	16	7	1.30026	1 0 0 0 0 0 6 8	19 28 48 42	0.97595	3.00000	1.26281	17.08779
4	17	6	0.41916	0 0 0 0 0 5 6 8	19 48 38 50	0.97595	3.90425	7.83989	9.99999
4	18	8	0.67512	0 0 0 0 0 0 6 8	19 28 24 48	0.97595	3.00000	4.00000	4.10227
4	19	9	1.12705	0 0 0 0 0 0 6 8	19 28 27 48	0.97595	3.00000	3.23356	4.10227
4	20	8	0.68885	0 0 0 0 0 0 6 8	19 28 27 48	0.97595	3.00000	1.23356	4.10227
4	21	13	0.94208	0 0 0 0 0 0 7 8	19 49 25 39	0.97595	1.59549	1.66407	1.70000
4	22	13	0.82091	0 0 0 0 0 0 7 8	19 49 25 28	0.97595	1.59549	2.23432	1.00000
4	23	10	0.71450	0 0 0 0 0 0 6 8	19 49 25 28	0.97595	1.59549	1.66407	3.00000
4	24	10	0.76962	1 0 0 0 0 0 6 8	19 28 27 24	0.97595	3.00000	3.23356	4.00000
4	25	12	0.79341	0 0 0 0 0 0 6 8	19 49 25 28	0.97595	1.59549	2.23432	3.00000
4	26	14	0.65924	0 0 0 0 0 0 6 8	19 49 25 39	0.97595	1.59549	1.66407	1.70000
4	27	12	0.66858	0 0 0 0 0 0 6 8	19 49 39 25	0.97595	1.59549	1.70000	2.23432
4	28	12	0.92461	0 0 0 0 0 0 6 8	19 49 25 39	0.97595	1.59549	1.66407	1.70000
4	29	10	0.73266	0 0 0 0 0 0 6 8	19 39 28 27	0.97595	1.70000	2.40891	3.23356
4	30	9	0.70942	0 0 0 0 0 0 6 8	19 28 27 24	0.97595	2.40891	3.23356	4.00000
4	31	9	0.72705	0 0 0 0 0 0 6 8	19 28 27 48	0.97595	3.00000	3.23356	4.10227
4	32	10	0.94418	0 0 0 0 0 0 6 8	19 49 39 25	1.32334	1.59549	1.70000	3.00000
4	33	11	0.97022	0 0 0 0 0 0 7 8	19 49 39 25	1.32334	1.59549	1.70000	3.00000
4	34	9	0.86411	0 0 0 0 5 6 7 8	19 49 39 48	1.32334	1.59549	1.70000	3.28203
4	35	7	0.56598	1 0 0 0 0 0 6 7 8	19 49 28 48	0.97595	1.59549	2.40891	3.90425
4	36	9	0.75472	0 0 0 0 0 0 6 7 8	19 28 25 27	0.97595	2.40891	3.00000	3.23356
4	37	10	0.71391	1 0 0 0 0 0 6 7 8	19 49 28 27	0.97595	1.59549	2.40891	3.23356
4	38	13	1.02084	0 0 0 0 0 0 0 7 0	19 49 39 25	1.32334	1.59549	1.70000	3.00000
4	39	10	0.92586	0 0 0 0 0 0 0 7 0	19 49 25 48	1.32334	1.59549	3.00000	3.28203
4	40	10	1.02085	0 0 0 0 0 0 0 7 0	19 25 48 38	1.32334	3.00000	3.09646	4.87782
4	41	12	0.91832	0 0 0 0 0 0 0 7 0	19 49 25 48	1.32334	1.59549	3.00000	4.10227
4	42	11	0.95851	0 0 0 0 0 0 0 7 0	19 49 25 48	1.32334	1.59549	3.00000	3.28203
4	41	12	1.00863	0 0 0 0 0 0 0 7 0	19 49 25 48	1.32334	1.59549	3.00000	3.09646
4	44	11	0.95851	0 0 0 0 0 0 0 7 0	19 49 25 48	1.32334	1.59549	3.00000	3.28203
4	45	11	0.95851	0 0 0 0 0 0 0 7 0	19 49 25 48	1.32334	1.59549	3.00000	3.28203
4	46	11	1.00165	0 0 0 0 0 0 0 7 0	19 49 32 25	1.32334	1.59549	1.90000	3.00000
4	47	11	1.00165	0 0 0 0 0 0 0 7 0	19 49 32 25	1.32334	1.59549	1.90000	3.00000
4	48	10	0.88312	0 0 0 0 0 0 0 7 0	19 25 48 38	1.32334	3.00000	3.28203	6.92063

DIELDRIN

A	B	C	D	E	F	G			
3	0	12	3.65622	0 0 0 0 0 0 7 0	45 24 38 29	4.50275	5.00000	5.45189	7.99999
3	1	5	0.77913	0 0 3 0 0 0 7 8	29 38 40 13	7.99999	10.79999	22.10088	231.05228
3	2	6	1.09757	0 0 0 0 0 0 7 8	38 29 48 40	2.45947	7.99999	14.45951	22.10088
3	3	6	1.09757	0 0 0 0 0 0 7 8	38 29 48 40	2.45947	7.99999	14.45951	22.10088
3	4	6	0.94178	0 0 0 0 0 0 7 8	38 29 48 40	2.45947	7.99999	14.45951	30.10193
3	5	6	0.94178	0 0 0 0 0 0 7 8	38 29 48 40	2.45947	7.99999	14.45951	30.10193
3	6	6	0.94178	0 0 0 0 0 0 7 8	38 29 48 40	2.45947	7.99999	14.45951	30.10193
3	7	7	2.15928	0 0 0 0 0 0 7 8	38 29 48 27	3.87334	7.99999	10.81058	19.99997
3	8	7	1.27308	0 0 0 0 0 0 7 8	38 29 48 27	2.45947	7.99999	10.81058	19.99997
3	9	6	0.76375	0 0 0 0 0 0 7 8	38 29 48 40	2.45947	7.99999	10.81058	40.99995
3	10	6	0.76375	0 0 0 0 0 0 7 8	38 29 48 40	2.45947	7.99999	10.81058	40.99995
3	11	8	2.07374	0 0 0 0 0 0 7 8	38 29 48 40	5.15388	7.99999	10.81058	30.10193
3	12	6	0.93063	0 0 0 0 0 0 7 8	38 29 48 40	2.45947	7.99999	10.81058	30.10193
3	13	6	0.76375	0 0 0 0 0 0 7 8	38 29 48 40	2.45947	7.99999	10.81058	40.99995
3	14	5	0.67884	0 0 0 0 5 0 7 8	38 29 48 40	2.45947	7.99999	10.81058	40.99995
3	15	5	0.67884	0 0 0 0 5 0 7 8	38 29 48 40	2.45947	7.99999	10.81058	40.99995
3	16	4	0.50124	1 0 0 0 5 6 7 8	45 48 40 19	4.50275	14.45951	40.99995	231.05228
3	17	4	0.20962	0 0 0 0 0 5 6 7 8	38 48 40 19	2.45947	10.81058	30.10193	231.05228
3	18	5	0.67505	0 0 0 0 0 6 7 8	38 24 48 40	2.45947	5.00000	10.81058	30.10193
3	19	5	0.90409	0 0 0 0 0 6 7 8	38 48 27 40	2.45947	10.81058	19.99997	30.10193
3	20	5	0.90409	0 0 0 0 0 6 7 8	38 48 27 40	2.45947	10.81058	19.99997	30.10193
3	21	6	1.01111	0 0 0 0 0 6 7 8	38 48 27 40	2.45947	10.81058	19.99997	30.10193
3	22	7	3.11198	0 0 0 0 0 0 7 8	38 29 48 27	5.45189	7.99999	10.81058	19.99997
3	23	5	0.56409	0 0 0 0 0 6 7 8	38 48 40 19	5.45189	10.81058	30.10193	231.05228
3	24	5	2.22945	1 0 0 0 0 6 7 8	24 48 27 40	5.00000	10.81058	19.99997	30.10193
3	25	6	2.67050	0 0 0 0 0 6 7 8	38 48 27 40	5.45189	10.81058	19.99997	30.10193
3	26	7	2.23992	0 0 0 0 0 6 7 8	24 38 48 27	5.00000	5.45189	10.81058	19.99997
3	27	5	0.42152	0 0 0 0 0 6 7 8	38 48 40 19	3.87334	10.81058	30.10193	231.05228
3	28	5	1.66336	1 0 0 0 0 6 7 8	48 27 40 19	10.81058	19.99997	30.10193	231.05228
3	29	5	1.66336	1 0 0 0 0 6 7 8	48 27 40 19	10.81058	19.99997	30.10193	231.05228
3	30	6	2.41439	1 0 0 0 0 6 7 8	24 48 27 40	5.00000	10.81058	19.99997	30.10193
3	31	5	5.13848	0 0 0 0 0 6 7 8	38 48 27 40	10.79999	10.81058	19.99997	30.10193
3	32	5	0.29870	0 0 0 0 0 6 7 8	38 48 40 19	2.45947	10.81058	30.10193	190.74548
3	33	6	0.97979	0 0 0 0 0 0 7 8	38 48 33 40	2.45947	10.81058	23.99997	30.10193
3	34	4	0.24227	0 0 0 0 5 6 7 8	38 48 40 19	2.45947	10.81058	30.10193	190.74548
3	35	4	0.87880	1 0 0 0 0 6 7 8	48 40 19 28	10.81058	30.10193	190.74548	739.99954
3	36	7	1.12210	0 0 0 0 0 6 7 8	38 48 27 40	2.45947	10.81058	19.99997	30.10193
3	37	8	2.13254	1 0 0 0 0 6 7 8	45 48 27 40	4.50275	10.81058	19.99997	30.10193
3	38	8	2.78136	0 0 0 0 0 0 7 0	38 29 48 33	5.15388	7.99999	10.81058	23.99997
3	39	8	1.26453	0 0 0 0 0 0 7 0	38 29 48 33	2.45947	7.99999	10.81058	23.99997
3	40	8	1.26453	0 0 0 0 0 0 7 0	38 29 48 33	2.45947	7.99999	10.81058	23.99997
3	41	8	1.26453	0 0 0 0 0 0 7 0	38 29 48 33	2.45947	7.99999	10.81058	23.99997
3	42	8	2.07419	0 0 0 0 0 0 7 0	38 29 48 33	3.87334	7.99999	10.81058	23.99997
3	43	8	1.26453	0 0 0 0 0 0 7 0	38 29 48 33	2.45947	7.99999	10.81058	23.99997
3	44	9	1.57875	0 0 0 0 0 0 7 0	38 45 29 48	2.45947	4.50275	7.99999	10.81058
3	45	8	2.91136	0 0 0 0 0 0 7 0	38 29 48 33	5.45189	7.99999	10.81058	23.99997
3	46	7	2.75267	0 0 0 0 0 0 7 0	38 29 48 33	5.45189	7.99999	10.81058	23.99997
3	47	8	1.49214	0 0 0 0 0 0 7 0	38 45 29 48	2.45947	4.50275	7.99999	10.81058
3	48	8	3.08791	0 0 0 0 0 0 7 0	45 38 29 48	4.50275	5.45189	7.99999	10.81058

ENDOSULFAN

A	B	C	D	E	F	G			
5	0	9	0.41508	0 0 0 0 0 0 7 0	38 40 32 41	0.86433	1.27884	2.30000	3.24037
5	1	4	0.08528	1 0 0 0 4 0 0 7 8	40 41 25 31	1.27884	3.24037	5.79999	87.65022
5	2	6	0.29728	0 0 0 0 4 0 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	3	6	0.29728	0 0 0 0 4 0 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	4	6	0.29728	0 0 0 0 4 0 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	5	6	0.29728	0 0 0 0 4 0 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	6	6	0.29728	0 0 0 0 4 0 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	7	6	0.29728	0 0 0 0 4 0 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	8	6	0.29728	0 0 0 0 4 0 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	9	5	0.29314	0 0 0 0 4 0 0 7 8	38 41 48 25	0.86433	3.24037	3.81051	6.00000
5	10	5	0.29314	0 0 0 0 4 0 0 7 8	38 41 48 25	0.86433	3.24037	3.81051	6.00000
5	11	6	0.29728	0 0 0 0 4 0 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	12	6	0.29728	0 0 0 0 4 0 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	13	5	0.29314	0 0 0 0 4 0 0 7 8	38 41 48 25	0.86433	3.24037	3.81051	6.00000
5	14	4	0.03772	0 0 0 0 4 5 0 7 8	38 41 48 31	0.86433	3.24037	3.81051	87.65022
5	15	4	0.03772	0 0 0 0 4 5 0 7 8	38 41 48 31	0.86433	3.24037	3.81051	87.65022
5	16	3	0.00000	1 0 0 0 4 5 0 7 8	45 48 31 0	3.70000	3.81051	87.65022	0.00000
5	17	5	0.27343	0 0 0 0 4 5 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	18	5	0.27343	0 0 0 0 4 5 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	19	5	0.27343	0 0 0 0 4 5 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	20	5	0.27343	0 0 0 0 4 5 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	21	6	0.29728	0 0 0 0 4 0 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	22	6	0.29728	0 0 0 0 4 0 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	23	6	0.29728	0 0 0 0 4 0 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	24	3	0.00000	1 0 0 0 4 5 0 7 8	40 48 31 0	1.27884	3.81051	87.65022	0.00000
5	25	6	0.29728	0 0 0 0 4 0 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	26	6	0.29728	0 0 0 0 4 0 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	27	6	0.29728	0 0 0 0 4 0 0 7 8	38 40 41 48	0.86433	1.27884	3.24037	3.81051
5	28	5	0.70214	1 0 0 0 4 0 0 7 8	40 41 48 25	1.27884	3.24037	3.81051	6.00000
5	29	4	0.07248	1 0 0 0 4 5 0 7 8	40 41 48 31	1.27884	3.24037	3.81051	87.65022
5	30	4	0.07248	1 0 0 0 4 5 0 7 8	40 41 48 31	1.27884	3.24037	3.81051	87.65022
5	31	3	0.00000	1 0 0 0 4 5 0 7 8	40 48 31 0	1.27884	3.81051	87.65022	0.00000

COLUMN KEY
- A CHEMICAL ID
- B STATE ID
- C NO. OF RESIDENT FAMILIES
- D FINAL ACUTE VALUE (FAV)
- E EIGHT CRITERIA (A NUMBER SIGNIFIES A CRITERIA NOT SATISFIED)
- F FOUR MOST SENSITIVE RESIDENT FAMILIES
- G FAMILY MEAN ACUTE VALUE FOR FOUR MOST SENSITIVE SPECIES

APPENDIX E
RECALCULATION RESULTS

ENDOSULFAN (Continued)

A	B	C	D	E	F				G			
5	12	7	[illegible]	[illegible] 8	38	40	41	48	0.66433	1.27884	1.24037	3.81051
5	13	7	[illegible]	[illegible] 8	38	40	41	48	0.66433	1.27884	1.24037	3.81051
5	14	8	[illegible]	[illegible] 8	38	40	41	48	0.66433	1.27884	1.24037	1.81051
5	15	4	[illegible]	[illegible] 4 [illegible] 8	41	41	48	11	1.27884	1.24037	1.81051	87.65022
5	16	5	[illegible]	[illegible] 4 [illegible] 8	38	41	48	25	0.66433	1.27884	1.81051	5.79999
5	17	4	[illegible]	[illegible] 4 [illegible] 8	41	41	48	11	1.27884	1.70000	1.81051	87.65022
5	38	8	0.19144	[illegible]	38	41	32	41	0.66433	1.27884	2.30000	1.24037
5	39	8	0.19144	[illegible]	38	41	32	41	0.66433	1.27884	2.30000	1.24037
5	40	8	0.19144	[illegible]	38	41	32	41	0.66433	1.27884	2.30000	1.24037
5	41	8	0.19144	[illegible]	38	40	32	41	0.66433	1.27884	2.30000	1.24037
5	42	7	0.13933	[illegible]	38	40	32	48	0.66433	1.27884	2.30000	1.81051
5	43	8	0.19144	[illegible]	38	40	32	41	0.66433	1.27884	2.30000	1.24037
5	44	8	0.06616	[illegible]	38	41	32	45	0.66433	1.27884	2.30000	1.70000
5	45	6	0.30698	[illegible]	38	32	48	25	0.66433	2.30000	1.81051	5.79999
5	46	7	[illegible]	[illegible] 8	38	48	25	11	0.66433	1.81051	5.79999	87.65022
5	47	6	0.12949	[illegible] 8	38	41	48	25	0.66433	1.70000	1.81051	5.79999
5	48	7	[illegible]	[illegible] 8	38	41	41	48	0.66433	1.27884	1.70000	1.81051

ENDRIN

A	B	C	D	E	F				G			
6	0	17	0.40155	0 0 0 0 0 0 7 0	46	38	33	32	0.44000	0.46827	0.49315	0.64675
6	1	8	0.17608	0 0 0 0 0 0 7 0	46	38	40	31	0.44000	0.45772	0.56177	1.80000
6	2	8	0.28102	0 0 0 0 0 0 7 0	38	40	48	31	0.55563	0.56177	1.01097	1.80000
6	3	8	0.28102	0 0 0 0 0 0 7 0	38	40	48	31	0.55563	0.56177	1.01097	1.80000
6	4	9	0.30539	0 0 0 0 0 0 7 0	46	38	48	40	0.44000	0.55563	1.01097	1.08615
6	5	9	0.30539	0 0 0 0 0 0 7 0	46	38	48	40	0.44000	0.55563	1.01097	1.08615
6	6	9	0.30539	0 0 0 0 0 0 7 0	46	38	48	40	0.44000	0.55563	1.01097	1.08615
6	7	11	0.40949	0 0 0 0 0 0 7 0	46	38	40	45	0.44000	0.68710	0.73211	0.75000
6	8	10	0.31648	0 0 0 0 0 0 7 0	46	38	48	40	0.44000	0.55563	1.01097	1.08615
6	9	10	0.33656	0 0 0 0 0 0 7 0	46	38	45	48	0.44000	0.55563	0.75000	1.01097
6	10	10	0.36749	0 0 0 0 0 0 7 0	46	38	45	48	0.44000	0.69443	0.75000	1.01097
6	11	11	0.37679	0 0 0 0 0 0 7 0	46	38	40	45	0.44000	0.52595	0.73211	0.75000
6	12	9	0.35042	0 0 0 0 0 0 7 0	38	40	48	31	0.55563	0.73211	1.01097	1.80000
6	13	9	0.35503	0 0 0 0 0 0 7 0	38	45	48	31	0.55563	0.75000	1.01097	1.80000
6	14	8	0.34033	0 0 0 0 5 0 7 0	38	45	48	31	0.55563	0.75000	1.01097	1.80000
6	15	8	0.34033	0 0 0 0 5 0 7 0	38	45	48	31	0.55563	0.75000	1.01097	1.80000
6	16	6	0.46370	0 0 0 0 5 6 7 8	44	41	48	40	0.85000	0.94868	1.01097	2.10000
6	17	6	0.30600	0 0 0 0 5 0 7 8	38	40	48	31	0.55563	0.73211	1.01097	1.80000
6	18	8	0.56064	0 0 0 0 0 0 7 8	38	40	45	48	0.69443	0.73211	0.75000	1.01097
6	19	9	0.56869	0 0 0 0 0 0 7 0	38	40	45	48	0.69443	0.73211	0.75000	1.01097
6	20	8	0.56064	0 0 0 0 0 0 7 8	38	40	45	48	0.69443	0.73211	0.75000	1.01097
6	21	9	0.46511	0 0 0 0 0 0 7 8	38	40	45	48	0.55563	0.73211	0.75000	1.01097
6	22	10	0.52998	0 0 0 0 0 0 7 0	38	40	45	48	0.62528	0.73211	0.75000	1.01097
6	23	7	0.39400	0 0 0 0 0 0 7 8	38	40	48	31	0.70057	0.73211	1.01097	1.80000
6	24	9	0.55378	1 0 0 0 0 0 7 0	40	45	48	27	0.73211	0.75000	1.01097	1.26491
6	25	8	0.46240	0 0 0 0 0 0 7 8	38	40	48	27	0.62528	0.73211	1.01097	1.26491
6	26	11	0.58750	0 0 0 0 0 0 7 0	38	40	45	48	0.70057	0.73211	0.75000	1.01097
6	27	8	0.55612	0 0 0 0 0 0 7 8	38	40	45	48	0.68710	0.73211	0.75000	1.01097
6	28	8	0.54174	1 0 0 0 0 0 7 8	40	45	48	27	0.73211	0.75000	1.01097	1.26491
6	29	9	0.55378	1 0 0 0 0 0 7 0	40	45	48	27	0.73211	0.75000	1.01097	1.26491
6	30	11	0.58548	1 0 0 0 0 0 7 0	40	45	48	27	0.73211	0.75000	1.01097	1.26491
6	31	8	0.17997	0 0 0 0 0 0 7 8	38	40	45	48	0.47125	0.73211	0.75000	1.01097
6	32	6	0.14359	0 0 0 0 0 6 7 8	38	40	48	25	0.69443	0.73211	1.01097	5.87367
6	33	7	0.38272	0 0 0 0 0 0 7 8	33	38	40	48	0.49315	0.69443	0.73211	1.01097
6	34	6	0.30600	0 0 0 0 5 0 7 8	38	40	48	31	0.55563	0.73211	1.01097	1.80000
6	35	7	0.41505	1 0 0 0 0 0 7 8	40	45	48	31	0.73211	0.75000	1.01097	1.80000
6	36	10	0.57646	0 0 0 0 0 0 7 8	38	40	45	48	0.69443	0.73211	0.75000	1.01097
6	37	8	0.83538	1 0 0 0 0 0 7 8	45	48	40	27	0.94868	1.01097	1.08615	1.26491
6	38	9	0.26608	0 0 0 0 0 0 7 0	38	33	32	48	0.38261	0.49315	0.64675	1.01097
6	39	9	0.24911	0 0 0 0 0 0 7 0	38	33	32	48	0.35693	0.49315	0.64675	1.01097
6	40	9	0.22154	0 0 0 0 0 0 7 0	38	33	32	48	0.31982	0.49315	0.64675	1.01097
6	41	10	0.29570	0 0 0 0 0 0 7 0	38	33	32	45	0.35693	0.49315	0.64675	0.75000
6	42	10	0.38230	0 0 0 0 0 0 7 0	38	33	32	45	0.46753	0.49315	0.64675	0.75000
6	43	9	0.24911	0 0 0 0 0 0 7 0	38	33	32	48	0.35693	0.49315	0.64675	1.01097
6	44	10	0.26661	0 0 0 0 0 0 7 0	38	33	32	45	0.35693	0.49315	0.64675	0.94868
6	45	10	0.12912	0 0 0 0 0 0 7 0	46	38	33	32	0.44000	0.46827	0.49315	0.77460
6	46	10	0.28880	0 0 0 0 0 0 7 0	33	46	38	32	0.32000	0.44000	0.46827	0.54000
6	47	10	0.19805	0 0 0 0 0 0 7 0	33	38	32	45	0.32000	0.35693	0.54000	0.94868
6	48	10	0.28776	0 0 0 0 0 0 7 0	46	38	33	45	0.44000	0.46827	0.49315	0.94868

HEPTACHLOR

A	B	C	D	E	F				G			
7	0	7	[illegible]	[illegible] 7 8	32	27	33	28	0.99499	1.80000	2.80000	7.79999
7	1	4	[illegible]	[illegible] 6 7 8	25	19	38	41	28.99997	50.74823	81.89980	100.69736
7	2	4	[illegible]	[illegible] 6 7 8	38	48	25	19	13.05761	25.99997	28.99997	50.74823
7	3	6	[illegible]	[illegible] 6 7 8	38	48	25	19	13.05761	25.99997	37.04762	50.74823
7	4	4	[illegible]	[illegible] 6 7 8	38	48	25	19	13.05761	25.99997	47.32856	50.74823
7	5	4	[illegible]	[illegible] 6 7 8	38	48	25	19	13.05761	25.99997	47.32856	50.74823
7	6	4	[illegible]	[illegible] 6 7 8	38	48	25	19	13.05761	25.99997	47.32856	50.74823
7	7	6	[illegible]	[illegible] 6 7 8	27	38	48	25	1.80000	17.70260	24.77092	37.04762
7	8	6	[illegible]	[illegible] 6 7 8	27	38	48	25	1.80000	13.05761	24.77092	47.32856
7	9	5	[illegible]	[illegible] 6 7 8	38	48	25	19	13.05761	25.99997	47.32856	50.74823
7	10	4	[illegible]	[illegible] 6 7 8	38	48	25	19	13.05761	25.99997	47.32856	50.74823
7	11	4	[illegible]	[illegible] 6 7 8	48	38	25	19	25.99997	32.70192	47.32856	50.74823

HEPTACHLOR (Continued)

A	B	C	D	E	F				G			
7	12	5	6.89214	0 0 0 0 0 6 7 8	38	48	25	19	13.05761	24.77092	47.32856	50.74823
7	13	5	6.89214	0 0 0 0 0 6 7 8	38	48	25	19	13.05761	24.77092	47.32856	50.74823
7	14	4	1.71463	0 0 0 0 5 6 7 8	38	48	19	40	13.05761	24.77092	50.74823	319.99933
7	15	4	1.71463	0 0 0 0 5 6 7 8	38	48	19	40	13.05761	24.77092	50.74823	319.99933
7	16	4	5.74669	1 0 0 0 5 6 7 8	48	19	45	40	24.77092	50.74823	147.99966	319.99933
7	17	4	2.84981	0 0 0 0 5 6 7 8	38	48	19	40	13.05761	25.99997	50.74823	179.50781
7	18	4	2.76726	0 0 0 0 5 6 7 8	38	48	19	40	13.05761	24.77092	50.74823	179.50781
7	19	5	0.48503	0 0 0 0 0 6 7 8	27	38	48	19	1.80000	13.05761	24.77092	50.74823
7	20	5	0.48503	0 0 0 0 0 6 7 8	27	38	48	19	1.80000	13.05761	24.77092	50.74823
7	21	6	0.57882	0 0 0 0 0 6 7 8	27	38	48	25	1.80000	13.05761	24.77092	47.32856
7	22	6	0.66180	0 0 0 0 0 6 7 8	27	48	38	25	1.80000	25.99997	29.49752	37.04762
7	23	5	16.21383	0 0 0 0 0 6 7 8	48	38	25	19	24.77092	29.49752	47.32856	50.74823
7	24	4	0.23528	1 0 0 0 0 6 7 8	27	48	19	40	1.80000	24.77092	50.74823	179.50781
7	25	6	0.66180	0 0 0 0 0 6 7 8	27	48	38	25	1.80000	25.99997	29.49752	37.04762
7	26	6	0.62179	0 0 0 0 0 6 7 8	27	48	38	25	1.80000	24.77092	29.49752	47.32856
7	27	5	10.74730	0 0 0 0 0 6 7 8	38	48	25	19	17.70260	25.99997	37.04762	50.74823
7	28	5	0.49098	1 0 0 0 0 6 7 8	27	48	25	19	1.80000	25.99997	47.32856	50.74823
7	29	5	0.40407	1 0 0 0 0 6 7 8	27	28	48	19	1.80000	7.79999	24.77092	50.74823
7	30	5	0.40407	1 0 0 0 0 6 7 8	27	28	48	19	1.80000	7.79999	24.77092	50.74823
7	31	5	0.41561	0 0 0 0 0 6 7 8	27	48	19	38	1.80000	24.77092	50.74823	81.89980
7	32	5	6.71928	0 0 0 0 0 6 7 8	38	48	25	19	13.05761	25.99997	28.99997	58.56595
7	33	6	1.21084	0 0 0 0 0 0 7 8	33	38	48	25	2.80000	13.05761	25.99997	28.99997
7	34	4	2.88044	0 0 0 0 5 6 7 8	38	48	19	40	13.05761	25.99997	58.56595	179.50781
7	35	4	1.57580	1 0 0 0 0 6 7 8	28	48	19	40	7.79999	25.99997	50.74823	179.50781
7	36	7	0.78657	0 0 0 0 0 6 7 8	27	28	38	48	1.80000	7.79999	13.05761	24.77092
7	37	6	0.46886	1 0 0 0 0 6 7 8	27	28	48	19	1.80000	7.79999	24.77092	50.74823
7	38	7	0.20217	0 0 0 0 0 0 7 8	32	33	48	25	0.99499	2.80000	25.99997	28.99997
7	39	7	0.24958	0 0 0 0 0 0 7 8	32	33	38	48	0.99499	2.80000	13.05761	25.99997
7	40	7	0.24958	0 0 0 0 0 0 7 8	32	33	38	48	0.99499	2.80000	13.05761	25.99997
7	41	7	0.25542	0 0 0 0 0 0 7 8	32	33	38	48	0.99499	2.80000	13.05761	24.77092
7	42	7	0.23482	0 0 0 0 0 0 7 8	32	33	38	48	0.99499	2.80000	17.70260	25.99997
7	43	7	0.24958	0 0 0 0 0 0 7 8	32	33	38	48	0.99499	2.80000	13.05761	25.99997
7	44	8	0.28467	0 0 0 0 0 0 7 8	32	33	38	48	0.99499	2.80000	13.05761	25.99997
7	45	7	0.22455	0 0 0 0 0 0 7 8	32	33	48	25	1.10000	2.80000	25.99997	28.99997
7	46	6	0.27147	0 0 0 0 0 0 7 8	32	48	25	38	0.90000	25.99997	28.99997	29.49752
7	47	7	0.32023	0 0 0 0 0 0 7 8	32	38	48	25	0.90000	13.05761	25.99997	28.99997
7	48	7	1.39690	0 0 0 0 0 0 7 8	33	48	25	38	2.80000	25.99997	28.99997	29.49752

LEAD

A	B	C	D	E	F				G			
16	0	7	0.07458	0 0 0 0 0 6 0 8	25	19	38	40	1.16107	4.01987	80.08241	358.79193
16	1	3	0.00000	0 0 3 4 5 6 0 8	38	40	7	0	40.52946	157.99112	803.84546	0.00000
16	2	4	21.49640	0 0 0 4 5 6 0 8	38	40	48	7	80.08241	157.99112	455.01465	803.84546
16	3	4	21.49640	0 0 0 4 5 6 0 8	38	40	48	7	80.08241	157.99112	455.01465	803.84546
16	4	4	29.93795	0 0 0 4 5 6 0 8	38	40	48	7	80.08241	358.79193	455.01465	803.84546
16	5	4	29.93795	0 0 0 4 5 6 0 8	38	40	48	7	80.08241	358.79193	455.01465	803.84546
16	6	4	29.93795	0 0 0 4 5 6 0 8	38	40	48	7	80.08241	358.79193	455.01465	803.84546
16	7	5	0.10871	0 0 0 4 0 6 0 8	25	38	40	48	1.16107	80.08241	358.79193	455.01465
16	8	4	29.93795	0 0 0 4 5 6 0 8	38	40	48	7	80.08241	358.79193	455.01465	803.84546
16	9	4	28.14089	0 0 0 4 5 6 0 8	38	48	7	40	80.08241	455.01465	803.84546	814.80310
16	10	4	72.98985	0 0 0 4 5 6 0 8	38	48	7	40	158.15637	455.01465	803.84546	814.80310
16	11	4	29.93795	0 0 0 4 5 6 0 8	38	40	48	7	80.08241	358.79193	455.01465	803.84546
16	12	4	29.93795	0 0 0 4 5 6 0 8	38	40	48	7	80.08241	358.79193	455.01465	803.84546
16	13	4	28.14089	0 0 0 4 5 6 0 8	38	48	7	40	80.08241	455.01465	803.84546	814.80310
16	14	4	28.14089	0 0 0 4 5 6 0 8	38	48	7	40	80.08241	455.01465	803.84546	814.80310
16	15	4	28.14089	0 0 0 4 5 6 0 8	38	48	7	40	80.08241	455.01465	803.84546	814.80310
16	16	4	310.91022	1 0 0 4 5 6 0 8	48	45	7	40	455.01465	532.85571	803.84546	814.80310
16	17	4	29.93795	0 0 0 4 5 6 0 8	38	40	48	7	80.08241	358.79193	455.01465	803.84546
16	18	5	0.11728	0 0 0 4 0 6 0 8	25	38	40	48	1.16107	158.15637	358.79193	455.01465
16	19	5	0.11728	0 0 0 4 0 6 0 8	25	38	40	48	1.16107	158.15637	358.79193	455.01465
16	20	4	74.76483	0 0 0 4 5 6 0 8	38	40	48	7	158.15637	358.79193	455.01465	803.84546
16	21	4	29.93795	0 0 0 4 5 6 0 8	38	40	48	7	80.08241	358.79193	455.01465	803.84546
16	22	5	0.10871	0 0 0 4 0 6 0 8	25	38	40	48	1.16107	80.08241	358.79193	455.01465
16	23	4	74.76483	0 0 0 4 5 6 0 8	38	40	48	7	158.15637	358.79193	455.01465	803.84546
16	24	4	0.07015	1 0 0 4 0 6 0 8	25	40	48	7	1.16107	358.79193	455.01465	803.84546
16	25	5	0.10871	0 0 0 4 0 6 0 8	25	38	40	48	1.16107	80.08241	358.79193	455.01465
16	26	5	0.11728	0 0 0 4 0 6 0 8	25	38	40	48	1.16107	158.15637	358.79193	455.01465
16	27	4	29.93795	0 0 0 4 5 6 0 8	38	40	48	7	80.08241	358.79193	455.01465	803.84546
16	28	4	0.07015	1 0 0 4 0 6 0 8	25	40	48	7	1.16107	358.79193	455.01465	803.84546
16	29	3	0.00000	1 0 0 4 5 6 0 8	40	48	7	0	358.79193	455.01465	803.84546	0.00000
16	30	4	0.07015	1 0 0 4 0 6 0 8	25	40	48	7	1.16107	358.79193	455.01465	803.84546
16	31	3	0.00000	1 0 0 4 5 6 0 8	40	48	7	0	358.79193	455.01465	803.84546	0.00000
16	32	5	0.85039	0 0 0 0 5 6 0 8	19	38	40	48	4.01987	158.15637	358.79193	455.01465
16	33	5	0.85039	0 0 0 0 5 6 0 8	19	38	40	48	4.01987	158.15637	358.79193	455.01465
16	34	5	0.57456	0 0 0 0 5 6 0 8	19	38	40	48	4.01987	80.08241	358.79193	455.01465
16	35	3	0.00000	1 0 0 4 5 6 0 8	40	48	7	0	358.79193	455.01465	803.84546	0.00000
16	36	5	0.11728	0 0 0 4 0 6 0 8	25	38	40	48	1.16107	158.15637	358.79193	455.01465
16	37	4	227.15302	1 0 0 4 5 6 0 8	40	48	45	7	358.79193	455.01465	532.85571	803.84546
16	38	5	0.57456	0 0 0 0 5 6 0 8	19	38	40	48	4.01987	80.08241	358.79193	455.01465
16	39	5	0.57456	0 0 0 0 5 6 0 8	19	38	40	48	4.01987	80.08241	358.79193	455.01465
16	40	5	0.85039	0 0 0 0 5 6 0 8	19	38	40	48	4.01987	158.15637	358.79193	455.01465
16	41	5	0.57456	0 0 0 0 5 6 0 8	19	38	40	48	4.01987	80.08241	358.79193	455.01465
16	42	5	0.57456	0 0 0 0 5 6 0 8	19	38	40	48	4.01987	80.08241	358.79193	455.01465
16	43	5	0.57456	0 0 0 0 5 6 0 8	19	38	40	48	4.01987	80.08241	358.79193	455.01465
16	44	6	0.71724	0 0 0 0 5 6 0 8	19	38	40	48	4.01987	80.08241	358.79193	455.01465

COLUMN KEY
- A CHEMICAL ID
- B STATE ID
- C NO. OF RESIDENT FAMILIES
- D FINAL ACUTE VALUE (FAV)
- E EIGHT CRITERIA (A NUMBER SIGNIFIES A CRITERIA NOT SATISFIED)
- F FOUR MOST SENSITIVE RESIDENT FAMILIES
- G FAMILY MEAN ACUTE VALUE FOR FOUR MOST SENSITIVE SPECIES

APPENDIX E
RECALCULATION RESULTS

LEAD (Continued)

A	B	C	D	E	F	G			
16	45	5	0.43848	0 0 0 0 5 6 0 8	19 38 48 7	4.01987	80.06241	455.01465	803.84546
16	46	5	0.43848	0 0 0 0 5 6 0 8	19 38 48 7	4.01987	80.06241	455.01465	803.84546
16	47	6	0.64400	0 0 0 0 5 6 0 8	19 38 48 45	4.01987	80.06241	455.01465	532.85571
16	48	6	0.[illegible]24	0 0 0 0 5 6 0 8	19 38 40 48	4.01987	80.06241	356.79193	455.01465

LINDANE

A	B	C	D	E	F	G			
8	0	10	8.43501	0 0 0 0 0 0 7 8	24 38 25 48	9.99999	21.98812	22.43718	52.87122
8	1	8	9.11178	0 0 0 0 0 6 7 8	38 48 25 49	15.86924	31.99995	47.99995	67.99983
8	2	6	8.44095	0 0 0 0 0 6 7 8	38 48 25 49	14.15800	42.19788	47.99995	67.99983
8	3	6	6.78459	0 0 0 0 0 6 7 8	38 25 48 49	14.15800	22.43718	42.19788	67.99983
8	4	7	4.49001	0 0 0 0 0 6 7 8	25 38 48 42	10.48808	14.15800	42.19788	53.06590
8	5	63	3.65875	0 0 0 0 0 6 7 8	25 38 48 49	10.48808	14.15800	42.19788	67.99983
8	6	6	3.65875	0 0 0 0 0 6 7 8	25 38 48 49	10.48808	14.15800	42.19788	67.99983
8	7	7	10.11431	0 0 0 0 0 6 7 8	38 25 48 42	18.35550	22.43718	52.87122	53.06590
8	8	7	4.19788	0 0 0 0 0 6 7 8	25 38 48 42	10.48808	14.15800	52.87122	53.06590
8	9	7	4.84662	0 0 0 0 0 6 7 8	25 38 48 42	10.48808	14.15800	42.19788	43.99995
8	10	7	2.99564	0 0 0 0 0 6 7 8	38 25 48 42	8.00389	10.48808	42.19788	43.99995
8	11	7	4.94561	0 0 0 0 0 6 7 8	25 38 48 42	10.48808	18.93304	42.19788	63.99987
8	12	6	3.48034	0 0 0 0 0 6 7 8	25 38 48 49	10.48808	14.15800	52.87122	67.99983
8	13	7	3.90369	0 0 0 0 0 6 7 8	25 38 48 42	10.48808	14.15800	52.87122	63.99987
8	14	5	21.65018	0 0 0 0 5 6 7 8	38 48 49 40	37.66935	52.87122	67.99983	112.69353
8	15	5	20.27814	0 0 0 0 5 6 7 8	38 48 42 40	37.66935	52.87122	53.06590	112.69353
8	16	5	21.43935	1 0 0 0 5 6 7 8	42 48 40 45	43.99995	52.87122	112.69353	137.99973
8	17	5	6.69240	0 0 0 0 5 6 7 8	38 48 42 40	14.15800	42.19788	53.06590	94.80521
8	18	6	2.26502	0 0 0 0 0 6 7 8	38 24 48 42	8.00389	9.99999	52.87122	53.06590
8	19	5	1.21448	0 0 0 0 5 6 7 8	38 48 42 40	8.00389	52.87122	53.06590	94.80521
8	20	5	19.50108	0 0 0 0 5 6 7 8	38 48 42 40	32.03120	52.87122	53.06590	94.80521
8	21	8	4.53113	0 0 0 0 0 0 7 8	25 38 48 42	10.48808	14.15800	52.87122	53.06590
8	22	8	13.20277	0 0 0 0 0 0 7 8	38 25 48 42	21.98812	22.43718	42.19788	53.06590
8	23	8	5.37087	0 0 0 0 0 0 7 8	25 38 48 42	10.48808	18.45586	52.87122	53.06590
8	24	5	4.34789	1 0 0 0 0 0 7 8	24 48 42 40	9.99999	52.87122	53.06590	94.80521
8	25	8	13.20277	0 0 0 0 0 0 7 8	38 25 48 42	21.98812	22.43718	42.19788	53.06590
8	26	9	4.02269	0 0 0 0 0 0 7 8	24 25 38 48	9.99999	10.48808	18.45586	52.87122
8	27	8	11.23682	0 0 0 0 0 0 7 8	38 25 48 42	18.35550	22.43718	42.19788	53.06590
8	28	8	2.70439	0 0 0 0 0 0 7 8	38 25 48 42	2.00000	10.48808	42.19788	53.06590
8	29	6	2.57080	0 0 0 0 5 0 7 8	38 48 42 40	2.00000	52.87122	53.06590	94.80521
8	30	6	3.48908	0 0 0 0 0 6 7 8	38 24 48 42	2.00000	9.99999	52.87122	53.06590
8	31	5	27.87500	0 0 0 0 5 6 7 8	38 48 42 40	45.27687	52.87122	53.06590	94.80521
8	32	8	21.74971	0 0 0 0 0 0 7 8	38 48 25 42	32.03120	42.19788	47.99995	53.06590
8	33	7	4.64000	0 0 0 0 0 6 7 8	38 48 25 42	8.00389	42.19788	47.99995	53.06590
8	34	6	8.19216	0 0 0 0 5 6 7 8	38 48 42 49	14.15800	42.19788	53.06590	67.99983
8	35	5	28.78233	1 0 0 0 5 0 7 8	48 42 49 40	42.19788	53.06590	67.99983	94.80521
8	36	5	26.91128	0 0 0 0 0 6 7 8	38 25 48 42	32.03120	47.99995	52.87122	53.06590
8	37	6	35.59354	1 0 0 0 5 6 7 8	48 42 49 40	52.87122	53.06590	67.99983	94.80521
8	38	8	14.68027	0 0 0 0 0 0 7 8	38 48 25 42	18.93304	42.19788	47.99995	53.06590
8	39	8	11.23779	0 0 0 0 0 0 7 8	38 48 25 42	14.15800	42.19788	47.99995	53.06590
8	40	7	4.64000	0 0 0 0 0 6 7 8	38 48 25 42	8.00389	42.19788	47.99995	53.06590
8	41	7	4.58828	0 0 0 0 0 6 7 8	38 24 48 42	14.15800	47.99995	52.87122	53.06590
8	42	8	13.35940	0 0 0 0 0 0 7 8	38 48 25 42	18.35550	42.19788	47.99995	63.99987
8	43	8	11.23779	0 0 0 0 0 0 7 8	38 48 25 42	14.15800	42.19788	47.99995	53.06590
8	44	8	11.23779	0 0 0 0 0 0 7 8	38 48 25 42	14.15800	42.19788	47.99995	53.06590
8	45	8	16.56344	0 0 0 0 0 0 7 8	38 48 25 42	21.98812	42.19788	47.99995	63.99987
8	46	7	15.47591	0 0 0 0 0 0 7 8	38 48 25 49	21.98812	42.19788	47.99995	67.99983
8	47	9	10.78070	0 0 0 0 0 0 7 8	38 48 25 42	14.15800	42.19788	47.99995	53.06590
8	48	7	17.03684	0 0 0 0 0 6 7 8	38 48 25 42	21.98812	42.19788	47.99995	53.06590

MERCURY

A	B	C	D	E	F	G			
17	1	9	2.94009	0 2 3 0 0 0 0 0	19 25 28 38	5.00000	9.99999	31.62273	244.25937
17	2	6	1.53310	0 2 3 4 0 0 0 0	25 28 38 7	9.99999	49.99995	219.99983	783.47107
17	2	6	1.25855	0 2 3 4 0 6 0 0	25 28 38 7	9.99999	49.99995	248.59476	783.47107
17	3	5	1.25855	0 2 3 4 0 6 0 0	25 28 38 7	9.99999	49.99995	248.59476	783.47107
17	4	5	1.25855	0 2 3 4 0 6 0 0	25 28 38 7	9.99999	49.99995	248.59476	783.47107
17	5	5	1.25855	0 2 3 4 0 6 0 0	25 28 38 7	9.99999	49.99995	248.59476	783.47107
17	6	5	1.25855	0 2 3 4 0 6 0 0	25 28 38 7	9.99999	49.99995	248.59476	783.47107
17	7	6	1.52780	0 2 3 4 0 0 0 0	25 28 38 7	9.99999	49.99995	248.59476	783.47107
17	8	7	1.82997	0 2 3 4 0 0 0 0	25 28 38 7	9.99999	49.99995	248.59476	783.47107
17	9	4	1.27818	0 2 3 4 0 6 0 0	25 38 7 10	9.99999	248.59476	783.47107	999.99841
17	10	5	1.25855	0 2 3 4 0 6 0 0	25 28 38 7	9.99999	49.99995	248.59476	783.47107
17	11	5	1.26114	0 2 3 4 0 6 0 0	25 28 38 7	9.99999	49.99995	244.25937	783.47107
17	12	6	1.52780	0 2 3 4 0 0 0 0	25 28 38 7	9.99999	49.99995	248.59476	783.47107
17	13	4	1.27818	0 2 3 4 0 6 0 0	25 38 7 10	9.99999	248.59476	783.47107	999.99841
17	14	4	3.35920	0 2 3 4 0 6 0 0	28 38 7 10	19.99997	248.59476	783.47107	999.99841
17	15	5	4.09633	0 2 3 4 0 0 0 0	28 38 7 10	19.99997	248.59476	783.47107	999.99841
17	16	3	0.00000	1 2 3 4 0 6 0 0	28 7 10 0	19.99997	783.47107	999.99841	0.00000
17	17	6	1.52780	0 2 3 4 0 0 0 0	25 28 38 7	9.99999	49.99995	248.59476	783.47107
17	18	4	1.27818	0 2 3 4 0 6 0 0	25 38 7 10	9.99999	248.59476	783.47107	999.99841
17	19	4	1.27818	0 2 3 4 0 6 0 0	25 38 7 10	9.99999	248.59476	783.47107	999.99841
17	20	5	0.69492	0 2 3 4 0 6 0 0	25 28 38 7	9.99999	19.99997	248.59476	783.47107
17	21	6	2.00637	0 2 3 4 0 0 0 0	25 38 7 10	9.99999	248.59476	783.47107	999.99841
17	22	7	2.44474	0 2 3 4 0 0 0 0	25 38 7 10	9.99999	244.25937	783.47107	999.99841
17	23	5	1.61117	0 2 3 4 0 0 0 0	25 38 7 10	9.99999	244.25937	783.47107	999.99841

MERCURY (Continued)

A	B	C	D	E	F	G			
17	24	4	0.33997	1 2 3 4 0 6 0 0	25 28 7 10	9.99999	19.99997	783.47107	999.99841
17	25	7	2.44474	0 2 3 4 0 0 0 0	25 38 7 10	9.99999	244.25937	783.47107	999.99841
17	26	6	1.99953	0 2 3 4 0 0 0 0	25 38 7 10	9.99999	244.25937	783.47107	999.99841
17	27	5	1.61861	0 2 3 4 0 0 0 0	25 38 7 10	9.99999	248.59476	783.47107	999.99841
17	28	3	0.00000	1 2 3 4 0 6 0 0	25 7 10 0	9.99999	783.47107	999.99841	0.00000
17	29	3	0.00000	1 2 3 4 0 6 0 0	25 7 10 0	9.99999	783.47107	999.99841	0.00000
17	30	4	0.33997	1 2 3 4 0 6 0 0	25 28 7 10	9.99999	19.99997	783.47107	999.99841
17	31	4	3.32883	0 2 3 4 0 6 0 0	28 38 7 10	19.99997	239.99963	783.47107	999.99841
17	32	5	0.20147	0 2 3 0 0 6 0 0	19 25 38 7	5.00000	9.99999	248.59476	783.47107
17	33	5	0.20147	0 2 3 0 0 6 0 0	19 25 38 7	5.00000	9.99999	248.59476	783.47107
17	34	4	0.48080	0 2 3 0 5 6 0 0	19 38 7 10	5.00000	248.59476	783.47107	999.99841
17	35	2	0.00000	1 2 3 4 5 6 0 0	7 10 0 0	783.47107	999.99841	0.00000	0.00000
17	36	5	0.69492	0 2 3 4 0 6 0 0	25 28 38 7	9.99999	19.99997	248.59476	783.47107
17	37	3	0.00000	1 2 3 4 0 6 0 0	28 7 10 0	19.99997	783.47107	999.99841	0.00000
17	38	5	0.20223	0 2 3 0 0 6 0 0	19 25 38 7	5.00000	9.99999	244.25937	783.47107
17	39	5	0.20147	0 2 3 0 0 6 0 0	19 25 38 7	5.00000	9.99999	248.59476	783.47107
17	40	5	0.20147	0 2 3 0 0 6 0 0	19 25 38 7	5.00000	9.99999	248.59476	783.47107
17	41	5	0.20147	0 2 3 0 0 6 0 0	19 25 38 7	5.00000	9.99999	248.59476	783.47107
17	42	5	0.20147	0 2 3 0 0 6 0 0	19 25 38 7	5.00000	9.99999	248.59476	783.47107
17	43	5	0.20147	0 2 3 0 0 6 0 0	19 25 38 7	5.00000	9.99999	248.59476	783.47107
17	44	5	0.20147	0 2 3 0 0 6 0 0	19 25 38 7	5.00000	9.99999	248.59476	783.47107
17	45	5	0.20223	0 2 3 0 0 6 0 0	19 25 38 7	5.00000	9.99999	244.25937	783.47107
17	46	5	0.20223	0 2 3 0 0 6 0 0	19 25 38 7	5.00000	9.99999	244.25937	783.47107
17	47	5	0.20147	0 2 3 0 0 6 0 0	19 25 38 7	5.00000	9.99999	248.59476	783.47107
17	48	5	0.20223	0 2 3 0 0 6 0 0	19 25 38 7	5.00000	9.99999	244.25937	783.47107

NICKEL

A	B	C	D	E	F	G			
18	0	16	65.82782	1 0 0 0 0 0 0 0	19 29 48 7	65.07871	233.55499	345.47168	401.21680
18	1	13	70.50883	1 0 0 0 0 0 0 0	19 48 7 35	78.45801	388.35048	401.21680	439.82544
18	2	12	66.25783	1 0 0 0 0 0 0 0	19 48 7 35	78.45801	345.47168	401.21680	439.82544
18	3	12	66.25783	1 0 0 0 0 0 0 0	19 48 7 35	78.45801	345.47168	401.21680	439.82544
18	4	12	66.25783	1 0 0 0 0 0 0 0	19 48 7 35	78.45801	345.47168	401.21680	439.82544
18	5	12	66.25604	1 0 0 0 0 0 0 0	19 7 35 48	78.45801	401.21680	439.82544	444.71680
18	6	12	66.25604	1 0 0 0 0 0 0 0	19 7 35 48	78.45801	401.21680	439.82544	444.71680
18	7	13	70.17523	1 0 0 0 0 0 0 0	19 48 7 35	78.45801	345.47168	401.21680	439.82544
18	8	13	67.71924	1 0 0 0 0 0 0 0	19 29 48 7	78.45801	233.55499	345.47168	401.21680
18	9	12	66.25783	1 0 0 0 0 0 0 0	19 48 7 35	78.45801	345.47168	401.21680	439.82544
18	10	12	66.25604	1 0 0 0 0 0 0 0	19 7 35 48	78.45801	401.21680	439.82544	444.71680
18	11	12	66.25783	1 0 0 0 0 0 0 0	19 48 7 35	78.45801	345.47168	401.21680	439.82544
18	12	13	70.17523	1 0 0 0 0 0 0 0	19 48 7 35	78.45801	345.47168	401.21680	439.82544
18	13	12	66.25783	1 0 0 0 0 0 0 0	19 48 7 35	78.47168	345.45801	401.21680	439.82544
18	14	11	66.24532	1 0 0 0 5 0 0 0	19 7 35 48	78.45801	401.21680	439.82544	444.71680
18	15	10	59.73523	1 0 0 0 5 0 0 0	19 47 48 7	78.45801	301.51019	325.84210	401.21680
18	16	11	61.67844	1 0 0 0 5 0 0 0	19 47 7 35	78.45801	301.51019	401.21680	439.82544
18	17	11	62.17289	1 0 0 0 0 0 0 0	19 48 7 35	78.45801	325.84210	401.21680	439.82544
18	18	11	63.23686	1 0 0 0 0 0 0 0	19 47 48 7	78.45801	301.51019	325.84210	401.21680
18	19	11	63.23686	1 0 0 0 0 0 0 0	19 47 48 7	78.45801	301.51019	325.84210	401.21680
18	20	11	63.23686	1 0 0 0 0 0 0 0	19 47 48 7	78.45801	301.51019	325.84210	401.21680
18	21	12	66.25783	1 0 0 0 0 0 0 0	19 48 7 35	78.45801	345.47168	401.21680	439.82544
18	22	13	67.71924	1 0 0 0 0 0 0 0	19 29 48 7	78.45801	233.55499	345.47168	401.21680
18	23	12	66.74388	1 0 0 0 0 0 0 0	19 47 48 7	8.45801	301.51019	345.47168	401.21680
18	24	11	63.23686	1 0 0 0 0 0 0 0	19 47 48 7	78.45801	301.51019	325.84210	401.21680
18	25	13	67.71924	1 0 0 0 0 0 0 0	19 29 48 7	78.45801	233.55499	345.47168	401.21680
18	26	13	69.98130	1 0 0 0 0 0 0 0	19 29 47 48	78.45801	233.55499	301.51019	345.47168
18	27	11	62.17289	1 0 0 0 0 0 0 0	19 48 7 35	78.45801	325.84210	401.21680	439.82544
18	28	11	62.17289	1 0 0 0 0 0 0 0	19 48 7 35	78.45801	325.84210	401.21680	439.82544
18	29	11	63.15298	1 0 0 0 0 0 0 0	19 47 48 7	78.45801	301.51019	345.47168	401.21680
18	30	10	58.44781	1 0 0 0 0 0 0 0	19 48 7 35	78.45801	325.84210	401.21680	439.82544
18	31	10	58.00987	1 0 0 0 5 0 0 0	19 47 7 35	78.45801	301.51019	401.21680	439.82544
18	32	10	47.02316	1 0 0 0 0 0 0 0	19 48 7 35	65.07871	325.84210	401.21680	439.82544
18	33	11	50.37553	1 0 0 0 0 0 0 0	19 48 7 35	65.07871	325.84210	401.21680	439.82544
18	34	10	46.73035	1 0 0 0 5 0 0 0	19 47 7 35	65.07871	301.51019	401.21680	439.82544
18	35	10	59.73523	1 0 0 0 5 0 0 0	19 47 48 7	78.45801	301.51019	325.84210	401.21680
18	36	11	63.23686	1 0 0 0 0 0 0 0	19 47 48 7	78.45801	301.51019	325.84210	401.21680
18	37	11	61.67844	1 0 0 0 5 0 0 0	19 47 7 35	78.45801	301.51019	401.21680	439.82544
18	38	9	43.43307	1 0 0 0 0 0 0 0	19 7 35 48	65.07871	401.21680	439.82544	444.71680
18	39	9	43.43307	1 0 0 0 0 0 0 0	19 7 35 48	65.07871	401.21680	439.82544	444.71680
18	40	9	42.89883	1 0 0 0 0 0 0 0	19 7 35 48	65.07871	401.21680	439.82544	509.26428
18	41	11	50.03452	1 0 0 0 0 0 0 0	19 47 7 35	65.07871	301.51019	401.21680	439.82544
18	42	8	40.11375	1 0 0 0 0 0 0 0	19 7 35 48	65.07871	401.21680	439.82544	444.71680
18	43	9	43.50597	1 0 0 0 0 0 0 0	19 47 7 35	65.07871	301.51019	401.21680	439.82544
18	44	10	46.73035	1 0 0 0 0 0 0 0	19 47 7 35	65.07871	301.51019	401.21680	439.82544
18	45	8	40.11375	1 0 0 0 0 0 0 0	19 7 35 48	65.07871	401.21680	439.82544	444.71680
18	46	9	43.50597	1 0 0 0 0 0 0 0	19 47 7 35	65.07871	301.51019	401.21680	439.82544
18	47	9	43.31558	1 0 0 0 0 0 0 0	19 7 35 45	65.07871	401.21680	439.82544	456.64178
18	48	10	46.73035	1 0 0 0 0 0 0 0	19 47 7 35	65.07871	301.51019	401.21680	439.82544

PCB

A	B	C	D	E	F	G			
9	0	5	0.27471	0 0 0 4 0 0 7 8	38 48 40 25	2.00000	6.61059	32.80120	99.55341
9	1	3	0.00000	1 0 0 4 5 0 7 8	48 40 31 0	2.30000	32.80120	282.84204	0.00000

COLUMN KEY
- A CHEMICAL ID
- B STATE ID
- C NO. OF RESIDENT FAMILIES
- D FINAL ACUTE VALUE (FAV)
- E EIGHT CRITERIA (A NUMBER SIGNIFIES A CRITERIA NOT SATISFIED)
- F FOUR MOST SENSITIVE RESIDENT FAMILIES
- G FAMILY MEAN ACUTE VALUE FOR FOUR MOST SENSITIVE SPECIES

APPENDIX E
RECALCULATION RESULTS

PCB (Continued)

A	B	C	D	E								F				G			
9	2	4	[illegible]				4				8	38	48	40	31	2.00000	2.30000	32.60120	282.84204
9	3	5	[illegible]				4				8	38	48	40	25	2.00000	2.30000	32.60120	107.66406
9	4	5	[illegible]				4				8	38	48	40	25	2.00000	2.30000	32.60120	107.66406
9	5	5	[illegible]				4				8	38	48	40	25	2.00000	2.30000	32.60120	107.66406
9	6	5	[illegible]				4				8	38	48	40	25	2.00000	2.30000	32.60120	107.66406
9	7	5	[illegible]				4				8	38	48	40	25	2.00000	6.61059	32.60120	99.55351
9	8	5	[illegible]				4				8	38	48	40	25	2.00000	6.61059	32.60120	107.66406
9	9	4	[illegible]				4				8	38	48	25	31	2.00000	2.30000	107.66406	282.84204
9	10	4	[illegible]				4				8	38	48	25	31	2.00000	2.30000	107.66406	282.84204
9	11	5	[illegible]				4				8	38	48	40	25	2.00000	2.30000	32.60120	107.66406
9	12	5	[illegible]				4				8	38	48	40	25	2.00000	6.61059	32.60120	107.66406
9	13	4	[illegible]				4				8	38	48	25	31	2.00000	6.61059	107.66406	282.84204
9	14	3	[illegible]				4				8	38	48	31		2.00000	6.61059	282.84204	0.00000
9	15	3	[illegible]				4				8	38	48	31		2.00000	6.61059	282.84204	0.00000
9	16	3	[illegible]				4				8	48				6.61059	0.00000	0.00000	0.00000
9	17	4	[illegible]				4				8	38	48	40	31	2.00000	2.30000	32.60120	282.84204
9	18	5	1.28800				4				8	38	48	40	25	2.00000	6.61059	32.60120	92.05394
9	19	5	1.28800				4				8	38	48	40	25	2.00000	6.61059	32.60120	92.05394
9	20	4	[illegible]				4				8	38	48	40	31	2.00000	6.61059	32.60120	282.84204
9	21	5	[illegible]				4				8	38	48	40	25	2.00000	6.61059	32.60120	107.66406
9	22	5	[illegible]				4				8	38	48	40	25	2.00000	2.30000	32.60120	99.55351
9	23	5	[illegible]				4				8	38	48	40	25	2.00000	6.61059	32.60120	107.66406
9	24	4	[illegible]				4				8	48	40	25	31	6.61059	32.60120	92.05394	282.84204
9	25	5	[illegible]				4				8	38	48	40	25	2.00000	2.30000	32.60120	99.55351
9	26	5	[illegible]				4				8	38	48	40	25	2.00000	6.61059	32.60120	99.55351
9	27	5	[illegible]				4				8	38	48	40	25	2.00000	2.30000	32.60120	107.66406
9	28	4	[illegible]				4				8	48	40	25	31	2.30000	32.60120	99.55351	282.84204
9	29	3	[illegible]				4				8	48	40	31		6.61059	32.60120	282.84204	0.00000
9	30	4	[illegible]				4				8	48	40	25	31	6.61059	32.60120	92.05394	282.84204
9	31	2	[illegible]				4				8	48	40			6.61059	32.60120	0.00000	0.00000
9	32	3	[illegible]				4				8	38	48	40		2.00000	2.30000	32.60120	0.00000
9	33	3	[illegible]				4				8	38	48	40		2.00000	2.30000	32.60120	0.00000
9	34	4	[illegible]				4				8	38	48	40	31	2.00000	2.30000	32.60120	282.84204
9	35	3	[illegible]				4				8	48	40	31		2.30000	32.60120	282.84204	0.00000
9	36	5	[illegible]				4				8	38	48	40	25	2.00000	6.61059	32.60120	92.05394
9	37	3	[illegible]				4				8	48	40	31		6.61059	32.60120	282.84204	0.00000
9	38	3	[illegible]				4				8	38	48	40		2.00000	2.30000	32.60120	0.00000
9	39	3	[illegible]				4				8	38	48	40		2.00000	2.30000	32.60120	0.00000
9	40	3	[illegible]				4				8	38	48	40		2.00000	2.30000	32.60120	0.00000
9	41	3	[illegible]				4				8	38	48	40		2.00000	6.61059	32.60120	0.00000
9	42	3	[illegible]				4				8	38	48	40		2.00000	2.30000	32.60120	0.00000
9	43	3	[illegible]				4				8	38	48	40		2.00000	2.30000	32.60120	0.00000
9	44	3	[illegible]				4				8	38	48	40		2.00000	2.30000	32.60120	0.00000
9	45	2	[illegible]				4				8	38	48			2.00000	2.30000	0.00000	0.00000
9	46	2	[illegible]				4				8	38	48			2.00000	2.30000	0.00000	0.00000
9	47	2	[illegible]				4				8	38	48			2.00000	2.30000	0.00000	0.00000
9	48	3	[illegible]				4				8	38	48	40		2.00000	2.30000	32.60120	0.00000

SELENIUM

A	B	C	D	E								F				G			
19	[illegible]	10	165.29888	0	0	0	0	0	0	0	8	26	19	44	38	339.99908	1992.47412	6499.97852	8479.72266
19	1	5	93.62001	0	0	1	0	0	6	0	8	26	40	19	38	339.99908	3105.14883	3889.98926	10199.974
19	2	6	117.48746	0	0	0	0	0	6	0	8	26	40	19	38	339.99908	3105.14883	3889.98926	8479.72266
19	3	6	117.48746	0	0	0	0	0	6	0	8	26	40	19	38	339.99908	3105.14883	3889.98926	8479.72266
19	4	7	125.60231	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	3889.98926	8479.72266	9002.43945
19	5	6	108.56085	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	3889.98926	8479.72266	9002.43945
19	6	6	108.56085	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	3889.98926	8479.72266	9002.43945
19	7	8	144.03163	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	3889.98926	8479.72266	9002.43945
19	8	7	125.60231	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	3889.98926	8479.72266	9002.43945
19	9	8	132.52921	0	0	0	0	0	6	0	8	26	19	38	45	339.99908	3889.98926	8479.72266	12599.947
19	10	8	134.94481	0	0	0	0	0	6	0	8	26	19	38	45	339.99908	3889.98926	7049.80845	12599.947
19	11	7	125.60231	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	3889.98926	8479.72266	9002.43945
19	12	6	108.56085	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	3889.98926	8479.72266	9002.43945
19	13	7	114.71645	0	0	0	0	0	6	0	8	26	19	38	45	339.99908	3889.98926	8479.72266	12599.947
19	14	7	114.71645	0	0	0	0	0	6	0	8	26	19	38	45	339.99908	3889.98926	8479.72266	12599.947
19	15	8	132.52921	0	0	0	0	0	6	0	8	26	19	38	45	339.99908	3889.98926	8479.72266	12599.947
19	16	8	135.61240	0	0	0	0	0	6	0	8	26	19	44	45	339.99908	3889.98926	6499.97852	12599.947
19	17	7	125.60231	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	3889.98926	8479.72266	9002.43945
19	18	8	148.20352	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	3889.98926	7049.80845	9002.43945
19	19	8	148.20352	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	3889.98926	7049.80845	9002.43945
19	20	8	148.20352	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	3889.98926	7049.80845	9002.43945
19	21	9	[illegible]	0	0	0	0	0	0	0	8	26	19	38	40	339.99908	3889.98926	8479.72266	9002.43945
19	22	8	[illegible]	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	3889.98926	8479.72266	9002.43945
19	23	7	[illegible]	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	3889.98926	7049.80845	9002.43945
19	24	7	[illegible]	0	0	0	0	0	6	0	8	26	19	40	45	339.99908	3889.98926	9002.43945	12599.947
19	25	7	125.60231	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	3889.98926	8479.72266	9002.43945
19	26	8	148.20352	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	3889.98926	7049.80845	9002.43945
19	27	9	[illegible]	0	0	0	0	0	0	0	8	26	19	38	40	339.99908	3889.98926	8479.72266	9002.43945
19	28	8	[illegible]	0	0	0	0	0	0	0	8	26	19	40	45	339.99908	3889.98926	9002.43945	12599.947
19	29	7	[illegible]	0	0	0	0	0	6	0	8	26	19	40	45	339.99908	3889.98926	9002.43945	12599.947
19	30	7	[illegible]	0	0	0	0	0	6	0	8	26	19	40	45	339.99908	3889.98926	9002.43945	12599.947
19	31	7	[illegible]	0	0	0	0	0	6	0	8	26	19	40	45	339.99908	3889.98926	9002.43945	12599.947
19	32	7	[illegible]	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	1992.47412	7049.80845	9002.43945
19	33	7	[illegible]	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	1992.47412	7049.80845	9002.43945

SELENIUM (Continued)

A	B	C	D	E								F				G			
19	34	7	104.88212	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	1992.47412	8479.72266	9002.43945
19	35	7	113.70836	1	0	0	0	0	6	0	8	26	19	40	45	339.99908	3889.98926	9002.43945	12599.947
19	36	9	168.17023	0	0	0	0	0	0	0	8	26	19	38	40	339.99908	3889.98926	7049.80845	9002.43945
19	37	8	131.49722	1	0	0	0	0	0	0	8	26	19	40	45	339.99908	3889.98926	9002.43945	12599.947
19	38	7	104.88212	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	1992.47412	8479.72266	9002.43945
19	39	7	104.88212	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	1992.47412	8479.72266	9002.43945
19	40	7	109.77351	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	1992.47412	7049.80845	9002.43945
19	41	8	120.32389	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	1992.47412	8479.72266	9002.43945
19	42	7	104.88212	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	1992.47412	8479.72266	9002.43945
19	43	7	104.88212	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	1992.47412	8479.72266	9002.43945
19	44	8	120.32389	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	1992.47412	8479.72266	9002.43945
19	45	6	59.20579	0	0	0	0	0	6	0	8	26	19	38	16	339.99908	1992.47412	8479.72266	24099.867
19	46	6	59.20579	0	0	0	0	0	6	0	8	26	19	38	16	339.99908	1992.47412	8479.72266	24099.867
19	47	8	108.28229	0	0	0	0	0	6	0	8	26	19	38	45	339.99908	1992.47412	8479.72266	12599.947
19	48	8	120.32389	0	0	0	0	0	6	0	8	26	19	38	40	339.99908	1992.47412	8479.72266	9002.43945

SILVER

A	B	C	D	E								F				G			
20	[illegible]	9	0.00108	0	0	0	0	0	0	0	8	19	52	40	44	0.00185	0.00401	0.00646	0.01232
20	1	2	0.00000	1	0	3	4	5	6	0	8	40	7	0	0	0.01083	5.51660	0.00000	0.00000
20	2	4	0.00013	0	0	0	4	5	6	0	8	40	38	48	7	0.01083	0.02051	0.11237	5.51660
20	3	4	0.00013	0	0	0	4	5	6	0	8	40	38	48	7	0.01083	0.02051	0.11237	5.51660
20	4	4	0.00013	0	0	0	4	5	6	0	8	40	38	48	7	0.01083	0.02051	0.11237	5.51660
20	5	4	0.00013	0	0	0	4	5	6	0	8	40	38	48	7	0.01083	0.02051	0.11237	5.51660
20	6	4	0.00013	0	0	0	4	5	6	0	8	40	38	48	7	0.01083	0.02051	0.11237	5.51660
20	7	6	0.00082	0	0	0	4	0	6	0	8	52	40	38	48	0.00401	0.01083	0.02051	0.11237
20	8	5	0.00071	0	0	0	4	5	6	0	8	52	40	38	48	0.00401	0.01083	0.02051	0.11237
20	9	3	0.00000	0	0	3	4	5	6	0	8	38	48	7	0	0.02051	0.11237	5.51660	0.00000
20	10	3	0.00000	0	0	3	4	5	6	0	8	38	48	7	0	0.02051	0.11237	5.51660	0.00000
20	11	5	0.00071	0	0	0	4	5	6	0	8	52	40	38	48	0.00401	0.01083	0.02051	0.11237
20	12	4	0.00013	0	0	0	4	5	6	0	8	40	38	48	7	0.01083	0.02051	0.11237	5.51660
20	13	3	0.00000	0	0	3	4	5	6	0	8	38	48	7	0	0.02051	0.11237	5.51660	0.00000
20	14	3	0.00000	0	0	3	4	5	6	0	8	38	48	7	0	0.02051	0.11237	5.51660	0.00000
20	15	4	0.00005	0	0	0	4	5	6	0	8	52	38	48	7	0.00401	0.02051	0.11237	5.51660
20	16	3	0.00000	1	0	0	4	5	6	0	8	44	48	7	0	0.01232	0.11237	5.51660	0.00000
20	17	5	0.00071	0	0	0	4	5	6	0	8	52	40	38	48	0.00401	0.01083	0.02051	0.11237
20	18	6	0.00082	0	0	0	4	0	6	0	8	52	40	38	48	0.00401	0.01083	0.02051	0.11237
20	19	6	0.00082	0	0	0	4	0	6	0	8	52	40	38	48	0.00401	0.01083	0.02051	0.11237
20	20	5	0.00071	0	0	0	4	5	6	0	8	52	40	38	48	0.00401	0.01083	0.02051	0.11237
20	21	6	0.00082	0	0	0	4	5	0	0	8	52	40	38	48	0.00401	0.01083	0.02051	0.11237
20	22	6	0.00082	0	0	0	4	0	6	0	8	52	40	38	48	0.00401	0.01083	0.02051	0.11237
20	23	5	0.00071	0	0	0	4	5	6	0	8	52	40	38	48	0.00401	0.01083	0.02051	0.11237
20	24	5	0.00004	1	1	0	4	0	6	0	8	52	40	48	7	0.00401	0.01083	0.11237	5.51660
20	25	6	0.00082	0	0	0	4	0	6	0	8	52	40	38	48	0.00401	0.01083	0.02051	0.11237
20	26	6	0.00082	0	0	0	4	0	6	0	8	52	40	38	48	0.00401	0.01083	0.02051	0.11237
20	27	5	0.00022	0	0	0	4	5	0	0	8	40	38	48	35	0.01083	0.02051	0.11237	4.10596
20	28	5	0.00042	1	0	0	4	0	0	0	8	40	48	35	7	0.01083	0.11237	4.10596	5.51660
20	29	4	0.00003	1	0	0	4	5	6	0	8	52	40	48	7	0.00401	0.01083	0.11237	5.51660
20	30	5	0.00004	1	1	0	4	0	6	0	8	52	40	48	7	0.00401	0.01083	0.11237	5.51660
20	31	3	0.00000	1	0	0	4	5	6	0	8	40	48	7	0	0.01083	0.11237	5.51660	0.00000
20	32	5	0.00030	0	0	0	0	5	6	0	8	19	40	38	48	0.00185	0.01083	0.02051	0.11237
20	33	5	0.00030	0	0	0	0	5	6	0	8	19	40	38	48	0.00185	0.01083	0.02051	0.11237
20	34	5	0.00030	0	0	0	0	5	6	0	8	19	40	38	48	0.00185	0.01083	0.02051	0.11237
20	35	3	0.00000	1	0	0	4	5	6	0	8	40	48	7	0	0.01083	0.11237	5.51660	0.00000
20	36	6	0.00029	0	0	0	4	0	0	0	8	40	38	48	35	0.01083	0.02051	0.11237	4.10596
20	37	4	0.00030	1	0	0	4	5	0	0	8	40	48	35	7	0.01083	0.11237	4.10596	5.51660
20	38	5	0.00030	0	0	0	0	5	6	0	8	19	40	38	48	0.00185	0.01083	0.02051	0.11237
20	39	6	0.00061	0	0	0	0	5	6	0	8	19	52	40	38	0.00185	0.00401	0.00646	0.02051
20	40	6	0.00061	0	0	0	0	5	6	0	8	19	52	40	38	0.00185	0.00401	0.00646	0.02051
20	41	6	0.00061	0	0	0	0	5	6	0	8	19	52	40	38	0.00185	0.00401	0.00646	0.02051
20	42	6	0.00061	0	0	0	0	5	6	0	8	19	52	40	38	0.00185	0.00401	0.00646	0.02051
20	43	6	0.00061	0	0	0	0	5	6	0	8	19	52	40	38	0.00185	0.00401	0.00646	0.02051
20	44	5	0.00021	0	0	0	0	5	6	0	8	19	40	38	48	0.00185	0.00646	0.02051	0.11237
20	45	6	0.00053	0	0	0	0	5	6	0	8	19	40	52	38	0.00185	0.00385	0.00401	0.02051
20	46	6	0.00053	0	0	0	0	5	6	0	8	19	40	52	38	0.00185	0.00385	0.00401	0.02051
20	47	5	0.00017	0	0	0	0	5	6	0	8	19	40	38	48	0.00185	0.00385	0.02051	0.11237
20	48	5	0.00021	0	0	0	0	5	6	0	8	19	40	38	48	0.00185	0.00646	0.02051	0.11237

TOXAPHENE

A	B	C	D	E								F				G			
10	0	12	1.07423	0	0	0	0	0	0	7	0	33	32	42	48	1.30000	2.62678	3.54658	4.72465
10	1	7	1.16180	0	0	0	0	0	0	7	8	48	40	38	49	2.00000	6.16529	6.54964	11.99999
10	2	7	1.77194	0	0	0	0	0	0	7	8	48	40	38	49	2.84828	6.16529	6.67760	11.99999
10	3	7	1.77194	0	0	0	0	0	0	7	8	48	40	38	49	2.84828	6.16529	6.67760	11.99999
10	4	8	1.83820	0	0	0	0	0	0	7	8	48	42	38	40	2.84828	3.54658	6.67760	7.42884
10	5	7	1.82558	0	0	0	0	0	0	7	8	48	38	40	49	2.84828	6.67760	7.42884	11.99999
10	6	7	1.82558	0	0	0	0	0	0	7	8	48	38	40	49	2.84828	6.67760	7.42884	11.99999
10	7	9	2.68047	0	0	0	0	0	0	7	8	42	48	38	40	3.54658	4.72465	5.22138	8.03264
10	8	9	2.65941	0	0	0	0	0	0	7	8	42	48	38	40	3.54658	4.72465	6.67760	8.43262
10	9	8	2.08801	0	0	0	0	0	0	7	8	48	42	38	40	2.84828	4.19275	6.67760	6.78180
10	10	8	2.18707	0	0	0	0	0	0	7	8	48	42	38	40	2.84828	4.19275	5.25072	6.78180
10	11	8	1.55055	0	0	0	0	0	0	7	8	48	42	38	40	2.84828	3.00000	7.12840	8.03264

COLUMN KEY
A CHEMICAL ID
B STATE ID
C NO. OF RESIDENT FAMILIES
D FINAL ACUTE VALUE (FAV)
E EIGHT CRITERIA (A NUMBER SIGNIFIES A CRITERIA NOT SATISFIED)
F FOUR MOST SENSITIVE RESIDENT FAMILIES
G FAMILY MEAN ACUTE VALUE FOR FOUR MOST SENSITIVE SPECIES

APPENDIX E
RECALCULATION RESULTS

TOXAPHENE

A	B	C	D	E								F				G			
10	12	7	3.28540	0	0	0	0	0	0	7	8	48	38	40	49	4.72465	6.67760	8.03264	11.99999
10	13	8	2.18830	0	0	0	0	0	0	7	8	42	48	38	40	3.00000	4.72465	6.67760	8.12908
10	14	6	3.39842	0	0	0	0	5	0	7	8	48	40	38	49	4.72465	8.12908	9.98253	11.99999
10	15	6	2.13035	0	0	0	0	5	0	7	8	42	48	40	38	3.54658	4.72465	8.12908	9.98253
10	16	6	1.95989	1	0	0	0	5	0	7	8	42	48	40	19	4.19275	4.72465	8.78180	14.37918
10	17	6	1.62407	0	0	0	0	5	0	7	8	48	42	38	40	2.84828	3.54658	6.67760	8.03264
10	18	7	2.53038	0	0	0	0	0	0	7	8	42	48	38	40	3.54658	4.72465	5.25072	8.03264
10	19	8	2.60797	0	0	0	0	0	0	7	8	42	48	38	40	3.54658	4.72465	5.25072	8.03264
10	20	7	2.31838	0	0	0	0	0	0	7	8	42	48	40	38	3.54658	4.72465	8.03264	9.19002
10	21	9	2.11721	0	0	0	0	0	0	7	8	42	48	38	40	3.54658	4.72465	6.67760	8.03264
10	22	9	1.88511	0	0	0	0	0	0	7	8	48	42	38	40	2.84828	3.54658	5.78072	8.03264
10	23	8	2.56778	0	0	0	0	0	0	7	8	42	48	38	40	3.54658	4.72465	4.94449	8.03264
10	24	7	1.81469	1	0	0	0	0	0	7	8	42	48	40	19	3.54658	4.72465	8.03264	14.37918
10	25	9	1.88511	0	0	0	0	0	0	7	8	48	42	38	40	2.84828	3.54658	5.78072	8.03264
10	26	9	2.64224	0	0	0	0	0	0	7	8	42	48	38	40	3.54658	4.72465	4.94449	8.03264
10	27	8	1.81373	0	0	0	0	0	0	7	8	48	42	38	40	2.84828	3.54658	5.22336	8.03264
10	28	9	1.55926	0	0	0	0	0	0	7	8	48	38	42	40	2.84828	3.00000	3.54658	8.03264
10	29	7	1.81022	0	0	0	0	0	0	7	8	38	42	48	40	3.00000	3.54658	4.72465	8.03264
10	30	8	1.88123	0	0	0	0	0	0	7	8	38	42	48	40	3.00000	3.54658	4.72465	8.03264
10	31	7	2.37493	0	0	0	0	0	0	7	8	42	48	40	38	3.54658	4.72465	8.03264	8.67179
10	32	8	1.61550	0	0	0	0	0	0	7	8	48	42	40	38	2.84828	3.54658	8.03264	9.19002
10	33	9	0.92622	0	0	0	0	0	0	7	0	33	48	42	38	1.30000	2.84828	3.54658	5.25072
10	34	7	1.70234	0	0	0	0	5	0	7	8	48	42	38	40	2.84828	3.54658	6.67760	8.03264
10	35	6	1.26280	1	0	0	0	5	0	7	8	48	42	40	49	2.84828	3.54658	8.03264	11.99999
10	36	8	2.41262	0	0	0	0	0	0	7	8	42	48	40	38	3.54658	4.72465	8.03264	9.19002
10	37	8	2.11732	1	0	0	0	0	0	7	8	42	48	40	49	3.54658	4.72465	8.43262	11.99999
10	38	10	1.08897	0	0	0	0	0	0	7	0	33	32	48	42	1.30000	2.62678	2.84828	3.54658
10	39	10	1.08897	0	0	0	0	0	0	7	0	33	32	48	42	1.30000	2.62678	2.84828	3.54658
10	40	9	1.04979	0	0	0	0	0	0	7	0	33	32	48	42	1.30000	2.62678	2.84828	3.54658
10	41	10	0.98850	0	0	0	0	0	0	7	0	33	32	42	48	1.30000	2.62678	3.54658	4.72465
10	42	10	1.12857	0	0	0	0	0	0	7	0	33	32	48	42	1.30000	2.62678	2.84828	3.00000
10	43	10	1.08897	0	0	0	0	0	0	7	0	33	32	48	42	1.30000	2.62678	2.84828	3.54658
10	44	11	1.12374	0	0	0	0	0	0	7	0	33	32	48	42	1.30000	2.62678	2.84828	3.54658
10	45	10	1.10858	0	0	0	0	0	0	7	0	33	32	48	42	1.30000	2.30000	2.84828	3.00000
10	46	8	1.69908	0	0	0	0	0	0	7	0	48	32	38	40	2.84828	3.00000	5.78072	7.21011
10	47	10	1.82814	0	0	0	0	0	0	7	0	48	32	42	38	2.84828	3.00000	3.54658	6.67760
10	48	9	0.89100	0	0	0	0	0	0	7	0	33	48	42	38	1.30000	2.84828	3.54658	5.78072

ZINC

A	B	C	D	E								F				G			
21	0	15	12.29622	0	0	0	0	0	0	0	0	19	16	38	7	13.73708	41.98642	48.86124	92.75665
21	1	13	17.06346	0	0	0	0	0	0	0	0	19	16	38	7	21.22283	41.98642	73.01714	92.75665
21	2	13	16.81556	0	0	0	0	0	0	0	0	19	16	38	7	21.22283	41.98642	50.06389	92.75665
21	3	13	16.90113	0	0	0	0	0	0	0	0	19	16	38	7	21.22283	41.98642	51.84550	92.75665
21	4	13	16.90113	0	0	0	0	0	0	0	0	19	16	38	7	21.22283	41.98642	51.84550	92.75665
21	5	13	16.90113	0	0	0	0	0	0	0	0	19	16	38	7	21.22283	41.98642	51.84550	92.75665
21	6	13	16.90113	0	0	0	0	0	0	0	0	19	16	38	7	21.22283	41.98642	51.84550	92.75665
21	7	13	16.11268	0	0	0	0	0	0	0	0	19	38	16	7	21.22283	41.27646	41.98642	92.75665
21	8	13	16.81054	0	0	0	0	0	0	0	0	19	16	38	7	21.22283	41.98642	49.98935	92.75665
21	9	13	16.59572	0	0	0	0	0	0	0	0	19	16	38	7	21.22283	41.98642	46.55005	92.75665
21	10	13	13.25433	0	0	0	0	0	0	0	0	19	38	16	7	21.22283	26.24273	41.98642	92.75665
21	11	13	17.04558	0	0	0	0	0	0	0	0	19	16	38	7	21.22283	41.98642	56.08541	92.75665
21	12	13	16.59572	0	0	0	0	0	0	0	0	19	16	38	7	21.22283	41.98642	46.55005	92.75665
21	13	13	16.59572	0	0	0	0	0	0	0	0	19	16	38	7	21.22283	41.98642	46.55005	92.75665
21	14	12	14.90239	0	0	0	0	5	0	0	0	19	16	38	7	21.22283	41.98642	46.55005	92.75665
21	15	11	18.93533	0	0	0	0	5	0	0	0	19	16	38	47	21.22283	41.98642	46.55005	49.26382
21	16	12	18.33065	1	0	0	0	5	0	0	0	19	38	47	44	21.22283	41.98642	49.26382	64.88714
21	17	11	15.21240	0	0	0	0	0	0	0	0	19	16	38	7	21.22283	41.98642	46.55005	92.75665
21	18	12	16.79051	0	0	0	0	0	0	0	0	19	38	16	47	21.22283	26.24273	41.98642	49.26382
21	19	12	16.79051	0	0	0	0	0	0	0	0	19	38	16	47	21.22283	26.24273	41.98642	49.26382
21	20	12	16.79053	0	0	0	0	0	0	0	0	19	38	16	47	21.22283	26.24273	41.98642	49.26382
21	21	12	15.90239	0	0	0	0	0	0	0	0	19	16	38	7	21.22283	41.98642	46.55005	92.75665
21	22	12	15.78276	0	0	0	0	0	0	0	0	19	16	38	7	21.22283	41.98642	44.94655	92.75665
21	23	13	19.65713	0	0	0	0	0	0	0	0	19	38	16	47	21.22283	38.69875	41.98642	49.26382
21	24	11	15.36884	0	0	0	0	0	0	0	0	19	16	47	7	21.22283	41.98642	49.26382	92.75665
21	25	12	15.78276	0	0	0	0	0	0	0	0	19	16	38	7	21.22283	41.98642	44.94655	92.75665
21	26	13	19.65713	0	0	0	0	0	0	0	0	19	38	16	47	21.22283	38.69875	41.98642	49.26382
21	27	12	14.88830	0	0	0	0	0	0	0	0	19	38	16	7	21.22283	36.87158	41.98642	92.75665
21	28	11	4.98141	1	0	0	0	0	0	0	0	19	16	7	40	21.22283	41.98642	92.75665	266.56775
21	29	11	15.36884	1	0	0	0	0	0	0	0	19	16	47	7	21.22283	41.98642	49.26382	92.75665
21	30	10	9.18501	1	0	0	0	0	0	0	0	19	16	7	40	21.22283	41.98642	92.75665	266.56775
21	31	11	16.27094	0	0	0	0	5	0	0	0	19	16	47	38	21.22283	41.98642	49.26382	81.41598
21	32	11	8.29230	0	0	0	0	0	0	0	0	19	38	16	7	13.73708	26.24273	41.98642	92.75665
21	33	12	8.19703	0	0	0	0	0	0	0	0	19	38	16	7	13.73708	26.24273	41.98642	92.75665
21	34	11	11.98874	0	0	0	0	5	0	0	0	19	16	38	47	13.73708	41.98642	46.55005	49.26382
21	35	10	14.61182	1	0	0	0	5	0	0	0	19	16	47	7	21.22283	41.98642	49.26382	92.75665
21	36	12	16.78051	0	0	0	0	0	0	0	0	19	38	16	47	21.22283	26.24273	41.98642	49.26382
21	37	11	15.36884	1	0	0	0	0	0	0	0	19	16	47	7	21.22283	41.98642	49.26382	92.75665
21	38	10	9.15442	1	0	0	0	0	0	0	0	19	16	38	7	13.73708	41.98642	56.45534	92.75665
21	39	10	9.29473	1	0	0	0	0	0	0	0	19	16	38	7	13.73708	41.98642	49.98935	92.75665
21	40	10	8.93250	1	0	0	0	0	0	0	0	19	38	16	7	13.73708	38.87227	41.98642	92.75665
21	41	12	12.08946	1	0	0	0	0	0	0	0	19	38	47	38	13.73708	41.98642	49.26382	49.98935
21	42	9	4.47485	1	0	0	0	0	0	0	0	19	38	7	40	13.73708	41.21798	92.75665	270.65472
21	43	11	9.44317	1	0	0	0	0	0	0	0	19	47	38	7	13.73708	49.26382	49.98935	92.75665

ZINC (Continued)

A	B	C	D	E								F				G			
21	44	11	10.16535	0	0	0	0	0	0	0	0	19	47	38	7	13.73708	49.26382	49.98935	92.75665
21	45	9	5.30456	0	0	0	0	0	0	0	0	19	38	7	25	13.73708	47.22923	92.75665	315.02075
21	46	10	9.48712	0	0	0	0	0	0	0	0	19	38	47	7	13.73708	47.22923	49.26382	92.75665
21	47	10	8.69117	0	0	0	0	0	0	0	0	19	38	7	45	13.73708	49.98935	92.75665	251.46085
21	48	11	10.08800	0	0	0	0	0	0	0	0	19	38	47	7	13.73708	47.22923	49.26382	92.75665

COLUMN KEY

A CHEMICAL ID
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C NO. OF RESIDENT FAMILIES
D FINAL ACUTE VALUE (FAV)
E EIGHT CRITERIA (A NUMBER SIGNIFIES A CRITERIA NOT SATISFIED
F FOUR MOST SENSITIVE RESIDENT FAMILIES
G FAMILY MEAN ACUTE VALUE FOR FOUR MOST SENSITIVE SPECIES