

APPENDIX 8.4 DERIVATION OF TOXICITY REFERENCE VALUE FOR AQUATIC LIFE

TRVs of Contaminants of Potential Concern (COPC) for aquatic life were evaluated to determine the Concentration of Interest (COI) for COC selection and the risk calculation for COCs. TRVs were derived from the following sources of toxicity values, listed in order of preference:

- Toxicity values developed and/or adopted by regulatory agencies; generally provided in the form of standards, criteria, guidance or benchmarks
- Toxicity values published in scientific literature

Water quality criteria/standards of the USA (federal and state level), the United Kingdom, Canada, Australia, China and Hong Kong were reviewed. Criteria/standards for some COCs were not identified. For the COCs with available criteria/standards, the following rules were adopted to derive the TRV:

- Rule 1: Criteria from Hong Kong are adopted when available and suitable
- Rule 2: Criteria/standards for protection of marine water/saltwater biota are preferred to that of freshwater or that without clear specification (e.g. protection of aquatic environment)
- Rule 3: Chronic criteria/standards specified with averaging time period are preferred and adopted whenever possible. For chronic criteria/standards without specified averaging time, annual averaging time is adopted
- Rule 4: National criteria/standards are preferred to local criteria/standards
- Rule 5: If more than one criteria/standards for the same COC meet the above criteria, criterion/standard with the lower value would be adopted to provide conservatism

The identified relevant criteria/standards were presented in **Table 1**; the adopted values based on the above rules were typed in bold.

Table 1 Water Quality Criteria/Standards

	US National ^a	US States ^b	Australia ^c	Canada ^d	UK ^e	China ^f	Hong Kong ^g
TRC	7.5 (saltwater, 4-day average)	Criteria search not needed	3 (freshwater, protection level to 95% species)	N/A	N/A	N/A	8 (at edge of mixing zone, daily max.) 13 (at edge of ZID, daily max.)
Bromodichloromethane	N/A	22 (marine water, annual avg.), Florida	N/A	N/A	N/A	N/A	N/A
Bromoform	N/A	360 (marine water, annual avg.), Florida	N/A	N/A	N/A	N/A	N/A
Chloroform	N/A	470.8 (marine water, annual avg.), Florida	N/A	1.8 (freshwater)	12 (marine water, annual avg.)	N/A	N/A
Dibromochloromethane	N/A	34 (marine water, annual avg.), Florida	N/A	N/A	N/A	N/A	N/A
Bromoacetic acid	N/A						
Chloroacetic acid	N/A						
Dibromoacetic acid	N/A						
Dichloroacetic acid	N/A						
Trichloroacetic acid	N/A						
Methylene chloride	N/A	1,580 (marine water, annual avg.), Florida	N/A	98.1 (freshwater)	N/A	N/A	N/A
Carbon tetrachloride	N/A	Criteria search not needed	N/A	N/A	12 (marine, annual avg.)	N/A	N/A
Chlorobenzene	N/A	Criteria search not needed	N/A	25 (marine water)	N/A	N/A	N/A
1,1-dichloroethane	N/A						
1,2-dichloroethane	N/A	Criteria search not needed	N/A	N/A	10 (marine, annual avg.)	N/A	N/A

	US National ^a	US States ^b	Australia ^c	Canada ^d	UK ^e	China ^f	Hong Kong ^g
1,1-dichloroethylene	N/A	3.2 (marine, annual avg.), Florida	N/A	N/A	N/A	N/A	N/A
1,2-dichloropropane	N/A						
Tetrachloroethylene	N/A	8.85 (marine, annual avg.), Florida	N/A	N/A	N/A	N/A	N/A
1,1,1-trichloroethane	N/A	Criteria search not needed	N/A	N/A	100 (marine annual avg.)	N/A	N/A
1,1,2-trichloroethane	N/A	Criteria search not needed	1,900 (marine water)	N/A	100 (marine annual avg.)	N/A	N/A
Trichloroethylene	N/A	Criteria search not needed	N/A	N/A	10 (marine annual avg.)	N/A	N/A
2-chlorophenol	N/A	Criteria search not needed	N/A	N/A	50 (marine annual avg.)	N/A	N/A
2,4-dichlorophenol	N/A	Criteria search not needed	N/A	N/A	20 (marine annual avg.)	N/A	N/A
p-chloro-m-cresol	N/A	Criteria search not needed	N/A	N/A	40 (marine annual avg.)	N/A	N/A
Pentachlorophenol	7.9 (marine water, 4-day avg.)	Criteria search not needed	22 (marine water)	N/A	N/A	N/A	N/A
2,4,6-trichlorophenol	N/A						
Bis(2-chloroethoxy)methane	N/A						
1,4-dichlorobenzene	N/A						
Hexachlorobenzene	N/A	Criteria search not needed	N/A	N/A	0.03 (marine, annual avg.)	N/A	N/A
Hexachlorocyclopentadiene	N/A						
Hexachloroethane	N/A						
1,2,4-trichlorobenzene	N/A	Criteria search not needed	80 (marine water)	5.4 (marine water)	N/A	N/A	N/A
Alpha-BHC	N/A						

	US National ^a	US States ^b	Australia ^c	Canada ^d	EU ^e	China ^f	Hong Kong ^g
Beta-BHC	N/A	0.046 (marine, annual Florida avg.),	N/A	N/A	N/A	N/A	N/A
Gamma-BHC	N/A	0.063 (marine, annual Florida avg.),	N/A	N/A	N/A	N/A	N/A
Aluminium	87 (freshwater, 4-day average)	1,500 (marine water), Florida	55 (freshwater)	5-100 (freshwater)	N/A	N/A	N/A
Antimony	N/A	4,300 (marine water), Florida	N/A	N/A	N/A	N/A	N/A
Barium	N/A						
Chromium (III)	74 (freshwater water, 4-day average)	Criteria search not needed	27.4 (marine water)	56 (marine water)	15 (marine water, annual avg.), in terms of total chromium	N/A	50 (at least 90% occasion), in terms of total chromium
Copper	3.1 (marine water, 4-day avg.)	Criteria search not needed	1.3 (marine water)	2-4 (freshwater)	5 (marine water, annual avg.)	N/A	5 (at least 90% occasion)
Lead	8.1 (marine water, 4-day avg.)	Criteria search not needed	N/A	1-7 (freshwater)	25 (marine, annual avg.)	N/A	N/A
Nickel	8.2 (marine water, 4-day avg.)	Criteria search not needed	70 (marine water)	25-150 (freshwater)	30 (marine, annual avg.)	N/A	5 (at least 90% occasion)
Selenium	71 (marine water, 4-day avg.)	Criteria search not needed	1 (freshwater)	11 (freshwater)	N/A	N/A	N/A
Silver	N/A	Criteria search not needed	1.4 (marine water)	1 (freshwater)	N/A	N/A	N/A
Tin	N/A						
Vanadium	N/A	Criteria search not needed	N/A	100 (marine water)	100 (marine, annual avg.)	N/A	N/A
Zinc	81 (marine water, 4-day average)	Criteria search not needed	15 (marine water)	30 (freshwater)	40 (marine, annual avg.)	N/A	20 (at least 90% of occasions)
Ammonia, total	pH and Temp. dependent	Criteria search not needed	910 (marine water)	N/A	N/A	N/A	N/A
Sulphide^h	2 (marine water, 4-day average) – hydrogen sulfide	Criteria search not needed	1 (freshwater) – in terms of hydrogen sulfide	N/A	N/A	N/A	20 (at least 90% of occasions)

Dioxins and Furans (TEQ)	N/A						
Toluene	N/A	Criteria search not needed	0.05 (freshwater)	N/A	40 (marine, annual average)	N/A	N/A
Diazinon	N/A	Criteria search not needed	0.01 (freshwater)	N/A	N/A	N/A	N/A
Malathion	0.1 (marine water, 4-day avg.)	Criteria search not needed	0.05 (freshwater)	N/A	0.02 (marine, annual average)	N/A	N/A

Note: N/A = Not Available; all concentration units in µg/L; bolded values were adopted as TRV.

^a USEPA (2004).

^b USEPA. www.epa.gov/waterscience/standards/states

^c ANZECC (2000).

^d CCME (2005).

^e WRc Swindon (1999).

^f PRC National Guideline – Environmental Quality Standards for Surface Water.

^g CDM (2002).

^h According to CDM (2002), using the TRV based on the criterion of 20µg/L would overestimate the risks to aquatic biota. Therefore, the criterion for sulphide was not adopted to derive TRV.

For COPCs without relevant criteria/standards adopted by agencies, TRVs were derived from toxicity data in scientific literature, based on the guidance provided by USEPA (1999b). ECOTOX database maintained by USEPA and OECD Screening Information DataSet (SIDS) by ICPS INCHEM were reviewed for toxicity data of HAAs on aquatic life, which are summarized at the end of this Appendix.

The ECOTOX database is a source for locating single chemical toxicity data from three USEPA ecological effects databases: AQUIRE, TERRETOX and PHYTOTOX. Relevant literature for ECOTOX is retrieved using a comprehensive search strategy to locate worldwide aquatic and terrestrial ecological effects literature. The majority of literature reviewed for ECOTOX is from 1972 through to present, which literature acquisition, data entry and data abstraction are continually conducted by USEPA who maintains the database. In the ECOTOX database, all the available toxicity data of a particular chemicals in the database can be retrieved by performing query, which is conducted by entering the chemical name or CAS number of the chemicals.

According to USEPA (1999b), the following rules are adopted to derive COC-specific TRV from the toxicity data:

- Rule 1: Toxicity data shall be ecologically relevant to the Study
 - Biota of concern: toxicity data for saltwater species is preferred to freshwater species
 - Ecological endpoint: ecologically relevant endpoint such as growth, reproduction and survival shall be used
- Rule 2: The following hierarchy, in terms of decreasing preference, shall be followed for the exposure duration and study endpoint selection:
 - Chronic NOEC (No Observable Effect Concentration)
 - Subchronic NOEC
 - Chronic LOEC (Lowest Observed Effect Concentration)
 - Subchronic LOEC
 - Acute median lethality point estimate (LC50)
 - Single dose toxicity value
- Rule 3: Uncertainty Factor (UF) shall be applied to convert toxicity test endpoint to TRV (which is equivalent to a chronic NOEC), if the toxicity test endpoint is not a chronic NOEC
 - Chronic LOEC should be multiplied by a UF of 0.1
 - Subchronic LOEC should be multiplied by a UF of 0.1
 - Acute lethal value (such as LC50) should be multiplied by an UF of 0.01

The following guidelines were adopted to generally determine exposure duration:

- For fish:
 - A chronic test lasts for more than 90 days
 - A subchronic test lasts from 14 to 90 days
 - An acute test lasts less than 14 days
- For other marine organisms:
 - A chronic test lasts for 7 or more days
 - A subchronic test lasts from 3 to 6 days
 - An acute test lasts less than 3 days

The derived TRVs for COCs without relevant criteria/standards are presented in **Table 2**.

Table 2 Toxicity Reference Values Derived

COC	Toxicity Data Adopted	UF Used	TRV Derived
Bromoacetic acid	1.6mg/L, chronic NOEC for water flea	-	1.6mg/L
Dibromoacetic acid	69.0mg/L, acute LC50 for fish	0.01	0.69mg/L
Chloroacetic acid	32.0 mg/L, chronic NOEC for water flea	-	32.0mg/L
Dichloroacetic acid	23.0mg/L, subchronic LC50 for copecod (an invertebrate)	0.01 ^a	0.23mg/L
Trichloroacetic acid	9300.0mg/L, acute LC50 for fish	0.01	93.0mg/L
Chlorobenzene	8.9mg/L, acute LC50 for fish	0.01	0.089mg/L
1,1-dichloroethane	No toxicity data available		
1,2-dichloropropane	61mg/L, acute LC50 for fish	0.01	0.61mg/L
2,4,6-trichlorophenol	1.21mg/L, subchronic LC50 for shrimp	0.01 ^a	0.0121mg/L
Bis(2-chloroethoxy)methane	184mg/L, acute LC50 for fish	0.01	1.84mg/L
1,4-dichlorobenzene	7.4mg/L, acute LC50 for fish	0.01	0.074mg/L
Hexachlorocyclopentadiene	0.009mg/L, chronic NOEC for water flea	-	0.009mg/L
Hexachloroethane	2.4mg/L, acute LC50 for fish	0.01	0.024mg/L
1,2,4-trichlorobenzene	0.09mg/L, subchronic LC50 for shrimp	0.01 ^a	0.0009mg/L
Alpha-BHC	0.5mg/L, subchronic LC50 for shrimp	0.01 ^a	0.005mg/L
Barium	500mg/L, acute LC50 for fish	0.01	5mg/L
Tin	8.16mg/L, subchronic LC50 for fish	0.01	0.0816mg/L
Sulphide	10mg/L, subchronic EC50 for algae	0.01	0.1mg/L
2,3,7,8-TCDD	3.8E-8mg/L, chronic NOEC for fish	-	3.8E-8mg/L

^a No recommended UF factor to convert subchronic lethal level to chronic NOEC; the adopted UF of 0.01 was considered to be conservative.

Toxicity Data Reviewed

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Bromoacetic acid						
<i>Daphnia magna</i> (Water flea)	FW	R	24hr	EC0 (ability to maintain balance)	34	ECOTOX
<i>Daphnia magna</i> (Water flea)	FW	R	24hr	EC50 (ability to maintain balance)	65	
<i>Daphnia magna</i> (Water flea)	FW	R	21d	NOEC (ability to maintain balance)	3.2	
<i>Daphnia magna</i> (Water flea)	FW	S	24hr	EC50 (immobile)	65.0	
<i>Daphnia magna</i> (Water flea)	FW	R	21d	NOEC (reproduction)	1.6	
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	48hr	EC50 (biomass)	0.34	
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	72hr	EC50 (biomass)	0.2	
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	96hr	EC50 (biomass)	0.22	
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	48hr	EC50 (population change)	2.3	
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	72hr	EC50 (population change)	1.4	
<i>Tinca tinca</i> (Tench, fish)	FW	NR	96hr	LC50	3420.0	

Note: Bolded value was used to derive toxicity reference value

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
<i>Dibromoacetic acid</i>						
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	24hr	LC50	160.0	ECOTOX
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	48hr	LC50	107.0	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	72hr	LC50	81.0	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96hr	LC50	69.0	

Note: Bolded value was used to derive toxicity reference value

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Chloroacetic acid						
<i>Daphnia magna</i> (Water flea)	FW	S	24hr	EC50 (ability to maintain balance)	79	ECOTOX
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	7d	EC03 (proliferation)	0.13	
<i>Brachionus calyciflorus</i> (Rotifer, zooplankton)	FW	S	48hr	EC50 (progeny)	68.9	
<i>Brachionus calyciflorus</i> (Rotifer, zooplankton)	FW	S	48hr	NOEC (progeny)	40	
<i>Daphnia magna</i> (Water flea)	FW	S	24hr	EC50 (immobile)	99.0	
<i>Daphnia magna</i> (Water flea)	FW	S	48hr	EC50 (immobile)	77.0	
<i>Daphnia magna</i> (Water flea)	FW	R	21d	NOEC (reproduction)	32.0	
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	48hr	EC50 (biomass)	0.028	
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	48hr	EC50 (population change)	0.07	
<i>Pimephales promelas</i> (Fathead minnow, fish)	FW	R	96hr	LC50	145	
<i>Brachydanio rerio</i> (Zebra Fish)	FW	S	96hr	LC50	370	
<i>Poecilia reticulata</i> (Guppy, fish)	FW	S	96hr	LC50	369	
<i>Scenedesmus quadricauda</i> (Green algae)	FW	NR	8d	EC3 (biomass)	0.13	
<i>Scenedesmus quadricauda</i> (Green algae)	FW	NR	48hr	EC10 (biomass)	0.007	
<i>Branchydanio reiro</i> (Zebrafish)	FW	R	12d	NOEC (egg and fish development)	320	

Note: Bolded value was used to derive toxicity reference value

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Dichloroacetic acid						
<i>Daphnia magna</i> (Water flea)	FW	S	24hr	EC50 (ability to maintain ability)	106	ECOTOX
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	7d	EC03 (proliferation)	1485	
<i>Nitocra spinipes</i> (Harpacticoid copepod, invertebrates)	SW	S	96hr	LC50	23.0	

Note: Bolded value was used to derive toxicity reference value

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Trichloroacetic acid						
<i>Daphnia magna</i> (Water flea)	FW	NR	24hr	EC0 (ability to maintain balance)	2500	ECOTOX
<i>Daphnia magna</i> (Water flea)	FW	NR	24hr	EC50 (ability to maintain balance)	8370	
<i>Leuciscus idus melanotus</i> (Carp, fish)	FW	NR	48hr	LC50	>10000	
<i>Alburnus alburnus</i> (Bleak, fish)	SW	S	96hr	LC50	9300.0	
<i>Carassius sp.</i> (Carp, fish)	FW	NR	96hr	LC50	3420.0	
<i>Cyprinus carpio</i> (Carp, fish)	FW	NR	96hr	LC50	2500.0	
<i>Daphnia magna</i> (Water flea)	FW	S	24hr	EC50 (immobile)	164.0	
<i>Daphnia magna</i> (Water flea)	FW	S	48hr	EC50 (immobile)	146.0	
<i>Daphnia magna</i> (Water flea)	FW	NR	96hr	LC50	3100.0	
<i>Nitocra spinipes</i> (Harpacticoid copepod, invertebrates)	SW	S	96hr	LC50	4800	
<i>Pimephales promelas</i> (Fathead minnow, fish)	FW	S	96hr	LC50	2000.0	
<i>Salmonidae</i> (Trout family)	FW	NR	96hr	LC50	1050.0	
<i>Streptocephalus proboscideus</i> (Fairy shrimp)	FW	S	24hr	LC50	1.2	
<i>Tinca tinca</i> (Tench, fish)	FW	NR	96hr	LC50	3420.0	

Note: Bolded value was used to derive toxicity reference value

Test Species	Media Type	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Chlorobenzene						
<i>Carassius auratus</i> (Goldfish)	FW	S	24 h	LC50	73.03	ECOTOX
<i>Carassius auratus</i> (Goldfish)	FW	S	48 h	LC50	56	
<i>Carassius auratus</i> (Goldfish)	FW	S	96 h	LC50	51.62	
<i>Carassius auratus</i> (Goldfish)	FW	F	84 h	LC50	4.38	
<i>Carassius auratus</i> (Goldfish)	FW	F	7.5 d	LC50	0.88	
<i>Carassius auratus</i> (Goldfish)	FW	F	84 h	LC50	4.08	
<i>Carassius auratus</i> (Goldfish)	FW	F	7.5 d	LC50	1.04	
<i>Carassius auratus</i> (Goldfish)	FW	F	96 h	LC50	3.48	
<i>Carassius auratus</i> (Goldfish)	FW	F	8 d	LC50	0.88	
<i>Carassius auratus</i> (Goldfish)	FW	F	96 h	LC50	2.37	
<i>Carassius auratus</i> (Goldfish)	FW	F	8 d	LC50	1.04	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	R	7 - 10 d	EC50 (reproduction)	14	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	R	7 - 10 d	EC50 (reproduction)	26	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	R	7 - 10 d	EC50 (reproduction)	22	

Test Species	Media Type	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Chlorobenzene						
<i>Ceriodaphnia dubia</i> (Water flea)	FW	S	24 h	LC50	7.6	ECOTOX
<i>Ceriodaphnia dubia</i> (Water flea)	FW	S	48 h	LC50	7.9	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	S	48 h	LC50	7.9	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	S	48 h	LC50	11.4	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	S	48 h	LC50	8.9	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	S	48 h	LC50	11	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	S	48 h	LC50	11.8	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	S	48 h	LC50	10.4	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	S	48 h	LC50	11.1	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	S	48 h	LC50	47	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	R	168 h	LC50	24	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	S	7 - 10 d	NOEC	3.89	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	R	7 - 10 d	NOEC (reproduction)	19	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	R	7 - 10 d	NOEC (reproduction)	19	

Test Species	Media Type	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Chlorobenzene						
<i>Ceriodaphnia dubia</i> (Water flea)	FW	R	7 - 10 d	NOEC (reproduction)	12	ECOTOX
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	24 h	LC50	>20	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	48 h	LC50	8.9	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	96 h	LC50	10	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	96 h	NOEC (mortality)	6.2	
<i>Danio rerio</i> (Zebra danio)	FW	R	28 d	LC50	10.3	
<i>Danio rerio</i> (Zebra danio)	FW	S	48 h	LC50	10.5	
<i>Danio rerio</i> (Zebra danio)	FW	R	7 d	NOEC (reproduction)	8.5	
<i>Danio rerio</i> (Zebra danio)	FW	R	14 d	NOEC (reproduction)	8.5	
<i>Danio rerio</i> (Zebra danio)	FW	R	21 d	NOEC (reproduction)	8.5	
<i>Danio rerio</i> (Zebra danio)	FW	R	28 d	NOEC (reproduction)	8.5	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	EC50 (immobile)	4.3	
<i>Daphnia magna</i> (Water flea)	FW	S	9 - 11 d	EC50 (reproduction)	15	
<i>Daphnia magna</i> (Water flea)	FW	S	9 - 11 d	EC50 (reproduction)	19	

Test Species	Media Type	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Chlorobenzene						
<i>Daphnia magna</i> (Water flea)	FW	S	9 - 11 d	EC50 (reproduction)	16	ECOTOX
<i>Daphnia magna</i> (Water flea)	FW	R	14 d	EC50 (reproduction)	2.5	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	LC50	140	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	86	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	LC50	310	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	13	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	10.7	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	15.4	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	12.9	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	21.3	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	8.6	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	11.5	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	12.8	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	31	

Test Species	Media Type	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Chlorobenzene						
<i>Daphnia magna</i> (Water flea)	FW	S	240 h	LC50	16	ECOTOX
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	LC50	14.2	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	LC50	13.9	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	13	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	10.7	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	15.4	
<i>Daphnia magna</i> (Water flea)	FW	S	9 - 11 d	NOEC (mortality)	<1.4	
<i>Daphnia magna</i> (Water flea)	FW	S	9 - 11 d	NOEC (reproduction)	11	
<i>Daphnia magna</i> (Water flea)	FW	S	9 - 11 d	NOEC (reproduction)	11	
<i>Daphnia magna</i> (Water flea)	FW	S	9 - 11 d	NOEC (reproduction)	6.5	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	24 h	LC50	24	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	48 h	LC50	24	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	96 h	LC50	24	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	24 h	LC50	17	

Test Species	Media Type	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Chlorobenzene						
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	96 h	LC50	16	ECOTOX
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	24 h	LC50	4.5	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	48 h	LC50	4.5	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	72 h	LC50	4.5	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	96 h	LC50	4.5	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	24 h	LC50	8	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	48 h	LC50	7.7	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	72 h	LC50	7.4	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	96 h	LC50	7.4	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	1 h	LC50	12	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	2 h	LC50	6.8	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	4 h	LC50	6	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	8 h	LC50	6	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	16 h	LC50	6	

Test Species	Media Type	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Chlorobenzene						
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	24 h	LC50	6	ECOTOX
<i>Micropterus salmoides</i> (Largemouth bass)	FW	F	60 h	LC50	0.66	
<i>Micropterus salmoides</i> (Largemouth bass)	FW	F	6.5 d	LC50	0.05	
<i>Micropterus salmoides</i> (Largemouth bass)	FW	F	60 h	LC50	0.71	
<i>Micropterus salmoides</i> (Largemouth bass)	FW	F	6.5 d	LC50	0.06	
<i>Micropterus salmoides</i> (Largemouth bass)	FW	F	84 h	LC50	0.34	
<i>Micropterus salmoides</i> (Largemouth bass)	FW	F	7.5 d	LC50	0.05	
<i>Micropterus salmoides</i> (Largemouth bass)	FW	F	84 h	LC50	0.39	
<i>Micropterus salmoides</i> (Largemouth bass)	FW	F	7.5 d	LC50	0.06	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	16 d	LC50	<0.09	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	16 d	LC50	<0.09	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	LC50	4.7	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	LC50	7.46	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	S	48 h	LC50	4.1	

Test Species	Media Type	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Chlorobenzene						
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	16.9	ECOTOX
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	24 h	LC50	29.12	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	48 h	LC50	29.12	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	29.12	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	24 h	LC50	33.93	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	48 h	LC50	33.93	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	33.93	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	24 h	LC50	39.19	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	48 h	LC50	34.98	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	33.93	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	7.7	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	22.3	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	35.4	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	22.2	

Test Species	Media Type	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Chlorobenzene						
<i>Poecilia reticulata</i> (Guppy)	FW	S	24 h	LC50	45.53	ECOTOX
<i>Poecilia reticulata</i> (Guppy)	FW	S	48 h	LC50	45.53	
<i>Poecilia reticulata</i> (Guppy)	FW	S	96 h	LC50	45.53	

Note: Bolded value was used to derive toxicity reference value

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
1,2-Dichloropropane						
<i>Chlamydomonas reinhardtii</i> (Green algae)	FW	F	4d	EC50 (population change)	83	ECOTOX
<i>Chlamydomonas reinhardtii</i> (Green algae)	FW	F	7d	EC50 (population change)	62	
<i>Chlamydomonas reinhardtii</i> (Green algae)	FW	F	10d	EC50 (population change)	50	
<i>Chlamydomonas reinhardtii</i> (Green algae)	FW	F	4d	EC50 (population change)	83	
<i>Chlamydomonas reinhardtii</i> (Green algae)	FW	F	7d	EC50 (population change)	62	
<i>Chlamydomonas reinhardtii</i> (Green algae)	FW	F	10d	EC50 (population change)	50	
<i>Chlamydomonas reinhardtii</i> (Green algae)	FW	F	4d	NOEC (population change)	38	
<i>Chlamydomonas reinhardtii</i> (Green algae)	FW	F	7d	NOEC (population change)	31.5	
<i>Chlamydomonas reinhardtii</i> (Green algae)	FW	F	10d	NOEC (population change)	29	
<i>Crangon crangon</i> (Common shrimp, sand shrimp)	SW	R	48hr	LC50	>100	
<i>Daphnia magna</i> (Water flea)	FW	S	24hr	LC50	99	
<i>Daphnia magna</i> (Water flea)	FW	S	48hr	LC50	52	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	86hr	LC50	320	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	24hr	LC50	360	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
1,2-Dichloropropane						
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	96hr	LC50	280	ECOTOX
<i>Menidia beryllina</i> (Inland silverside)	SW	S	96hr	LC50	240	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	24hr	LC50	194	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	48hr	LC50	154	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	72hr	LC50	141	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96hr	LC50	140	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96hr	LC50	127	
<i>Pleuronectiformes</i> (Sole order)	SW	F	96hr	LC50	61	
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	<=96hr	EC50 (population change)	194	
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	<=96hr	EC50 (population change)	123	

Note: Bolded value was used to derive toxicity reference value

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
2,4,6-Trichlorophenol						
<i>Ceriodaphnia dubia</i> (Water flea)	FW	S	48 h	EC50 (mortality)	4	ECOTOX
<i>Chlorella vulgaris</i> (Green algae)	FW	S	96 h	EC50 (general growth)	10	
<i>Chlorella vulgaris</i> (Green algae)	FW	S	96 d	EC50 (general growth)	10	
<i>Crangon septemspinosa</i> (Bay shrimp, Sand shrimp)	SW	R	96 h	LC50	2.7	
<i>Daphnia carinata</i> (Water flea)	FW	S	24 h	EC50 (immobile)	7.5	
<i>Daphnia magna</i> (Water flea)	FW	F	48 h	EC50 (immobile)	3.34	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	EC50 (immobile)	3.7	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	EC50 (immobile)	2.2	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	EC50 (immobile)	1.7	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	EC50 (immobile)	5.47	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	LC50	15	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	6	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	LC50	13.7	
<i>Daphnia magna</i> (Water flea)	FW	S	13 d	LC50	0.77	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
2,4,6-Trichlorophenol						
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	0.33	ECOTOX
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	0.27	
<i>Daphnia magna</i> (Water flea)	FW	R	21 d	NOEC (progeny)	0.5	
<i>Daphnia pulex</i> (Water flea)	FW	S	24 h	EC50 (immobile)	3.9	
<i>Fundulus heteroclitus</i> (Mummichog, fish)	SW	S	48 h	LC50	2.3	
<i>Jordanella floridae</i> (Flagfish)	FW	R	96 h	LC50	2.26	
<i>Jordanella floridae</i> (Flagfish)	FW	F	12 h	LC50	2.972	
<i>Jordanella floridae</i> (Flagfish)	FW	F	24 h	LC50	2.541	
<i>Jordanella floridae</i> (Flagfish)	FW	F	36 h	LC50	2.292	
<i>Jordanella floridae</i> (Flagfish)	FW	F	48 h	LC50	2.207	
<i>Jordanella floridae</i> (Flagfish)	FW	F	72 h	LC50	2.207	
<i>Jordanella floridae</i> (Flagfish)	FW	F	96 h	LC50	2.207	
<i>Jordanella floridae</i> (Flagfish)	FW	F	10 d	LOEC	>1.76	
<i>Jordanella floridae</i> (Flagfish)	FW	F	28 d	LOEC	1.335	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
2,4,6-Trichlorophenol						
<i>Jordanella floridae</i> (Flagfish)	FW	F	28 d	LOEC (general growth)	0.75	ECOTOX
<i>Lemna minor</i> (Duckweed)	FW	S	72 h	LC50	5.9	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	24 h	LC50	0.72	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	96 h	LC50	0.32	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	96 h	LC50	0.41	
<i>Mya arenaria</i> (Sand gaper, soft shell clam)	SW	R	96 h	LC50	3.9	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	R	48 h	LC50	2.786	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	LC50	0.73	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	S	24 h	LC50	3.304	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	R	72 h	LC50	2.249	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	R	96 h	LC50	1.991	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	S	48 h	LC50	0.18	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	S	96 h	LC50	2.3	
<i>Palaemonetes pugio</i> (Daggerblade grass shrimp)	SW	S	48 h	LC50	5.6	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
2,4,6-Trichlorophenol						
<i>Palaemonetes pugio</i> (Daggerblade grass shrimp)	SW	R	96 h	LC50	1.21	ECOTOX
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	2.8	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	9.7	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	8.6	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	8 d	LC50	5.8	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	8 d	LC50	6.4	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	2.74	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	9.16	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	4.55	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	4.55	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	0.1-1	
<i>Platichthys flesus</i> (European flounder, fish)	SW	R	96 h	LC50	1.4	
<i>Poecilia reticulata</i> (Guppy)	FW	R	96 h	LC50	2.2	
<i>Pseudokirchneriella subcapitata</i> (Green algae)	FW	S	96 h	EC50 (general growth)	3.5	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
2,4,6-Trichlorophenol						
<i>Pseudokirchneriella subcapitata</i> (Green algae)	FW	S	96 d	EC50 (general growth)	3.5	ECOTOX
<i>Salmo trutta</i> (Brown trout)	FW	S	24 h	LC50	11	
<i>Scenedesmus abundans</i> (Green algae)	FW	S	96 h	EC50 (general growth)	5.6	
<i>Spirostomum teres</i> (Ciliated protozoa)	FW	S	24 h	LC50	2	

Note: Bolded value was used to derive toxicity reference value

Test Species	Media Type	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
<i>Bis(2-chloroethoxy)methane</i>						
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	201	ECOTOX
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	184	

Note: Bolded value was used to derive toxicity reference value

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
1,4-Dichlorobenzene						
<i>Danio rerio</i> (Zebra danio)	FW	F	48 h	LC50	4.8	ECOTOX
<i>Danio rerio</i> (Zebra danio)	FW	F	96 h	LC50	2.1	
<i>Danio rerio</i> (Zebra danio)	FW	F	14 d	NOEC (general behavioral changes)	0.44	
<i>Daphnia magna</i> (Water flea)	FW	R	24 h	EC0 (equilibrium)	1.5	
<i>Daphnia magna</i> (Water flea)	FW	R	24 h	EC50 (equilibrium)	3.2	
<i>Daphnia magna</i> (Water flea)	FW	R	21 d	NOEC (equilibrium)	0.5	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	24 h	LC50	>7.5-10	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	48 h	LC50	7.2	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	72 h	LC50	7.4	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	96 h	LC50	7.4	
<i>Danio rerio</i> (Zebra danio)	FW	R	28 d	LC50	2.7	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
1,4-Dichlorobenzene						
<i>Danio rerio</i> (Zebra danio)	FW	S	48 h	LC50	4.25	ECOTOX
<i>Danio rerio</i> (Zebra danio)	FW	S	24 h	LC50	4.2	
<i>Danio rerio</i> (Zebra danio)	FW	R	7 d	NOEC (reproduction)	2.1	
<i>Danio rerio</i> (Zebra danio)	FW	R	14 d	NOEC (reproduction)	2.1	
<i>Danio rerio</i> (Zebra danio)	FW	R	21 d	NOEC (reproduction)	2.1	
<i>Danio rerio</i> (Zebra danio)	FW	R	28 d	NOEC (reproduction)	2.1	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	EC50 (immobile)	0.0007	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	EC50 (immobile)	1.6	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	EC50 (immobile)	1.6	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	EC50 (immobile)	3.2	
<i>Daphnia magna</i> (Water flea)	FW	F	96 h	EC50 (immobile)	1.35	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
1,4-Dichlorobenzene						
<i>Daphnia magna</i> (Water flea)	FW	R	14 d	EC50 (reproduction)	0.93	ECOTOX
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	LC50	42	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	11	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	LC50	11.2	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	LC50	21.4	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	LC50	16.7	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	10.9	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	13.5	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	10.5	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	2.2	
<i>Daphnia magna</i> (Water flea)	FW	R	21 d	NOEC	0.3	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
1,4-Dichlorobenzene						
<i>Daphnia magna</i> (Water flea)	FW	R	21 d	NOEC (reproduction)	0.4	ECOTOX
<i>Jordanella floridae</i> (Flagfish)	FW	R	96 h	LC50	4.48	
<i>Jordanella floridae</i> (Flagfish)	FW	F	12 h	LC50	3.069	
<i>Jordanella floridae</i> (Flagfish)	FW	F	24 h	LC50	3.069	
<i>Jordanella floridae</i> (Flagfish)	FW	F	36 h	LC50	3.069	
<i>Jordanella floridae</i> (Flagfish)	FW	F	48 h	LC50	2.11	
<i>Jordanella floridae</i> (Flagfish)	FW	F	72 h	LC50	2.053	
<i>Jordanella floridae</i> (Flagfish)	FW	F	96 h	LC50	2.053	
<i>Jordanella floridae</i> (Flagfish)	FW	F	10 d	LOEC	0.263	
<i>Jordanella floridae</i> (Flagfish)	FW	F	28 d	LOEC	>0.349	
<i>Jordanella floridae</i> (Flagfish)	FW	F	28 d	LOEC (general growth)	>0.349	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
1,4-Dichlorobenzene						
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	24 h	LC50	4.5	ECOTOX
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	96 h	LC50	4.3	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	96 h	LC50	6.4	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	EC50 (equilibrium)	1.1	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	S	48 h	LC50	1.18	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	24 h	LC50	1.37	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	48 h	LC50	1.24	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	72 h	LC50	1.24	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	LC50	1.12	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	S	24 h	LC50	1.2	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	14 d	LC50	0.8	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
1,4-Dichlorobenzene						
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	LC50	1.12	ECOTOX
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	S	24 h	LC50	0.88	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	S	96 h	LC50	0.88	
<i>Palaemonetes pugio</i> (Daggerblade grass shrimp)	SW	S	48 h	LC50	129.2	
<i>Palaemonetes pugio</i> (Daggerblade grass shrimp)	SW	S	96 h	LC50	60	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	24 h	LC50	34	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	48 h	LC50	34	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	34.5	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	2.4	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	24 h	LC50	35.4	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	48 h	LC50	35.4	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
1,4-Dichlorobenzene						
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	33.7	ECOTOX
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	30	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	4	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	3.6	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	14.2	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	11.7	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	4.2	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	32 d	LOEC	1	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	32 d	NOEC	0.57	
<i>Pseudokirchneriella subcapitata</i> (Green algae)	FW	S	96 h	EC50 (general growth)	1.6	
<i>Pseudokirchneriella subcapitata</i> (Green algae)	FW	S	3 h	EC50 (photosynthesis)	5.2	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
1,4-Dichlorobenzene						
<i>Salvelinus fontinalis</i> (Brook trout)	FW	S	96 h	LC50	1.67	ECOTOX
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	48 h	EC50	28	
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	48 h	EC50	38	

Note: Bolded value was used to derive toxicity reference value

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Hexachlorocyclopentadiene						
<i>Daphnia magna</i> (Water flea)	FW	R	24 h	EC0 (ability to maintain balance)	0.19	ECOTOX
<i>Daphnia magna</i> (Water flea)	FW	R	24 h	EC50 (ability to maintain balance)	0.21	
<i>Daphnia magna</i> (Water flea)	FW	R	21 d	NOEC (ability to maintain balance)	0.009	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	EC50 (immobile)	0.21	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	0.0522	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	LC50	0.093	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	LC50	0.13	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	0.039	
<i>Daphnia magna</i> (Water flea)	FW	R	21 d	NOEC (reproduction)	0.009	
<i>Ictalurus punctatus</i> (Channel catfish)	FW	S	24 h	LC50	0.19	
<i>Ictalurus punctatus</i> (Channel catfish)	FW	S	48 h	LC50	0.15	
<i>Ictalurus punctatus</i> (Channel catfish)	FW	S	96 h	LC50	0.097	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	24 h	LC50	>500	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	48 h	LC50	30	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Hexachlorocyclopentadiene						
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	96 h	LC50	25	ECOTOX
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	24 h	LC50	0.17	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	48 h	LC50	0.15	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	96 h	LC50	0.13	
<i>Micropterus salmoides</i> (Largemouth bass)	FW	S	24 h	LC50	>500	
<i>Micropterus salmoides</i> (Largemouth bass)	FW	S	48 h	LC50	35	
<i>Micropterus salmoides</i> (Largemouth bass)	FW	S	96 h	LC50	20	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	0.007	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	30 d	LC50	0.0067	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	24 h	LC50	0.078	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	48 h	LC50	0.059	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	72 h	LC50	0.059	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	0.059	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	24 h	LC50	0.115	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Hexachlorocyclopentadiene						
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	48 h	LC50	0.11	ECOTOX
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	72 h	LC50	0.107	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	0.104	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	24 h	LC50	0.093	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	48 h	LC50	0.078	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	72 h	LC50	0.078	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	0.078	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	0.0139	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	24 h	LC50	0.24	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	48 h	LC50	0.21	
<i>Pimephales promelas</i> (Fathead minnow)	FW	S	96 h	LC50	0.18	
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	48 h	EC50 (biomass)	0.08	
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	48 h	EC50 (population change)	0.24	

Note: Bolded value was used to derive toxicity reference value

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Hexachloroethane						
<i>Arbacia punctulata</i> (Purple-spined sea urchin)	SW	S	48 h	EC50 (general growth)	9.32	ECOTOX
<i>Arbacia punctulata</i> (Purple-spined sea urchin)	SW	S	48 h	EC50 (general growth)	8.51	
<i>Carassius auratus</i> (Goldfish)	FW	F	96 h	LC50	>2.1	
<i>Carassius auratus</i> (Goldfish)	FW	F	96 h	LC50	1.42	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	S	48 h	EC50 (mortality)	4.3	
<i>Ceriodaphnia reticulata</i> (Water flea)	FW	S	48 h	EC50 (immobile)	6.8	
<i>Ceriodaphnia reticulata</i> (Water flea)	FW	S	48 h	LC50	3.3	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	24 h	LC50	3.1	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	48 h	LC50	2.8	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	72 h	LC50	2.4	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	96 h	LC50	2.4	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	EC50 (immobile)	10	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	EC50 (immobile)	2.1	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	EC50 (immobile)	1.8	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Hexachloroethane						
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	LC50	26	ECOTOX
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	8.1	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	2.9	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	2.4	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	2.7	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	1.36	
<i>Daphnia pulex</i> (Water flea)	FW	S	48 h	EC50 (immobile)	13	
<i>Daphnia pulex</i> (Water flea)	FW	S	48 h	LC50	>10	
<i>Gambusia affinis</i> (Western mosquitofish)	FW	F	96 h	LC50	1.38	
<i>Ictalurus punctatus</i> (Channel catfish)	FW	F	48 h	LC50	1.93	
<i>Ictalurus punctatus</i> (Channel catfish)	FW	F	72 h	LC50	1.6	
<i>Ictalurus punctatus</i> (Channel catfish)	FW	F	96 h	LC50	1.52	
<i>Ictalurus punctatus</i> (Channel catfish)	FW	F	96 h	LC50	2.36	
<i>Ictalurus punctatus</i> (Channel catfish)	FW	F	96 h	LC50	1.77	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Hexachloroethane						
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	24 h	LC50	1.8	ECOTOX
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	96 h	LC50	0.98	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	24 h	LC50	1.82	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	48 h	LC50	1.6	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	72 h	LC50	1.13	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	96 h	LC50	0.97	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	96 h	LC50	0.856	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	EC50 (ability to maintain balance)	0.84	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	EC50 (mortality)	0.87	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	192 h	EC50 (mortality)	0.6	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	LC50	0.84	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	24 h	LC50	1.8	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	48 h	LC50	1.17	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	72 h	LC50	1.05	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Hexachloroethane						
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	LC50	0.94	ECOTOX
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	192 h	LC50	0.77	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	24 h	LC50	1.51	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	48 h	LC50	0.97	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	72 h	LC50	0.97	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	LC50	0.97	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	LC50	1.18	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	LC50	0.98	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	192 h	LC50	0.76	
<i>Orconectes immunis</i> (Crayfish)	FW	F	96 h	LC50	>2.1	
<i>Orconectes immunis</i> (Crayfish)	FW	F	96 h	LC50	2.7	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	24 h	LC50	1.74	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	48 h	LC50	1.44	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	72 h	LC50	1.29	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Hexachloroethane						
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	1.23	ECOTOX
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	24 h	LC50	1.8	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	48 h	LC50	1.55	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	72 h	LC50	1.55	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	1.51	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	1.32	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	1.53	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	1.39	
<i>Pimephales promelas</i> (Fathead minnow)	FW	F	96 h	LC50	1.1	
<i>Simocephalus vetulus</i> (Water flea)	FW	S	48 h	LC50	5.8	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
1,2,4-Trichlorobenzene						
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	EC50 (equilibrium)	5.4	ECOTOX
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	7 d	EC03 (proliferation)	>24	
<i>Acartia tonsa</i> (Calanoid copepod)	SW	S	96 h	LC50	2.1	
<i>Armandia maculata</i> Polychaete or Opheliid worm	SW	F	96 h	LC50	0.93	
<i>Branchiostoma caribaeum</i> (Caribbean lancelet)	SW	F	96 h	LC50	>1.5 - <10	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	S	48 h	EC50 (immobile)	F 3.9, 2.7 - 5.6 umol/L	
<i>Corophium acherusicum</i> (Scud)	SW	F	96 h	LC50	1.1	
<i>Crangon septemspinosa</i> (Bay shrimp, Sand shrimp)	SW	S	96 h	LC50	0.09	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	24 h	LC50	>47	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	48 h	LC50	>47	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	72 h	LC50	>4	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	96 h	LC50	21	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	96 h	NOEC	15	
<i>Danio rerio</i> (Zebra danio)	FW	S	48 h	LC50	6.3	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	EC50 (immobile)	1.2	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
1,2,4-Trichlorobenzene						
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	EC50 (equilibrium)	5.4	ECOTOX
<i>Scenedesmus subspicatus</i> (Green algae)	FW	S	7 d	EC03 (proliferation)	>24	
<i>Acartia tonsa</i> (Calanoid copepod)	SW	S	96 h	LC50	2.1	
<i>Armandia maculata</i> Polychaete or Opheliid worm	SW	F	96 h	LC50	0.93	
<i>Branchiostoma caribaeum</i> (Caribbean lancelet)	SW	F	96 h	LC50	>1.5 - <10	
<i>Ceriodaphnia dubia</i> (Water flea)	FW	S	48 h	EC50 (immobile)	F 3.9, 2.7 - 5.6 umol/L	
<i>Corophium acherusicum</i> (Scud)	SW	F	96 h	LC50	1.1	
<i>Crangon septemspinosa</i> (Bay shrimp, Sand shrimp)	SW	S	96 h	LC50	0.09	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	24 h	LC50	>47	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	48 h	LC50	>47	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	72 h	LC50	>4	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	96 h	LC50	21	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	S	96 h	NOEC	15	
<i>Danio rerio</i> (Zebra danio)	FW	S	48 h	LC50	6.3	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
1,2,4-Trichlorobenzene						
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	EC50 (immobile)	1.2	ECOTOX
<i>Daphnia magna</i> (Water flea)	FW	F	48 h	EC50 (immobile)	3.39	
<i>Daphnia magna</i> (Water flea)	FW	R	14 d	EC50 (reproduction)	0.45	
<i>Daphnia magna</i> (Water flea)	FW	S	24 h	LC50	110	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	50	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	2.1	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	1.7	
<i>Daphnia magna</i> (Water flea)	FW	S	48 h	LC50	7.69	
<i>Gammarus annulatus</i> (Scud)	SW	S	96 h	LC50	0.5	
<i>Gammarus minus</i> (Scud)	FW	S	96 h	LC50	3.9	
<i>Hydra oligactis</i> (Hydra)	FW	F	96 h	LC50	>3.37	
<i>Jordanella floridae</i> (Flagfish)	FW	R	96 h	LC50	4	
<i>Jordanella floridae</i> (Flagfish)	FW	R	24 h	LC50	2.672	
<i>Jordanella floridae</i> (Flagfish)	FW	R	36 h	LC50	2.318	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
1,2,4-Trichlorobenzene						
<i>Jordanella floridae</i> (Flagfish)	FW	R	48 h	LC50	1.494	ECOTOX
<i>Jordanella floridae</i> (Flagfish)	FW	F	72 h	LC50	1.285	
<i>Jordanella floridae</i> (Flagfish)	FW	F	96 h	LC50	1.217	
<i>Jordanella floridae</i> (Flagfish)	FW	F	10 d	LOEC	1.13	
<i>Laevicardium mortoni</i> (Morton's egg cockle)	SW	F	96 h	LC50	0.89	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	24 h	LC50	109	
<i>Lepomis macrochirus</i> (Bluegill)	FW	S	96 h	LC50	3.4	
<i>Lepomis macrochirus</i> (Bluegill)	FW	F	96 h	LC50	3.02	
<i>Leptosynapta inhaerens</i> (Sea cucumber)	SW	F	96 h	LC50	2.4	
<i>Lumbriculus variegatus</i> (Oligochaete, worm)	FW	F	96 h	LC50	>3.37	
<i>Menidia beryllina</i> (Inland silverside)	SW	S	96 h	LC50	2.5	
<i>Neanthes arenaceodentata</i> (Polychaete worm)	SW	S	96 h	LC50	4.7	
<i>Nitocra spinipes</i> (Harpacticoid copepod)	SW	S	96 h	LC50	2.6	
<i>Oncorhynchus mykiss</i> (Rainbow trout, donaldson trout)	FW	F	96 d	EC50 (equilibrium)	1.27	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
1,2,4-Trichlorobenzene						
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	S	48 h	LC50	1.95	ECOTOX
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	24 h	LC50	2.3	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	48 h	LC50	2	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	72 h	LC50	1.73	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	LC50	1.53	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	192 h	LC50	1.28	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	S	96 h	LC50	4.04	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	S	96 h	LC50	4.33	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	LC50	1.32	
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	F	96 h	LC50	1.52	
<i>Orconectes immunis</i> (Crayfish)	FW	F	96 h	LC50	3.02	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	S	48 h	LC50	1.1	
<i>Palaemonetes pugio</i> (Daggerblade grass shrimp)	SW	F	96 h	LC50	0.54	
<i>Palaemonetes pugio</i> (Daggerblade grass shrimp)	SW	S	96 h	LC50	0.9	

Note: Bolded value was used to derive toxicity reference value

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Alpha-BHC						
<i>Artemia salina</i> (Brine shrimp)	SW	R	96 h	LC50	0.5	ECOTOX
<i>Chlorella pyrenoidosa</i> (Green algae)	FW	R	96 h	EC50 (general growth)	>10	
<i>Danio rerio</i> (Zebra danio)	FW	S	24 h	LC50	1.41	
<i>Danio rerio</i> (Zebra danio)	FW	S	48 h	LC50	1.11	
<i>Danio rerio</i> (Zebra danio)	FW	S	72 h	LC50	1.11	
<i>Danio rerio</i> (Zebra danio)	FW	S	96 h	LC50	1.11	
<i>Daphnia magna</i> (Water flea)	FW	R	48 h	EC50 (immobile)	0.8	
<i>Daphnia magna</i> (Water flea)	FW	R	25 d	EC50 (reproduction)	0.1	
<i>Daphnia magna</i> (Water flea)	FW	R	1 wk	LC50	0.37	
<i>Daphnia magna</i> (Water flea)	FW	R	2 wk	LC50	0.48	
<i>Daphnia magna</i> (Water flea)	FW	R	3 wk	EC50 (general growth)	>8.5	
<i>Daphnia magna</i> (Water flea)	FW	R	19 d	EC50 (reproduction)	1.36	
<i>Daphnia magna</i> (Water flea)	FW	R	1 wk	LC50	>8.5	
<i>Daphnia magna</i> (Water flea)	FW	R	2 wk	LC50	>8.5	
<i>Daphnia magna</i> (Water flea)	FW	R	3 wk	LC50	2.1	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Alpha-BHC						
<i>Microhyla ornata</i>	FW	R	96 h	LC50	7.27	ECOTOX
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	D	48 h	EC50 (immobile)	1.05	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	R	24 h	EC50 (immobile)	>10	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	R	48 h	EC50 (immobile)	8	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	R	72 h	EC50 (immobile)	8	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	R	96 h	EC50 (immobile)	5.6	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	R	24 h	LC50	>10	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	R	48 h	LC50	>10	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	R	72 h	LC50	8.5	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	R	96 h	LC50	8	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	R	9 d	LC50	>10	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	R	9 d	LC50	>10	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	R	16 d	LC50	>10	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	R	23 d	LC50	2.8	
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	R	30 d	LC50	2.3	

Test Species	Medium	Exposure Type	Duration	Endpoint	Concentration (mg/L)	Source
Alpha-BHC						
<i>Oryzias latipes</i> (Medaka, high-eyes)	FW	R	37 d	LC50	1.2	ECOTOX
<i>Paracheirodon axelrodi</i>	FW	S	24 h	LC50	1.64	
<i>Paracheirodon axelrodi</i>	FW	S	48 h	LC50	1.52	
<i>Paracheirodon axelrodi</i>	FW	S	72 h	LC50	1.52	
<i>Paracheirodon axelrodi</i>	FW	S	96 h	LC50	1.52	
<i>Poecilia reticulata</i> (Guppy)	SW	R	48 h	EC50 (immobile)	1.38	
<i>Poecilia reticulata</i> (Guppy)	SW	R	96 h	EC50 (immobile)	1.31	
<i>Poecilia reticulata</i> (Guppy)	FW	R	48 h	EC50 (immobile)	0.8	
<i>Poecilia reticulata</i> (Guppy)	FW	S	24 h	LC50	2.65	
<i>Poecilia reticulata</i> (Guppy)	FW	S	48 h	LC50	1.95	
<i>Poecilia reticulata</i> (Guppy)	FW	S	72 h	LC50	1.58	
<i>Poecilia reticulata</i> (Guppy)	FW	S	96 h	LC50	1.49	

Note: Bolded value was used to derive toxicity reference value

Test Species	Medium	Duration	Exposure Type	Endpoint	Concentration (mg/L)	Source
Barium						
<i>Americamysis bahia</i> (Opossum shrimp)	SW	96 h		LC50	>500	ECOTOX
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	24 h	S	LC50	>500	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	48 h	S	LC50	>500	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	72 h	S	LC50	>500	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	96 h	S	LC50	>500	
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	SW	96 h	S	NOEC	500	
<i>Daphnia magna</i> (Water flea)	FW	24 h	S	LC50	>530	
<i>Daphnia magna</i> (Water flea)	FW	48 h	S	LC50	410	
<i>Lemna minor</i> (Duckweed)	FW	4 d	S	EC50	26	
<i>Myriophyllum spicatum</i> (Eurasian watermilfoil)	FW	32 d	S	EC50	41.2	
<i>Myriophyllum spicatum</i> (Eurasian watermilfoil)	FW	32 d	S	EC50	103	

Test Species	Medium	Duration	Exposure Type	Endpoint	Concentration (mg/L)	Source
Barium						
<i>Myriophyllum spicatum</i> (Eurasian watermilfoil)	FW	32 d	S	EC50	113	ECOTOX
<i>Myriophyllum spicatum</i> (Eurasian watermilfoil)	FW	32 d	S	EC50	83.8	

Note: Bolded value was used to derive toxicity reference value

Test Species	Medium	Duration	Exposure	Endpoint	Concentration (mg/L)	Source
<i>Tin</i>						
<i>Oncorhynchus mykiss</i> (Rainbow trout,donaldson trout)	FW	28 d	R	LC50	>0.17-<15.61	ECOTOX

Note: Bolded value was used to derive toxicity reference value

Test Species	Medium	Duration	Exposure	Endpoint	Concentration (mg/L)	Source
Sulphide						
<i>Pseudokirchneriella subcapitata</i> (Green algae)	FW	96 h		EC50	10	ECOTOX
<i>Cyprinodon variegatus</i> (Sheepshead minnow)	FW	24 h		NR-ZERO	4.5 – 5.0	
<i>Fundulus grandis</i> (Gulf killifish)	FW	24 h		NR-ZERO	4.5 – 5.0	
<i>Fundulus similis</i> (Longnose killifish)	FW	24 h		NR-ZERO	4.5 – 5.0	
<i>Gambusia affinis</i> (Western mosquitofish)	FW	24 h		NR-ZERO	4.5 – 5.0	
<i>Lucania parva</i> (Rainwater Killifish)	FW	24 h		NR-ZERO	4.5 – 5.0	