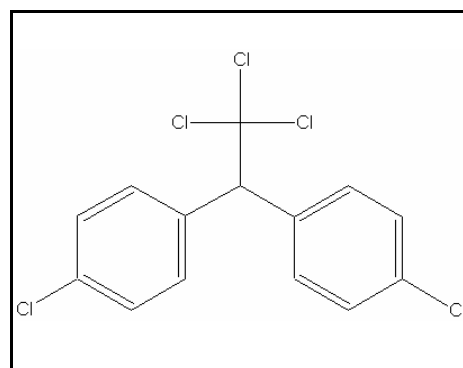




TIER I ACUTE AND TIER II CHRONIC AQUATIC LIFE VALUES

4,4'-DDT

CAS RN: 50-29-3
Water Solubility: 0.00000017 g/100 mL
Log K_{ow}:



Standard

The procedures described in the Tier I and Tier II methodologies indicate that, except possibly where a locally important species is very sensitive, aquatic organisms should not be affected unacceptably if the four (4) day average concentration of DDT does not exceed 0.032 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 0.45 µg/L more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

Four Lowest GMAVs:

Mayfly	1.2 µg/L
Fowler's Toad	1.0 µg/L
Western Chorus Frog	0.8 µg/L
Cladoceran	0.93 µg/L

$$S^2 = 5.5106$$

$$S = 2.3475$$

$$L = -0.6295$$

$$A = -0.1046$$

$$FAV = 0.90$$

$$CMC = FAV/2 = 0.45 \mu\text{g/L}$$

Chronic Aquatic Life:

$$SCV = FAV/SACR$$

$$SACR = 28 \text{ (Geometric mean of 18, 18, 65)}$$

$$SCV = 0.90/28 = 0.032 \mu\text{g/L}$$

Notes:

The data used to calculate these criteria came primarily from EPA's 1980 criteria document for DDT. Studies collected by Michigan were used to supplement the information in the EPA criteria document.

Data

Table 1. GMAVs and SMAVs for 4, 4' DDT

<u>Genus Mean Acute Value ($\mu\text{g/L}$)</u>	<u>Species</u>	<u>Species Mean Acute Value ($\mu\text{g/L}$)</u>	<u>Acute- Chronic Ratio</u>	<u>Reference Number</u>
100,000	Tubificid Worm	100,000		1
1,230	Planarian <u>Polycelis felina</u>	1,230		2
362	Stonefly <u>Acroneuria pacifica</u>	362		2
192	Stonefly <u>Pteronarcys californica</u>	192		2
175	Caddisfly <u>Arctopsyche grandis</u>	175		2

>130	Oligochaete <u>Lumbriculus variegatus</u>	>130		3
68	Northern Redbelly Dace <u>Chrosomus eos</u>	68		2
67	Brook Stickleback <u>Culaea iconstans</u>	67		2
54	Seed Shrimp <u>Cypridopsis vidua</u>	54		2
48	Caddisfly <u>Hydropsyche california</u>	48		2
48	Fathead Minnow <u>Pimephales promelas</u>	48	65	2
40	Goldfish <u>Carassius auratus</u>	40		2
33	Guppy <u>Poecilia reticulata</u>	33		2
17.5	Black Bullhead <u>Ictalurus melas</u>	18		2
	Channel Catfish <u>Ictalurus punctatus</u>	17		2
10.9	Coho Salmon <u>Oncorhynchus kisutch</u>	14		2
	Chinook Salmon <u>Oncorhynchus tshawytsche</u>	12		2
	Rainbow Trout <u>Oncorhynchus mykiss</u>	7.8		2
10	Freshwater Drum <u>Aplodinotus grunniens</u>	10		2

8.9	Lake Trout <u>Salvelinus namaycush</u>	9.3	2
	Brook Trout <u>Salvelinus fontinalis</u>	8.5	2
8.0	Carp <u>Cyprinus carpio</u>	8.0	2
5.0	Longear Sunfish <u>Lepomis megalotis</u>	7.8	2
	Redear Sunfish <u>Lepomis microlophus</u>	5.0	2
	Bluegill <u>Lepomis macrochirus</u>	4.9	2
	Green Sunfish <u>Lepomis cyanellus</u>	4.3	2
	Pumpkinseed <u>Lepomis gibbosus</u>	3.9	2
4.0	Isopod <u>Asellus brevicaudus</u>	4.0	2
3.5	Stonefly <u>Classenia sabulosa</u>	3.5	2
3.2	Glass Shrimp <u>Palaemonetes kadiakensis</u>	3.2	2
3.0	Crayfish <u>Procambarus acutus</u>	3.0	2
2.8	Brown Trout <u>Salmo trutta</u>	7.3	2
	Cutthroat Trout <u>Salmo clarki</u>	1.1	2
2.6	Cladoceran	2.6	2

	<u>Simocephalus serrulatus</u>		
2.3	Scud <u>Gammarus lacustris</u>	3.0	2
	Scud <u>Gammarus fasciatus</u>	1.7	2
1.9	Crayfish <u>Orconectes nais</u>	1.9	2
1.9	Stonefly <u>Pteronarcella badia</u>	1.9	2
1.7	Northern Pike <u>Esox lucius</u>	1.7	2
1.6	Yellow Perch <u>Perca flavescens</u>	1.6	2
1.4	Largemouth Bass <u>Micropterus salmoides</u>	1.4	2
1.2	Mayfly <u>Ephemerella sp.</u>	1.2	4
1.0	Fowler's Toad <u>Pseudacris triseriata</u>	1.0	5
0.8	Western Chorus Frog <u>Bufo woodhousii fowleri</u>	0.8	5
0.93	Cladoceran <u>Daphnia magna</u>	2.4	2
	Cladoceran <u>Daphnia pulex</u>	0.36	2
	Cladoceran <u>Daphnia magna</u>	0.68	6
	Cladoceran	1.1	7

<u>Daphnia pulex</u>		
Cladoceran	1.1	8
<u>Daphnia magna</u>		
Cladoceran	1.1	9
<u>Daphnia pulex</u>		

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Acronyms/Abbreviations

CAS RN	Chemical Abstract Service Registry Number
K _{ow}	Octanol-Water Partition Coefficient
P (superscript)	Predicted value
SAV	Secondary Acute Value
GMAV	Genus Mean Acute Value
SAF	Secondary Acute Factor
SMC	Secondary Maximum Concentration
SCC	Secondary Continuous Concentration
SACR	Secondary Acute-Chronic Ratio
FT	Flow-through
S	Static
U	Unmeasured
M	Measured
EVISTRA	Evaluation and Interpretation of Suitable Test Results in AQUIRE (EPA quality checking method/database)

Revision History

February 26, 1997 Values first developed
May 16, 2001 New search for data. No new studies added.

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