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TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES FOR 2,4-DICHLOROPHENOXYACETIC ACID (2,4-D)

Standard:

The procedures described in the Tier II methodology 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 2,4-D does not exceed 380 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 2,500 µg/L more than once every three (3) years on the average.

Calculations:

Acute Aquatic Life:

$$SAV = \text{lowest GMAV/SAF}$$

$$\begin{aligned}\text{Lowest GMAV} &= 30,166 \text{ µg/L} \\ \text{SAF} &= 6.1\end{aligned}$$

$$SAV = 30,166/6.1 = 4,945 \text{ µg/L}$$

$$SMC = SAV/2 = 4,945/2 = \mathbf{2,500 \text{ µg/L}}$$

Chronic Aquatic Life:

$$SCV = SAV/SACR$$

$$SACR = 13.14 \text{ (Geometric mean of 18, 18, 7)}$$

$$SCV = 4,945/13.14 = \mathbf{380 \text{ µg/L}}$$

Calculation of ACR's

Ceriodaphnia dubia

$$\begin{aligned}\text{NOEC} &= 23,300 \text{ µg/L} \\ \text{LOEC} &= 48,800 \text{ µg/L}\end{aligned}$$

$$CV = \text{Geometric Mean of 23300 and 48800} = 33,720$$

$$ACR = 236,000/33,720 = 7.0$$

Table 1. GMAVs and SMAVs for 2,4-D

<u>Genus Mean Acute Value (µg/L)</u>	<u>Species</u>	<u>Species Mean Acute Value (µg/L)</u>	<u>Acute- Chronic Ratio</u>	<u>Reference Number</u>
30,166	Cladoceran <u>Daphnia magna</u>	25,000		1
	Cladoceran <u>Daphnia magna</u>	36,400		1
320,000	Fathead Minnow <u>Pimephales promelas</u>	320,000		1
157,733	Bluegill <u>Lepomis macrochirus</u>	263,000		1
	Pumpkinseed <u>Lepomis gibbosus</u>	94,600		3
358,000	Rainbow Trout <u>Oncorhynchus mykiss</u>	358,000		1
122,200	Annelid <u>Lumbriculus variegatus</u>	122,200		2
236,000	Cladoceran <u>Ceriodaphnia dubia</u>	236,000		3
52,952	Striped Bass <u>Morone saxatilis</u>	70,100		3
	White Perch <u>Morone americanus</u>	40,000		3
300,600	American Eel	300,600		3
37,768	Carp <u>Cyprinus carpio</u>	134,800		4

Carp <u>Cyprinus carpio</u>	24,150	5
Carp <u>Cyprinus carpio</u>	31,250	5
Carp <u>Cyprinus carpio</u>	20,000	6

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