



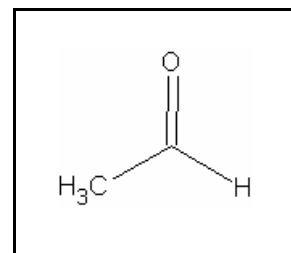
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**TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES**

**2,4-DICHLOROPHENOXYACETIC ACID (2,4-D)**

CAS RN: 94-75-7  
Water Solubility: 0.0890 g/100 mL  
Log  $K_{ow}$ : 2.80<sup>P</sup>



**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 240 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:

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

$$\text{Lowest GMAV} = 30,166 \mu\text{g/L}$$

$$SAF = 6.1$$

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

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

Chronic Aquatic Life:

$$SCV = SAV/SACR$$

$$SACR = 20.46 \text{ (Geometric mean of 18, 68, 7)}$$

$$SCV = 4,945/20.46 = 240 \text{ } \mu\text{g/L}$$

Calculation of ACR's

Ceriodaphnia dubia

$$NOEC = 23,300 \text{ } \mu\text{g/L}$$

$$LOEC = 48,800 \text{ } \mu\text{g/L}$$

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

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

Medaka

$$CV = 40,800$$

$$ACR = 2,780,000/40,800 = 68$$

**Data**

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

<u>Genus Mean Acute Value (<math>\mu\text{g/L}</math>)</u>	<u>Species</u>	<u>Species Mean Acute Value (<math>\mu\text{g/L}</math>)</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	7	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
2,780,000	Medaka <u>Oryzias latipes</u>	2,780,000	68	7

## References

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## Acronyms/Abbreviations

CAS RN	Chemical Abstract Service Registry Number
K <sub>ow</sub>	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 24, 1999      Values first developed  
February 8, 2001      New search for data. Medaka data point added.

## Contact Information

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