



TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES
--

MOLYBDENUM

CAS RN: 7439-98-7
Water Solubility:
Log K_{ow}:

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 molybdenum does not exceed 800 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 7,200 µg/L more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

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

$$\begin{aligned}\text{Lowest GMAV} &= 88,318 \text{ } \mu\text{g/L} \\ \text{SAF} &= 6.1\end{aligned}$$

$$\text{SAV} = 88,318 / 6.1 = 14,478 \text{ } \mu\text{g/L}$$

$$\text{SMC} = \text{SAV} / 2 = 14,478 / 2 = \mathbf{7,200 \text{ } \mu\text{g/L}}$$

Chronic Aquatic Life:

$$\text{SCV} = \text{SAV}/\text{SACR}$$

$$\text{SACR} = 18$$

$$\text{SCV} = 14,478/18 = \mathbf{800\ \mu\text{g/L}}$$

Data

Table 1. GMAVs and SMAVs for molybdenum

<u>Genus Mean Acute Value ($\mu\text{g/L}$)</u>	<u>Species</u>	<u>Species Mean Acute Value ($\mu\text{g/L}$)</u>	<u>Reference Number</u>
207,000	Cladoceran <u>Daphnia magna</u>	207,000	1
116,603	Bluegill <u>Lepomis macrochirus</u>	157,000	2
	Bluegill <u>Lepomis macrochirus</u>	86,600	2
625,465	Fathead Minnow <u>Pimephales promelas</u>	678,000	1
	Fathead Minnow <u>Pimephales promelas</u>	577,000	1
88,318	Rainbow Trout <u>Oncorhynchus mykiss</u>	120,000	2
	Rainbow Trout <u>Oncorhynchus mykiss</u>	65,000	2
2,650,000	Isopod <u>Cragonyx pseudogracilis</u>	2,650,000	3

References

1. Kimball, G. 1978. The effects of lesser known metals and one organic to fathead minnows (*Pimephales promelas*) and *Daphnia magna*. Manuscript, Dep. Of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN. 88 pp.
2. Martin, T.R., and D.M. Holdich 1986. The acute lethal toxicity of heavy metals to peracarid crustaceans (with particular reference to fresh-water asellids and gammarids). *Water Res.* 20(9): 1137-1147.

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

October 1, 1998 Values first developed
September 18, 2001 New search for data. No new studies added.

Contact Information

David B. Kallander
Water Quality Standards Section
Indiana Department of Environmental Management
100 North Senate Ave., P.O. Box 6015
Indianapolis, IN 46206-6015
(317) 233-2472
Email: dkalland@dem.state.in.us