Indiana Department of Environmental Management
Office of Water Quality - Water Quality Standards Section

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:

SAV = lowest GMAV/SAF

Lowest GMAV = 88,318 µg/L
SAF = 6.1

SAV = 88,318/6.1 = 14,478 µg/L

SMC = SAV/2 = 14,478/2 = **7,200 µg/L**

Chronic Aquatic Life:

SCV = SAV/SACR

SACR = 18

SCV = 14,478/18 = **800 μg/L**

Data

Table 1. GMAVs and SMAVs for molybdenum

Genus Mean Acute Value (μg/L)	Species	Species Mean Acute Value (μg/L)	Reference Number
207,000	Cladoceran Daphnia magna	207,000	1
116,603	Bluegill Lepomis macrochirus	157,000	2
	Bluegill Lepomis macrochirus	86,600	2
625,465	Fathead Minnow Pimephales promelas	678,000	1
	Fathead Minnow Pimephales promelas	577,000	1
88,318	Rainbow Trout Onchorhynchus mykiss	120,000	2
	Rainbow Trout Oncorhynchus mykiss	65,000	2
2,650,000	Isopod Cragonyx pseudogracilis	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

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