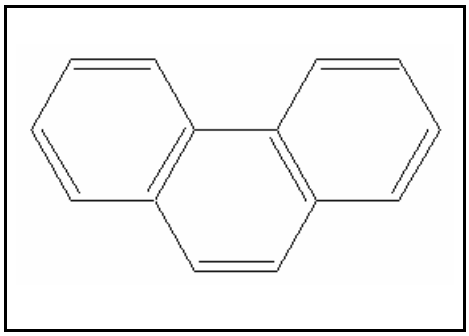
Indiana Department of Environmental Management
Office of Water Quality - Water Quality Standards Section

TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES

PHENANTHRENE

CAS RN: 85-01-8
Water Solubility: 0.000118 g/100 mL
Log K_{ow}: 4.46



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 phenanthrene does not exceed 0.93 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 8.4 µg/L more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

SAV = lowest GMAV/SAF

Lowest GMAV = 366.1 µg/L
SAF = 21.9

SAV = 366.1/21.9 = 16.72 µg/L

SMC = SAV/2 = 16.72/2 = **8.4 µg/L**

Chronic Aquatic Life:

SCV = SAV/SACR

SACR = 18

SCV = 16.72/18 = **0.93 μg/L**

Data

Table 1. GMAVs and SMAVs for phenanthrene

Genus Mean Acute Value (μg/L)	Species	Species Mean Acute Value (μg/L)	Acute-Chronic Ratio	Reference Number
366.1	Cladoceran Daphnia magna	383		1
	Cladoceran Daphnia pulex	350		2

References

1. Munoz, M.J. and J.V. Jarazona 1993. Synergistic effect of 2-and four-component combinations of the polycyclic armoatic hydrocarbons: phenanthrene, antharcene, naphthalene and acenaphthene on Daphnia magna. Bull. Environ. Contam. Toxicol. 50: 363-368.

2. Smith, S.B., J.F. Savino, and M.A. Blouin 1988. Acute toxicity of Daphnia pulex of six classes of chemical compounds potentially hazardousto Great Lakes aquatic biota. J. Great Lakes Res. 14(4): 394-404.

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

January 8, 1997 Values first developed
September 19, 2001 New search for data. No studies added.

Contact Information

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