OHIO EPA SURFACE WATER QUALITY CRITERION FACT SHEET

Chemical Name: 1,3-Dinitrobenzene Developed by: Chris J. Skalski
CAS # 99-65-0 Data Retrieval Date: 10-11-01
Internal Code # --- Fact Sheet Preparation Date: 3-01-06

ACUTE DATA

SPECIES	EC_{50}/LC_{50} (µg/l)	TEST TYPE[a]	DURATION (HOURS)	SMAV[b] (µg/l)	GMAV[b] (µg/l)	REFERENCE NUMBER
Cladoceran	53,000	S,U	48	39,673	39,673	1
Daphnia magna	27,400	S,M	48			2
	43,000	S,M	48			3
Channel Catfish	8,130	S,M	96	8,130	8,130	2
Ictalurus punctatus						
Bluegill	1,440	S,M	96	1,440	1,440	2
Lepomis macrochirus						
Rainbow Trout	1,700	S,M	96	1,700	1,700	2
Oncorhynchus mykiss						
Fathead Minnow	7,400	S,U	96	10,253	10,253	1
Pimephales promelas	12,700	S,M	96			4
	7,000	S,U	96			5
	16,800	S,M	96			2

[a] S = static; U = unmeasured; M = measured.
[b] SMCV = Species Mean Chronic Value; GMCV = Genus Mean Chronic Value.

CHRONIC DATA

SPECIES	CHRONIC VALUE (µg/l)	SMCV[a] METHOD	GMCV[a] (µg/l)	REFERENCE (µg/l)	NUMBER
Rainbow Trout	500-970	Early Life Stage	696	696	2
Oncorhynchus mykiss	696				

[a] SMCV = Species Mean Chronic Value; GMCV = Genus Mean Chronic Value.

REFERENCES

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2. Van der Schalie, W.H. 1983. The Acute and Chronic Toxicity of 3,5-Dinitroaniline, 1,3-Dinitrobenzene, and 1,3,5-Trinitrobenzene to Freshwater Aquatic Organisms. Technical Report 8305, U.S. Army Medical Bioengineering Research and Development Laboratory, Frederick, MD: 53 p.

3. Hermens, J., H. Canton, N. Steyger and R. Wegman. 1984. Joint Effects of a Mixture of 14 Chemicals on Mortality and Inhibition of Reproduction of *Daphnia magna*. Aquat. Toxicol. 5(4):315-322.

4. Curtis, M.W. and C.H. Ward. 1981. Aquatic Toxicity of Forty Industrial Chemicals: Testing in Support of Hazardous Substance Spill Prevention Regulation. J. Hydrol. 51:359-367.

5. Bailey, H.C. and R.J. Spanggord. 1983. The Relationship Between the Toxicity and Structure of Nitroaromatic Chemicals. In: W.E. Bishop, R.D. Cardwell and B.B. Heidolph (Eds.), Aquatic Toxicology and Hazard Assessment: Sixth Symposium. ASTM STP 802, Philadelphia, PA:98-107.

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CALCULATION OF ACUTE AQUATIC VALUE (AAV)[a]

Data Requirement OAC 3745-1-36(A)(1)	SPECIES	GMAV (µg/l)
(a)	Rainbow Trout	1,700
(b)	Bluegill	1,440
(c)	Channel Catfish	8,130
(d)	*Daphnia magna*	39,673

Secondary Acute Factor (SAF) = 7.0

Secondary Acute Value (SAV) = Lowest GMAV ÷ SAF
= 1,440 ÷ 7.0
= 205.7 = 210 µg/l

Tier II Acute Aquatic Value (AAV) = SAV ÷ 2
= 205.7 ÷ 2
= 102.9 = 100 µg/l

CALCULATION OF CHRONIC AQUATIC VALUE (CAV)[a]

Experimentally determined Acute-Chronic Ratios (ACRs):

SPECIES	ACUTE VALUE (µg/l)	CHRONIC VALUE (µg/l)	ACUTE-CHRONIC RATIO	SPECIES MEAN ACR
Rainbow Trout *Oncorhynchus mykiss*	1,700	696	2.44	2.44

Secondary Acute Chronic Ratio (SACR) = $\sqrt[3]{(2.44)(18)(18)} = 9.25$

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Chronic Aquatic Value (CAV) = SAV ÷ SACR
= 205.7 ÷ 9.25
= 22 μg/l

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[a]See Ohio Administrative Code 3745-1-36 effective February 22, 2002.