OHIO EPA SURFACE WATER QUALITY CRITERION FACT SHEET

Chemical Name: Nitrobenzene Developed by: Chris J. Skalski
CAS # 98-95-3 Data Retrieval Date: 10-11-01
Internal Code # 95 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	27,000	S,U	48	31,977	31,977	1
Daphnia magna	33,000[c]	S,U	48			2
	35,000	S,U	48			3
	34,600	S,U	48			10
Snail	64,500	S,U	96	64,500	64,500	10
Lymnaea stagnalis						
Guppy	135,000	S,U	96	135,000	135,000	10
Poecilia reticulata						
Bluegill	43,000	S,U	96	43,000	43,000	4
Lepomis macrochirus						
Rainbow Trout	24,253	S,U	96	24,253	24,253	5
Oncorhynchus mykiss						
Fathead Minnow	44,100	F,M	96	84,994	84,994	6
Pimephales promelas	117,000	F,M	96			7
	119,000[d]	F,M	96			6
	119,000	F,M	96			8

[a] S = static; F= flow through; U = unmeasured; M = measured.
[b] SMAV = Species Mean Acute Value; GMAV = Genus Mean Acute Value.
[c] Data not used to calculate the SMAV since the test organisms were fed during the toxicity test.
[d] Data not used to calculate the SMAV since the larvae were more sensitive than the juveniles in this study.

CHRONIC DATA

SPECIES	CHRONIC VALUE (µg/l)	METHOD	SMCV[a] (µg/l)	GMCV[a] (µg/l)	REFERENCE NUMBER
Fathead minnow	>32,000	Early Life Stage	>32,000	>32,000	9
Pimephales promelas					

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

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10. Ramos, E.U., C. Vermeer, W.H.J. Vaes and J.L.M. Hermens. 1998. Acute Toxicity of Polar Narcotics to Three Aquatic Species (*Daphnia magna, Poecilia reticulata* and *Lymnaea stagnalis*) and its Relation to Hydrophobicity. Chemosphere 37(4):633-650.

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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	24,253
(b)	Bluegill	43,000
(c)	Fathead Minnow	84,994
(d)	*Daphnia magna*	31,977
(g)	Snail	64,500

Secondary Acute Factor (SAF) = 6.1

Secondary Acute Value (SAV) = Lowest GMAV ÷ SAF
= 24,253 ÷ 6.1
= 3,976 = 4,000 µg/l

Tier II Acute Aquatic Value (AAV) = SAV ÷ 2
= 3,976 ÷ 2
= 1,988 = 2,000 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
Fathead Minnow *Pimephales promelas*	117,000	>32,000	<3.66	<3.66

Secondary Acute-Chronic Ratio (SACR) = $\sqrt[3]{(3.66)(18)(18)} = 10.58$

Chronic Aquatic Value (CAV) = SAV ÷ SACR
= 3,976 ÷ 10.58[b]
= 376 = 380 µg/l

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

[b] A definitive species mean ratio is not available. There are two options for determining the secondary acute-chronic ratio (SACR). One option is to choose the default of 18 when no chronic data are available. The second option is to use 3.66 in determining the SACR. Since the available data indicate that the species ratio for the fathead minnow is less than 3.66, the more reasonable option in this case is to choose to use the 3.66 to determine the SACR. There is presently no justification for not factoring in the 3.66 as part of the SACR determination.