OHIO EPA SURFACE WATER QUALITY CRITERION FACT SHEET

Chemical Name: Tetrachloroethylene Developed by: Chris J. Skalski
CAS # 127-18-4 Data Retrieval Date: 10-29-97
Internal Code # 116 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	18,000	S,U	48	12,369	12,369	1
Daphnia magna	7,500[d]	S,M	48			2
	7,490[c]	S,M	48			3
	8,500	S,M	48			2
	8,500[c]	S,M	48			3
	9,100[d]	S,M	48			2
	9,090[c]	S,M	48			3
	18,000[e]	S,M	48			2
	18,100[c]	S,M	48			3
Bluegill	13,000	S,U	96	13,000	13,000	4
Lepomis macrochirus						
Rainbow Trout	4,990	F,M	96	5,191	5,191	5
Oncorhynchus mykiss	4,990[c]	F,M	96			3
	5,840	F,M	96			5
	5,840[c]	F,M	96			3
	4,800	F,M	96			12
Fathead Minnow	14,400	F,M	96	13,906	13,906	6
Pimephales promelas	18,400[e]	F,M	96			6
	21,400	S,U	96			6
	13,400	F,M	96			7
	13,500[c]	F,M	96			8
	13,400	F,M	96			9
	20,300[e]	F,M	96			9
	8,450	F,M	96			9
	23,800	F,M	96			10
	13,460[c]	F,M	96			12
Midge	30,800	S,M	48	30,800	30,800	3
Tanytarsus dissimilis						
Flagfish	4,000	R,M	96	8,430	8,430	11
Jordanella floridae	8,430	F,M	96			11
Mysid Shrimp	10,200[f]	S,U	96			12
Mysidopsis bahia						

[a] S = static; F = flow though; M = measured; U = unmeasured; R = renewal.
[b] SMAV = Species Mean Acute Value; GMAV = Genus Mean Acute Value.
[c] Duplicate data not used to calculate the SMAV.
[d] Data not used to calculate the SMAV since the test organisms were fed during testing.
[e] Data not used to calculate the SMAV since a corresponding EC_{50} was available from the same test.
[f] Data for this saltwater species is used in the determination of the acute-chronic ratio but not in the

determination of the secondary acute value or the acute aquatic value.

CHRONIC DATA

SPECIES	CHRONIC VALUE (µg/l)	METHOD	SMCV[a] (µg/l)	GMCV[a] (µg/l)	REFERENCE NUMBER
Cladoceran *Daphnia magna*	510-1,100 749	Life Cycle	749	749	2
Cladoceran *Daphnia magna*	505-1,110[b] 749	Life Cycle			3
Fathead Minnow *Pimephales promelas*	500-1,400 837	Embryo-Larval	837	837	12
Mysid Shrimp *Mysidopsis bahia*	300-670 448	Life Cycle	448	448	12

[a] SMCV = Species Mean Chronic Value; GMCV = Genus Mean Chronic Value.
[b] Duplicate data not used to calculate the SMCV.

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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	5,191
(b)	Bluegill	13,000
(c)	Fathead Minnow	13,906
(d)	*Daphnia magna*	12,369
(f)	Midge	30,800

Secondary Acute Factor (SAF) = 6.1

Secondary Acute Value (SAV) = Lowest GMAV ÷ SAF
= 5,191 ÷ 6.1
= 851 = 850 µg/l

Tier II Acute Aquatic Value (AAV) = SAV ÷ 2
= 851 ÷ 2
= 426 = 430 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
Cladoceran *Daphnia magna*	8,500	749	11.35	11.35
Fathead Minnow *Pimephales promelas*	13,460	837	16.08	16.08
Mysid Shrimp *Mysidopsis bahia*	10,200	448	22.77	22.77

Final Acute-Chronic Ratio (FACR) = $\sqrt[3]{(11.35)(16.08)(22.77)} = 16.08$

Chronic Aquatic Value (CAV) = SAV ÷ FACR
= 851 ÷ 16.08
= 53 µg/l

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