Rule 57 Aquatic Values Data Sheet

Chemical name: Trichloroethylene
CAS #: 79-01-6

Developed by: D. Bush DB
Date developed: 7/31/2012
Literature search date: 6/18/2012

FAV: 3,500 ug/l *(Tier: II)*
AMV: 1,800 ug/l *(Tier: II)*
FCV: 200 ug/l *(Tier: II)*

ACUTE DATA

Species	Endpoint (EC or LC50)	Duration (hours)	Test Type (FT,M, etc.)	Hardness mg/L	Test Chemical	LC50/EC50 ug/L	SMAV ug/L	GMAV ug/L	Rank	Reference
American Flagfish	LC50	96	FT,M	48		28,280	28,280	28,280	1	1
(*Jordanella floridae*)	LC50	96	SR,U	48		3,100 [1]				1
Fathead Minnow	LC50	96	FT,M	45.5		44,100	44,548	44,548	2	2,3,4
(*Pimephales promelas*)	LC50	96	FT,M	45.1		45,000				5
Water Flea	LC50	48	S,U	-----		100,000	51,172	47,772	3	6
(*Daphnia magna*)	LC50	48	S,U	-----		94,000				6
	LC50	48	S,U	-----		41,000				6
	LC50	48	S,U	-----		43,000				6
	LC50	48	S,U	-----		55,000				6
	LC50	48	S,U	-----		56,000				6
	LC50	48	S,U	173		18,000				7
Water Flea	LC50	48	S,U	-----		51,000	44,598			6
(*Daphnia pulex*)	LC50	48	S,U	-----		39,000				6

CHRONIC DATA

Species	Test type (ELS, etc.)	Duration (days)	Study Conditions (FT,M etc.)	Hardness mg/L	Test Chemical	MATC ug/L	SMCV ug/L	GMCV ug/L	Rank	Reference

NO SUITABLE DATA WERE FOUND.

[1] Value not used to calculate SMAV, because data from FT,M test preferred over data from other test types.

References:

1.) Smith, A.D., A. Bharath, C. Mallard, D. Orr, K. Smith, J.A. Sutton, J. Vukmanich, L.S. McCarty, and G.W. Ozburn. 1991. The acute and chronic toxicity of ten chlorinated organic compounds to the American flagfish (*Jordanella floridae*). Arch. Environ. Contam. Toxicol. 20(1):94-102.

2.) Veith, G.D., D.J. Call, and L.T. Brooke. 1983. Structure-toxicity relationships for the fathead minnow, *Pimephales promelas*: Narcotic industrial chemicals. Can. J. Fish. Aquat. Sci. 40(6):743-748.

3.) Geiger, D.L., C.E. Northcott, D.J. Call, and L.T. Brooke. 1985. Acute Toxicities of Organic Chemicals to Fathead Minnows (*Pimephales promelas*), Vol. 2. Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI p.326.

4.) Veith, G.D., D.J. Call, and L.T. Brooke. 1983. Estimating the acute toxicity of narcotic industrial chemicals to fathead minnows. In: Aquatic Toxicology and Hazard Assessment, pp 90-97.

5.) Walbridge, C.T., J.T. Fiandt, G.L. Phipps, and G.W. Holcombe. 1983. Acute toxicity of ten chlorinated aliphatic hydrocarbons to the fathead minnow (*Pimephales promelas*). Arch. Environ. Contam. Toxicol. 12(6):661-666.

6.) Canton, J.H. and D.M.M. Adema. 1978. Reproducibility of short-term and reproduction toxicity experiments with *Daphnia magna* and comparison of the sensitivity of *Daphnia magna* with *Daphnia pulex* and *Daphnia cucullata* in short-term experiments. Hydrobiologia 59(2):135-140.

7.) LeBlanc, G.A. 1980. Acute toxicity of priority pollutants to water flea (*Daphnia magna*). Bull. Environ. Contam. Toxicol. 24(5):684-691.

Min. data req. met	Acute Factor
2	13
3	8
4	7
5	6.1
6	5.2
7	4.3

Rule 57 Aquatic Values Work Sheet

Chemical Name: Trichloroethylene
C.A.S. #: 79-01-6

AQUATIC MAXIMUM VALUE CALCULATIONS

A. Minimum 8 species requirement is **not** met. Minimum requirements met = 3 (ii, iii, iv)
Minimum requirements missing for Tier I = 5 (i, v, vi, vii, viii)
Acute factor = 8

1. Toxicity **is not** dependent on a water characteristic

   a. Final Acute Value (FAV) = 28,280 ug/l / 8 = 3,535 ug/l = 3,500 ug/l

2. Toxicity **is** dependent on a water characteristic

   a. Slope = (Table ___)

   b. FAV equation:

3. Go to C.

B. Minimum 8 species requirement **is** met (Tier I)

1. Toxicity **is not** dependent on a water characteristic

   a. FAV calculation: Att. ___

2. Toxicity **is** dependent on a water characteristic

   a. Slope = (Table ___)

   b. Ranked genus mean acute intercepts: Table

   c. Final acute intercept = (Att. ___)

   ln of final acute intercept =

   d. FAV equation =

C. Aquatic Maximum Value (AMV) = FAV ÷ 2 = 3,535 ug/l / 2 = 1,768 ug/l = 1,800 ug/l

FINAL CHRONIC VALUE CALCULATIONS

A. Minimum 8 species requirement is **not** met (Tier II). Minimum requirements met = 0
Minimum requirements missing for Tier I = 8

1. Acute to chronic ratio

    a. Number ACRs meeting minimum data requirements = 0

    b. Acute to chronic ratio = 18

2. Toxicity **is not** dependent on a water characteristic

    FCV = FAV ÷ ACR = 3,535 ug/l / 18 = 196 ug/l = 200 ug/l

3. Toxicity **is** dependent on a water characteristic

    a. Slope = (Table _)

    b. Aquatic chronic intercept = (Table _)

    ln of aquatic chronic intercept =

    c. FCV equation =

B. Minimum 8 species requirement **is** met (Tier I)

1. Toxicity **is not** dependent on a water characteristic

    a. FCV = ___ (Att. ___)

2. Toxicity **is** dependent on a water characteristic

    a. Slope = (Table _)

    b. Ranked genus mean chronic intercepts: Table ___

    c. Final chronic intercept = ____ (Att. ___); ln of final chronic intercept =

    d. FCV equation =