Rule 57 Aquatic Values Data Sheet

Chemical name: 1,1-Dichloroethylene
C.A.S #: 75-35-4

Developed by: D. Bush
Approved by: B. Sayler
Approval date: 7/31/07
Literature search date: 7/10/2007
Clearinghouse search date:

FAV: 2,300 ug/L *(Tier: 2)*
AMV: 1,200 ug/L *(Tier: 2)*
FCV: 130 ug/L *(Tier: 2)*
Acute CF: ---- *Chronic CF:* ----

ACUTE DATA

Species	Test type (EC or LC50)	Duration (hours)	Test conditions (FT,M, etc.)	Hardness mg/L	Chemical	LC50/EC50 ug/L	SMAV ug/L	GMAV ug/L	Rank	Referer
Water flea	LC50	48	S,U	72		79,000	30,272	30,272	1	1
(*Daphnia magna*)	LC50	48	S,U	100		11,600				2
Fathead minnow	LC50	96	FT,M	100		108,000	108,000	108,000	2	2
(*Pimephales promelas*)	LC50	96	S,U	100		169,000*				2

*flow-through measured test is higher priority than static unmeasured test so this value was not used.

CHRONIC DATA

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

No useful chronic studies are available.

References:

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

2. Dill, D.C. et al. 1980. Toxicity of 1,1-Dichloroethylene (Vinylidene Chloride) to Aquatic Organisms. Ecol. Res. Ser., EPA-600/3-80-057. (the fathead minnow test was not run at the recommended temperature (although this may have prevented some volatilization) and did not provide details of the study design (# reps, fish/rep, control information) . However, it was used to derive a tier 2 value because it was a FT,M test and the daphnid value found in the same test was significantly lower).

References Reviewed but not Used:

1. Buccafusco, R.J. et al. 1981. Acute toxicity of priority pollutants to bluegill (*Lepomis macrochirus*). Bull. Environ. Contam. Toxicol. 26(4): 446-452. (reject because of low dissolved oxygen in undetermined test runs)

2. Dawson, G.W. et al. 1977. The acute toxicity of 47 industrial chemicals to fresh and saltwater fishes. J. Hazard. Mater. 1(4):303-318. (high loading, wide size range of organisms, no control treatments used, insufficient information on test conditions--reps?, # fish?)

3. Heitmuller, P.T. et al. 1981. Acute toxicity of 54 industrial chemicals to sheepshead minnows (*Cyprinodon variegatus*). Bull. Environ. Contam. Toxicol. 27(5):596-604. (test conducted in saltwater)

4. EPA. 1978. In-Depth Studies on Health and Environmental Impact of Selected Water Pollutants. (secondary reference and test conducted in saltwater)

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Note: A literature search conducted on 8/27/2012 revealed no additional studies that could be used for the derivation of aquatic life values (D. Bush)

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: 1,1-Dichloroethylene
C.A.S. #: 75-35-4

AQUATIC MAXIMUM VALUE CALCULATIONS

A. Minimum 8 species requirement is **not** met. Minimum requirements met = 2 (iii, iv)
Minimum requirements missing for Tier I = 6 (i, ii, v, vi, vii, viii)
Acute factor = 13

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

   a. FAV calculation: 30,272 ug/L/13 = 2,329 ug/L = 2,300 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) calculation: (30,272 ug/L/13)/2 = 1,164 ug/L = 1,200 ug/L

FINAL CHRONIC VALUE CALCULATIONS

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

1. Acute to chronic ratio

   a. Number ACRs meeting minimum data requirements = 0 (Table ___)

   b. Acute to chronic ratio = 18 (default)

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

   FCV = (30,272 ug/L/13)/18 = 129 ug/L = 130 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 =