

DATA EVALUATION RECORD

1. CHEMICAL: fenvalerate (Asana) SN:109301
2. TEST MATERIAL: TGAI 98.6%
3. STUDY/ACTION TYPE: Acute Toxicity on Freshwater Invertebrate species: Daphnia magna
4. STUDY IDENTIFICATION:

Hutton, D.G., 1987. Daphnia magna static acute 48-hour EC50 of technical Asana insecticide. Report number: 402-87, Prepared by E.I. du Pont de Nemours and Company, Inc., Haskell Laboratory, Newark, DE. Submitted by E.I. du Pont de Nemours and Company, Inc. Newark, DE. Assession No: 404440-02.

5. REVIEWED BY:

David Johnson, Fishery Biologist
Ecological Effects Branch

Signature: 
Date: 7 March 88

6. APPROVED BY:

Otto Gutenson, Acting Head Section
Ecological Effects Branch
Hazard Evaluation Division

Signature: 
Date: 3/8/88

7. CONCLUSIONS:

The technical grade of Asanatm (fenvalerate) was found to be extremely toxic to Daphnia, with a 48h LC50 of 0.9 ppb. This study is scientifically sound and satisfies Guideline requirements.

8. RECOMMENDATION: N/A9. BACKGROUND: N/A

10. DISCUSSION OF INDIVIDUAL STUDIES OR TESTS: N/A

11. METHODS AND MATERIALS:

Species. Daphnia magna

Size/Age/Physical Condition. Daphnids less than 24h in age were selected from an established culture.

Source. The Daphnids were cultured from laboratory stock.

Food prior to the test. not specified

Test water

Temperature: 20°C

Water source and chemistry: reconstituted hard water

The properties of the water are: Hardness- 177mg/L
CaCO₃, pH- 8.3

Aeration: Test solutions were not aerated.

Solvent: acetone

Controls: Controls were run concurrent with the test.

Test System.

Vessel Size/Volume: 250ml/200ml of test solution

Vessel Construction: Glass

Photoperiod: 16h-light/8h-dark

Loading: ≈1 daphnid/20ml solution

Number of Daphnids/concentration. 10/vessel x 2 rep. = 20

Test Levels:

nominal: 4.0, 2.4, 1.4, .86, .52, .31, .19, .11 µg/L

measured: not measured

Toxic signs. mortality, inability to swim

Statistical analysis.

Probit analysis was used to estimate the EC50 and confidence interval.

12. REPORTED RESULTS:

Chemical analysis of dilution water included

Data

The data were included with the study report.

Analysis of Test Concentrations Chemical analyses of the test concentrations were not performed.

13. STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:

Technical Asana was found to exhibit very high acute toxicity.

48h EC50(95%CL): 0.9 µg/L (0.7-1.2) Slope: not specified
NOEL: 48h EC0: 0.11 µg/L

24h EC50: 3.7 ppb NOEL 24h: .52 ppb

14. REVIEWER'S DISCUSSION AND INTERPRETATION OF THE STUDY:

A. Test Procedure.

This study was performed under conditions that generally comply with current Guideline standards.

B. Statistical Analysis.

EEB agrees with the statistical method. The study author's calculations match the reviewer's. The calculations are appended.

C. Results/Discussion.

The study is judged to be scientifically sound and acceptable for use in a hazard assessment.

D. Adequacy of the Study.

1. Category: core

2. Rationale: N/A

3. Remedy: N/A

15. COMPLETION OF ONE LINER 26 February 1988

d.johnson FENVALERATE DAPHNIA 02-26-88

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
4	20	20	100	9.536742E-05
2.4	20	15	75	2.069473
1.4	20	12	60.00001	25.17223
.86	20	11	55	41.19014
.52	20	7	35	13.1588
.31	20	3	15	.1288414
.19	20	1	5	2.002716E-03
.11	20	0	0	9.536742E-05

THE BINOMIAL TEST SHOWS THAT .31 AND 2.4 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS .7592603

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
7	5.135018E-02		.8496861	.688847 1.075918

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
5	6.654026E-02	1	.638863

SLOPE = 2.355707
95 PERCENT CONFIDENCE LIMITS = 1.748043 AND 2.963371

LC50 = .8925751
95 PERCENT CONFIDENCE LIMITS = .7012163 AND 1.149892

LC10 = .2579458
95 PERCENT CONFIDENCE LIMITS = .1586533 AND .3556047

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Pages 5 through 6 are not included.

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