9-24-91

Data Evaluation Record

1. Chemical: F6285 4F Herbicide
Shaughnessy No.:129081

2. Test Material: F6285, 94.3% a.i., lot #21-89-1403, EF301-72, CAS#122836-35-5, a cream-colored powder.

3. Study type: Freshwater Invertebrate 48-hour Acute Toxicity

Test Species: Water flea (Daphnia magna)

4. Study ID: Holmes, Catherine M., and Peters, Gregory T. F6285: A 48-hour flow-through acute toxicity test with the cladoceran Daphnia magna. Performed by Wildlife International, 305 Commerce Drive, Easton, MD 21601 for the FMC Corporation. WI study ID #104A-105A. FMC Study #A89-3059. **MRID #419116-22.**

5. Reviewed by: Kathryn Valente
Biologist
EEB/EFED
Signature: Kathryn L. Valente
Date: 9/24/91

6. Approved by: Allen Vaughan
Acting Head, Section II
EEB/EFED
Signature: Allen W. Vaughan
Date: 9.24.91

7. Conclusions: The study is scientifically sound. With an EC_{50} of 60.4 mg/L, the test material is considered to be slightly toxic to daphnia. The NOEL was determined to be 14.1 mg/L. The study is classified as core.

8. Recommendations: N/A

9. Background information: This study was submitted in support of an Experimental Use Permit for F6285.

10. Discussion of Individual Tests: N/A

11. Materials and Methods:

a. Test animals: Daphnia were obtained from Wildlife International Ltd. Cultures, 322 Brooks Drive, Easton, MD 21601. The daphnids were less than 24 hours old at test initiation. The daphnids were not fed during the test.

b. Test system: Tests were conducted in 300 mL glass beakers suspended in 8L polyethylene chambers containing 6.5L of test solution or control water. The chambers were placed in a water bath which maintained a temperature of 20 +/- 1° C. A proportional diluter was used so that each chamber received approximately 13.8 volume additions of test solution or control water every 24 hours.

c. Study design: Five treatments, a control and a solvent

control were used, each with two replicates of ten daphnids. Observations for mortality and sublethal effects were made daily throughout the exposure period. Analytical water samples were taken at 0, 24 and 48 hours. The test was conducted with a photoperiod of 16-hr light/8-hr dark with a 30-minute dawn-dusk transition period. DO content and pH were measured at the beginning and end of the test. Temperature was measured continuously in the negative control, and ranged from 19.7-20.1 ° C. The temperature in each chamber was measured at the beginning and end of the test. These temperatures ranged from 19.6-20.1° C. The pH ranged from 7.8-8.2, and the DO was 8.6-8.9, which is >60% saturation at the temperatures measured. The nominal exposure levels of F6285 were: control, dimethyl formamide control, 13.0, 21.6, 36.0, 60.0 and 100 mg/L.

d. Statistics: The EC_{50} values and the corresponding 95% confidence intervals were calculated using the computer program of C.E. Stephan. The probit method was used to evaluate the mortality data.

12. Reported Results: The mean measured concentrations of F6285 were: 14.1, 23.5, 42.1, 67.0 and 112 mg/L. Sublethal effects were observed at 23.5, 42.1, 67.0 and 112 mg/L and included immobilization and lethargy. The EC_{50} calculation was made considering immobilization as mortality.

13. Study Author's Conclusions/Quality Assurance Report: The EC_{50} value was 60.4 mg/L. No slope was reported. The NOEL was 14.1 mg/L. Based on these values, F6285 is classified as slightly toxic to daphnia.
Quality Assurance and Good Laboratory Practice statements were included in the report. One exception to GLP was noted: analyses for stability, purity and composition of the test material have been completed, but the results have not yet been reported.

14. Reviewer's Discussion and Interpretation of the Results:
a. Test Procedure: The test design and procedure were in accordance with protocols recommended by the Guidelines.

b. Statistical Analysis: The EC_{50} and its confidence limits were verified using EPA's Toxanal computer program. The results were in accordance with the reported values. The slope, which was not reported by the author, was 3.103, calculated by the probit method.

c. Discussion/Results: The study is scientifically sound and in accordance with the Guidelines.

d. Adequacy of the study:
(1) Classification: Core.
(2) Rationale: N/A.
(3) Repairability: N/A

Valente F6285 Daphnia acute

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
112	20	15	75	2.069473
67	20	13	65	13.1588
42.1	20	5	25	2.069473
23.5	20	3	15	.1288414
14.1	20	0	0	9.536742E-05

THE BINOMIAL TEST SHOWS THAT 42.1 AND 112 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 56.45571

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
3	.2789699	60.33063	43.77525	91.56819

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
4	.1302276	1	.4938556

SLOPE = 3.103988
95 PERCENT CONFIDENCE LIMITS = 1.98385 AND 4.224126

LC50 = 60.4335
95 PERCENT CONFIDENCE LIMITS = 48.48487 AND 79.23898

LC10 = 23.55735
95 PERCENT CONFIDENCE LIMITS = 14.09568 AND 31.23458

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