2-14-92

MRID No. 420096-06

DATA EVALUATION RECORD

1. **CHEMICAL:** Fenoxaprop-ethyl.
Shaughnessey No. 128701.

2. **TEST MATERIAL:** Fenoxaprop-P-ethyl technical (HOE 046360); 95.6% active ingredient; a light-colored solid.

3. **STUDY TYPE:** Freshwater Invertebrate Static Acute Toxicity Test. Species Tested: *Daphnia magna*. 72-2

4. **CITATION:** Fischer, R. 1986. The Effect of HOE 046360 - Substance, Technical Identification Code: HOE 046360 OH ZC96 0002 to *Daphnia magna* (Waterflea) in a Static Acute Toxicity Test (Dm610a, Method EPA). Laboratory Report No. A34147. Prepared by Hoechst AG, Federal Republic of Germany. Submitted by Hoechst Celanese Corporation, Somerville, NJ. EPA MRID No. 420096-06.

5. **REVIEWED BY:**

Richard C. Petrie, Agronomist
Ecological Effects Branch, Section 3
Environmental Fate and Effects Division

Signature: R. C. Petrie
Date: 2/04/92

6. **APPROVED BY:**

Daniel Rieder, Head Section 3
Ecological Effects Branch
Environmental Fate and Effects Branch

Signature: Daniel Rieder
Date: 2-14-92

7. **CONCLUSIONS:** This study is not scientifically sound and does not meet the guideline requirements for a static acute freshwater invertebrate toxicity study. Analysis of 3 test levels at initiation and termination indicated that the test concentrations were highly variable and that actual concentrations the daphnids were exposed to are unknown.

8. **RECOMMENDATIONS:** [redacted] N/A

9. **BACKGROUND:**

10. **DISCUSSION OF INDIVIDUAL TESTS:** N/A.

DATA EVALUATION RECORD

1. **CHEMICAL:** Fenoxaprop-ethyl.
Shaughnessey No. 128701.

2. **TEST MATERIAL:** Fenoxaprop-P-ethyl technical (HOE 046360); 95.6% active ingredient; a light-colored solid.

3. **STUDY TYPE:** Freshwater Invertebrate Static Acute Toxicity Test. Species Tested: *Daphnia magna*.

4. **CITATION:** Fischer, R. 1986. The Effect of HOE 046360 - Substance, Technical Identification Code: HOE 046360 OH ZC96 0002 to *Daphnia magna* (Waterflea) in a Static Acute Toxicity Test (Dm610a, Method EPA). Laboratory Report No. A34147. Prepared by Hoechst AG, Federal Republic of Germany. Submitted by Hoechst Celanese Corporation, Somerville, NJ. EPA MRID No. 420096-06.

5. **REVIEWED BY:**

Mark A. Mossler, M.S.
Associate Scientist
KBN Engineering and
Applied Sciences, Inc.

Signature: Mark A Mossler
Date: 11/22/91

6. **APPROVED BY:**

Louis M. Rifici, M.S.
Associate Scientist
KBN Engineering and
Applied Sciences, Inc.

Signature: Louis M Rifici
Date: 11/25/91

Henry T. Craven, M.S.
Supervisor, EEB/EFED
USEPA

Signature:
Date:

7. **CONCLUSIONS:** This study is not scientifically sound and does not meet the guideline requirements for a static acute freshwater invertebrate toxicity study. Analysis of 3 test levels at initiation and termination indicated that the test concentrations were highly variable and that actual concentrations the daphnids were exposed to are unknown. ~~The 48-hour EC_{50} of 2.7 mg/l (based on nominal concentration) classifies~~ fenoxaprop-p-ethyl as moderately ~~toxic to *Daphnia magna*. The NOEC, based on the lack of mortality, was 1.0 mg/l.~~ Delete

2

8. **RECOMMENDATIONS:** N/A.

9. **BACKGROUND:**

10. **DISCUSSION OF INDIVIDUAL TESTS:** N/A.

11. **MATERIALS AND METHODS:**

A. **Test Animals:** The daphnids (*Daphnia magna*) used in the test were obtained from in-house cultures. The adult daphnids were fed a mixture of green algae (*Scenedesmus subspicatus*) and a suspension of flake food. Daphnids were cultured under the test conditions listed in Section 11.B. Young daphnids (≤24 hours old) were obtained for testing by transferring adult daphnids to 2-l crystallizing dishes containing dilution water 24 hours prior to test initiation.

B. **Test System:** The test chambers were 200-ml glass jars (95 mm diameter, 50 mm height) containing 200 ml of test solution. The test solution depth was approximately 29 mm. The test chambers were covered with glass plates and kept in a water bath designed to maintain 20 ±1°C. The laboratory environment was maintained on a 16-hour daylight photoperiod. Soft reconstituted water with an alkalinity and hardness of 31 and 46 mg/l (as $CaCO_3$), respectively, was aerated before use as dilution water.

C. **Dosage:** Forty-eight-hour static test. Based on preliminary tests, six nominal concentrations (0.56, 1.0, 1.8, 3.2, 5.6 and 10 mg/l), a dilution water control and a solvent control (0.5 ml acetone/l) were used. The concentrations made were not corrected for the percent active ingredient in the test material.

D. **Design:** A stock solution was prepared by diluting 60 mg of fenoxaprop-p-ethyl to 3 ml with acetone. The highest four test concentrations were prepared by direct addition of the primary stock solution to the dilution water. The two lowest test concentrations were prepared by addition of a secondary stock to dilution water. The test solutions were stirred vigorously.

Ten daphnids were randomly selected from holding tanks and distributed to each test jar, two jars per concentration or control, for a total of 20 daphnids

per concentration. A separate replicate was constructed for the low, medium, and high test concentrations and controls to measure chemical and physical parameters. The test chambers were not aerated and the daphnids were not fed during the test. Observations of mortality were made every 24 hours. Dead daphnids were removed after each assessment.

The dissolved oxygen (D.O.), temperature, and pH were measured in the low, medium, and high test concentrations and the controls initially and every 24 hours thereafter. Conductivity was monitored in these same vessels at the beginning and end of the test. The temperature of the water bath was also monitored continuously.

Samples were collected from the 0.56, 1.8, and 10 mg/l test concentrations for analysis of fenoxaprop-p-ethyl.

E. **Statistics:** The median effective concentration (EC_{50}) and associated 95% confidence interval (C.I.) for each 24-hour interval were calculated using a computer program developed by Stephan et al. (1978).

12. **REPORTED RESULTS:** The responses of *Daphnia magna* are given in Table 6.4 (attached). The 48-hour EC_{50}, based on nominal concentrations, was 2.7 mg/l (95% C.I. = 2.2-3.2 mg/l). The slope of the concentration-response curve was 4.4. No sublethal effects were noted during the test. The no-observed-effect concentration (NOEC) was 1.0 mg/l.

Dissolved oxygen ranged from 8.8 to 9.3 mg/l. The pH values were between 7.6 and 8.2. The temperature was 19.1-20.3°C throughout the test. Conductivity was 159-166 µmhos/cm.

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:** No conclusions other than those stated were presented by the author.

Quality Assurance and Good Laboratory Practice Statements were included in the report, indicating that the study was conducted in accordance with FIFRA Good Laboratory Practice Standards set forth in 40 CFR Part 160.

14. **REVIEWER'S DISCUSSION AND INTERPRETATION OF STUDY RESULTS:**

A. **Test Procedure:** The test procedures were generally in accordance with protocols recommended by the guidelines, but deviated from the SEP as follows:

A

The period between test solution preparation and the initiation of the test was not stated in the report. Tests should be initiated within 30 minutes of solution preparation.

A dawn/dusk simulation was not used.

The D.O. was occasionally higher than 100% saturation.

B. **Statistical Analysis:** The reviewer used EPA's Toxanal program to calculate the EC_{50} value (see attached printout). The reviewer obtained similar results.

C. **Discussion/Results:** Chemical analysis (Table 6.2, attached) demonstrated that the measured values for each test level, except the lowest concentration, were quite variable. Additionally, differential amounts of sampling are seen within each time period and between concentrations. No explanation was provided to help the reviewer comprehend how these samples were analyzed. Based on these findings, it is evident that the true concentrations that the daphnids were exposed to are unknown.

Physical and chemical samples should be taken from containers that held daphnids so that the conditions that the organisms were exposed to can be determined. In this study, these parameters were measured in a replicate that contained no daphnids.

This study is not scientifically sound and does not meet the guideline requirements for a static acute freshwater invertebrate toxicity study. ~~The 48-hour EC_{50} of 2.7 mg/l (based on nominal concentrations) classifies fenoxaprop-p-ethyl as moderately toxic to *Daphnia magna*. The NOEC, based on the lack of mortality,~~ was 1.0 mg/l. Delete

D. **Adequacy of the Study:**

(1) **Classification:** Invalid.

(2) **Rationale:** The concentrations that the daphnids were exposed to are unknown.

(3) **Repairability:** No.

15. **COMPLETION OF ONE-LINER FOR STUDY:** Yes, 10-31-91.

FENOXAPROP

2IN 4731-95 P.C. 128701

Page_____ is not included in this copy.

Pages 6 through 7 are not included.

The material not included contains the following type of information:

_____ Identity of product inert ingredients.

_____ Identity of product impurities.

_____ Description of the product manufacturing process.

_____ Description of quality control procedures.

_____ Identity of the source of product ingredients.

_____ Sales or other commercial/financial information.

_____ A draft product label.

_____ The product confidential statement of formula.

_____ Information about a pending registration action.

✓ FIFRA registration data.

_____ The document is a duplicate of page(s) _____.

_____ The document is not responsive to the request.

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

MOSSLER FENOXAPROP-P-ETHYL DAPHNIA MAGNA 10-31-91

****

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
10	20	19	95	2.002716E-03
5.6	20	19	95	2.002716E-03
3.2	20	15	75	2.069473
1.8	20	4	20	.5908966
1	20	0	0	9.536742E-05
.56	20	0	0	9.536742E-05

THE BINOMIAL TEST SHOWS THAT 1.8 AND 3.2 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 2.47111

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
5	6.572957E-02	2.739405	2.192521	3.491148

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
5	9.822671E-02	1	6.127095E-02

SLOPE = 4.41487

95 PERCENT CONFIDENCE LIMITS = 3.031199 AND 5.79854

LC50 = 2.672201

95 PERCENT CONFIDENCE LIMITS = 2.213087 AND 3.223078

LC10 = 1.37786

95 PERCENT CONFIDENCE LIMITS = .9505705 AND 1.726983

****

Shaughnessey # 128701 Chemical Name Fenoxaprop-p-ethyl Chemical Class _____ Page 1 of 1

Study/Species/Lab/ MRID #	Chemical % a.i.	Results	Reviewer/ Date	Validation Status
48-Hour EC_{50}	95.6%	EC_{50} = 2.7 mg/l* pp 95% C.L. (2.2-3.5) - moving average; Control Mortality (%) = 0%; Solvent Control Mortality (%) = 0%		
Species: Daphnia magna		Slope = n/A # Animals/Level = 20; Temperature = 20 °C		
Lab: Hoechst Ag.		48-Hour Dose Level mg/l* pp /(% Effect): 0.56 (0), 1.0 (0), 1.8 (20), 3.2 (75), 5.6 (95), 10 (95).	M. Mossler 10/31/91	
MRID # 42009606		Comments: NOEC = 1.0 mg/l* * Based on nominal concentrations		
96-Hour LC_{50}		LC_{50} = pp 95% C.L. ( ) Control Mortality (%) = ; Solvent Control Mortality (%) =		
Species:		Slope = # Animals/Level = ; Temperature =		
Lab:		96-Hour Dose Level pp /(% Mortality): ( ), ( ), ( ), ( ), ( )		
MRID #		Comments:		

D