2-14-92

MRID No. 420096-03

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 Fish Static Acute Toxicity Test. Species Tested: Bluegill Sunfish (*Lepomis macrochirus*). 72-1

4. **CITATION:** Fischer, R. 1986. The Effect of HOE 046360 - Substance, Technical Identification Code: HOE 046360 OH ZC96 0002 to *Lepomis macrochirus* (Bluegill Sunfish) in a Static Acute Toxicity Test (Lm16/a, Method EPA). Laboratory Report No. A33183. Prepared by Hoechst AG, Federal Republic of Germany. Submitted by Hoechst Celanese Corporation, Somerville, NJ. EPA MRID No. 420096-03.

5. **REVIEWED BY:**

Richard C. Petrie, Agronomist
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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 scientifically sound and meets the guideline requirements for a static acute freshwater fish toxicity study. The 96-hour LC_{50} of 0.58 mg/l (based on nominal concentrations) classifies fenoxaprop-p-ethyl as highly toxic to bluegill sunfish. The NOEC was 0.32 mg/l based on lack of mortality and sublethal effects.

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

9. **BACKGROUND:**

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

11. **MATERIALS AND METHODS:**

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5. **REVIEWED BY:**

Mark A. Mossler, M.S.
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KBN Engineering and
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6. **APPROVED BY:**

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7. **CONCLUSIONS:** This study is scientifically sound and meets the guideline requirements for a static acute freshwater fish toxicity study. The 96-hour LC_{50} of 0.58 mg/l (based on nominal concentrations) classifies fenoxaprop-p-ethyl as highly toxic to bluegill sunfish. The NOEC was 0.32 mg/l based on lack of mortality and sublethal effects.

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

9. **BACKGROUND:**

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

11. **MATERIALS AND METHODS:**

A. **Test Animals:** Juvenile (ca. 4 mo.) bluegill sunfish (*Lepomis macrochirus*) were obtained from a commercial supplier in the USA. The fish were treated with 10 g/m^3 Acriflavin for 24 hours after arrival. The fish were raised in the laboratory (until 7 months old) and fed flake and frozen foods. The fiberglass holding tanks (180 cm diameter, 68 cm height) received 170 to >190 l/hour of water and the solution depth was 55-60 cm. The temperature in the holding unit was 20 ±2°C. There were no indications of disease and no mortality was witnessed during the five weeks before test initiation.

The fish were acclimated to the test conditions and fasted for 96 hours. Mean weight and length of 10 fish were 2.1 g and 44 mm, respectively.

B. **Test System:** The test chambers were 59-l stainless-steel tanks (62 x 50 x 19 cm) filled with 54 l of test solution. The test solution depth was approximately 17.5 cm. The test tanks were kept in a temperature-controlled laboratory at 22 ±1°C. The laboratory environment was maintained on a 16-hour daylight photoperiod. Test water was deionized, charcoal-filtered water which had been reconstituted to a final alkalinity and hardness of 36 and 52 mg/l as $CaCO_3$, respectively. The water was aerated to oxygen saturation prior to use.

A stock solution was prepared by adding 0.285 g of fenoxaprop-p-ethyl to 190 ml of acetone. Appropriate volumes of the stock solution were added to a 25 ml volume in acetone and all of this stock was added to each 50 l test volume. The resulting amount of solvent was 0.5 ml acetone/l. The mixture was stirred thoroughly with a glass rod.

C. **Dosage:** Ninety-six-hour static test. Eight nominal concentrations (0.1, 0.135, 0.18, 0.24, 0.32, 0.42, 0.56, and 0.75 mg/l), a dilution water control and a solvent control were used. The concentrations made were not corrected for the percent active ingredient in the test material.

D. **Design:** Five bluegill sunfish were randomly selected and distributed to each of two test chambers for a total of 10 individuals per concentration or control. The biomass loading rate was 0.21 g/l. The fish were not fed and the water was not aerated during the test. Observations of mortality and sublethal responses were made every 24 hours. Dead fish were removed at each observation time.

The dissolved oxygen (D.O.), temperature, and pH were measured in the controls and the low, middle, and high test concentrations at the start of the study and every 24 hours thereafter. The conductivity was measured in these same vessels at the start and end of the study. The temperatures of both controls and the low, medium, and high test concentrations were continuously monitored during the test.

E. **Statistics:** The median lethal concentration (LC_{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:** All results are based on nominal rates.

The responses of bluegill sunfish are given in Table 5.2 (attached). Signs of toxicity included slower reaction, swimming at the surface, narcosis, and equilibrium disturbance. The 96-hour LC_{50}, based on nominal concentrations, was 0.58 mg/l (95% C.I. = 0.42-0.75 mg/l). Sublethal or lethal effects were observed at concentrations greater than 0.42 mg/l after 96 hours. However, sublethal effects were observed at the 0.42 mg/l exposure concentration at 72 hours, therefore, the no-observed-effect concentration (NOEC) was 0.32 mg/l.

Dissolved oxygen ranged from 7.2 to 9.2 mg/l. The pH values ranged from 7.7 to 8.2. The temperature was 21.1-22.0°C throughout the test. Conductivity was 177-185 µmhos/cm.

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

The fish were acclimated to the test conditions for 96 hours. The guidelines recommend 2 weeks.

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.

The D.O. was above 100% saturation at test initiation in some treatment vessels.

No length range was given for the test fish. The SEP states that the length of the longest fish can be no more than twice that of the shortest.

A dawn/dusk lighting transition period was not used.

B. **Statistical Analysis:** The reviewer used EPA's Toxanal program to calculate the LC_{50} and obtained the same value as the author (see attached printout).

C. **Discussion/Results:** Judging from the response of the control organisms, the short acclimation period did not modify the response of the bluegill sunfish in the test.

This study is scientifically sound and meets the guideline requirements for a static acute freshwater fish toxicity study. The 96-hour LC_{50} of 0.58 mg/l (based on nominal concentration) classifies fenoxaprop-p-ethyl as highly toxic to bluegill sunfish. The NOEC was determined as 0.32 mg/l based on lack of mortality and sublethal effects.

D. **Adequacy of the Study:**

(1) Classification: Core.

(2) Rationale: N/A.

(3) Repairability: N/A.

15. **COMPLETION OF ONE-LINER FOR STUDY:** Yes, 10-30-91.

FENOXADROP

RIN 4731-95 P.C. 128701

Page 6 is not included in this copy.

Pages _____ through _____ 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.

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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 BLUEGILL SUNFISH 10-30-91

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
.75	10	10	100	9.765625E-02
.56	10	4	40	37.69531
.42	10	0	0	9.765625E-02
.32	10	0	0	9.765625E-02
.24	10	0	0	9.765625E-02
.18	10	0	0	9.765625E-02
.135	10	0	0	9.765625E-02
.1	10	0	0	9.765625E-02

THE BINOMIAL TEST SHOWS THAT .42 AND .75 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 .5811336

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

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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}	_____	EC_{50} = pp (95% C.L.) Control Mortality (%) = Solvent Control Mortality (%) = Slope = # Animals/Level = Temperature = 48-Hour Dose Level pp /(% Effect) ( ), ( ), ( ), ( ), ( ) Comments:	_____	_____

96-Hour LC_{50}
 Species: *Lepomis macrochirus*
 Lab: Hoechst Ag.
 MRID # 42096-03
	95.6	LC_{50} = 0.58 ~~pp~~ mg ai/l* (95% C.L. (0.42 - 0.75), binomial probability) Control Mortality (%) = 0%
		 Solvent Control Mortality (%) = 0%
		 Slope = N/A # Animals/Level = 10
		 Temperature = 22 °C
		 96-Hour Dose Level ~~pp~~ mg ai/l* /(% Mortality)
		 0.1 (0), 0.135 (0), 0.18 (0), 0.24 (0), 0.32 (0)
		 0.42 (0), 0.56 (40), 0.75 (100).
		 Comments:
		 NOEC = 0.32 mg/l*
		 *Based on nominal concentrations of total test material.
			M. McMossler 10/30/91	Core