2-19-92

MRID No. 415651-32

DATA EVALUATION RECORD

1. **CHEMICAL:** Acetochlor.
   Shaughnessey Number: 121601.

2. **TEST MATERIAL:** Acetochlor technical; 2-chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methyl-phenylacetamide); 89.4% active ingredient w/w; a brown liquid

3. **STUDY TYPE:** Freshwater Fish Static Toxicity Test. Species Tested: Rainbow Trout (*Salmo gairdneri*).

4. **CITATION:** Tapp, J.F., S.A. Sankey, J.E. Caunter, and H.M. Miller. 1989. Acetochlor: Determination of Acute Toxicity to Rainbow Trout (*Salmo gairdneri*). Brixham Study No. R1072/A. Study performed by Imperial Chemical Industries PLC, Brixham Laboratory, Freshwater Quarry, Brixham, Devon, U.K. Submitted by ICI Americas, Inc. EPA MRID No. 415651-32.

5. **REVIEWED BY:**

   Rosemary Graham Mora, M.S.
   Associate Scientist
   KBN Engineering and
   Applied Sciences, Inc.

   Signature: Rosemary Graham Mora
   Date: 9/20/91

6. **APPROVED BY:**

   Pim Kosalwat, Ph.D.
   Senior Scientist
   KBN Engineering and
   Applied Sciences, Inc.

   Signature: P. Kosalwat
   Date: 9/20/91

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

   Signature: Michael Davy 1-15-92
   Date: for [signature] 2-19-92

7. **CONCLUSIONS:** This study is scientifically sound and does meet the guideline requirements for an acute toxicity study using rainbow trout. The 96-hour LC_{50} of acetochlor technical for *Salmo gairdneri* was 0.38 mg/l based on mean measured concentrations, which classifies acetochlor technical as highly toxic to *Salmo gairdneri*. The NOEC was 0.17 mg/l based on mean measured concentrations.

   However, these results should be viewed with caution because the study temperature (14.6-15.8°C) was much higher than the recommended temperature (12°C) for coldwater fish.

6 [illegible]

8. **RECOMMENDATIONS:** N/A

9. **BACKGROUND:**

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

11. **MATERIALS AND METHODS:**

A. **Test Animals:** The test organisms (*Salmo gairdneri*) were obtained from Upwey Trout Farm, Upwey, Weymouth, Dorset, U.K. The fish were treated with malachite green approximately 14 days prior to test initiation. During the 48 hours prior to test initiation, less than 3% mortality was observed. The fish were held in glass aquaria under daylight and artificial lighting at 15 ±1°C for 18 days prior to the beginning of the test. The pre-test diet was the commercial product, Promin®.

At test termination the control fish had a mean weight of 0.97 (range of 0.62-1.36 g), and a mean length of 43 mm (range of 38-50 mm).

B. **Test System:** The glass test vessels (400 X 280 X 280 mm) had the maximum holding capacity of 31 l and contained 20 l of solution. The test was performed in a temperature-controlled room at 15.0 ±1°C.

The dilution water was tap water supplied from a reservoir (retention time of 24 hours). This supply was dechlorinated with sodium thiosulfate, carbon-filtered, held in a second reservoir, and delivered to the test via a temperature-controlled header tank (15°C). At test initiation, the dilution water had a total hardness and alkalinity of 55.0 and 32.6 mg/l as $CaCO_3$, respectively, a specific conductivity of 120 µS/cm, and a pH of 7.9. No free or combined residual chlorine was detected in the water.

C. **Dosage:** Ninety-six-hour static acute test. Five nominal concentrations were chosen for this study (0.18, 0.32, 0.56, 1.0, and 1.8 mg/l). In addition, a dilution water control was also used.

The test solutions were prepared by adding appropriate amounts of test substance to 10 l of freshwater in each test vessel. The solutions were aerated and each vessel was filled with an additional 10 l of freshwater.

D. **Design:** Ten fish were added to each test concentration and control (one vessel/treatment and control). The fish were not fed during the test.

Mortality and symptoms of toxicity were noted every 24 hours during the study.

Dissolved oxygen concentration, pH, and temperature were measured daily.

Chemical analysis of each concentration was performed using gas chromatography on samples collected at test initiation, after 48 hours and at test termination.

E. **Statistics:** The LC_{50} values were calculated with the moving average method (Stephan, 1977) using a Brixham Laboratory computer program.

12. **REPORTED RESULTS:** Measured concentrations were 0.17, 0.33, 0.62, 0.99, and 1.9 mg/l (Table 1, attached). These mean measurements represent 94-111% of nominal concentrations.

No sublethal effects or mortality were observed in the control or the lowest test concentration (0.17 mg/l) (Tables 2 and 3, attached). Thirty-percent mortality was observed at the 0.17 mg/l level based on mean measured concentrations, and total mortality was observed at the remaining test concentrations. The 96-hour LC_{50} value and 95% confidence interval for rainbow trout exposed to acetochlor technical are 0.36 mg/l and 0.27-0.44 mg/l based on mean measured concentrations. The NOEC is 0.17 mg/l.

During the study, the pH was 7.7-8.3, the temperature was 14.6-15.8°C, and the dissolved oxygen concentration was 8.6-10.0 mg/l.

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:** The authors made no conclusions in the report.

A GLP compliance statement, signed by the study director, the project manager, and a representative of the sponsor company, was included in the report indicating that the study conducted in accordance with the principles of Good Laboratory Practice of the United Kingdom Department of Health Compliance programme (1989). This statement also indicates that this study satisfies the requirements of 40 CFR 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, except for the following deviations:

The dilution water was chlorinated tap water which was dechlorinated prior to use. The SEP discourages the use of dechlorinated water because removal of chlorine is rarely complete and residual chlorine can be toxic to aquatic organisms. Since levels of residual and combined chlorine were below the detection limit, and no control mortality was observed, the use of dechlorinated tap water probably did not affect the results of this study.

The age of the test organisms was not reported.

The temperature (14.6-15.8°C) was much higher than recommended (12°C) in the SEP.

The recommended photoperiod for a freshwater fish acute toxicity study is 16-hour light/8-hour dark with 15- to 30-minute transitions. The photoperiod employed during the study was not presented in the report.

The report did not indicate that the fish were randomly assigned to the test chambers as recommended in the SEP.

Continuous temperature (hourly) measurements were not reported.

B. Statistical Analysis: EPA's Toxanal computer program was used to verify the LC_{50} value and 95% confidence interval presented by the authors. The reviewer's LC_{50} value (0.38 mg/l based on measured concentrations) and 95% confidence interval (0.17-0.62 mg/l) are similar to those of the authors (printout, attached).

C. Discussion/Results: The deviations listed above probably did not affect the results of this test. This study is scientifically sound and meets the guideline requirements for an acute static toxicity study using freshwater fish. The 96-hour LC_{50} of acetochlor technical to *Salmo gairdneri* was 0.38 mg/l based on mean measured concentrations. Based on the results of this study, acetochlor technical is highly toxic to

Salmo gairdneri. The NOEC was 0.18 mg/l based on mean measured concentrations.

D. **Adequacy of the Study:**

(1) **Classification:** Core.

(2) **Rationale:** However, these results should be viewed with caution because the study temperature (14.6-15.8°C) was much higher than the recommended temperature (12°C) for coldwater fish.

(3) **Repairability:** N/A.

15. **COMPLETION OF ONE-LINER FOR STUDY:** Yes, September 18, 1991.

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ACETOCHLOR

Page_____ is not included in this copy.

Pages 6 through 8 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.

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____ Sales or other commercial/financial information.

____ A draft product label.

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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.

Rosemary Graham Mora Acetochlor Salmo gairdneri 9-17-91

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
1.9	10	10	100	9.765625E-02
.99	10	10	100	9.765625E-02
.62	10	10	100	9.765625E-02
.33	10	3	30	17.1875
.17	10	0	0	9.765625E-02

THE BINOMIAL TEST SHOWS THAT .17 AND .62 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 .3810953

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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