10-30-90
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MRID No: AB-79-079

DATA EVALUATION RECORD

1. **CHEMICAL:** Acetochlor.
Shaughnessey No: 121601.

2. **TEST MATERIAL:** CP 55097; Acetochlor; Lot # XHK-119; 91.3% active ingredient; a brown liquid.

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

4. **CITATION:** Forbis, A.D. and C.M. Thompson. 1979. Acute Toxicity of CP 55097 (AB-79-079) to Daphnia magna. Conducted by Analytical Biochemistry Laboratories, Inc. (ABC), Columbia Missouri, ABC Study No. 24018. Submitted by Monsanto Chemical Company, St. Louis, Missouri. Monsanto Study No. AB-79-079.

5. **REVIEWED BY:**

G. Scott Ward
Manager
Aquatic Toxicology Laboratory
Toxikon Environmental Sciences

Signature: P. Kosalwat for G. Scott Ward
Date: 6/20/90

6. **APPROVED BY:**

Michael L. Whitten, M.S.
Staff Toxicologist
KBN Engineering and
Applied Sciences, Inc.

Signature: Michael L. Whitten
Date: 6-18-90

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

Signature: Cynthia A. Moulton
Date: Henry T. Craven 10/31/90

7. **CONCLUSIONS:** This study is scientifically sound and fulfills the requirements for an acute static toxicity test using Daphnia magna. With a 48-hour LC50 of 14 mg/L based on nominal concentrations, Acetochlor is considered to be slightly toxic to Daphnia magna under the conditions ot this test. The NOEC was 10 mg/L.

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

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9. **BACKGROUND:**

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

11. **MATERIALS AND METHODS:**

A. **Test Animals:** This test was conducted using Daphnia magna cultured at the ABC Laboratory in laboratory well water with the following water quality characteristics: hardness, 255 ppm as $CaCO_3$; alkalinity, 368 ppm as $CaCO_3$; conductivity, 50 µmhos/cm; pH, 8.1; dissolved oxygen, 9.3 ppm. Concentrations of metals and organophosphorus pesticides were generally non-detectable or detectable but low (Table 2, attached). Adult daphnids were fed a suspension of trout chow and alfalfa (PR-11) daily until 24 hours prior to testing.

B. **Test System:** The test was conducted in 250-mL glass beakers each containing 200 mL of ABC laboratory well water with the characteristics described above. Beakers were maintained at 20 ± 1°C. The photoperiod during testing was 16 hours light/8 hours dark.

C. **Dosage:** This was a 48-hour static acute test.

D. **Design:** Based on the results of a range-finding test, the definitive test was conducted at nominal concentrations of 5.6, 10, 18, 32, and 56 mg/L. Acetone was used to prepare CP 55097 test solutions and an acetone control. The acetone concentration in the solvent control and the highest test concentration was 2.8 mL/L. A dilution water control was maintained concurrently with CP 55097 test concentrations. Test solutions were not analyzed for exact concentrations of test material.

Twenty daphnids were tested at each treatment with 10 animals in each of two duplicate treatment beakers.

E. **Statistics:** LC50 values and 95% confidence limits were calculated according to the Litchfield and Wilcoxon method (1949).

12. **REPORTED RESULTS:** Mortality during the test is shown in Table 3 (attached). The reported 48-hour LC50 and 95% confidence limits were 16 (14-18) mg/L.

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:** The authors did not present any study conclusions.

The QAU conducted a final inspection of all data and records on July 31, 1979, and indicated that the report accurately reflected the study conduct.

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

A. **Test Procedure:** The test procedures were in accordance with protocols recommended by the SEP, except for the following deviations:

- o The age of daphnids at test initiation was not reported.
- o The test was conducted using hard water (255 ppm as $CaCO_3$); 40-48 mg/L is recommended.
- o No light/dark transition period was reported.
- o No observations of sublethal effects were reported.
- o The report did not state the time delay between addition of test material and addition of test animals to the beakers.
- o Water quality measurements were reported only for the control at 0 hours and the solvent control plus the 10 mg/L treatment at 48 hours. No other measurements were reported.
- o Each designated treatment group was exposed to a concentration of toxicant that is approximately 56% of the next highest concentration. The SEP recommends 60% of the next highest concentration.
- o The solvent concentration of 2.8 mL/L in the solvent control and the highest test concentration exceeded the guideline recommendation for solvent (i.e, 0.5 mL/L).

B. **Statistical Analysis:** The reviewer recalculated the 48-hour LC50 using EPA's Toxanal computer program. The results (attached) were similar to the results reported by the author.

C. **Discussion/Results:** The concentration of solvent was more than five times as great as the maximum recommended concentration. Since there was no

mortality in the solvent control, however, this does not appear to have been a confounding factor.

Although observations of sublethal effects were not mentioned, a review of the raw data sheets and the authors'summary suggest that no sublethal effects were observed. Therefore, the NOEC was 10 mg/L, based on mortality at all higher concentrations.

This study is scientifically sound and fulfills the requirements for an acute static toxicity test using bluegill sunfish. The deviations from the guideline recommendations probably did not affect the toxicity results. With a 48-hour LC50 value of 14 mg/L (95% C.L.=10 and 18 mg/L) based on nominal concentrations, CP 55097 is considered to be slightly toxic to Daphnia magna.

D. Adequacy of the Study:

(1) **Classification:** Core.

(2) **Rationale:** N/A

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

15. COMPLETION OF ONE-LINER: Yes. June 11, 1990.

ACETOCHLOR

Page_____ is not included in this copy.

Pages 5 through 6 are not included.

The material not included contains the following type of information:

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____ Identity of product impurities.

____ Description of the product manufacturing process.

____ Description of quality control procedures.

____ Identity of the source of product ingredients.

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SCOTT WARD ACETOCHLOR DAPHNIA MAGNA 06-10-90

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
56	20	20	100	9.536742E-05
32	20	20	100	9.536742E-05
18	20	19	95	2.002716E-03
10	20	0	0	9.536742E-05
5.6	20	0	0	9.536742E-05

THE BINOMIAL TEST SHOWS THAT 10 AND 18 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 13.94458

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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