2-19-92

MRID No. 415651-29

DATA EVALUATION RECORD

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

2. **TEST MATERIAL:** Acetochlor; Batch No. A1016/9 P2; 89.4% active ingredient; a brown liquid.

3. **STUDY TYPE:** Avian Single Dose Oral LD_{50} Test.
Species Tested: Mallard duck (*Anas platyrhynchos*).

4. **CITATION:** Hakin, B., A.J. Norman and I.S. Dawe. 1989. The Acute Oral Toxicity (LD_{50}) of Acetochlor to the Mallard Duck. HRC Report No. ISN 193/891133. Performed by Huntingdon Research Center, Huntingdon, Cambridgeshire, UK. Submitted by ICI Agrochemicals, Haslemere, Surrey, UK. EPA MRID No. 415651-29.

5. **REVIEWED BY:**

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

Signature: Mark A. Mossler
Date: 10/3/91

6. **APPROVED BY:**

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

Signature: Michael L. Whitten
Date: 10/3/91

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

Signature: Michael Davy 1-15-92
Date: for David Rose 2-19-92

7. **CONCLUSIONS:** This study is scientifically sound and meets the requirements for an acute oral toxicity test using mallard ducks. The LD_{50} value of 1788 mg ai/kg of body weight classifies acetochlor as slightly toxic to mallard ducks. The NOEC was 447 mg ai/kg of body weight.

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

9. **BACKGROUND:**

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10. DISCUSSION OF INDIVIDUAL TESTS: N/A.

11. MATERIALS AND METHODS:

A. Test Animals: The birds used in the study were 11-month old mallard ducks (*Anas platyrhynchos)* obtained from The County Game Farm, Kent, UK. The birds appeared in good condition at the time of testing. They were acclimated to the laboratory for 2 weeks prior to testing and ranged in weight from 870 to 1260 g at test initiation. Except for a 15-hour fasting period immediately prior to dosing, water and a game bird ration were offered ad libitum during acclimation and testing. No antibiotics were administered during the test.

B. Test System: All birds were housed indoors in pens constructed of wire and galvanized sheeting. The pen measured 185 x 120 cm. Lights provided 7 hours of illumination per day. The temperature was 20-24°C and the average relative humidity was 73 ±8.7%.

C. Dosage: Fourteen-day single dose oral LD_{50} test. Three nominal dosages (500, 1000, and 2000 mg/kg of body weight) and a diluent (corn oil) control were used in the test. The dosages were not corrected for the purity of the test substance.

D. Design: Groups of ten birds (five males and five females) were assigned to each treatment and control group by body weight so that all treatment groups would have similar initial bodyweight means. Each dosage group was assigned two pens. The birds were segregated by sex.

The test substance was suspended in corn oil and intubated directly into each bird using a plastic catheter and disposable syringe. Each bird was individually weighed and dosed on the basis of milligrams of test substance per kilogram of body weight. The control birds received a corresponding volume of corn oil only.

All birds were observed daily for mortality, signs of toxicity, and abnormal behavior. The birds were weighed individually at test initiation, day 7 and 14. Group food consumption was determined for days 1-7 and 8-14. Post-mortem examinations were conducted on ten birds from the highest dose group.

A 10 ml sample was taken from each dose suspension and sampled for acetochlor by gas chromatography (GC).

E. **Statistics:** No statistical analysis was reported.

12. **REPORTED RESULTS:** There were no mortalities or signs of toxicity in any bird following dosing, and all birds remained in good health throughout the study.

One bird was found dead on the day before dosing and was replaced with a spare bird. Since no mortalities occurred after dosing, it was not possible to calculate the LD_{50} of acetochlor for the mallard duck. The LD_{50} value must exceed 2000 mg/kg, the maximum concentration tested. Bodyweight changes and feed consumption were considered to be within the normal range. There was no evidence of any treatment-related effects for either of these parameters.

No abnormalities were detected in the post-mortem necropsies.

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:** "There were no mortalities following dosing. Therefore, under the conditions of this study, it was not possible to determine the acute oral toxicity (LD_{50}) of acetochlor for the Mallard duck. This value must exceed 2000 mg/kg, the maximum dose level used."

Quality Assurance and Good Laboratory Practice Statements were included in the report indicating compliance with the regulations under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

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

A. **Test Procedure:** The test procedures were in accordance with Subdivision E and SEP guidelines with the following exceptions:

The report did not state if the birds were from the same hatch.

The report did not state if the birds were phenotypically indistinguishable from wild birds.

The type of lighting was not specified.

It was not stated if the test material was technical or formulated product; the reviewer assumes it was technical.

B. **Statistical Analysis:** Since no birds died during the test, statistical analysis could not be performed. Upon review of the data, the authors' values appear correct.

C. **Discussion/Results:** In contrast to what was stated by the authors, there appeared to be a loss in food consumption at the two higher test dosages (1000 and 2000 mg/kg, Table 2 - attached). The NOEC would therefore be 500 mg/kg.

The percent purity of the test material was 89.4%. The authors stated that the test dosages were not adjusted for percent purity of the test material. Therefore, the NOEC and LD_{50} values of acetochlor for mallard duck were 447 and 1788 mg ai/kg of body weight, respectively.

This study is scientifically sound and meets the requirements for an acute oral toxicity test using the mallard duck. The LD_{50} value of 1788 mg ai/kg of body weight classifies acetochlor as slightly toxic to mallard ducks. The NOEC was 447 mg ai/kg of body weight.

D. **Adequacy of the Study:**

(1) **Classification:** Core.

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

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

15. **COMPLETION OF ONE-LINER:** Yes, 9-20-91.

FOOD CONSUMPTION

Results are given in Table 2.

TABLE 2

Group mean food consumption (g/bird/day)

Group	Treatment (mg/kg)	No. of birds	Days of study			
			-14 to -8	-7 to -1	1 to 7	8 to 14
1	Control 0	5♂ 5♀	63 149	80 134	131 149	137 149
2	Acetochlor 500	5♂ 5♀	74 137	83 197*	143 109	151 163
3	Acetochlor 1000	5♂ 5♀	46 131	71 111	103 114	137 123
4	Acetochlor 2000	5♂ 5♀	74 163	97 97	143 103	123 103

* Food spillage by birds

Food consumption was similar in all groups and there was no evidence of any treatment-related effect.

MACROSCOPIC POST-MORTEM EXAMINATION

No abnormalities were detected in any bird examined.

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