2-19-92

MRID No. 415651-31

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 Dietary LC_{50} Test. Species Tested: Bobwhite quail (*Colinus virginianus*).

4. **CITATION:** Hakin, B., A.J. Norman, A. Anderson, and J.G. Maxwell. 1989. The Dietary Toxicity (LC_{50}) of Acetochlor to the Bobwhite Quail. HRC Report No. ISN 191/89449. Performed by Huntingdon Research Center, Huntingdon, Cambridgeshire, UK. Submitted by ICI Agrochemicals, Haslemere, Surrey, UK. EPA MRID No. 415651-31.

5. **REVIEWED BY:**

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

Signature: [signature]
Date: 10/3/91

6. **APPROVED BY:**

Michael Whitten, M.S.
Wildlife Toxicologist
KBN Engineering and
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Signature: [signature]
Date: 10/3/91 [signature] 1-15-92

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

Signature:
Date: for Daniel Rieder 2-19-92

7. **CONCLUSIONS:** This study is scientifically sound and meets the guideline requirements for an avian dietary LC_{50} toxicity test. The LC_{50} value of acetochlor for bobwhite quail was >4610 ppm (mean measured concentration). Therefore, this compound is classified as slightly toxic to the bobwhite quail. The NOEC was 2305 ppm (mean measured concentration) based on mortalities at the 4610 ppm concentration.

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

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9. **BACKGROUND:**

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

11. **MATERIALS AND METHODS:**

A. **Test Animals:** Bobwhite quail (*Colinus virginianus*) were obtained from a supplier in Cambridgeshire, UK. The birds were one-day old when received. All birds were acclimated to the caging and facilities for 13 days. The birds were 14 days of age and weighed between 14.7 and 15.2 g at test initiation.

B. **Test System:** The birds were housed indoors in wooden boxes measuring 83 x 52 x 51 cm. Lids were constructed of wire mesh. Each box contained a drinker and feeding tray covered with wire mesh to minimize spillage of the diet. During the test, the mean daily temperature in the building was 25-28°C. A 300 watt infra-red lamp was suspended above each cage to provide additional heat. The average relative humidity was 44 ±6%. A continuous photoperiod was used throughout the study.

The test diets were prepared by adding the test substance into the diet to form a pre-mix from which the final diets were prepared. The diets were prepared at test initiation and kept at room temperature until the end of the test.

The birds were offered water and feed ad libitum throughout the study. A list of the ingredients in the feed was given in the report and it appeared to be free of unfamiliar ingredients and medications.

C. **Dosage:** Acute dietary LC_{50} test. Dosage levels selected for the study were 163, 325, 650, 1300, 2600, and 5200 ppm.

D. **Design:** Ten quail per test level and in each of three controls were assigned to numbered pens. Signs of toxicity, abnormal behavior, and mortality were assessed at least daily. Group body weights were measured at initiation, day 5, and day 8 of the test. Average feed consumption was determined by group for days 0-1, 1-2, 2-3, 3-4, 4-5, (the exposure period) and 6-8 (the observation period).

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Samples of the test diet were taken immediately after preparation for analysis of acetochlor by gas chromatography (GC).

A post-mortem examination was conducted on all birds in the highest test group and on all birds that died during the study.

E. **Statistics:** The LC_{50} value was estimated by visual assessment of the data due to the mortality pattern in this study.

12. **REPORTED RESULTS:** One mortality occurred in the controls two days before test initiation. It was replaced with a spare quail. No further mortalities occurred. All control birds remained in good health throughout the study.

There were three mortalities on day 2 of the exposure period and one death on day 3 for the 325 ppm acetochlor test concentration. One mortality occurred in the highest test concentration (5200 ppm) on day 3 (Table 1, attached). No other mortalities were noted. One bird in the lowest concentration level (163 ppm) appeared weak and unsteady on day 3, but by the end of the day, the bird had recovered. All remaining birds were in good health throughout the study.

There were no treatment-related reductions in either body weight gain or feed consumption (Tables 2 & 3, attached).

No abnormalities were detected in any of the birds examined by post-mortem necropsy.

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:** "Under the conditions of this study, it was not possible to determine the LC_{50} of acetochlor to the Bobwhite quail. This value must lie in excess of 5200 ppm, the maximum dose level used. This nominal value is adjusted to 4757 ppm when the calculated mean recovery from the diet is taken into account."

A Quality Assurance Unit Statement was included in the report indicating that the study conformed with Good Laboratory Practice standards published by the U.S. Environmental Protection Agency.

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

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

Body weights were measured by group. Individual body weights should have been measured.

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

It was not stated if the birds were phenotypically indistinguishable from wild birds.

B. Statistical Analysis: Since a dose-related mortality response did not occur during the testing period, an LC_{50} value and 95% confidence limits could not be obtained. A discussion of the LC_{50} is presented below.

C. Discussion/Results: Although the report stated that chicks were distributed randomly, it was also stated that the chicks were distributed in a manner that would equilibrate the mean weight of each test group. If the chicks were weighed and put in a group on the basis of weight, they were not distributed randomly.

A report on the analysis of the test material in the diet was included in the main report. The study verified that the test material was homogeneous throughout the diet, but that the concentration declined by 26-30% after 7 days of storage at room temperature. The reviewer multiplied the time 0 measured concentrations by 0.72 to obtain the theoretical measured concentrations after 7 days. The reviewer then calculated the mean of the day 0 and day 7 concentrations. This method better represents the actual concentrations the birds were exposed to over the test period. Mean measured concentrations were 140, 281, 556, 1084, 2305, and 4610 ppm.

The authors did not calculate a precise LC_{50}; instead, the LC_{50} was greater than 4610 ppm. Based on this value, the test material could be classified as either practically non-toxic (LC_{50} >5000 ppm) or as slightly toxic (LC_{50} from 1001-5000 ppm). For a study to meet required guidelines, a precise LC_{50} must be established, or else the study must show that the LC_{50} was greater

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than 5000 ppm. This study meets the requirements only if the LC_{50} is classified as slightly toxic. Under this condition, the study is scientifically sound and meets the guideline requirements for an avian dietary LC_{50} toxicity test. The NOEC was 2305 ppm (mean measured concentration) based on mortality at the 4610 ppm concentration. Since no mortality occurred at the 556, 1084, and 2305 ppm concentrations, the four mortalities at 281 ppm were not believed to be treatment related.

D. **Adequacy of the Study:**

(1) **Classification:** Core.

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

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

15. **COMPLETION OF ONE-LINER:** Yes, 9-23-91.

ACETOCHLOR

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