DATA EVALUATION RECORD

(TOX:3P)

PM 9/29/82

CASE GS0140 ALDICARB

CHEM 098301

BRANCH EEB DISC TOPIC Special Order

FORMULATION 00 Active Ingredient

FICHE/MASTER ID 05008363 CONTENT CAT 01

Hudson, R.H.; Haegele, M.A.; Tucker, R.K. (1979) Acute oral and percutaneous toxicity of pesticides to mallards: correlations with mammalian toxicity data. Toxicology and Applied Pharmacology 47(3):451-460.

SUBST. CLASS = S.

OTHER SUBJECT DESCRIPTORS

PRIM:

SEC:

DIRECT RVW TIME = (MM) START-DATE END DATE

REVIEWED BY: RICHARD R. STEVENS

TITLE: ECOLOGIST

O-G: EEB/HED

LOC/TEL:

DATE: 4/4/84

SIGNATURE: Richard R. Stevens

APPROVED BY:

TITLE:

O-G:

LOC/TEL:

DATE:

SIGNATURE:

DATA EVALUATION RECORD

CHEMICAL: Alidcarb, 95%

CITATION: Hudson, R.H., M.A. Haegele and R.K. Tucker. 1979. Acute oral and percutaneous toxicity of pesticides to mallards: Correlations with mammalian toxicity data. Toxicol. Appl. Pharmacol. 47,451-460. (Fiche ID 05008363).

REWVIEWED BY: Richard R. Stevens
Ecologist, EEB/HED
3/14/84

TEST TYPE: Avian acute PO and percutaneous toxicity. Mallard (Anas platyrhynchos)

RESULTS: The acute PO and 24-hour percutaneous LD_{50} values for the mallard are 3.4 (2.7 - 4.28) and 60 (30 - 120) mg/kg respectively. Aldicarb was considered a moderate skin irritant; it produced slight erythema and slight edema.

CONCLUSIONS: The acute oral LD_{50} of 3.4 mg/kg indicates that aldicarb is highly toxic to mallards. This study is sufficient to waterfowl. It does not fulfill guideline requirements for said testing.

Materials/Methods

Test Procedures

"The mallards were pen-reared through full growth at the Denver Wildlife Research Center from stock lines or form day-old duckling obtained from the Max McGraw Wildlife Foundation in Dundee, Illinois." Female mallards 13-16 weeks old were used in the acute oral test, and 43-45 week old male mallards were used in the percutaneous test.

"The mallards were fed commercial game bird chow ad libitum. Before po administration, all birds were fasted for 20 hr. Drinking water was available at all times either in swimming ponds or in 4-liter waterers used during the 24-hr percutaneous exposure. For po treatment ... the methods of dose preparation, treatment, observation, and LD_{50} calculation were the same as described previously (Tucker and Haegele, 1971)."

Three to 7 birds were treated at each of 4 geometrically (unspecified) spaced dosage levels. Test birds were observed for 14 days post-treatment.

"For the percutaneous treatments, four groups of two mallards each, or two groups of four mallards each were used... On the evening before percutaneous treatment, the feet of the mallards were inspected for cuts, cracks, or abrasions, and only birds with feet in good conditions were used. The feet were then rinsed in warm water to remove any foreign particles. Before treatment the following morning, the crura of the mallards were shaved with an electric clipper to facilitate taping of the plastic bags which were used to cover the exposed areas. The chemicals were dissolved or suspended by ultrasonic dispersion in either corn oil or propylene glycol in appropriate quantities such that approximately 0.6 ml of solution be applied to each foot. This amount was found to be th minimum amount which would wet the entire surface area. The area covered included the tarsometatarsus, phalanges, and webbing, which constitutes (by measurement) approximately 12% of the body surface area of a full-grown mallard. The feet were then covered with a plastic bag which extended midway up the crus. After 24-hr, the bags were removed and the feet were washed with mild soap and warm water. Observation for mortalities and signs of intoxication was continued for 14 days (or for up to 30 days if signs were persistent). Primary dermal irritation was scored according to the technicque proposed by Draize et al. (1944)."

Statistical Analysis

Data were used to compute the acute oral LD_{50} and 24-hour percutaneous LD_{50} values by the method of Thompson (1947) and Weil (1952).

Reported Results

The acute PO and 24-hour percutaneous LD_{50} values are 3.4 (2.7 - 4.28) and 60 (30 -120) mg/kg respectively. Aldicarb was considered a moderate skin irritant; slight erythema and slight edema. Also reported is the dermal toxicity index (DTI = po LD_{50}/percutaneous LD_{50} x 100), which was intended to provide a quick indication of relative dermal hazard. "The higher the index, the greater the percutaneous toxicity is in relation to its po toxicity, and a DTI greater than 100 indicate that the compound is more toxic dermally than it is orally." Aldicarb's DTI is 6.

Reviewer's Evaluation

This study has been judged to be technically sound. It does not comply totally, based on the data presented, with the recommended EPA 1982 protocol for avian avute oral LD_{50} studies (see rationale.) There are no requirements for percutaneous toxicity testing.

Validation Category: Supplemental

Category Rationale: This study is judged to be supplemental rather than core for the following reasons:

1. Inadequate description of protocol in the following areas:

   a. Specific number of birds per chemical per dose level.
   b. Husbandry practices including pen and weather data.

2. Inadequate reporting of results:

   a. Weights of birds at 0, 3, 7 and 14 days.
   b. Dosage - mortality data.
   c. Description, if any, of gross necropsy.
   d. Symptoms, if any, of intoxication.

Category Repairability: Provided that the above rationale can be met, this study will be reevaluated and may be upgraded to core.