

US EPA ARCHIVE DOCUMENT

079401

DATA EVALUATION RECORD

MK
135497

7-1

1. CHEMICAL: Endosulfan
2. FORMULATION: Technical (97.2% a.i.)
3. CITATION: Roberts, N.L. and C.N. Phillips. 1983. The acute oral toxicity (LD₅₀) of Endosulfan - technical to the Bobwhite quail. Performed by Huntingdon Research Center, England; submitted by American Hoechst Corp. in support Reg. No. 8340-13. Accession No. 252043-~~5~~
4. REVIEWED BY: John J. Bascietto
Wildlife Biologist
EEB/HED
5. DATE REVIEWED: 2/22/84
6. TEST TYPE: Avian acute oral toxicity (LD₅₀)
A) Species; Bobwhite quail (Colinus virginianus)
7. REPORTED RESULTS:
LD₅₀ = 42 mg/kg (35-56 mg/kg).
8. REVIEWER'S CONCLUSIONS: The study is scientifically sound. With an LD₅₀ = 42 (35-56) mg/kg endosulfan technical is "highly toxic" to bobwhite quail. The guidelines requirement is satisfied.

sun

9. Materials/Methods

- A) Procedure: The protocol used is basically that recommended by the EPA guidelines. A range finder used 3 groups of 2 birds (one male; one female) was used to establish range for definitive study. The definitive study tested a corn oil vehicle control group of 10 birds plus five(5) treatment groups of 10 birds each. The birds were allocated to treatment groups on the basis of bodyweight with equal numbers of males & females per group. A 14-day acclimation period was followed by single dose by oral gavage, followed by A 14-day observation period. Water and diet were ad libitum. Bodyweight and feed consumption measured as per guidelines.
- B) Statistics - treatment group mortality was analyzed by Finney probit analysis.

10. Results

The following mortalities were reported:

| <u>Group</u> | <u>Treatment Level</u> | <u># Dead/10</u> |
|--------------------------|------------------------|------------------|
| 1 (control- Corn oil) | 0 mg/kg endosulfan | 0 |
| 2 (Treatment) | 10 " " | 0 |
| 3 (") | 15 " " | 0 |
| 4 (") | 23 " " | 0 |
| 5 (") | 34 " " | 3 |
| 6 (") | 51 " " | 7 |

Birds in groups 4 and 5 were "subdued" after treatment. Those at the highest treatment level were "unsteady" after dosing. Groups 5 & 6 remained "subdued" through the fifth day of the observation period.

11. Reviewer's Evaluation

- A. Procedures: guidelines procedures were used. The birds were assigned to treatment groups on the basis of bodyweight "with the aim of all treatment groups having similar initial bodyweight means" Generally, this would not be acceptable if the mean bodyweights were significantly different as reflected by comparison of group mean weights. but in this case, group mean weights at initiation of the study were not significantly different, however the male and female mean weights were different with the males at about 205 g/bird and females at about 188 g/bird. This is acceptable.

B. Statistical Analysis - Analyzed and verified by EEB's computer program (Stephan's) for calculation of median lethal doses and 95% confidence intervals. See attached verification sheet.

C. Results

The results, as calculated by EEB, are generally in agreement with the authors'. There are no remarkable bodyweight or feed consumption data. Most birds that died, did so within 48 hours, although 1 male at 34 mg/kg died 7 days after dosing. No birds died after 7 days post-dosing. Gross post-mortems revealed no remarkable abnormalities but the results were not presented in the report.

D. Conclusions

- 1) Category: Core
- 2) Rationale: Guidelines
- 3) Repair: N/A

BASCIETTO ENDOSULFAN BOBWHITE QUAIL ACUTE ORAL LD50

| CONC. | NUMBER EXPOSED | NUMBER DEAD | PERCENT DEAD | BINOMIAL PROB.(PERCENT) |
|-------|----------------|-------------|--------------|-------------------------|
| 51 | 10 | 7 | 70 | 17.1875 |
| 34 | 10 | 3 | 30 | 17.1875 |
| 23 | 10 | 0 | 0 | .0976563 |
| 15 | 10 | 0 | 0 | .0976563 |
| 10 | 10 | 0 | 0 | .0976563 |

THE BINOMIAL TEST SHOWS THAT 23 AND +INFINITY 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 41.6413

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

| SPAN | G | LC50 | 95 PERCENT CONFIDENCE LIMITS | |
|------|---------|---------|------------------------------|-------|
| 2 | .272537 | 41.6413 | 34.772 | 57.89 |

RESULTS CALCULATED USING THE PROBIT METHOD

| ITERATIONS | G | H | GOODNESS OF FIT PROBABILITY |
|------------|---------|---|-----------------------------|
| 9 | .393508 | 1 | .916451 |

SLOPE = 7.60772
 95 PERCENT CONFIDENCE LIMITS = 2.83538 AND 12.3801

LC50 = 42.2735
 95 PERCENT CONFIDENCE LIMITS = 35.2096 AND 56.1018

LC10 = 28.7828
 95 PERCENT CONFIDENCE LIMITS = 16.0333 AND 34.6831
