079401

MRID 136998

DATA EVALUATION RECORD

71-1

1. CHEMICAL: Endosulfan

2. FORMULATION: Technical (97.2% a.i.)

3. CITATION: Roberts, N.L. and C.N. Phillips. 1983. The acute oral toxicity (LD_{50}) of Endosulfan - Technical to the Mallard duck. Performed by Huntingdon Research Center, England, submitted by American Hoechst Corp, Somerville, New Jersey, in support of Reg. No. 8340-13. Accession No. 252043.

4. REVIEWED BY: John J. Bascietto
Wildlife Biologist
EEB/HED

5. DATE REVIEWED: 2/22/84

6. TEST TYPE: Avian acute oral toxicity (LD_{50})

A) species - mallard duck (Anas Platyrynchos)

7. REPORTED RESULTS:

LD_{50} = 28 mg/kg (22-36 mg/kg)

8. REVIEWER'S CONCLUSIONS: The study is scientifically sound. With on LD_{50} = 28(22-36) mg/kg, endosulfan technical is "highly toxic" to mallard ducks. The study fulfills the intent of the guidlines requirement.

9. Materials and Methods

A. Procedure: Procedures were those recommended by protocols referred to in EPA guidelines. A range finding study was performed to establish the definitive test concentrations. A definitive study, testing ten (10) birds per level at five(5) endosulfan concentrations plus one(1) vehicle control (corn oil) concentration, was performed. This study had a 14-day acclimation period, followed by a single dose by oral gavage, followed by a 14-day observation period. Water & diet were available ad libitum. Body weight and feed consumption measurements were as per guidelines.

B. Statistical Analysis - treatment group mortality was analyzed by Finney probit analysis.

10. Results -

The following mortatilies were reported:

Group	Treatment level	# Dead/10
1 (vehicle control)	0 mg/kg endosulfan	0
2 (Treatment)	5 " "	0
3 (")	10 " "	0
4 (")	20 " "	1
5 (")	40 " "	9
6 (")	80 " "	10

Birds in groups 4, 5 and 6 were "unsteady" after dosing. Survivors in groups 4 and 5 remained so for several hours, but were normal by the end of Day 1. All birds that died did so within 4 hours of dosing.

11. Reviewers's Evaluation

A. Procedures: guidelines protocols were followed. The birds were assigned to treatment groups on the basis of bodyweight "with the aim of all treatment groups having similar initial body weight means". Generally, this would not be acceptable if the mean body weights 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.

B. Statistical Analysis - analyzed and verified by EEB's computer program (Stephan's) for calculating 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 nor feed consumption data.

Gross post-mortem examinations 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 MALLARD ACUTE ORAL LD50

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
80	10	10	100	.0976563
40	10	9	90	1.07422
20	10	1	10	1.07422
10	10	0	0	.0976563
5	10	0	0	.0976563

THE BINOMIAL TEST SHOWS THAT 20 AND 40 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 28.2843

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
4	.114405	28.2843	20.737	42.1922

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
8	.332745	1	.999987

SLOPE = 8.52835
95 PERCENT CONFIDENCE LIMITS = 3.60885 AND 13.4478

LC50 = 28.2843
95 PERCENT CONFIDENCE LIMITS = 22.0823 AND 36.2281

LC10 = 20.0738
95 PERCENT CONFIDENCE LIMITS = 11.4987 AND 24.8936

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