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079401
SHAUGHNESSEY NO.

9
REVIEW NO.

EEB BRANCH REVIEW

DATE: IN 3-2-84 OUT 4-9-84

FILE OR REG. NO. 11678-5

PETITION OR EXP. PERMIT NO.

DATE OF SUBMISSION 1-12-84

DATE RECIEVED BY HED 2-28-84

RD REQUESTED COMPLETION DATE 4-28-84

EEB ESTIMATED COMPLETION DATE 4-21-84

RD ACTION CODE/TYPE OF REVIEW 655/Reg. Std.

TYPE PRODUCT(S): I, D, H, F, N, R, S Insecticide

DATA ACCESSION NO(S). 252229

PRODUCT MANAGER NO. G. LaRocca (15)

PRODUCT NAME(S) Endosulfan

COMPANY NAME Makhteshim-Agan (America) Inc.

SUBMISSION PURPOSE Submission of bobwhite quail acute oral LD50 study in support of registration standard

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
079401	Endosulfan tech.	97

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

17 APR 1984

MEMORANDUM

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

TO: G. LaRocca, PM Team 15
Registration Division - TS-767c

THRU: Dave Coppage, Head, Sec. 3
Ecological Effects Branch
Hazard Evaluation Division - TS-769c

THRU: Clayton Bushong, Chief
Ecological Effects Branch
Hazard Evaluation Division - TS-769c

SUBJECT: Acute Oral LD_{50} Study With Endosulfan and Bobwhite Quail; Acc. No. 252229.

The following study was reviewed and is acceptable to support registrations under the endosulfan registration standard.

Roberts, N.L. and C.N.K. Phillips. 1983. The acute oral toxicity (LD_{50}) of endosulfan technical to the Bobwhite quail. Prepared by Huntingdon Research Centre, Cambridgeshire, England submitted by Makhteshim-Agan (America), Inc., New York, N.Y.; under Acc. No. 252229.

The acute oral LD_{50} of technical endosulfan to Bobwhite quail (Colinus virginianus) is 42 mg/kg (35-56 mg/kg).

John J. Bascietto
Wildlife Biologist, Sec 3.
Ecological Effects Branch/HED TS-769c

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DATA EVALUATION RECORD

1. CHEMICAL: Endosulfan

2. FORMULATION: Technical 97.2%

3. CITATION: Roberts, N.L. and C.N.K. Phillips. 1983. The acute oral toxicity of endosulfan technical to the Bobwhite quail. Report prepared by Huntingdon Research Centre, Cambridgeshire, England; submitted by Makhteshim Agan (America) Inc., New York, N.Y. Reg. No. 116785; Acc: No. 252229.

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

5. DATE REVIEWED: 4/12/84

6. TEST TYPE: Avian Acute Oral LD_{50}
A) Bobwhite quail (Colinus virginianus)

7. REPORTED RESULTS:

LD_{50} = 42 mg/kg (35-56) mg/kg.
(95% c.i.)

8. REVIEWER'S CONCLUSIONS: The study is scientifically sound. With an LD_{50} = 42 mg/kg (35-56) mg/kg., endosulfan technical is considered "highly toxic" to upland game birds. The study fulfills the guidelines requirements for a avian acute oral LD_{50} for an upland game bird.

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9. Materials/Methods

A. Procedures: The protocol used was that recommended by the pesticide current pesticide hazard assessment guidelines (EPA - 540/9-82-024), Subdivision E, Oct., 1982.

B. Statistical Analysis - the authors calculated the LD_{50} and 95% confidence interval using the dose-mortality data and the Finney probit analysis method. (Finney, D.J. 1971. Probit Analysis. 3rd ed. Cambridge University Press).

10. Results

Table 1. gives the dose-response (mortality) data given in the report. Corn oil control birds (0 mg/kg) had no mortality. Mortality in treatment groups occurred within 24 hours and sporadically over 7 days after dosing. No mortality occured beyond 7 days after dose (birds were observed for 14 days after dosing).

Table 1. Mortality Observed

Group and Dose			No. Dead/10 birds per group (percent mortality)
1.	Corn oil control	0 mg/kg	0
2.	Endosulfan	10 mg/kg	0
3.	"	15 mg/kg	0
4.	"	23 mg/kg	0
5.	"	24 mg/kg	3 (30%)
6.	"	51 mg/kg	7 (70%)

Within 1 1/2 hours birds in Groups 4 and 5 showed "subdued" behavior but no mortality. Birds in Group 6 appeared "unsteady" at this time with 2 birds dying within 1 1/2 hours and 2 birds dying at 5 hours after dose in this group. By the end of Day 1 one bird in Group 5 could not stand and 2 birds had died (1 at 5 hours and 1 at 24 hours). Surviving birds in Group 6 were "very subdued" at 24 hours. On Day 2 the bird which could not stand in Group 5 on day 1, was now able to do so, but was still "unsteady". Birds in Groups 5 and 6 were still "subdued". 2 more birds died in Group 6 on Day 2 and 1 death on Day 4. One bird died in Group 5 on Day 7 but this bird showed no signs of ill health prior to death. Birds in groups 5 and 6 which were subdued, remained so until day 5. In the 7-day period following dose all birds except Group 5 females and Group 6 males show body weight gains. Most bodyweight changes observed in the 14 day period were considered "normal". Food consumption was variable but generally "normal".

No abnormalities were observed upon gross necropsy of all birds.

11. Reviewer's Evaluation

A. Procedures: acceptable

B. Statistics: acceptable

C. Results: The results indicate that endosulfon technical is "highly toxic" to bobwhite quail. The LD_{50} is 42 mg/kg (35-56) mg/kg. A review of the raw data on individual's bodyweights indicates no remarkable results. Group mean food consumption data (g/bird/day) likewise was not remarkable.

D. Conclusions

1. Category: Core

2. Rationale: Guidelines study

3. Repair: N/A