FORM 11

FDMS DATA EVALUATION RECORD PAGE 1 OF

CASE GS ___ _____ PM ___ ___/___/___

CHEM 105001 TERBUFOS

BRANCH EEB DISC ___

FORMULATION Technical, 89.6% a.i.

FICHE/MASTER ID FEØTERØ2

CITATION: Beavers, J. B. and R. Fink. (1982). Acute oral LD_{50} - Bobwhite Quail. Counter Terbufos technical. Final report. Proj. No. 130-133. (Unpublished study received Arpil 20, 1982 under Reg. NO. 241-238; prepared by Wildlife International LTD.; submitted by American Cyanamid Company, Princeton, N.J.;

SUBST. CLASS=

OTHER SUBJECT DESCRIPTORS
PRIM:

DIRECT REVIEW TIME= 30 min. (MH) START DATE 10/14/82 END DATE 11/29/82

REVIEWED BY: James. D. Felkel
TITLE: Wildlife Biologist
ORG: Ecological Effects Branch, Hazard Evaluation Division (TS-769)
LOC./TEL: Rm. 1128, CM#2 (703-557-7667)

SIGNATURE: James D. Felkel DATE: 12/10/82

APPROVED BY:
TITLE:
ORG:
LOC/TEL:

SIGNATURE: DATE:

Addition to W. Rabert's Conclusion block: The confirmed LD_{50} value of 28.6 mg/kg indicates that terbufos is highly toxic to the bobwhite quail.

5 pp.

DATA EVALUATION RECORD

1. CHEMICAL: Terbufos

S-[[(1,1-Dimethylethyl)thio]methyl] o,o-diethyl phosphorodithioate

2. FORMULATION: Technical -- 89.6 percent

3. CITATION:

Beavers, J. B. and R. Fink. (1982). Acute oral LD_{50} - Bobwhite quail. Counter® Terbufos technical. Final report. Proj. No. 130-133. (Unpublished study received April 20, 1982 under Reg. No. 241-238; prepared by Wildlife International LTD.; submitted by American Cyanamid Company, Princeton, N.J.; CDL:).

4. REVIEWED BY: W. S. Rabert
Biologist
EEB/HED
557-7696

5. DATE REVIEWED: 5/12/82

6. TEST TYPE: Avian Acute Oral LD_{50}

A. Test Species: Bobwhite Quail
(Colinus virginianus)

7. REPORTED RESULTS:

The acute oral toxicity study conducted with technical grade terbufos on bobwhite quail reported the acute oral LD_{50} to be 28.6 mg/kg of body weight with 95% confidence limits of 22.2 to 57.2 mg/kg. All mortality occurred in the first three days. Toxicity symptoms included lethargy progressing to depression, reduced reaction to external stimuli (sound and movement), loss of coordination, lower limb weakness, prostrate posture, loss of righting reflex, salivation, and lower limb rigidity.

8. REVIEWER'S CONCLUSIONS:

In general, the test procedures conformed to the recommended test protocols proposed in the Federal Register on July 10, 1978. The LD50 value was verified with the Stephan's program.

This study is scientifically sound and will support the guideline requirement for an avian acute oral LD_{50} study.

Materials/Methods

Test Material

The test material, Counter technical (H91108-0360), was identified as an amber liquid, of 89.6 percent purity. It was received on 22 December 1981.

The test material was dispersed in 50 ml of corn oil and intubated directly into the crop via a stainless steel catheter. Control birds were dosed with a corresponding volume of corn oil only.

Test Species

The birds used in the study were obtained from Wildlife International, Ltd.'s production flock. The birds were held in flight pens outside until two weeks prior to testing when they were placed in pens identical to those used for testing. The birds were 7 months old at testing.

Test Procedures

When cited, the test procedures generally followed the protocols set forth in the EPA proposed guidelines of July 10, 1978. Some specifics of note include:

age of the birds - 7 months;
treatment levels - 6.81, 10.0, 14.7, 21.5, and 31.6 mg/kg and a corn oil control;
number of birds - 10 birds per dose-level (5 males and five females);
duration of test - observation for 14 days pre- and post-dosing;

Statistical Analysis

Mortality was analyzed statistically by probit analysis.

Results/Discussion

Technical grade terbufos had a reported LD_{50} value of 28.6 (22.2 - 57.2) mg per kg of body weight. No mortality was found in either the controls or the 6.81 and 10.0 mg/kg test levels. Toxic symptoms included lethargy within three hours at lowest test level which generally lasted along with huddling through Day 1 for some birds and through Day 5 for others. Other toxicity symptoms included lethargy progressing to depression, reduced reaction to external stimuli (sound and movement), loss of coordination, lower limb weakness, prostrate posture, loss of righting reflex, salivation, and lower limb rigidity. All mortality occurred during the first three days.

Reviewer's Evaluation

A. Test Procedures

In general, the test procedures used in this study followed those set forth in the EPA proposed guidelines of July 10, 1978.

B. Statistical Analysis

The LD50 value was confirmed by the probit method with the Stephan's program.

C. Discussion

All aspects of the study were acceptable as reported.

D. Conclusions

1. Validation Category: Core.

2. Rationale: Not necessary.

3. Repairability: Not necessary.

William S. Rabert
William S. Rabert, Biologist
Section 2, EEB, HED
Date: May 13, 1982

David Coppage
David Coppage, Section Head
Section 3, EEB, HED
Date: June 10/1982

Clayton Bushong
Clayton Bushong, Chief
Ecological Effects Branch, HED
Date: 6/14/82

RABERT TERBUFOS BOBWHITE QUAIL ACUTE ORAL L050

NOTE TO REVIEWER: THIS DATA SET DOES NOT MEET
THE CRITERIA ESTABLISHED BY THE COMMITTEE ON
METHODS FOR TOXICITY TESTS WITH AQUATIC ORGANISMS
BECAUSE NO PERCENT OEAO IS GREATER THAN 65 PERCENT.

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
31.6	10	6	60	37.69531
21.5	10	2	20	5.46875
14.7	10	2	20	5.46875
10	10	0	0	0.09765625
6.81	10	0	0	0.09765625

THE BINOMIAL TEST SHOWS THAT 10 AND +INFINITY CAN BE
USEO AS STATISTICALLY SOUNO CONSERVATIVE 95 PERCENT
CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIOENCE LEVEL
ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 28.80791

RESULTS CALCULATED USING THE MOVING AVERAGE METHOO

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
1	1.25215	28.80791	19.64584	+INFINITY

RESULTS CALCULATEO USING THE PROBIT METHOO

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
5	0.4094846	1	0.6337758

SLOPE = 4.353761
95 PERCENT CONFIOENCE LIMITS = 1.567746 ANO 7.139775

LC50 = 28.5812
95 PERCENT CONFIDENCE LIMITS = 22.20987 AND 55.39152

LC10 = 14.60087
95 PERCENT CONFIDENCE LIMITS = 6.740164 AND 18.93497
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