

US EPA ARCHIVE DOCUMENT

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✓ (TDR03R)

CASE GS0097

CHLOROTHALONIL

C-24-83  
PM 400 08/03/82

CHEM 081961

Chlorothalonil ( tetrachloroisophthalon

BRANCH EEM DISC 40 TOPIC 05103043

FORMULATION

FICHE/MASTER ID RI 0 CHL 04 CONTENT CAT

Beavers, J. and R. Fink. 1981. Eight-day dietary LC50 - Bobwhite Quail. T-114-2.  
Unpublished study submitted by Diamond Shamrock Corp. Accession # 071097.

SUBST. CLASS = 5.

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

REVIEWED BY:

TITLE:

ORG:

LOC/TEL:

*Daniel Rieder*  
*wildlife Biologist*  
*EEB/HED*

SIGNATURE:

*Daniel Rieder*

DATE: *6/24/83*

APPROVED BY:

TITLE:

ORG:

LOC/TEL:

SIGNATURE:

DATE:

Data Evaluation Record

1. Chemical: 4-hydroxy -2,5,6,-trichloroisophthalonitrile  
(DS-3701)
2. Formulation: 99%; analytical grade.
3. Citation: Beavers, J. and R. Fink. 1981. Eight-day dietary LC<sub>50</sub>-  
Bobwhite Quail. T-114-2. Final Report. Unpublished study  
submitted to Diamond Shamrock Corp., Plainesville, Ohio, by  
Wildlife International, Ltd., St. Michael's Md. Registration  
No. 677-313. Accession No. 071097.
4. Reviewed by: John J. Bascietto  
Wildlife Biologist  
EEB/HED
5. Date Reviewed: Nov 9, 1982
6. Test Type: Subacute toxicity - Avian dietary LC<sub>50</sub>
  - A. Test species: Bobwhite quail  
(Colinus virginianus)
7. Reported Results:

The dietary LC<sub>50</sub> of this compound in the Bobwhite quail is  
1746 ppm, confidence limits 1384 ppm to 2261 ppm.
8. Reviewer's Conclusions:

This study is scientifically sound and with an LC<sub>50</sub> = 1746 ppm (1384 -  
2261 ppm), DS-3701 (a degradation product of chlorothalonil), is  
considered "slightly" toxic to Bobwhite quail. The study fulfills  
the requirement for an avian dietary toxicity test of this compound.

9. Materials and Methods

- A. Test procedures - The protocol and procedures used closely follow the E.P.A. recommended protocol for an 8-day dietary LC<sub>50</sub> test with Bobwhite quail, as discussed in the July 10, 1978 Proposed Guidelines.
- B. Statistical Analysis - LC<sub>50</sub> and 95% confidence limits were calculated from the raw dose-mortality data by the "PROBIT" computer program of the Statistical Analysis System (SAS; Carey, North Carolina).

10. Results

Dose-Mortality Response

Test Conc. (ppm)	No. Dead/No. tested (On Day 8)
(control) 0	0/50 (5 sets of 10)
562	0/10
1000	1/10
1780	4/10
3160	10/10
5620	10/10

LC<sub>50</sub> + 95% c.i. = 1746 ppm (1384 - 2261 ppm)

Body weight gain and food consumption -

Except for the 562 and 1000 ppm treatment levels the authors observed a dose-related reduction in body weight gain of surviving birds. Also a dose related reduction in food consumption per bird per day was observed at all treatment levels except 562 ppm (as compared to controls). Control quail doubled their initial test weights during this test. Quail at 562 ppm almost doubled their initial test weights while the 1000 ppm group had a near normal, but somewhat smaller weight gain. Birds at 1000 ppm had 19% reduced food consumption per bird per day as compared to controls. At 1780 ppm there was no weight gain and a 60.5% reduction in food consumption per bird per day. The early total mortality at 3160 and 5620 ppm (Day 6 and Day 5 respectively) severely depressed the food consumption per bird per day results (> 86% reduction).

Symptoms of Toxicity -

At 1000 ppm - some wing droop first observed on Day 3. By Day 5 one bird exhibited depression and reduced reaction to sights and sounds. Lethargy was also noted in several birds on Day 5 and by Day 6 three birds continued to exhibit this symptom, while one bird was depressed with reduced reaction to stimuli and a prostrate posture with loss of righting reflex. By Day 7 surviving birds were asymptomatic.

At 1780 ppm some wing droop on Day 3. By Day 4, reduced reaction to stimuli with a few birds showing wing droop, loss of coordination, and lower limb weakness. Day 6 two birds had all above symptoms plus prostrate posture

and loss of righting reflex. By Day 8 all survivors were asymptomatic. At 3160 and 5620 ppm - symptoms prior to deaths included lethargy, depression, reduced reactions, wing droop, loss of coordination, lower limb weakness, prostrate posture, and loss of righting reflex.

Necropsy of birds that died on test showed lesions associated with reduction of food intake - these included reduced body weight, empty gastrointestinal tracts, enlarged gall bladder. A number of these birds also showed pale kidneys and a small and darkened spleen. Gross necropsy of birds sacrificed at test termination revealed no abnormalities other than light body weight - except for one bird at 1780 ppm which also had a small, dark spleen. No abnormalities were observed in controls.

#### Reviewer's Evaluation

- A. Procedure - the procedures used, as well as dose levels, numbers and health of birds, were all within acceptable values as outlined by the Proposed Pesticide Registratin Guidelines of July 10, 1978, and are accepted by EEB.
- B. Statistical Analysis - The "Probit" program used produced an acceptable LC<sub>50</sub> and 95% c.i. for these data.
- C. Results - the results obtained refer to DS-3701 which is a product of Chlorothalonil degradation.

Dietary toxicity results are in agreement with the raw data obtained, so that with a LC<sub>50</sub> = 1746 ppm (1384-2261 ppm), DS-3701 is considered "slightly" toxic to Bobwhite quail when administered in a test diet.

The toxic symptoms exhibited by quail on test indicate that a "no observable effect level" is 562 ppm. at 1000 ppm the toxic symptoms observed could cause disruption of normal life funtions necessary for young birds survival in the wild. Toxic symptoms at >1000 ppm were very severe and more widespread and, in the wild, would present an excessive amount of stress, likely leading to death for the young birds affected.

#### D. Conclusions

1. Category: Core
2. Rationale: Guidelines study
3. Repair: N/A