(10-5-87)

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DATA EVALUATION REPORT

1. Chemical: Cyhalothrin

2. Test Material: Technical, 89.2% AI

3. Study/Action Type: Avian Dietary LC_{50} Study
Species: Bobwhite Quail (Colinus virginianus)

4. Study Identification: The Subacute Dietary Toxicity of Cyhalothrin to the Bobwhite Quail, by N.L. Roberts, C. Fairley and R.N. Woodhouse. Prepared by ICI, Ltd., July 1981. Submitted by Coopers Animal Health Inc., Kansas City, Mo. EPA Acc. No. 073221.

5. Review By: Ann Stavola
Aquatic Biologist
HED/EEB
Signature: Ann Stavola
Date: May 6, 1985

6. Approved By: Douglas Urban
Supervisory Biologist
HED/EEB
Signature: Douglas J. Urban
Date: 10/5/87

7. Conclusions:

The study is scientifically sound but does not fulfill our Guideline requirements for an avian dietary study on upland gamebirds. An LC_{50} of 2354 ppm indicates that cyhalothrin is slightly toxic to upland gamebirds.

8. Recommendations:

The study can be upgraded to core if the registrant can satisfactorily explain the high mortality at 2610 ppm ai. The study can be acceptable at present, if the registrant will accept our LC_{50} calculation of 2354 ppm ai.

9. Background:

This study was submitted to support the request for EUP's for Grenade 5% and Grenade 20% insecticides.

10. Materials and Methods

A. Test Animals: One-day old bobwhite quail (Colinus virginianus) were obtained from Lincolnshire Pheasantries, Ltd. When the birds were 7 days old they were randomly allocated to the several treatment groups, and when they were 10 days old they were fed the treated diet. There were 10 birds per treatment level.

B. Dose: The test compound, cyhalothrin, 89.2% ai, was mixed in corn oil and then incorporated into the standard chick diet. Controls were fed corn oil in the chick diet.

C. Study Design Each group of 10 birds was fed one of the nominal concentrations of cyhalothrin: 0, 1000, 1400, 1960, 2744, 3842, 5378, or 7530 ppm. These diets were analyzed for cyhalothrin content. The birds were fed the treated diets for 5 days and were then observed for 3 additional days. The birds were examined at the end of the study for gross pathological changes.

D. Statistics: No LC_{50} value could be calculated.

11. Reported Results:

Nominal Conc. PPM	Mean Measured Conc. PPM	Percent Mortalities
0	0	0
1000	1010	0
1400	1430	0
1960	1880	0
2744	2610	80
3842	3690	10
5378	5330	0
7530	7520	10

At 2 days pretreatment all birds at the 1000 ppm level died. The infrared lamp over the pen slipped and caused the birds to die of overheating. All these birds were replaced with birds kept for this purpose which were of the same age and from the same batch as the birds placed in the test groups. Otherwise all birds appeared to be healthy.

During days 1 to 5 there was a very slight decrease in the mean body weights of the birds fed $\geq$ 2744 ppm. During days 5 to 8 the increases in mean body weights were similar in treated and control groups.

Food consumption data were variable due to much food spillage. Food consumption was somewhat lower on day 4 in the groups at 3842 and 7530 ppm.

Postmortem examination showed no abnormalities.

12. Study Author's Conclusions/QA Measures

LC_{50} > 7530 ppm (7520 ppm ai)

"To the best of my knowledge and belief, this study was conducted in compliance with Good Laboratory Practice regulations as set forth in 'Title 21 of the U.S. Code of Federal Regulations, Part 58,' with the exception of possible minor items, none of which is considered to have an impact on the validity of the data or the interpretation of the results in the report."

13. Reviewer's Discussion:

A. Test Procedure: The procedures follow those recommended by EPA in the 1978 Proposed Guidelines and the 1982 Guidelines, Subpart E.

B. Statistical Analysis: See Next Section

C. Discussion/Results: The data indicate that 80% of the quail fed 2610 ppm ai died while on the treated diet. Five birds died on day 3, one died on day 2, and two on day 4. No explanation is given about these deaths. In fact, neither the body weight data or the food consumption data for this group indicates anything different from the other groups.

Because of the high mortality at an intermediate test level, it cannot be stated that the LC_{50} value exceeds the highest test level. Therefore an LC_{50} value, based on the mortalities from 1010 ppm ai to 2610 ppm ai was calculated using EEB's Toxanal program. The LC_{50} value is 2354 ppm ai which indicates technical cyhalothrin is slightly toxic to upland gamebirds.

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D. Adequacy of the Study

1. Classification: Supplemental

2. Rationale: Although the study is scientifically sound, it does not meet our Guideline requirements for an avian dietary study.

3. Repairability: The study can be upgraded to core if the registrant can satisfactorily explain the high mortality at an intermediate test level. The study can be considered acceptable at present if the registrant will accept our LC_{50} calculation of 2354 ppm ai.

STAVOLA CYHALOTHRIN QUAIL DIETARY

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
2610	10	8	80	5.46875
1880	10	0	0	.0976563
1430	10	0	0	.0976563
1010	10	0	0	.0976563

THE BINOMIAL TEST SHOWS THAT 1880 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 2353.93

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

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