2-6-91

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DATA EVALUATION RECORD

1. CHEMICAL: OCTHILINONE

2. TEST MATERIAL: Octhilinone technical 98.5% active ingredient Lot #3192, yellow/tan liquid

3. STUDY TYPE: Avian Single-Dose Oral LD50 Bioassay

4. CITATION: Pedersen, C.A. (1990). Octhilinone: 21-Day Acute Oral LD50 Study in Bobwhite Quail. Study conducted by Bio-Life Associates, Ltd. Neillsville, WI. BLAL # 89 QD 140, R & H Protocol # 90P-020, R & H Report #90RC-0020. Submitted by Rohm and Haas Company, Spring House, PA. Accession No. 416080-01.

5. REVIEWED BY:

Greg Susanke, Biologist
Ecological Effects Branch
Environmental Fate and Effects Division (H7507 C)

Greg Susanke 11/27/90

6. APPROVED BY:

Les Touart, Acting Section Head
Ecological Effects Branch
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2/6/91

7. CONCLUSION:

This study appears scientifically sound and fulfills the Guideline requirement (71-1) for an acute oral LD50 study on Bobwhite Quail. The LD50 of octhilinone is 660 mg a.i./kg, therefore it is considered slightly toxic. The NOEL was not determined.

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8. MATERIALS AND METHODS:

A. Test Organisms:

Species- Bobwhite Quail (Colinus virginianus)

Supplier- Oak Ridge Farm, Gravette, AR.

Age- 19 weeks at test initiation

Acclimation period- There was a 15 day quarantine period to determine their suitability and to acclimate them to test conditions: 10 hour/day fluorescent lighting, temperature ranged from 34 - 76 °F, relative humidity was between 60 and 100%, and birds were fed Purina Duck Grower W/O. There were two mortalities out of seventy birds total.

B. Test System:

Pen size- 61.0 cm x 53.3 cm x 38.1 cm wire pens

Environmental temperature- 62 - 83 °F

Relative humidity- 56 - 90%

Photoperiod- fluorescent lighting 10 hours/day

Dose preparation- Doses for each treatment bird were volumetrically measured and administered via gelatin capsules.

C. Test Design:

Range finding test- There was a 7 day range finding test which used 1 male and 1 female per treatment level (215, 316, 464, 681 mg a.i./kg of body weight). There was one mortality at 464 and two mortalities at 681 mg a.i./kg. Chalky diarrhea was observed but total remission was achieved by the end of day 4.

Definitive test

Nominal concentrations- 215, 316, 464, 681, and 1,000 mg a.i./kg. Dose levels were based on a geometric scale of 1.47.

Controls- Control bird received a gelatin capsule only.

Number of test organisms- 5 males and 5 females per treatment level plus control. Birds were individually identified by the use metal wing tags.

Biological observations- Observations for toxic effects and mortalities were conducted daily.

Physical parameter measurements- The abundance of food and water, and food spillage was inspected daily. Quail were individually weighed at 0 hour, and on test days 3, 7, 14, and 21. The food consumption of each treatment group was weighed on days 3, 7, 14, and 21. Specific gravity of octhilinone was determined to be 1.07 g/ml.

Feeding- All birds were fasted (except for water) for approximately 19.5 hours prior to dosing at test initiation.

9. REPORTED RESULTS:

Body weights- There was a statistically significant decrease in the mean body weight of all treatment groups on day 3 and day 7.

Food consumption- Food consumption was decreased at 215 and 316 mg a.i./kg through day 3. It was decreased at 464 and 681 mg a.i./kg through day 7, and it remained reduced through day 21 at 1000 mg a.i./kg.

Mortality and observations- One mortality occurred at 464 mg a.i./kg, six mortalities occurred at 681 mg a.i./kg, and nine mortalities occurred at 1000 mg a.i./kg. Signs of toxicity such as chalky diarrhea, lethargy, anorexia (based upon food consumption), and body weight loss were observed in all treatment levels. By the end of day 15 all signs of toxicity ceased except for anorexia.

Gross pathology- Two arbitrarily selected male and female quail from each of the control and 215, 316, and 464 mg a.i./kg groups as well as the surviving birds from the 681 (4 survivors) and 1000 mg a.i./kg group (1 survivor) were subjected to gross pathological examinations at the termination of the observation period.

At 464 mg a.i./kg, one bird had a small hole in the viscera covering the crop, in another a hard mass was attached to the viscera covering the crop and in another calloused skin covered the crop. At 681 mg a.i./kg one bird had a hard mass attached to the viscera covering the crop, and in another calloused skin covered the crop. At 1000 mg a.i./kg the only surviving bird was severely

emaciated and its crop had become a hard mass.

Five of the sixteen birds that died during the study revealed abnormal pathological findings. At 681 mg a.i./kg, one bird had a large amount of gel-like substance subdermally in the crop area. At 1000 mg a.i./kg, the lung region was very bloody in one bird, and in two others there was a moderate amount of fluid in the abdominal cavities. In the fourth bird, the intestines were gaseous, it was emaciated, and there was a hard mass attached to the viscera covering the crop.

10. STUDY AUTHORS'S CONCLUSIONS / QUALITY ASSURANCE MEASURES:

The acute oral LD50 of octhilinone was determined to be 680 mg a.i./kg of body weight with 95% confidence limits of 523 - 884 mg a.i./kg of body weight. A no observed effect level was not achieved.

Quality Assurance and Good Laboratory Practice Regulation Statements were included in the report, indicating that the study was conducted in accordance with the FIFRA Good Laboratory Practice Standards set forth in 40 CFR Part 160.

11. REVIEWER'S DISCUSSION AND INTERPRETATION OF STUDY RESULTS:

A. Test Procedure: The test procedures were generally in accordance with protocols recommended by the Guidelines.

B. Statistical Analysis: The LD50 was calculated by the Ecological Effects Branch Toxanol computer program which used the Probit Method.

C. Discussion/Results: The study results appear to be scientifically valid. The LD50 = 660 mg a.i./kg of body weight, and the 95% confidence limits are 554 - 795 mg a.i./kg. A NOEL was not determined in this study. Octhilinone is classified as slightly toxic on an acute oral basis.

D. Adequacy of the Study:

1. Classification: Core

2. Rationale: N/A

3. Repairability: N/A

12. COMPLETION OF ONE-LINER FOR STUDY: yes

Greg Susanke octhilinone Acute Oral LD50

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
1000	10	9	90	1.074219
681	10	6	60.00001	37.69531
464	10	1	10	1.074219
316	10	0	0	9.765625E-02
215	10	0	0	9.765625E-02

THE BINOMIAL TEST SHOWS THAT 464 AND 1000 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 635.01

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
3	.1678587	658.5223	552.2299	837.0519

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	)ODNESS OF FIT PROBABILITY
8	.2658711	1	.9621311

SLOPE = 7.992141
95 PERCENT CONFIDENCE LIMITS = 3.871177 AND 12.1131

LC50 = 659.5911
95 PERCENT CONFIDENCE LIMITS = 553.5291 AND 795.1841

LC10 = 457.4763
95 PERCENT CONFIDENCE LIMITS = 297.0802 AND 546.7943

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