DATA EVALUATION RECORD

1. CHEMICAL: Strychnine Alkaloid

2. TEST MATERIAL: Strychnine Alkaloid

3. STUDY TYPE: Acute Dietary LC50 (5-day)

4. CITATION AND MRID NO: Record, R.C., 1987. Tests to Determine the Dietary LC-50 of Strychnine Alkaloid to Red Foxes (Vulpes fulva) MRID # 402965-03

5. AUTHORS, STUDY DATE, TEST LABORATORY:
Raymond C. Record, June 1987, Summit Laboratories

6. REVIEWED BY:

Richard W. Felthousen
Wildlife Biologist
EEB/EFED

Signature: Richard W. Felthousen
Date: 8/14/91

7. APPROVED BY:

for Norm Cook
Supervisory Biologist
EEB/EFED

Signature: Allen W. Vaughan
Date: 8.20.91

8. CONCLUSIONS:

The study has been found to be inadequate to support registration because there were insufficient number of test animals per treatment level. The study can be used as supplemental data for a hazard assessment.

9. RECOMMENDATIONS: N/A

10. BACKGROUND: The USEPA required Registrants of strychnine treated egg baits to provide data determining the dietary LC50 of strychnine alkaloid to the Red Fox.

11. DISCUSSION OF INDIVIDUAL TESTS:

12. MATERIALS AND METHODS:

A. Test Animals: Red Fox (Vulpes fulva)

B. Dosage: 22, 44, 88 and 176 ppm

C. Test System: pen study

D. Test Design and Procedures: Test animals were young adult (approximately 1 year old) red foxes obtained from the Shadeland Fur Farm, Crawfordsville, Indiana.

adult (approximately 1 year old) red foxes obtained from the Shadeland Fur Farm, Crawfordsville, Indiana. Animals were housed outdoors in individual galvinized wire cages (92 cm wide, 92 cm long by 81 cm high). Ambient temperatures were recorded daily.

Test animals were fed a ration of commercial fox food pellets and water.

Range finding tests were performed to determine the concentrations to be tested. Test diets were prepared by taking a stock solution of strychnine and mixing with appropriate amounts of water and acetic acid to achieve a standard volume solution per unit of fox food, then measured into the fox food and mixed to the desired test concentration. All diets were refrigerated until used.

The concentrations tested were 110, 165, 220 and 275 ppm. Samples of the test diets were submitted to the Wyoming Department of Agriculture Division of State Laboratories for analysis. The observed analysis was within 90% of the expected concentration for all treatment levels.

Food consumption was determined for each day and all foxes were weighed at the beginning and end of each test. Symptoms of toxicosis were noted and all dead animals were subjected to gross necropsy.

E. Statistics: Litchfield/Wilcoxin Method

13. REPORTED RESULTS:

The calculated dietary LC50 of strychnine alkaloid to the red fox was reported to be 70 ppm with 95 percent confidence limits of 52 to 96 ppm. Symptoms of toxicosis included paresis, immobility, goose stepping ataxia and tetanic seizures.

14. STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:
No conclusions or quality assurance measures reported.

15. REVIEWER'S DISCUSSION:

A. Test Procedure: With the exception for the number of test animals per treatment level the test procedure was adequate to determine an LC50 value.

B: Statistical analyses: See attached

C. Discussion/Results: The EEB is aware that Summit Laboratories was the subject of an EPA audit to determine if Good Laboratory Practice was adhered to

during the conduct of these tests. The conclusion was, that although GLP was not followed, for certain practices, deviations from GLP should not have significantly altered the results of the study.

D. Adequacy of the Study:

(1) Classification: Supplemental

(2) Rationale: The study provides some information relative to the toxicty of strychnine alkaloid to the red fox, however, because insufficient number of animals per concentraton were used, (only 6 animals per treatment were used an a minimum of 10 is required) the study cannot be considered adequate to support registration.

(3) Repairability: Provided the Registrant can make a scientifically sound argument as to why the LC50, as established for the 6 animals tested, would not differ significantly from an LC50 value for 10 animals, the EEB would consider upgrading the study to CORE status.

fite strychnine fox 10-15-87

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
176	6	5	83.33333	10.9375
88	6	5	83.33333	10.9375
44	6	2	33.33334	34.375
22	6	0	0	1.5625

THE BINOMIAL TEST SHOWS THAT 0 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 54.97519

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
3	.3638307	61.17771	33.70979	108.8918

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
5	.4267526	1	.385542

SLOPE = 3.322256

95 PERCENT CONFIDENCE LIMITS = 1.151949 AND 5.492563

LC50 = 64.0636

95 PERCENT CONFIDENCE LIMITS = 36.76477 AND 113.1157

LC10 = 26.56691

95 PERCENT CONFIDENCE LIMITS = 4.437506 AND 43.46251

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