INERT INGREDIENT INFORMATION IS NOT INCLUDED

DATA EVALUATION RECORD

1. CHEMICAL: Avermectin B_1

2. FORMULATION: Avermectin B_1 Fire Ant Bait (100 mg/lb [redacted]

3. CITATION: EG & G Bionomics. 1981. Acute toxicity of L-676, 863 35U01 to rainbow trout (Salmo gairdneri). Submitted to Merck Sharp & Dohme, Rahway, N.J. Accession No. 246358 in 618-EUP-10.

4. REVIEWED BY: Mary L. Gessner
   Fishery Biologist
   HED/EEB

5. DATE REVIEWED: 12/16/81

6. TEST TYPE: 96-hour acute toxicity of formulated product to rainbow trout.

   Test Species: Rainbow trout

7. REPORTED RESULTS: The 96-hour LC_{50} (and 95% C.I.) for rainbow trout exposed to L-676, 863 35U01 was 23(16-32) ppm.

8. REVIEWER'S CONCLUSIONS: This study is scientifically sound and with an LC_{50} of 19.4 ppm, L-676, 863 35U01 is slightly toxic to rainbow trout. This study is not adequate to fulfill the guideline requirement for formulated product testing with coldwater fish. Undissolved test material in the test chambers may have caused actual exposure concentrations to be somewhat less than the nominal concentrations. An LC_{50} cannot be calculated without measured concentrations.

Materials/Methods

Test Procedure

Fish were obtained from a commercial supplier and held in a 500 liter fiberglass tank under a 16-hour light/8-hour darkness photoperiod. Fish were fed a dry pelleted food, ad libitum, daily up to 48 hours prior to testing. There was <2% mortality in the test fish population during the 2 days prior to testing. Water in the holding tank had a total hardness of 20-25 mg/l, alkalinity of 20-28 mg/l, specific conductance of 90-110 umhos/cm, pH of 6.8-7.1 and DO of 73-90% saturation. Test fish were held for a minimum of 14 days prior to testing.

Testing was conducted in 19.6 L glass jars containing 15L of solution. Dilution water was reconstituted water with the following characteristics: total hardness - 37 mg/l $CaCO_3$, alkalinity - 33 mg/l $CaCO_3$, pH-7.5, and conductance - 140 umhos/cm. Test tanks were maintained at 12 ± 1°C, with no aeration. Ten rainbow trout, mean weight 0.14 (0.05-0.23)g and mean total length 27 (25-30)mm, were randomly distributed to each test jar. Fish were not fed during the exposure period. Mortalities and behavioral observations were recorded at 0,24,48,72 and 96 hours. The pH and DO were recorded at 0,24,48 and 96 hours.

Statistical Analysis

The 96-hour LC_{50} and 95% C.I.s were estimated by the moving average angle method.

Discussion/Results

The 96-hour LC_{50} and 95% C.I.s for bluegill sunfish exposed to L-676, 863 35U01, was estimated to be 23(16-32) mg/l.

Reviewer's Evaluation

A. Test Procedure

Test procedure generally followed EPA-recommended protocol. Fish were smaller than the recommended 0.2-5.0g.

B. Statistical Analysis

Data was validated using the Stephan's program, with the following results:

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
100	10	10	100	0.09765625
60	10	10	100	0.09765625
36	10	6	60	37.69531
22	10	6	60	37.69531
13	10	2	20	5.46875

THE BINOMIAL TEST SHOWS THAT 2.2 AND 60 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 LC_{50} FOR THIS SET OF DATA IS 19.38826

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
3	0.214484	23.16161	15.97403	30.19119

RESULTS CALCULATED UISNG THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
6	0.2582691	1	0.3897997

SLOPE = 3.663794
95 PERCENT CONFIDENCE LIMITS = 1.801847 AND 5.525741

LC50 = 22.13896
95 PERCENT CONFIDENCE LIMITS = 14.82583 AND 29.48606

LC10 = 9.966029
95 PERCENT CONFIDENCE LIMITS = 3.417806 AND 14.86698

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C. Discussion/Results

Test concentrations may have been lower than the reported nominal concentrations. All of the test material did not go into solution, therefore, acutal measured concentrations are required before an acceptable LC_{50} can be calculated. Presently there is no requirement for formulated product testing with this chemical. Final DO in all tanks was below the lowest allowable percent saturation (40%).

D. Conclusions

1. Category: Supplemental

2. Rationale: The calculated LC_{50} was based on nominal concentrations, which may not have been maintained throughout the test period. There is presently no requirement for formulated product testing on this chemical.

3. Repairability: None