081901

Catfish
3-12-80

DATA EVALUATION SHEET

1. CHEMICAL: Bravo 500

2. FORMULATION: Chlorothalonil

3. CITATION

Stiefel, Charlotte, 1979. Acute Toxicity of T-117-2 to Channel Catfish (Ictalurus punctatus). An unpublished report prepared by EG & G Bionomics for Diamond Shamrock Corporation, Painesville, Ohio (Acc. No. 099247).

4. REVIEWED BY: Daniel Rieder
Wildlife Biologist
EEB/HED

5. DATE REVIEWED: March 12, 1980

6. TEST TYPE: 96-hour Acute Toxicity

A. Test Species: Channel Catfish (Ictalurus punctatus)

B. Test Material: Chlorothalonil (Technical, 96%)

7. REPORTED RESULTS

The 96-hour LC_{50} for channel catfish exposed to chlorothalonil (96% pure), was estimated by the binomial probability method to be 43 ppb. No mortalities occurred in the controls or in the test concentrations up to 26 ppb. 100% mortality occurred in the 70-330 ppb concentration level.

8. REVIEWERS CONCLUSION

A. Validation Category: Supplemental

B. Discussion

This study was conducted scientifically, and demonstrates that chlorothalonil could be very highly toxic to channel catfish. It does not fulfill the requirements for an acute toxicity test for fish.

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METHODS/RESULTS

A. Test Procedures

Two groups of five fish were tested in separate 19.6L containers at each concentration level, and in the control and solvent control. The levels of test concentration were 16, 26, 43, 70, 120, 200, and 330 ppb. DO was measured at 24-hour intervals in the controls and in the high, medium and low test concentrations. The fish were held 48 hours without food prior to the test.

B. Statistical Analysis

The 96-hour LC_{50} was calculated to be 43 ppb, using the binomial probability method.

C. Results

The 96-hour LC_{50} was estimated at 43 ppb. There was 100% mortality in the 70 ppb test concentration and higher. No deaths occurred in the controls or up to the 26 ppb concentration level. One concentration, 43 ppb, had a partial kill of 30%. The DO content at the end of the test in the 330 ppb concentration was, 8% and 25% (two containers per concentration level). For the 70 ppb and 16 ppb, the DO was 10% - 14% and 22% - 26% respectively. The DO in the solvent control dropped to 11% while it remained high in the normal control. The test containers and the solvent control became cloudy.

REVIEWERS EVALUATION

A. Test Procedure

The protocol generally met requirements for an acute toxicity test except that the DO content was low at the end of the test in addition it should have been measured in each concentration. Also, since the fish were fed up until 48 hours before, the cloudiness could have been the result of fecal material reacting with the chlorothalonil.

B. Statistical Analysis

An LC_{50} was calculated during the review using Stephans computer analysis, the results are attached to the original review. The resulting LC_{50} is 48 ppb. However, since there was only one partial (between 0% and 100%) kill, sound statistical analysis was not possible. It is reasonable to assume that the LC_{50} for chlorothalonil in channel catfish would be between 26 and 70 ppb.

C. Discussion

It is possible that the low DO was responsible for the mortality occurring in this toxicity test.

D. Conclusions

1. Category: Supplemental

2. Rationale

Due to the following items, this test does not meet the requirements for an acute toxicity test for fish.

a. The DO was only measured in the high, medium and low test concentrations.

b. The DO dropped to well below 40% of saturation at the end of 96 hours.

c. The fish were fed up until 48 hours prior to testing.

3. Repairability: N/A

CHLOROTHALONIL
CATFISH
Daniel Rieder
3/12/80

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
120	10	10	100	9.76563E-2
70	10	10	100	9.76563E-2
43	10	3	30.	17.1875
26	10	0	0	9.76563E-2
16	10	0	0	9.76563E-2

THE BINOMIAL TEST SHOWS THAT 26 AND 70 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 48.0594

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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