

US EPA ARCHIVE DOCUMENT

12-16-82

CASE GS0097

CHLOROTHALONIL

PM 400 08/03/82

CHEM 081901

Chlorothalonil (tetrachloroisophthalon

BRANCH EEB

DISC 40 TOPIC 05103043

FORMULATION 01 - TECHNICAL CHEMICAL

FICHE/MASTER ID 00030390

CONTENT CAT 01

Shults, S.K.; Killeen, J.C., Jr.; Heilman, R.D.; et al. (1980) Chlorothalonil (Technical) Acute Toxicity (LC50) Study in Channel Catfish. (Unpublished study including report # BW-79-6-460, received Feb 19, 1980 under 677-313; prepared in cooperation with EG&G, Bionomics, submitted by Diamond Shamrock Agricultural Chemicals, Cleveland, Ohio; CDL:099247-E)

SUBST. CLASS = S.

DIRECT RVW TIME =

(MH) START-DATE

END DATE

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DATA EVALUATION SHEET

1. CHEMICAL: Bravo 500
2. FORMULATION: Chlorothalonil
3. CITATION:

Shults, S.K.; Killeen, J.C., Jr., Heilman, R.D.; et al. (1980). 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 An unpublished report prepared by EG & G Bionomics for Diamond Shamrock Corporation, Painesville, Ohio (Acc.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. REVIEWER: Daniel Rieder
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5. REVIEW DATE: 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 LC₅₀ 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: Core
 - B. Discussion

This study was conducted scientifically, and demonstrates that chlorothalonil could be very highly toxic to channel catfish. It fulfills the requirements for an acute toxicity test for warmwater fish.

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METHODS/RESULTSA. 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 LC₅₀ was calculated to be 43 ppb, using the binomial probability method.

C. Results

The 96-hour LC₅₀ 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.

| <u>Conc. (ppb)</u> | <u>Number Tested</u> | <u>96-hour</u> | |
|--------------------|----------------------|----------------------|--------------------------|
| | | <u>Mortality (%)</u> | <u>DO (% saturation)</u> |
| Control | 10 | 0 | 47-51 |
| Acetone Control | 10 | 0 | 47-51 |
| 16 | 10 | 0 | 22-26 |
| 26 | 10 | 0 | 10- |
| 43 | 10 | 30 | - |
| 70 | 10 | 100 | 10-14 |
| 120 | 10 | 100 | - |
| 200 | 10 | 100 | - |
| 330 | 10 | 100 | 8.25 |

REVIEWERS EVALUATIONA. 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 LC₅₀ was calculated during the review using Stephens computer analysis, the results are attached to the original review. The resulting LC₅₀ 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 LC₅₀ for chlorothalonil in channel catfish would be between 26 and 70 ppb.

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C. Discussion

It is possible that the low DO was partially responsible for the mortality occurring in this toxicity test. However since the DO was low (11 ppm) in the solvent control and no fish died it is expected that the mortality in the higher test levels was really a result of the chlorothalonil.

D. Conclusions

1. Category: Core