

CASE GS0097

CHLOROTHALONIL

PM 400 08/03/82 12-16-82

CHEM 081901

Chlorothalonil (tetrachloroisophthalon

BRANCH EEB DISC 40 TOPIC 05103043

FORMULATION 01 - TECHNICAL CHEMICAL

FICHE/MASTER ID 00056486

CONTENT CAT 01

Shults, S.K.; Killeen, J.C., Jr.; Heilman, R.D. (1980) Chlorothalo-
nil (Technical) Acute Toxicity (LC50%) Study in Rainbow
Trout. (Unpublished study including report # BW-79-6-461, re-
ceived Feb 19, 1980 under 677-313; prepared in cooperation with
EG&G, Bionomics, submitted by Diamond Shamrock Agricultural
Chemicals, Cleveland, Ohio; CDL:099247-C)

SUBST, CLASS = S.

DIRECT RVW TIME =

(MH) START-DATE

END DATE

REVIEWED BY:

Daniel Rieder

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12/16/82

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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. (1980).
Chlorothalonil Acute Toxicity Study in Bluegill.
An unpublished report prepared by EG & G Bionomics for
Diamond Shamrock Corporation. (Accession Number 099247).

4. REVIEWER: Daniel Rieder
Wildlife Biologist
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5. REVIEW DATE: March 7, 1980 ?

6. TEST TYPE: 96-hour Acute Toxicity.

A. Test Species: Rainbow trout (Salmo gairdneri)

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

✓ 7. REPORTED RESULTS

The reported 96-hour LC₅₀ is 4⁷ ppb with 95% confidence limits of 32-68 ppb. The highest concentration in which no mortalities occurred was 32 ppb. All 10 fish died in the 68 ppb concentration.

8. REVIEWERS CONCLUSION

A. Validation Category: Supplemental

B. Discussion

This study was conducted scientifically and indicates that chlorothalonil could be very highly toxic to rainbow trout. However, it does not fulfill the requirements for an acute toxicity test for fish.

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METHODS/RESULTSA. Test Procedures

Test protocol followed those described in "Methods for acute toxicity tests with fish, macroinvertebrates, and amphibians" (U.S. EPA, 1975). Ten fish were used in each of the 7 test containers and in the solvent control and control. The concentrations were nominally; 8.8, 15, 22, 32, 46, 68, and 100 ppb active ingredient. Active Ingredient purity was 96%. Dissolved Oxygen content was measured in the controls and at the high (100 ppb), medium (32 ppb) and low (8.8) concentration.

B. Statistical Analysis

The 96-hour LC₅₀ and its 95% confidence limits was calculated by the binominal probability method.

C. Results

The 96-hour LC₅₀ for rainbow trout exposed to chlorothalonil is estimated at 47 ppb with 95% confidence limits of 32-68 ppb. No mortalities occurred in the controls or the test concentrations up to the 32 ppb level, and 100% mortality occurred in the 68 ppb concentration level. Partial mortality occurred at only one concentration level.

Conc. ppb	Number Tested	96-hour	
		Mortality %	DO (% saturation)
Control	10	0	59
Acetone control	10	0	69
8.8	10	0	68
15	10	0	—*
22	10	0	—*
32	10	0	55
46	10	70	—*
68	10	100	—*
100	10	100	10

*Not measured

REVIEWER'S EVALUATIONA. Test Procedure

The main deviation from the accepted guidelines is that the DO was only measured in the high, medium, and low test concentrations. The DO content fell to 10% saturation within 100 ppb concentration test container. Since the DO was not measured in the test concentration at which the partial kill occurred there is no way to tell whether a low DO was responsible for the deaths.

B. Statistical Analysis

The raw data provided with the report was used with Stephens statistical analysis computer program; the results indicate that an approximate LC₅₀ is 42.3 ppb. Since there were less than two concentrations at which the percent dead was between 0 and 100, neither the moving average nor the probit method can give statistically sound results.

C. Discussion

The results would indicate that chlorothalonil is very highly toxic to rainbow trout. However, the low DO reported in the highest concentration, and the lack of information on DO in the concentrations where partial mortality occurred, would cast some doubt on the validity of these results. The DO was high in the solvent control in this study as compared to the other studies where the DO was low in the solvent control. which were called "core"

D. Conclusions

1. Category: Supplemental.

2. Rationale:

This study cannot be considered core because of the low DO content in the highest test concentration. Additionally, no DO measurements were taken in the other test containers where partial or 100% kills occurred. The DO remained high in the controls also.

3. Repairability: Not repairable.