

US EPA ARCHIVE DOCUMENT

MRIID
162224

TRID No. 470254-018

DATA EVALUATION RECORD

1. **CHEMICAL:** Iprodione.
Shaughnessey No. 109801.
2. **TEST MATERIAL:** Iprodione technical; Lot No. C.A. 84-251-01;
95% active ingredient: a white solid.
3. **STUDY TYPE:** 72-1. Freshwater Fish Acute Flow-Through
Toxicity Test. Species Tested: Channel catfish (*Ictalurus
punctatus*).
4. **CITATION:** Swigert, J.P., B.B. Franklin, A. Seidel, and C.
Lingle. 1986. Acute Flow-Through Toxicity of Iprodione
Technical to Channel Catfish (*Ictalurus punctatus*). Final
Report No. 34385. Prepared by Analytical Bio-Chemistry
Laboratories, Inc., Columbia, MO. Submitted by Rhone-
Poulenc, Inc., Monmouth Junction, NJ. EPA TRID No. 470254-
018.
5. **REVIEWED BY:**

Mark A. Mossler, M.S.
Associate Scientist
KBN Engineering and
Applied Sciences, Inc.

Signature: *[Handwritten Signature]*
Date: 12/22/92

6. **APPROVED BY:**

Pim Kosalwat, Ph.D.
Senior Scientist
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Signature: P. Kosalwat
Date: 12/22/92

Henry T. Craven, M.S.
Supervisor, EEB/EFED
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Date: 1/6/93

7. **CONCLUSIONS:** This study is ^{Administrative} scientifically sound but does not meet the guideline requirements for a freshwater fish toxicity test. Precipitates were present in the two highest test concentration solutions and it was not stated if the solution samples were filtered. The 96-hour NOEC and LC₅₀ for channel catfish exposed to iprodione were 0.52 and 3.1 mg ai/l, respectively, based on mean measured concentrations. Therefore, iprodione is classified as moderately toxic to the channel catfish.

8. RECOMMENDATIONS: N/A.
9. BACKGROUND:
10. DISCUSSION OF INDIVIDUAL TESTS: N/A.
11. MATERIALS AND METHODS:

- A. Test Animals: Channel catfish (*Ictalurus punctatus*) were obtained from Louisiana State University, Baton Rouge, LA. The fish were held for a minimum of 14 days and were fed a commercial fish food daily (except for the final 48 hours prior to test initiation). The laboratory was maintained on a 16-hour daylight photoperiod and a record of daily observations was kept.

Mean weight and length (\pm standard deviation) of the control fish were 0.094 (\pm 0.014) g and 23 (\pm 1.4) mm, respectively, at test termination.

- B. Test System: The system consisted of six glass aquaria, each containing approximately 30 l of test solution. A proportional diluter intermittently delivered 127 ml/min of aerated well water to the individual aquaria for an average of 6 volume replacements per day over the course of the study. The test aquaria were immersed in a circulating water bath set to maintain $22 \pm 1^\circ\text{C}$. Test solutions had been flowing through the diluter system for 18 hours before test initiation. Well water with the characteristics listed in Table 1 (attached) was used as diluent.

A 47,500 mg active ingredient (ai)/l diluter stock solution was prepared by dissolving 5.0 g of the test material to the final volume of 100 ml in acetone. The injector was calibrated to deliver 0.2 ml of stock solution to 1.9 l of dilution water.

- C. Dosage: Ninety-six-hour flow-through test. Based on preliminary tests, five nominal concentrations (0.3, 0.6, 1.2, 2.5, and 5.0 mg ai/l) and a solvent control (0.1 ml acetone/l of solution) were selected for the definitive test.
- D. Design: Twenty catfish were randomly distributed to each aquarium (one aquarium per concentration). Observations of mortality and sublethal responses were made every 24 hours. Dead fish were removed from the vessels at each observation. The temperature,

dissolved oxygen concentration, and pH were measured in the solvent control, low, and highest concentration solutions containing surviving fish at test initiation and every 48 hours thereafter.

Iprodione concentrations were measured by gas-liquid chromatography from samples taken at test initiation and termination.

E. Statistics: The median lethal concentration (LC_{50}) and associated 95% confidence interval (C.I.) for each 24-hour interval were calculated using mean measured concentrations and a computer program developed by Stephan et al. This program employed the binomial, moving average angle, and probit methods of analysis.

12. **REPORTED RESULTS:** The mean measured concentrations were 0.22, 0.52, 0.96, 2.1, and 4.2 mg ai/l. These values represent 73 to 87% of nominal concentrations (Table 3, attached). Measured concentrations between sampling days were fairly consistent.

The mortalities of the catfish are reported in Table 2 (attached). The 96-hour LC_{50} was determined to be 3.1 mg ai/l (95% C.I.= 2.6-3.6 mg ai/l). Sublethal responses (fish on the bottom, quiescence, loss of equilibrium, and surfacing) were noted among fish in the three highest concentration groups (≥ 0.96 mg ai/l). Therefore, the no-observed-effect concentration (NOEC) was determined to be 0.52 mg ai/l.

Dissolved oxygen ranged from 8.7 to 9.0 mg/l or 97 to 100% of saturation. The pH values ranged from 8.0 to 8.2. The temperature was 21-22°C throughout the test.

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:**
The authors presented no conclusions.

Quality Assurance and Good Laboratory Practice Regulation Statements were included in the report, indicating that the study was conducted in accordance with Good Laboratory Practice Standards set forth in 40 CFR Part 160.

14. **REVIEWER'S DISCUSSION AND INTERPRETATION OF STUDY RESULTS:**

A. Test Procedure: The test procedures were generally in accordance with protocols recommended by the SEP, but deviated as follows:

The hardness of the dilution water (225-275 mg/l as CaCO_3) was higher than recommended (40-200 mg/l as CaCO_3).

A negative control was not incorporated into the study design. However, since mortality is the end point for an acute fish test and no mortality or sublethal effects occurred in the solvent control fish, the lack of a dilution water control in this test will be accepted.

The biomass loading rate was not reported.

Each selected nominal concentration was approximately 50% of the next highest concentration. The SEP recommends that each concentration be 60% of the next highest concentration.

- B. Statistical Analysis: The reviewer used EPA's Toxanal program to verify the LC_{50} . The results obtained are similar to those of the authors (see attached printout); however, a narrower 95% C.I. was obtained (2.7-3.5 mg ai/l) using the moving average angle method.
- C. Discussion/Results: Although stated in the protocol, it was not stated in the report whether the fish were fed during the test.

Although the biomass loading rate was not reported, the reviewer determined that it was 0.01 g/l of flowing solution/day.

In the definitive test, precipitates were present in the two highest test concentration solutions (page 30, attached). When precipitates are present in the test solutions, care should be taken to filter any precipitates from the analytical samples prior to preparation. The preparation of the sample may cause the precipitated material to go back into solution and therefore falsely include this material in the determination of the actual concentrations. Consequently, the test material will appear to be less toxic. It was not stated if the samples were filtered in the report.

This study is scientifically sound but does not meet the guideline requirements for a freshwater fish acute toxicity test. The 96-hour NOEC and LC_{50} for channel

catfish exposed to iprodione were 0.52 and 3.1 mg ai/l, respectively, based on mean measured concentrations. Therefore, iprodione is classified as moderately toxic to the channel catfish.

D. Adequacy of the Study:

- (1) **Classification:** Supplemental.
- (2) **Rationale:** It was not stated if the solution samples were filtered.
- (3) **Repairability:** Yes, upon satisfactory submission of sampling methodology, this study could be upgraded to the "core" category.

15. **COMPLETION OF ONE-LINER FOR STUDY:** Yes, 12-17-92.

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MOSSLER IPRADIONE ICTALURUS PUNCTATUS 12-17-92

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
4.2	20	18	90	2.012253E-02
2.1	20	1	5	2.002716E-03
.96	20	0	0	9.536742E-05
.52	20	0	0	9.536742E-05
.22	20	0	0	9.536742E-05

THE BINOMIAL TEST SHOWS THAT 2.1 AND 4.2 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 3.061726

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD				
SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
1	.1031077	3.061726	2.730452	3.457326

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Ecological Effects Branch One-Liner Data Entry Form

Chemical Imidacloprid

Shaughnessy No. 109801

Pesticide Use Fungicide

AQUATIC VERTEBRATE TOX.	% AI	LC ₅₀ (95%CL) SLOPE	HRS / TYPE	NOEC	STUDY/REVIEW DATES	MRID / CATEGORY	LAB	RC
1. Channel catfish <i>Ictalurus punctatus</i>	95	3.1 mg ai/l (2.7-3.5 mg ai/l) with	96 hr Flow-Through	0.52 mg ai/l	1986 / 1992	970254-018 (Sept 1991)	ABC	MM
2.								
3.								
4.								
5.								
6.								
7.								
CHRONIC TOX.	% AI	MATC LC ₅₀	DAYS	AFFECTED PARA.	STUDY/REVIEW DATES	MRID / CATEGORY	LAB	RC
1.								
2.								
3.								

COMMENTS:

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