

US EPA ARCHIVE DOCUMENT

## DATA EVALUATION RECORD

1. **CHEMICAL:** Iprodione. Shaughnessey No. 109801.
2. **TEST MATERIAL:** Iprodione Technical; tested as 100% active ingredient; an off-white powder.
3. **STUDY TYPE:** 72-4. Freshwater Invertebrate Life-Cycle Test. Species Tested: *Daphnia magna*.
4. **CITATION:** Surprenant, D.C. 1988. The Chronic Toxicity of Iprodione Technical to *Daphnia magna* Under Flow-Through Conditions. Report No. 87-12-2573. Study conducted by Springborn Life Sciences, Inc., Wareham, MA. Submitted by Rhone-Poulenc Ag Company, Research Triangle Park, NC. EPA MRID No. 404892-01.

5. **REVIEWED BY:**

Rosemary Graham Mora, M.S.  
Associate Scientist  
KBN Engineering and  
Applied Sciences, Inc.

Signature:



Date:

12/23/92

6. **APPROVED BY:**

Louis M. Rifici, M.S.  
Associate Scientist  
KBN Engineering and  
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Signature:

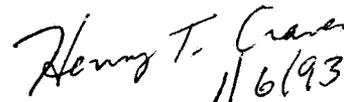


Date:

12/23/92

Henry T. Craven, M.S.  
Supervisor, EEB/EFED  
USEPA

Signature:



Date:

1-4-93

7. **CONCLUSIONS:**  This study is not scientifically sound and does not fulfill the guideline requirements for a *Daphnia magna* life-cycle toxicity test. The test concentrations varied substantially throughout the test period (i.e., the highest measured concentration in three treatments was more than twice the lowest in the same concentration). Raw data (biological, physical, and chemical) were not submitted with the report, therefore, the reviewer could not verify the author's results. According to the author's report, the MATC of Iprodione Technical for *Daphnia magna* was >0.17 and <0.33 mg/l mean measured concentrations (geometric mean MATC was 0.24 mg/l).

8. **RECOMMENDATIONS:**

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

- A. **Test Animals:** *Daphnia magna* ( $\leq 24$  hours old) were obtained from populations cultured at the testing facility.
- B. **Test System:** The flow-through test system was a 200-ml proportional diluter with a 0.5 dilution factor. Test vessels were glass battery jars with a 1.8-l volume capacity. Test solutions drained through a 3.5 x 8.0 cm notch at the upper edge of the jars. The drain was covered with Nitex<sup>®</sup> 40-mesh screen. The diluter delivered solution to each vessel at an average rate of approximately 6 volume additions per day. The 90% replacement time was approximately 9 hours.

The dilution water, which was also used as the culture water, was prepared with well water fortified to total hardness and alkalinity ranges of 160-180 and 110-130 mg/l as CaCO<sub>3</sub>, respectively. The dilution water had a pH range of 7.9-8.3 and a specific conductivity range of 400-600  $\mu$ mhos/cm. The fortified water was filtered through a resin column prior to use.

Sixteen hours of light at an intensity of 30-80 footcandles were provided each day. Test temperature was maintained at approximately 20  $\pm 1^{\circ}$ C by a temperature-controlled water bath.

A diluter stock solution (20.74 mg a.i./ml) was prepared weekly by dissolving 0.2089 g of test material with acetone to a total volume of 10 ml.

- C. **Dosage:** Twenty-one-day, flow-through test. Nominal test concentrations selected based on results of a range-finding study were 0.063, 0.13, 0.25, 0.5, and 1.0 mg/l. A dilution water control and a solvent control (48  $\mu$ l acetone/l) were also included.
- D. **Design:** Ten daphnids ( $\leq 24$  hours old) were impartially selected and distributed to each of four exposure vessels per treatment (i.e., 40 daphnids per treatment). The daphnids were fed 0.5 ml of yeast suspension (5 mg/ml), 3.0 ml of green algal suspension (*Ankistrodesmus falcatus*; 4 x 10<sup>7</sup> cells/ml), and 1.0 ml of Selco<sup>®</sup> (0.6 mg/ml) three times daily on weekdays and

twice daily on weekends and holidays. The jars were brushed and the solutions filtered through fine-mesh nets at least twice a week.

Adult survival and offspring production were determined on days 1, 2, 4, and three times per week from day 7 through day 21. The offspring were discarded after counting. At test termination, body length of all surviving adults was recorded.

Dissolved oxygen concentration (DO), pH, and temperature were measured once a week in every test vessel. The DO was also measured every weekday in one replicate vessel. Temperature was monitored daily in one vessel of each treatment. Total hardness and alkalinity, specific conductivity, and pH were measured weekly in one replicate vessel of each treatment.

Water samples were collected from two replicates of each treatment on test days 0, 4, 7, 14, and 21 for determination of Iprodione technical using high pressure liquid chromatography.

- E. **Statistics:** The percentage survival data were arcsine square-root transformed before analysis. A one-way single classification analysis of variance (ANOVA) demonstrated that the solvent control was not significantly different from the dilution water control; therefore, the control data were pooled prior to subsequent analysis.

Williams' method was used to assess exposure-level effects. If daphnid survival in any treatment level was significantly affected, growth and reproduction data for that level were excluded from statistical analysis. The level of significance was set at  $p=0.05$ .

12. **REPORTED RESULTS:** Throughout the exposure period, no signs of undissolved test material were observed. Mean measured concentrations were 0.042, 0.085, 0.17, 0.33, and 0.71 mg/l, with a coefficient of variation ranging from 14 to 27% (Table 2, attached).

Survival in the two highest concentrations was significantly different from that of the pooled controls (Table 3, attached). Total mortality at the highest test concentration was noted by day 16. Since survival was significantly affected at these two concentrations, these levels were not analyzed for effects on growth or reproduction. "Although not verified by statistical

analyses it appears that the reproduction (78 offspring per female) and growth (mean body length of 4.0 mm) of daphnids, determined after 21 days of the chronic study were also adversely affected by exposure to 0.33 mg/l IPRDIONE Technical [Tables 4 and 5, attached]."

During the study, pH was 7.9-8.2; mean total hardness and alkalinity were 170-180 and 130 mg/l as CaCO<sub>3</sub>, respectively; specific conductance was 490  $\mu$ mhos/cm; and the mean temperature was 20°C (range of 18-22°C). The mean dissolved oxygen concentrations ranged from 8.2 to 8.6 mg/l.

13. STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:

"Based on these data the Maximum Acceptable Toxicant Concentration of IPRDIONE Technical to *Daphnia magna* was >0.17 mg/l and <0.33 mg/l (geometric mean MATC = 0.24 mg/l)."

A GLP compliance statement was included in the report indicating that the data and report prepared for this study were produced and compiled in accordance with all pertinent EPA Good Laboratory Practice Regulations except in the case of characterization and verification of test substance identity. A Quality Assurance Statement was also included.

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

- A. Test Procedure: An SEP for *Daphnia magna* chronic flow-through studies is not available at this time, thus ASTM recommended procedures were used in this data validation process. Deviations from ASTM are as follows:

The highest measured concentration in three treatments was more than twice the lowest measured concentration in the same treatment.

The actual percentage active ingredient of the test material was not reported.

Dry weight of first-generation daphnids was not determined. ASTM prefers dry weight to length for growth measurement.

The author did not indicate the selection criteria (i.e., brood number) for organisms used in the test.

A 15- to 30-minute dawn and dusk simulation period was not employed in this study.

Raw data were not submitted by the registrant. All raw data for each biological endpoint and for physical and chemical parameters measured during the test must always be submitted.

On page 10 of the report, the author states that the test material was tested as 100% active ingredient; however, the amount of test material used to prepare the diluter stock solution (20.74 mg a.i./l) was 0.2089 g. This is a discrepancy in the report.

- B. **Statistical Analysis:** Since raw data were not submitted with the report, statistical analyses could not be verified.
  - C. **Discussion/Results:** This study is not scientifically sound and does not meet the guideline requirements for a *Daphnia magna* life-cycle toxicity test. The measured test concentrations demonstrated unacceptable variation during the test period. According to the author's results, the MATC of Iprodione Technical for *Daphnia magna* was  $>0.17$  and  $<0.33$  mg/l mean measured concentrations (geometric mean MATC = 0.24 mg/l).
  - D. **Adequacy of the Study:**
    - (1) **Classification:** Invalid.
    - (2) **Rationale:** The highest measured concentration in three treatments was more than twice the lowest measured concentration in the same treatment.
    - (3) **Repairability:** No.
15. **COMPLETION OF ONE-LINER:** Yes, December 15, 1992.

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IPRODIONE

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Page \_\_\_\_\_ is not included in this copy.

Pages 6 through 9 are not included.

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The material not included contains the following type of information:

- Identity of product inert ingredients.
  - Identity of product impurities.
  - Description of the product manufacturing process.
  - Description of quality control procedures.
  - Identity of the source of product ingredients.
  - Sales or other commercial/financial information.
  - A draft product label.
  - The product confidential statement of formula.
  - Information about a pending registration action.
  - FIFRA registration data.
  - The document is a duplicate of page(s) \_\_\_\_\_.
  - The document is not responsive to the request.
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The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

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Ecological Effects Branch One-Liner Data Entry Form

Chemical Iprodione Shaughnessy No. 109801 Pesticide Use

INVERTEBRATE ACUTE TOXICITY	% AI	EC <sub>50</sub> (95%CL) SLOPE	HRS/TYPE	NOEC	STUDY/REVIEW DATES	MRID/CATEGORY	LAB	RC
1.								
2.								
3.								
4.								
5.								
6.								
7.								
CHRONIC TOX.	% AI	MATC <del>LC<sub>50</sub></del>	DAYS	AFFECTED PARA.	STUDY/REVIEW DATES	MRID/CATEGORY	LAB	RC
1. <i>Daphnia magna</i>	ND	0.24 mg/l	21	reprod. & length	1988/1992	40489201	SLS	RM
2.								
3.								

COMMENTS: ND=not defined; SLS=Springborn Life Sciences, Inc.