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DATA EVALUATION RECORD MRID No. 427702-31

1. **CHEMICAL:** Pirate® (AC 303,630)
Shaughnessey No. 129093

2. **TEST MATERIAL:** AC 303,630; Lot No. AC7504-59A; CAS No. 122453-73-0; 94.5% active ingredient; a tan powder.

3. **STUDY TYPE:** 72-1. Freshwater Fish Acute Flow-Through Toxicity Test. Species Tested: Rainbow Trout (*Oncorhynchus mykiss*).

4. **CITATION:** Kavanaugh, J.L., G.S. Ward, and J.D. Wisk. 1992. Acute Toxicity of AC 303,630 to Rainbow Trout (*Oncorhynchus mykiss*) Under Flow-Through Test Conditions. Study ID No. J9104006c. Performed by Toxikon Environmental Sciences, Jupiter, FL. Submitted by American Cyanamid Company, Princeton, NJ. EPA MRID No. 427702-31.

5. **REVIEWED BY:**

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

Signature: for RGM
Date: 7/20/93

6. **APPROVED BY:**

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

Signature:
Date: 7/20/93

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

Signature: Henry T. Craven
Date: 8/6/93

7. **CONCLUSIONS:** This study is scientifically sound and meets the guideline requirements for a 96-hour acute toxicity test using freshwater fish. Based on mean measured concentrations, the 96-hour LC_{50} for rainbow trout exposed to AC 303,630 was 7.44 µg ai/l. Therefore, AC 303,630 is classified as very highly toxic to *Oncorhynchus mykiss*. The NOEC was 2.61 µg ai/l.

RECOMMENDATIONS: N/A.

BACKGROUND:

DISCUSSION OF INDIVIDUAL TESTS: N/A.

positioned in a water bath. The biomass loading rate was 0.38 g/l/day. Fish were not fed during the test.

Observations of mortality and abnormal effects were recorded daily. Dead fish were removed at each observation. Dissolved oxygen concentration (DO) and pH were measured daily in each treatment. Temperature was monitored continuously and daily.

Analytical determination of test concentrations was performed using high pressure liquid chromatography on samples collected on days 0, 2, and 4.

E. **Statistics:** The 96-hour LC_{50} and its 95% confidence interval were calculated using a computer program by Wheat (1989).

12. **REPORTED RESULTS:** Mean measured concentrations were 2.61, 4.68, 8.01, 18.4, and 32.4 µg ai/l which represent 50-81% of nominal concentrations (Table 1, attached). An unidentified peak appeared in the chromatograms of the four lowest test concentration on day 2 and again in the chromatograms of the three lowest test concentrations on day 4. Those concentrations not demonstrating the unidentified peak had 85-100% mortality. "This suggests that the reason for the lower recoveries in the lowest treatment concentrations may have been due to the trout absorbing and metabolizing the test substance."

By test termination, no mortality was observed in the dilution water control, the solvent control, or the lowest test concentration. Mortality in the remaining test concentrations ranged from 5 to 100% (Table 2, attached).

During the test period, the test solutions had a pH range of 7.7-8.4, a temperature range of 10.6-13.5°C, a DO of ≥6.4 mg/l (≥59% of saturation).

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:** Based on mean measured concentrations, the 96-hour LC_{50} of AC 303,630 to rainbow trout was 7.44 µg ai/l with 95% confidence limits of 6.48 and 8.95 µg ai/l. The slope of the dose-response curve was 8.2. The no-observed-effect concentration (NOEC) was 2.61 µg ai/l.

Statements of quality assurance and good laboratory practice compliance were included in the report, indicating that the study was conducted in accordance with EPA Good Laboratory Practice Regulations (40 CFR Part 160).

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

A. **Test Procedure:** The test procedures were generally in accordance with the SEP, except for the following:

The age of the test organisms was not reported.

The report did not indicate whether food was withheld from the fish 24 hours prior to test initiation as recommended.

B. **Statistical Analysis:** The reviewer used EPA's Toxanal computer program to calculate the 96-hour LC_{50} and obtained the same results as the authors (printout, attached).

C. **Discussion/Results:** This study is scientifically sound and meets the guideline requirements for a 96-hour acute toxicity test using freshwater fish. Based on mean measured concentrations, the 96-hour LC_{50} for *Oncorhynchus mykiss* exposed to AC 303,630 was 7.44 µg ai/l. Therefore, AC 303,630 is classified as very highly toxic to rainbow trout. The NOEC was 2.61 µg ai/l.

D. **Adequacy of the Study:**

(1) **Classification:** Core.

(2) **Rationale:** N/A.

(3) **Repairability:** N/A.

15. **COMPLETION OF ONE-LINER:** Yes; 9 July 1993.

Page _____ is not included in this copy.

Pages 5 through 9 are not included.

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.

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.

Rosemary Graham Mora AC Rainbow Trout

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
32.4	20	20	100	9.536742E-05
18.4	20	20	100	9.536742E-05
8.01	20	12	60.00001	25.17223
4.68	20	1	5	2.002716E-03
2.61	20	0	0	9.536742E-05

THE BINOMIAL TEST SHOWS THAT 4.68 AND 18.4 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 7.365361

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
4	3.434082E-02	8.277146	6.964381	9.820722

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
6	.2726216	1	.9994598

SLOPE = 8.248785

95 PERCENT CONFIDENCE LIMITS = 3.941832 AND 12.55574

LC50 = 7.444062

95 PERCENT CONFIDENCE LIMITS = 6.477199 AND 8.948184

LC10 = 5.222133

95 PERCENT CONFIDENCE LIMITS = 3.596082 AND 6.080766

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