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Du Pont HLR 55-89

Study Title

Static Acute 96-Hour LC50^a of
[REDACTED]
to Fathead Minnows (Pimephales promelas)

Author

David G. Hutton

Study Completed On

February 20, 1989

Performing Laboratory

E. I. du Pont de Nemours and Company, Inc.
Haskell Laboratory for Toxicology and Industrial Medicine
Elkton Road, P. O. Box 50
Newark, Delaware 19714

[REDACTED]

[REDACTED]

Laboratory Project ID

Haskell Laboratory Report No. 55-89

GOOD LABORATORY PRACTICE STATEMENT

This study was conducted according to EPA Good Laboratory Practice Regulations (40 CFR 792). Any areas of noncompliance are documented in the study records. No deviations existed that significantly affected the validity of the study.

Submitter: E. I. du Pont de Nemours and Company, Inc.

Sponsor: Chemicals and Pigments Department
E. I. du Pont de Nemours and Company, Inc.

Study Director:

David G. Hutton 2/14/89

David G. Hutton

Consultant

Environmental Sciences

GENERAL INFORMATION

Material Tested:

[REDACTED]

Medical Research No.:

[REDACTED]

Haskell No.:

17,503

Purity:

[REDACTED]

Synonyms:

[REDACTED]

Submitter's Notebook Number:

[REDACTED]

Sponsor:

Chemicals and Pigments Department
E. I. du Pont de Nemours and Company, Inc.
Wilmington, Delaware

Material Submitted By:

[REDACTED]

Chemicals and Pigments Department
E. I. du Pont de Nemours and Company, Inc.
Jackson Laboratory

Study Initiated - Completed:

Test initiated: 1/10/89
Test completed: 1/14/89
Study completed: 1/26/89

Notebooks:

[REDACTED]

There are 9 pages in this report.

Distribution:

[REDACTED]

Title of Report

Static Acute 96-Hour LC50^a of
[REDACTED]
to Fathead Minnows (Pimephales promelas)

Summary

[REDACTED] (H-17,503) exhibited no acute toxicity to fathead minnows, a warm freshwater fish, under static unaerated test conditions during a 96-hour exposure period. The 96-hour LC50 was >1000 mg/L, because there were no mortalities at nominal test concentrations up to and including 1000 mg/L. The solubility of [REDACTED] (H-17,503) was found to be less than 360 mg/L, as there was undissolved material in all test concentrations.

Reported by:

James W. Wetzel
James W. Wetzel
Technician

Mo/Day/Yr

Study Director:

David G. Hutton
David G. Hutton
Consultant
Environmental Sciences

2/1/89
Mo/Day/Yr

Approved by:

Frank X. Phillips
Frank X. Phillips, Ph.D.
Section Supervisor
Environmental Toxicology and Information Services

2/17/89
Mo/Day/YrReviewed and
Approved for Issue:

David G. Hutton
David G. Hutton
Study Director

2/20/89
Mo/Day/Yr

JWW/DGH/FXP/smk/AQRP28.4

QUALITY ASSURANCE DOCUMENTATION

STUDY: [REDACTED]
H# 17,503

Static Acute 96-Hour LC50 of
[REDACTED]
to Fathead Minnows (Pimephales promelas)

AUDITS:

Items Audited

Audit Dates

Protocol Evaluation

1/6/89

SHORT-TERM AUDIT REPORT NUMBER: [REDACTED]

DATE FINDINGS REPORTED TO MANAGEMENT AND STUDY DIRECTOR: 1/6/89

Reported by: William J. Lynam
William J. Lynam
Quality Assurance Auditor

2/16/89
Date

Introduction/Purpose

To determine the static acute toxicity of [REDACTED] (H-17,503) to fathead minnows, a warm freshwater fish.

Materials/Methods (Aquatic SOP-T02)

The test material, [REDACTED] (H-17,503), was prepared as a 1.0 mg/mL stock solution in Haskell Laboratory well water, placed into 5-liter aquaria, and diluted with laboratory well water to yield the desired nominal exposure concentrations in 4 liter final volumes (12-cm liquid depth). Two identical vessels containing only laboratory well water were designated as the H₂O controls.

Chemical stability of the test material in well water was not determined.

Ten juvenile, unsexed fathead minnows (*Pimephales promelas*) from Haskell-bred stock with a 1.6 cm mean standard length (range 1.2 to 1.8 cm) and 0.046 g mean wet weight (range 0.015 to 0.078 g) were randomly placed in the test vessels, two test vessels per concentration. Loading was 0.12 g fish/L. Fathead minnows are identified by labeling the culture and test vessels. The fish were maintained at Haskell Laboratory for approximately 163 days, with the last 110 days in a 272-liter Fiberglass tank (84-cm in diameter by about 49-cm liquid depth) before being used for this test. Holding temperature was within 3°C of testing temperature throughout the holding period. The dissolved oxygen concentration during acclimatization was assumed to be at or near saturation because air was continuously bubbled through the water. No treatment of the fish for diseases was required during the holding period. Fish were not fed for approximately 72 hours prior to nor during the exposure. The test solutions were not aerated, and temperature was maintained between 21.7°C and 22.6°C. Photoperiod was maintained at 16 hours light:8 hours dark. Mortality counts and observations were made approximately every 24 hours during the 96-hour exposure period.

Dissolved oxygen and pH were measured in the H₂O control and in the low, medium, and high test concentrations at the beginning of the test and at approximately 24-hour intervals during the 96-hour exposure period. Total alkalinity, hardness (EDTA), and conductivity were measured at the beginning of the test in the H₂O control.

Records

All records from this test and the final report will be maintained at Haskell Laboratory for Toxicology and Industrial Medicine (Newark, Delaware) or archived at the Du Pont Records Management Center (Wilmington, Delaware).

Results

Test results for fathead minnows exposed to [REDACTED] (H-17,503) are presented in Table 1. The 96-hour LC50 was >1000 mg/L, because there were no mortalities at nominal test concentrations up to and including 1000 mg/L. All test solutions (from 360 to 1000 mg/L) were milky with undissolved test material floating on the surface and settling to the bottom.

The chemical and physical parameters measured during the test of [REDACTED] are reported in Table 2. All were within acceptable ranges for this study.

Discussion/Conclusion

[REDACTED] has been tested for acute toxicity with fathead minnows, a warm freshwater fish. Under the conditions of this test, [REDACTED] was found to exhibit no acute toxicity at test concentrations above its solubility limit in water.

A preliminary rangefinding test on this compound was run but data are not reported here. In this test all the fish survived at dose levels of 1000, 100, 10, 1, and 0.1 mg/L, plus a H₂O control.

Footnote

^aLC50 = That concentration which is lethal to 50% of a test population during the specified time period.

TABLE 1

RESULTS OF A 96-HOUR STATIC ACUTE TOXICITY TEST WITH
 FATHEAD MINNOWS EXPOSED TO [REDACTED] (H-17,503)

Nominal Test Concentrations (mg/L)	Cumulative Observed Mortality (%)							
	24 Hr.		48 Hr.		72 Hr.		96 Hr.	
	A*	B*	A*	B*	A*	B*	A*	B*
H ₂ O Control	0	0	0	0	0	0	0	0
360	0	0	0	0	0	0	0	0
600	0	0	0	0	0	0	0	0
1000	0	0	0	0	0	0	0	0

*Replicate exposure chambers containing ten fish in each.

TABLE 2

RESULTS OF PHYSICAL AND CHEMICAL PARAMETERS
 MEASURED DURING A 96-HOUR STATIC ACUTE TOXICITY TEST WITH
 FATHEAD MINNOWS EXPOSED TO [REDACTED] (H-17,503)

Physical/Chemical Parameters	Nominal Test Concentrations (mg/L)			H ₂ O Control
	1000 (High)	600 (Medium)	360 (Low)	
<u>Dissolved Oxygen (mg/L)</u>				
0 Hr.	8.6	8.7	8.7	8.5
24 Hr.	7.6	7.7	7.7	8.0
48 Hr.	6.8	7.1	7.3	7.7
72 Hr.	6.5	6.9	7.1	7.5
96 Hr.	6.9	7.1	7.5	7.8

pH

0 Hr.	7.6	7.6	7.6	7.6
24 Hr.	7.1	7.1	7.1	7.5
48 Hr.	7.4	7.4	7.4	7.7
72 Hr.	7.3	7.3	7.3	7.6
96 Hr.	7.4	7.4	7.5	7.6

Water Chemistry on the H₂O Control at 0 Hours

<u>Total Alkalinity (mg/L as CaCO₃)</u>	<u>EDTA Hardness (mg/L as CaCO₃)</u>	<u>Conductivity (μmhos/cm)</u>
90	70	150