

US EPA ARCHIVE DOCUMENT

DATA EVALUATION RECORD
ACUTE LC₅₀ TEST WITH AN ESTUARINE/MARINE FISH
§ 72-3(A)

1. CHEMICAL: Mepiquat Chloride PC Code No.: 109101
2. TEST MATERIAL: Mepiquat Chloride Purity: 54.6 %

3. CITATION

Authors: Drottar, Kurt R., James P. Swigler,
and Catherine M. Holmes.
Title: Mepiquat chloride: A 96-hour static acute
toxicity test with the Sheepshead Minnow
(*Cyprinodon variegatus*).

Study Completion Date: January 16, 1995
Laboratory: Wildlife International Ltd.
Sponsor: BASF Corporation
Laboratory Report ID: 147A-121
MRID No.: 435167-01
DP Barcode: D212401

4. REVIEWED BY: William S. Rabert, Biologist, EEB, EFED

Signature: *William S. Rabert* Date: *Oct. 4, 1995*

5. APPROVED BY: Harry Craven, Head of Section 4, EEB, EFED

Signature: *Harry Craven* Date: *10/12/95*

6. STUDY PARAMETERS

Scientific Name of Test Organism: Sheepshead Minnow
Age or Size of Test Organism: Juveniles (20 mm. ± 2 mm.)
Definitive Test Duration: 96 hours
Study Method: Static
Type of Concentrations: Mean measured

7. CONCLUSIONS: The 96-hour LC₅₀ value for sheepshead minnow
exposed to Mepiquat Chloride was > 151 mg
a.i./L (ppm). The NOEC was 151 mg a.i./L.

Results Synopsis: No mortality or any effects were observed.

LC₅₀: > 151 ppm ai 95% C.I.: N/A
NOEL: 151 ppm ai Probit Slope: N/A

8. ADEQUACY OF THE STUDY

A. Classification: Core for 54.6 % formulation.

B. Rationale: N/A

C. Repairability: N/A

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9. Guideline Deviations

1. N/A
2. (etc.)

10. SUBMISSION PURPOSE: Reregistration Data Requirement

11. MATERIALS AND METHODS

A. Test Organisms

Guideline Criteria	Reported Information
<u>Species</u> Preferred species are the sheepshead minnow (<i>Cyprinodon variegatus</i>) or the Silverside (<i>Menidia sp.</i>).	Sheepshead Minnow <i>Cyprinodon variegatus</i>
<u>Mean Weight</u> 0.5 - 5 g	Mean: 0.29 g Range: 0.18 - 0.41 g
<u>Mean Standard Length</u> Longest not > 2x shortest	Mean: 20 mm. Range: 18 - 22 mm.
<u>Supplier</u>	Laboratory culture
All fish from same source?	Yes
All fish from the same year class?	Yes

B. Source/Acclimation

Guideline Criteria	Reported Information
<u>Acclimation Period</u> minimum 14 days	held 14 days, but acclimated to test conditions for 53 hrs.
Wild caught organisms were quarantined for 7 days?	N/A
Were there signs of disease or injury?	No
If treated for disease, was there no sign of the disease remaining during the 48 hours prior to testing?	N/A

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Guideline Criteria	Reported Information
Feeding No feeding during the study	No fed starting 53 hours prior to test initiation
Pretest Mortality <3% mortality 48 hours prior to testing	0 % mortality prior to testing

C. Test System

Guideline Criteria	Reported Information
Source of dilution water Soft reconstituted water or water from a natural source, not dechlorinated tap water	Natural seawater collected at Indian River Inlet, Delaware, and diluted to 20 ‰ with well water
Does water support test animals without observable signs of stress?	Yes
Salinity 30-34 ‰ salinity, weekly range < 6 ‰	diluted to 20 ‰
Water Temperature 22 ± 1 °C	21.7 - 22.0 °C
pH 8.0-8.3 for marine-stenohaline fishes, 7.7-8.0 for estuarine- euryhaline fishes, monthly range < 0.8	7.9-8.3
Dissolved Oxygen Static: ≥ 60% during 1 st 48 hrs and ≥ 40% during 2 nd 48 hrs, flow-through: ≥ 60%	6.4 mg/l at 72 hours
Test Aquaria 1. Material: Glass or stainless steel 2. Size: Volume of 19 L (5 gal) or 30 x 60 x 30 cm 3. Fill volume: 15-30 L of solution	Teflon®-lined polyethylene aquaria 15 liter 17.5 cm deep
Type of Dilution System Must provide reproducible supply of toxicant	static test

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Guideline Criteria	Reported Information
<p>Flow Rate Consistent flow rate of 5-10 vol/24 hours, meter systems calibrated before study and checked twice daily during test period</p>	N/A
<p>Biomass Loading Rate Static: ≤ 0.8 g/L at $\leq 17^\circ\text{C}$, ≤ 0.5 g/L at $> 17^\circ\text{C}$; flow-through: ≤ 1 g/L/day</p>	0.19 g/L
<p>Photoperiod 16 hours light, 8 hours dark</p>	16 h light, 8 h dark.
<p>Solvents Not to exceed 0.5 ml/L for static tests or 0.1 ml/L for flow-through tests</p>	Solvent: N/A Maximum conc.: N/A

D. Test Design

Guideline Criteria	Reported Information
<p>Range Finding Test If $\text{LC}_{50} > 100$ mg/L with 30 fish, then no definitive test is required.</p>	no effects ≤ 120 mg ai/L
<p>Nominal Concentrations of Definitive Test Control & 5 treatment levels; each conc. should be 60% of the next highest conc.; concentrations should be in a geometric series</p>	16, 26, 43, 72, & 120 mg ai/L
<p>Number of Test Organisms Minimum 10/level, may be divided among containers</p>	20 fish/ conc.
<p>Test organisms randomly or impartially assigned to test vessels?</p>	Not reported
<p>Biological observations made every 24 hours?</p>	Yes

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Guideline Criteria	Reported Information
<p>Water Parameter Measurements</p> <p>1. <u>Temperature</u> Measured constantly or, if water baths are used, every 6 hrs, may not vary > 1°C</p> <p>2. <u>DO and pH</u> Measured at beginning of test and ever 48 h in the high, medium, and low doses and in the control</p>	<p>continuous in one replicate</p> <p>measured every 24 hours</p>
<p>Chemical Analysis needed if solutions were aerated, if chemical was volatile, insoluble, or known to absorb, if precipitate formed, if containers were not steel or glass, or if flow-through system was used</p>	<p>measured</p> <p>not aerated</p> <p>no precipitate</p>

12. REPORTED RESULTS

A. General Results

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes
<u>Recovery of Chemical</u>	117 - 146 %
<u>Control Mortality</u> Not more than 10% of control organisms may die or show abnormal behavior.	0 %
Raw data included?	Yes
Signs of toxicity (if any) were described?	None observed

Mortality

Concentration (ppm)		Number of Fish	Cumulative Number Dead			
Nominal	Mean Measured		Hour of Study			
			24	48	72	96

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Control	< LOQ	20	0	0	0	0
Solvent Control	N/A					
16	19	20	0	0	0	0
26	31	20	0	0	0	0
43	54	20	0	0	0	0
72	79	20	0	0	0	0
120	151	20	0	0	0	0

Other Significant Results: None

B. Statistical Results

Method: N/A

96-hr LC₅₀: > 151 ppm ai 95% C.I.: N/A

Probit Slope: N/A NOEC: 151 ppm ai

13. VERIFICATION OF STATISTICAL RESULTS

Parameter	Result
Binomial Test LC ₅₀ (C.I.)	N/A (____ - ____) ppm ai
Moving Average Angle LC ₅₀ (95% C.I.)	N/A (____ - ____) ppm ai
Probit LC ₅₀ (95% C.I.)	N/A (____ - ____) ppm ai
Probit Slope	N/A
NOEC	151 ppm ai

14. REVIEWER'S COMMENTS: N/A