DATA EVALUATION RECORD
ACUTE LC_{50} TEST WITH AN ESTUARINE/MARINE SHRIMP
§ 72-3(C)

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 Saltwater Mysid (*Mysidopsis bahia*).
Study Completion Date: January 17, 1995
Laboratory: Wildlife International Ldt.
Sponsor: BASF Corporation
Laboratory Report ID: 147A-122
MRID No.: 435167-03
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: *Mysidopsis bahia*
Age or Size of Test Organism: Juveniles (< 24 hours old)
Definitive Test Duration: 96 hours
Study Method: Static
Type of Concentrations: Mean measured

7. **CONCLUSIONS:** The 96-hour LC50 value for saltwater mysid exposed to Mepiquat Chloride was > 136 mg a.i./L (ppm). The NOEC was 79 mg a.i./L.

Results Synopsis: 10 Percent mortality at 136 ppm a.i..

LC_{50}: > 136 ppm ai — 95% C.I.: N/A
NOEL: 79 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

9. **BACKGROUND**

10. **GUIDELINE DEVIATIONS**

1. Salinity of the test water was 20 °/oo, rather than 10 to 17 °/oo, specified in SEP for euryhaline shrimp species.

11. **SUBMISSION PURPOSE:**

12. **MATERIALS AND METHODS**

A. Test Organisms

Guideline Criteria	Reported Information
Species Preferred species are *Mysidopsis bahia*, *Penaeus setiferus*, *P. duorarun*, *P. aztecus* and *Palaemonetes sp.*	*Mysidopsis bahia*
Age Juvenile, mysids should be ≤ 24 hours old	< 24 hours old
Supplier	Wildlife lab cultures
All shrimp are from same source?	Yes
All shrimp are from the same year class?	Yes

B. Source/Acclimation

Guideline Criteria	Reported Information
Acclimation Period minimum 10 days	14 days
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

Guideline Criteria	Reported Information
Feeding No feeding during the study and no feeding for 24 hour before the beginning of the test if organisms are over 0.5 g each.	Fed twice daily during the test
Pretest Mortality <3% mortality 48 hours prior to testing	Unreported, transferred directly from cultures to test chambers

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 a salinity of 20 °/oo with well water
Does water support test animals without observable signs of stress?	Yes
Salinity 30-34 ‰ for marine (stenohaline) shrimp and 10-17 ‰ for estuarine (euryhaline) shrimp, weekly range < 6 ‰	20 °/oo
Water Temperature Approx. 22 ± 1 °C	24.1 to 24.8 °C
pH 8.0-8.3 for marine (stenohaline) shrimp, 7.7-8.0 for estuarine (euryhaline) shrimp, monthly range < 0.8	7.9 to 8.2
Dissolved Oxygen Static: ≥ 60% during 1st 48 hrs and ≥ 40% during 2nd 48 hrs, Flow-through: ≥ 60%	6.0 to 8.5 mg/L
Total Organic Carbon	1.4 mg/L

Guideline Criteria	Reported Information
Test Aquaria 1. Material: Glass or stainless steel 2. Size: 19.6 L is acceptable for organisms ≥ 0.5 g (e.g. pink shrimp, white shrimp, and brown shrimp), 3.9 L is acceptable for smaller organisms (e.g. mysids and grass shrimp). 3. Fill volume: 15 L is acceptable for organisms ≥ 0.5 g, 2-3 L is acceptable for smaller organisms.	glass beakers 2 L 1.5 L
Type of Dilution System Must provide reproducible supply of toxicant	None
Flow Rate Consistent flow rate of 5-10 vol/24 hours, meter systems calibrated before study and checked twice daily during test period	N/A
Biomass Loading Rate Static: ≤ 0.8 g/L at ≤ 17°C, ≤ 0.5 g/L at > 17°C; flow-through: ≤ 1 g/L/day	Not reported, but 10 mysids in 1.5 L is acceptable
Photoperiod 16 hours light, 8 hours dark	16 h light, 8 h dark.
Solvents Not to exceed 0.5 ml/L for static tests or 0.1 ml/L for flow-through tests	Solvent: N/A Maximum conc.: ml/L.

D. Test Design

Guideline Criteria	Reported Information

Range Finding Test If LC_{50} >100 mg/L with 30 shrimp, then no definitive test is required.	> 120 mg a.i./L no mortality
Nominal Concentrations of Definitive Test Control & 5 treatment levels; a geometric series in which each concentration is at least 60% of the next higher one.	16, 26, 43, 72, & 120 mg ai/L
Number of Test Organisms Minimum 20/level, may be divided among containers	20
Test organisms randomly or impartially assigned to test vessels?	Yes
Biological observations made every 24 hours?	Yes
Water Parameter Measurements 1. Temperature Measured constantly or, if water baths are used, every 6 hrs, may not vary > 1°C 2. DO and pH Measured at beginning of test and ever 48 h in the high, medium, and low doses and in the control	24.1 -24.8 °C D.O. 6.0 - 8.5 mg/L 6.0 at 48 hours 6.0 / 6.71 = 89 % saturation pH 7.9 - 8.2
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	measured conc. with ion chromatographic system, not aerated no precipatate

13. **REPORTED RESULTS**

A. General Results

Guideline Criteria	Reported Information

Quality assurance and GLP compliance statements were included in the report?	Yes
Recovery of Chemical	102 - 133 %
Control Mortality 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?	Yes

Mortality

Concentration (ppm)		Number of Shrimp	Cumulative Number Dead			
			Hour of Study			
Nominal	Mean Measured		24	48	72	96
Control	--	20	0	0	0	0
Solvent Control	N/A					
16	19	20	0	0	0	0
26	29	20	0	0	0	0
43	49	20	0	0	0	0
72	79	20	0	0	0	0
120	136	20	0	0	0	2

Other Significant Results: None reported

B. Statistical Results

Method: estimated by visual inspection of mortality data

96-hr LC_{50}: > 136 ppm ai 95% C.I.: N/A

Probit Slope: N/A NOEC: 72 ppm ai

14. VERIFICATION OF STATISTICAL RESULTS

Parameter	Result
Binomial Test LC_{50} (C.I.)	N/A
Moving Average Angle LC_{50} (95% C.I.)	N/A
Probit LC_{50} (95% C.I.)	N/A
Probit Slope	N/A
NOEC	72 ppm ai

15. **REVIEWER'S COMMENTS:** Mepiquat is practically non-toxic to estuarine shrimp.