



2001868

DATA EVALUATION RECORD  
S 72-1(A) -- ACUTE LC<sub>50</sub> TEST WITH A WARMWATER FISH

1. CHEMICAL: Imiprothrin (Pralle®)      PC Code No.: 004006  
2. TEST MATERIAL: S-41311 T.G.      Purity: 92.9%

3. CITATION

Authors: Bowman J. & L. Stuerman  
Title: Acute Flow-through Toxicity of S-41311 to Bluegill sunfish (*Lepomis macrochirus*)  
Study Completion Date: 6/7/93  
Laboratory: ABC Laboratory, Inc.  
Sponsor: Sumitomo Chemical Co. Ltd.  
Laboratory Report ID: SGW-31-0003  
MRID No.: 437507-15  
DP Barcode: D228125

- 4.
- REVIEWED BY:
- Richard Lee, Entomologist, EEB, EFED

Signature:

*Richard Lee*

Date: 1/29/97

- 5.
- APPROVED BY:
- Ann Stavola, Head, Section 5, EEB, EFED

Signature:

*Ann Stavola*

Date: 2/5/97

6. STUDY PARAMETERS

Scientific Name of Test Organism: (*Lepomis macrochirus*)  
Age or Size of Test Organism: 1.11 ± 0.44, 35 ± 4 mm  
Definitive Test Duration: 96 hrs  
Study Method: A 96-h acute toxicity test  
Type of Concentrations: flow-through/measured conc.

7. CONCLUSIONS:Results Synopsis

LC<sub>50</sub>: 0.070 ppm ai (measured)    95% C.I.: 0.063-0.079 ppm ai  
NOEL: 0.033 ppm ai                  Probit Slope: 11

8. ADEQUACY OF THE STUDY

A. Classification: Core

B. Rationale:

C. Repairability:

9. GUIDELINE DEVIATIONS

1. The pH value was too high (8.1-8.2 instead of 7.2-7.6)

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2. Total Hardness was too high (142-148 mg/L instead of 40-48 mg/L)
10. SUBMISSION PURPOSE: Sec.3 full registration
11. MATERIALS AND METHODS

A. Test Organisms

Guideline Criteria	Reported Information
<u>Species</u> Preferred species is the Bluegill sunfish ( <i>Lepomis macrochirus</i> )	Bluegill sunfish ( <i>Lepomis macrochirus</i> )
<u>Mean Weight</u> 0.5-5 g	1.11 ± 0.44 g
<u>Mean Standard Length</u> Longest not > 2x shortest	Mean: 35 mm Range: 31 - 39 mm
<u>Supplier</u>	Osage Catfisheries, Osage Beach, MO
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	48 hrs to test condition, but was held for 20 wks.
Wild caught organisms were quarantined for 7 days?	N/A
Were there signs of disease or injury?	Not reported
If treated for disease, was there no sign of the disease remaining during the 48 hours prior to testing?	N/A
<u>Feeding</u> No feeding during the study	No feeding during the acclimation and test period.

Guideline Criteria	Reported Information
<u>Pretest Mortality</u> < 3% mortality 48 hours prior to testing	No mortality prior to testing.

## C. Test System

Guideline Criteria	Reported Information
<u>Source of dilution water</u> Soft reconstituted water or water from a natural source, not dechlorinated tap water	Blended natural hard well water & demineralized hard well water.
Does water support test animals without observable signs of stress?	Yes
<u>Water Temperature</u> 12°C	22 ± 1°C
<u>pH</u> Prefer 7.2 to 7.6	8.1 - 8.2
<u>Dissolved Oxygen</u> Static: ≥ 60% during 1 <sup>st</sup> 48 hrs and ≥ 40% during 2 <sup>nd</sup> 48 hrs, flow-through: ≥ 60%	8.4 to 8.6 mg/L (or 100 - 102%) at 22°C
<u>Total Hardness</u> Prefer 40 to 48 mg/L as CaCO <sub>3</sub>	142 - 148 mg/L as CaCO <sub>3</sub>
<u>Test Aquaria</u> 1. <u>Material</u> : Glass or stainless steel 2. <u>Size</u> : Volume of 18.9 L (5 gal) or 30 x 60 x 30 cm 3. <u>Fill volume</u> : 15-30 L of solution	glass 45-L 56.6 cm(L) x 26.5 cm(W) x 30.8 cm(H) 30 L
<u>Type of Dilution System</u> Must provide reproducible supply of toxicant	A Half-L proportional diluter system (Mount & Brungs) w/ Hamilton Micro Lab 420 syringe dispenser

Guideline Criteria	Reported Information
<p><b>Flow Rate</b> Consistent flow rate of 5-10 vol/24 hours, meter systems calibrated before study and checked twice daily during test period</p>	15 vol/24 hours
<p><b>Biomass Loading Rate</b> Static: <math>\leq 0.8</math> g/L at <math>\leq 17^\circ\text{C}</math>, <math>\leq 0.5</math> g/L at <math>&gt; 17^\circ\text{C}</math>; flow-through: <math>\leq 1</math> g/L/day</p>	0.051 g/L (or g/L/day)
<p><b>Photoperiod</b> 16 hours light, 8 hours dark</p>	16 hrs daylight
<p><b>Solvents</b> Not to exceed 0.5 ml/L for static tests or 0.1 ml/L for flow-through tests</p>	Solvent: DMF Maximum conc.: 0.1 ml/L.

## D. Test Design

Guideline Criteria	Reported Information
<p><b>Range Finding Test</b> If <math>LC_{50} &gt; 100</math> mg/L with 30 fish, then no definitive test is required.</p>	100 mg/L had 100% mortality; 0.01 ppm had no mortality.
<p><b>Nominal Concentrations of Definitive Test</b> Control, &amp; 5 treatment levels; dosage should be 60% of the next highest concentration; concentrations should be in a geometric series</p>	0.012, 0.019, 0.032, 0.054, and 0.090 ppm nominal conc. plus negative and positive controls
<p><b>Number of Test Organisms</b> Minimum 10/level, may be divided among containers</p>	20 fishes/level
<p>Test organisms randomly or impartially assigned to test vessels?</p>	Yes
<p>Biological observations made every 24 hours?</p>	Yes

Guideline Criteria	Reported Information
<p><b>Water Parameter Measurements</b></p> <p>1. <u>Temperature</u> Measured constantly or, if water baths are used, every 6 hrs, may not vary &gt; 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>22 ± 1°C measured at 0, 48, and 96 hrs</p> <p>Measured all test conc. at 0, 48, and 96 hrs.</p>
<p><b>Chemical Analysis</b> 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>The mean measured con. were 0.013, 0.022, 0.033, 0.050, and 0.085 ppm ai.</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>	90 ± 11%
<u>Control Mortality</u> Not more than 10% control organisms may die or show abnormal behavior.	No control mortality.
Raw data included?	Yes
Signs of toxicity (if any) were described?	Yes

Mortality

Concentration (ppm)		Cumulative Number Dead
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Number  
of  
Fish

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Nominal	Mean Measured		Hour of Study			
			24	48	72	96
Control		20	0	0	0	0
Solvent Control		20	0	0	0	0
0.012	0.013	20	0	0	0	0
0.019	0.022	20	0	0	0	0
0.032	0.033	20	9	0	0	0
0.054	0.050	20	0	0	1	1
0.090	0.085	20	9	14	15	16

Other Significant Results:

**B. Statistical Results**

Method: Moving average method

96-hr LC<sub>50</sub>: 0.070 ppm ai      95% C.I.: 0.063 - 0.079 ppm

Probit Slope: 11      NOEC: 0.033 ppm ai

**13. VERIFICATION OF STATISTICAL RESULTS**

Parameter	Result
Binomial Test LC <sub>50</sub> (C.I.)	0.070 (0.053-0.085) ppm ai
Moving Average Angle LC <sub>50</sub> (95% C.I.)	0.070 (0.063-0.079) ppm ai
Probit LC <sub>50</sub> (95% C.I.)	_____ ( _____ - _____ ) ppm ai
Probit Slope	_____
NOEC	ppm ai

**14. REVIEWER'S COMMENTS:**

The pH value and total hardness measured were too high. However, the LC50 value obtained probably is valid because statistical analysis is based on measured concentrations.

RICHARD LEE PRALLE BLUEGILL LC50

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
.085	20	16	80	.5908966
.05	20	1	5	2.002716E-03
.033	20	0	0	9.536742E-05
.022	20	0	0	9.536742E-05
.013	20	0	0	9.536742E-05

THE BINOMIAL TEST SHOWS THAT .05 AND .085 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 6.984291E-02

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS
1	.1382494	6.984291E-02	6.324115E-02

7.885836E-02

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H
10	.1956855	1

GOODNESS OF FIT PROBABILITY  
.9999405

SLOPE = 10.81479  
95 PERCENT CONFIDENCE LIMITS = 6.03072 AND 15.59885

LC50 = 7.104106E-02  
95 PERCENT CONFIDENCE LIMITS = 6.263514E-02 AND 8.014375E-02

LC10 = 5.420978E-02  
95 PERCENT CONFIDENCE LIMITS = 4.153875E-02 AND 6.169209E-02

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