



2001869

DATA EVALUATION RECORD
§ 72-1(C) -- ACUTE LC₅₀ TEST WITH A COLDWATER 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
Rainbow trout *Oncorhynchus mykiss*

Study Completion Date: 6/14/93

Laboratory: ABC Laboratory, Inc.

Sponsor: Sumitomo Chemical Co. Ltd.

Laboratory Report ID: SGW-31-0002

MRID No.: 437507-16

DP Barcode: 228125

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

Signature:

Richard D. Lee

Date: 1/29/97

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

Signature:

Ann Stavola

Date: 2/3/97

6. STUDY PARAMETERS

<u>Scientific Name of Test Organism:</u>	<i>Oncorhynchus mykiss</i>
<u>Age or Size of Test Organism:</u>	1.19 ± 0.3 g., 44 ± 4 mm
<u>Definitive Test Duration:</u>	96 hrs
<u>Study Method:</u>	A 96-h acute toxicity test
<u>Type of Concentrations:</u>	flow-through

7. CONCLUSIONS:

Results Synopsis

LC₅₀: 0.038 ppm ai

NOEL: 0.021 ppm ai

95% C.I.: 0.021-0.062 ppm ai

Probit Slope: 9.8

8. ADEQUACY OF THE STUDY

A. Classification: Core

B. Rationale:

C. Repairability:

9. GUIDELINE DEVIATIONS

1. The pH value was too high (8.0-8.2 instead of 7.2-7.6)

DP Barcode: D228125

MRID No.: 437507-16

2. Total Hardness was too high (134-148 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 rainbow trout (<i>Onchorhynchus mykiss</i>)	<i>Rainbow trout</i> <i>Oncorhynchus mykiss</i>
<u>Mean Weight</u> 0.5-5 g	1.19 g ± 0.30 g
<u>Mean Standard Length</u> Longest not > 2x shortest	Mean: 44 mm Range: 40 - 48 mm
<u>Supplier</u>	Mt. Lassen Trout Farm Red Bluff, Calif.
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, but was hatched at WLI lab.
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
Pretest Mortality < 3% mortality 48 hours prior to testing	No 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	Blended natural hard well water & demineralized hard well water.
Does water support test animals without observable signs of stress?	Yes
Water Temperature 12°C	12 °C
pH Prefer 7.2 to 7.6	8.0 - 8.2
Dissolved Oxygen Static: ≥ 60% during 1 st 48 hrs and ≥ 40% during 2 nd 48 hrs, flow-through: ≥ 60%	8.8 to 9.3 mg/L (or 85 - 90%) at 12°C
Total Hardness Prefer 40 to 48 mg/L as CaCO ₃	134 - 148 mg/L as CaCO ₃
Test Aquaria 1. Material: Glass or stainless steel 2. Size: Volume of 18.9 L (5 gal) or 30 x 60 x 30 cm 3. Fill volume: 15-30 L of solution	glass 45-L 56.6 cm(L) x 26.5 cm(W) x 30.8 cm(H) 30 L
Type of Dilution System 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
<u>Flow Rate</u> Consistent flow rate of 5-10 vol/24 hours, meter systems calibrated before study and checked twice daily during test period.	15 vol/24 hours
<u>Biomass Loading Rate</u> 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	0.053 g/L (or g/L/day)
<u>Photoperiod</u> 16 hours light, 8 hours dark	16 hrs light
<u>Solvents</u> Not to exceed 0.5 ml/L for static tests or 0.1 ml/L for flow-through tests	Solvent: DMF Maximum conc.: 0.1 ml/L.

D. Test Design

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

Guideline Criteria	Reported Information
<p><u>Water Parameter Measurements</u></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>12 °C measured at 0, 48, and 96 hrs</p> <p>Measured all test conc. at 0, 48, and 96 hrs.</p>
<p><u>Chemical Analysis</u> 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 0.012, 0.021, 0.040, 0.062, and 0.1 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)	Number of Fish	Cumulative Number Dead

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	0.012	20	0	0	0	0
0.019	0.021	20	0	0	0	0
0.032	0.040	20	9	11	11	11
0.054	0.062	20	20	20	20	20
0.090	0.10	20	20	20	20	20

Other Significant Results:

B. Statistical Results

Method: Binomial Test

96-hr LC₅₀: 0.038 ppm ai (measured) 95% C.I.: 0.021-0.062 ppm

Probit Slope: 9.8

NOEC: 0.021 ppm ai

13. VERIFICATION OF STATISTICAL RESULTS

Parameter	Result
Binomial Test LC ₅₀ (C.I.)	0.038(0.021-0.062) ppm ai
Moving Average Angle LC ₅₀ (95% C.I.)	____ (____ - ____) ppm ai
Probit LC ₅₀ (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 RAINBOW TROUT LC50

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
.1	20	20	100	9.536742E-05
.062	20	20	100	9.536742E-05
.04	20	11	55	41.19014
.021	20	0	0	9.536742E-05
.012	20	0	0	9.536742E-05

THE BINOMIAL TEST SHOWS THAT .021 AND .062 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 3.833395E-02

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.
