128834

DATA EVALUATION RECORD

1. Chemical: Pyridate

2. Test Material: LX101-01-45 WP (45% ai)

3. Study Type: Acute Toxicity - Marine/Estuarine (96 hr LC_{50})

   Species tested: Mysidopsis bahia

4. Study ID: Irwin, S. and G. S. Ward. 1984. Acute toxicity of LX101-01-45 WP to mysid (Mysidopsis bahia). Prepared by Springborn Bionomics; submitted to W. R. Landis Assoc., Inc.; submitted by Gilmore, Inc. Acc. No. 073281.

5. Review By: John J. Bascietto
   Wildlife Biologist
   Ecological Effects Branch/HED
   Signature: John J. Bascietto
   Date: 5/1/85

6. Approved By: Dave Coppage
   Supervisory Biologist
   Ecological Effects Branch/HED
   Signature: D Coppage
   Date: 5/1/85

7. Conclusions:

   The study is scientifically sound. With a 96-hr LC_{50} = 3.8 (3.3-4.4) ppm this formulation is considered "moderately" toxic to mysid shrimp. The study fulfills a requirement for formulation test of a marine/estuarine shrimp, under the Pesticide Assessment Guidelines.

8. Recommendations:

   N/A

9. Background:

The study was required to support proposed registrations on rice.

10. Discussion of Individual Studies: N/A

11. Materials/Methods

(Definitive study)

A. Test Animals - 3-day-old shrimp (Mysidopsis bahia) cultured at the test facility, fed brine shrimp nauplii daily prior to test. Test system - 1.6 glass culture dish with 1 final volume of solution; salinity = 30 parts per thousand; test conducted under flourescent lightning, 14 hr light/10 hr dark; water temp = 21-23°C; no aeration. Feeding was discontinued during the test. Observed mortality during holding period (48 hrs) was 2%. Dilution water is natural filtered seawater. Loading $\leq$ 0.8 g/ on test.

B. Dose: Static bioassay using nominal concentrations. No carrier used.

C. Design: Two (2) replicate bowls, each with 10 shrimp; seven (7) doses - 0.37, 0.62, 1.0, 1.7, 2.9, 4.8, and 8.0 ppm were used plus a negative seawater control (2 replicates each).

D. Statistics: Stephan's method for LC_{50}.

12. Reported Results:

LX101-01-45 WP was acutely toxic to shrimp. No control mortality. 0-15% mortality at $\leq$ 2.9 ppm. 75-85% mortality at $\geq$ 4.8 ppm. Water quality parameters were within the acceptable ranges for mysids. Some of the higher concentrations (1.7.- 8 ppm) were "cloudy" indicating a possible precipitate formation. Some lethargy and partial loss of equilibrium was noted at the higher concentrations ($\geq$ 1.7 ppm) 48, 72 and 96 hours.

Dose mortality data are indicated on the attached statistical analysis.

13. Study Author's Conclusions/QA Measures

96-hr LC_{50} = 3.8 ppm (3.3 - 4.4 ppm)
Q.A. statement attached to report (p. 6) signed by Thomas P. Maziarz.

14. Reviewer's Discussion and Interpretation of Study

A. Test Procedures: generally consistent with recommended protocols in the guidelines.

B. Statistical Analysis: EEB evaluated the tabular mortality data against the nominal concentrations using the "TOXANAL" program which is very similar to the method used by the authors. The results of this analysis are attached and agree with the analysis of the authors except for the upper limit of the 95% ci.

C. Discussion/Results

The data indicate that this formulation is considered "moderately" toxic to mysid shrimp in an acute static 96-hr bioassay.

D. Adequacy of the Study

1. Classification: Core

2. Rationale: Scientifically sound study consistent with guidelines

3. Repair: N/A

15. Completion of One-Liner: April 17, 1985

16. CBI Appendix - Statistical Analysis attached.

Pyridate 45 WP

LX101-01-45 W.P. 96HR

SASCIETTO MYSID SHRIMP LC50 (FORMULATION)

****

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
8	20	17	85	.128841
4.8	20	15	75	2.06947
2.9	20	3	15	.128841
1.7	20	2	10	.0201225
1	20	0	0	9.53674E-05
.62	20	0	0	9.53674E-05
.37	20	1	5	2.00272E-03

THE BINOMIAL TEST SHOWS THAT 2.9 AND 4.8 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 3.91471

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
3	.150172	4.09765	3.25828	5.32645

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
4	1.90622	10.9132	0

A PROBABILITY OF 0 MEANS THAT IT IS LESS THAN 0.001.

SINCE THE PROBABILITY IS LESS THAN 0.05, RESULTS CALCULATED
USING THE PROBIT METHOD PROBABLY SHOULD NOT BE USED.

SLOPE = 2.99144
95 PERCENT CONFIDENCE LIMITS =-1.13872 AND 7.12161

LC50 = 3.99362
95 PERCENT CONFIDENCE LIMITS = 0 AND +INFINITY

LC10 = 1.50253
95 PERCENT CONFIDENCE LIMITS = 0 AND 4.11465

****