DP Barcode : D198211
PC Code No : 129011
EEB Out : / / 7-20-94

To: Cynthia Giles-Parker
Product Manager 22
Registration Division (7505C)

From: Anthony F. Maciorowski, Chief
Ecological Effects Branch/EFED (H7507C)

Attached, please find the EEB review of...

Reg./File # : 000707-EGN
Chemical Name : Fenbuconazole
Type Product : fungicide
Product Name : Indar
Company Name : Rohm & Haas
Purpose : Review eco-effects data.

Action Code: 101 Date Due: 5/11/94
Reviewer: Regina Hirsch

EEB Guideline/MRID Summary Table: The review in this package contains an evaluation of th following:

GDLN NO	MRID NO	CAT	GDLN NO	MRID NO	CAT	GDLN NO	MRID NO	CAT
71-1(A)			72-2(A)			72-7(A)		
71-1(B)			72-2(B)			72-7(B)		
71-2(A)			72-3(A)	430590-02		122-1(A)		
71-2(B)			72-3(B)			122-1(B)		
71-3			72-3(C)			122-2		
71-4(A)			72-3(D)			123-1(A)		
71-4(B)			72-3(E)			123-1(B)		
71-5(A)			72-3(F)			123-2		
71-5(B)			72-4(A)			124-1		
72-1(A)			72-4(B)			124-2		
72-1(B)			72-5			141-1		
72-1(C)			72-6			141-2		
72-1(D)						141-5		

Y=Acceptable (Study satisfied Guideline)/Concur
P=Partial (Study partially fulfilled Guideline but additional information is needed
S=Supplemental (Study provided useful information but Guideline was not satisfied)
N=Unacceptable (Study was rejected)/Nonconcur

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DATA EVALUATION RECORD

1. CHEMICAL: Fenbuconazole (RH-57,592)

2. TEST MATERIAL: 98% TGAI, white powder, Lot Number BPP-3-1786R.

3. STUDY TYPE: §72-3

4. CITATION:

Author:	Mark W. Machado
Title:	RH-57,592 technical - acute toxicity to mysid shrimp (*Mysidopsis bahia*)
Date:	10 December 1993
Laboratory Report #:	93-11-5012
Any Other Study #:	86.0493.6167.515
Sponsor:	Rohm and Haas
Sponsor #:	93RC-0072
Laboratory:	Springborn Laboratories, Inc. Wareham, MA
MRID No.:	430580-02

5. REVIEWED BY:

Regina M. Hirsch, Wildlife Biologist Signature: R. Hirsch
Ecological Effects Branch
Environmental Fate and Effects Division (7507 C) Date: 7/20/94

6. APPROVED BY:

Les Touart, Chief, Section 1 Signature: L. Touart
Ecological Effects Branch
Environmental Fate and Effects Division (7507C) Date: 7/20/94

7. CONCLUSION

This study appears to be scientifically sound and fulfills the guideline requirements for an acute toxicity test on mysids. The 96-hour EC_{50} was 0.63 mg ai/L, which classifies Fenbuconazole as being highly toxic to mysid shrimp.

8. RECOMMENDATIONS

9. BACKGROUND

10. MATERIALS AND METHODS

A. Test Organisms: Mysid Shrimp

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Guideline Criteria	Reported Information
Species (Scientific Name)	*Mysidopsis bahia*
Mean Weight (> 0.5 grams)	≤ 24 hours old
Supplier	Springborn Laboratories. SLI Lot Number 93Ab
All shrimp from same source (yes or no)	yes
All shrimp from the same year class (yes or no)	yes
Other Comments	

B. Source/Acclimation

Guideline Criteria	Reported Information
Acclimation Period (minimum 10 days)	N/A
Wild caught 7 day quarantine (yes or no)	no
Check for signs of disease or injury (yes or no, if yes describe)	N/A
If diseased it can be treated in 48-hr pretest no sign of the disease remains (Report hours prior to test in which no sign of disease or N/A)	
<3% mortality 48 hours prior to testing (% mortality, if any)	Information not available

C. Test System:

Guideline Criteria	Reported Information
Describe source of dilution water	Seawater collected from Cape Cod Canal, Bourne, MA
Does water support test animals without observable signs of stress?	yes

What was the salinity of the water used? (30-34% ppt for marine (stenohaline) shrimp and 10-17% ppt for estuarine (euryhaline) shrimp.	31-33%
Water Temperature (22°C)	25 ± 1°C
pH 8.0-8.3 marine (stenohaline) shrimp 7.7-8.0 estuarine (euryhaline) shrimp	7.9-8.0
Dissolved Oxygen (Static 1st 48 hrs 40%; 2nd 48 hrs 60%; Flow-through 60%) (% of lowest conc. & hour)	
Total Organic Carbon	1.2 mg/L
Test Aquaria 1. Material (glass or stainless steel) 2. a. Static volume (18.9 L (5 gal or 19000 cc) with 15 L solution) b. Static or flow-through volume (300x600x300 = 54000 cc.)	19.5 glass aquaria 7-11 L fluctuation 39 X 20 X 25 cm
Type of Dilution System (Reproducible supply of toxicant)	yes
Flow rate Consistent flow rate-meter systems calibrated before study and checked 2*24 hours - 5 to 10 vol/24 hours	7 volume replacements per 24 hours
Biomass Loading Rate (Static no > 0.8 g/L ≤ 17°C; >17°C 0.5 g/L; Flow-through 1 g/L/24	0.00013 g biomass/L
Photoperiod (16 L & 8 D)	16 light and 8 dark

Solvents 1. (Do not exceed 0.5 ml/L for static tests) 2. (Do not exceed 0.1 ml/L for flow-through)	0.093 ml/L
Other Comments	

D. Test Design:

Guideline Criteria	Reported Information
Range Finding Test (LC_{50} >100 mg/L with 30 shrimp, no definitive test required.)	0.25, 0.41, 0.68, 1.1, 1.9 mg ai/L 100% mortality @ 1.1 and 1.9
Definitive Test	
Nominal Concentrations (control+5 treatment levels; dosage should be 60% of the next highest concentration; concentrations should be geometric series)	0.14, 0.24, 0.40, 0.66, 1.10 mg ai/L
Controls (Minimum control mortality; static 10%; flow-through 5%	0%
Number of Test Organisms; (Minimum 20/level can be divided among containers)	20 /test concentration and control
All organisms must be randomly assigned to test vessels. (yes or no, describe if no)	yes
Biological Observations (yes or no)	yes
Water Parameter Measurements 1. Temperature - record every 6 hrs;>1°C. 2. D.O. beginning,48 hrs,end for control high, medium, and low dose. 3. pH beginning,48 hrs, end for control, high, medium, and low dose.	Temp. continuously measured in 1 control replicate. Temp. measured in all other test and control vessels daily. For DO and pH see Table 1

Chemical Analysis (needed if aeration, volatile, insoluble, precipitate, not steel or glass, known to adsorb, and flow-through) (yes or no)	No visible signs of undissolved test material
Other Comments	

11. REPORTED RESULTS:

Guideline Criteria	Reported Information
Mean Measured Concentrations (report conc.)	0.16, 0.21, 0.33, 0.53, 0.94 mg ai/L
Recovery of Chemical (% recovery)	
Mortality & Observations (Describe observations & attach mortality tables)	See Table 3
Author's Comments	

12. STUDY AUTHOR'S CONCLUSIONS / QUALITY ASSURANCE MEASURES:

No conclusions were made.

Quality assurance and good laboratory practice statements were included in the report, indicating that the study was conducted in accordance with U.S. EPA Good Laboratory Practices Regulations set forth in FIFRA 40 CFR Part 160.

13. REVIEWER'S DISCUSSION AND INTERPRETATION

A. Test Procedure:
Test complied with guidelines.

B. Statistical Analysis

Guideline Criteria	Reported Information
Binomial (yes, no, or not reported)	yes, confidence intervals were calculated. 95% CI 0.53-0.94 mg ai/L
Moving Average Angle (yes, no, or not reported)	
Probit (yes, no, or not reported)	
Other Comments -- study used nonlinear interpolation	EC_{50} = 0.63 mg ai/L

C. Discussion/Results:

This study appears to be scientifically sound and fulfills the guideline requirements for an acute toxicity test on mysids. The 96-hour EC_{50} was 0.63 mg ai/L, which classifies Fenbuconazole as being highly toxic to mysid shrimp.

D. Adequacy of the Study:

1. Classification: Core

2. Rational:

3. Reparability:

14. COMPLETION DATE OF ONE-LINER FOR STUDY:

Regina Hirsch Fenbuconazole Acute Toxicity to Mysid Shrimp

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
.94	20	20	100	9.536742E-05
.53	20	4	20	.5908966
.33	20	0	0	9.536742E-05
.21	20	1	5	2.002716E-03
.16	20	0	0	9.536742E-05

THE BINOMIAL TEST SHOWS THAT .53 AND .94 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 .6333479

THE MOVING AVERAGE METHOD CANNOT BE USED WITH THIS DATA SET BECAUSE NO SPAN WHICH PRODUCES MOVING AVERAGE ANGLES THAT BRACKET 45 DEGREES ALSO USES TWO PERCENT DEAD BETWEEN 0 AND 100 PERCENT.

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
7	5.985625	15.93358	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 = 6.70461
95 PERCENT CONFIDENCE LIMITS =-9.698579 AND 23.1078

LC50 = .5997951
95 PERCENT CONFIDENCE LIMITS = 0 AND +INFINITY

LC10 = .3877761
95 PERCENT CONFIDENCE LIMITS = 0 AND +INFINITY

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RIN 3477-95

EEB FENBUCONAZOLE REVIEW

Page____ is not included in this copy.

Pages 9 through 12 are not included.

The material not included contains the following type of information:

____ Identity of product inert ingredients.

____ Identity of product impurities.

____ Description of the product manufacturing process.

____ Description of quality control procedures.

____ Identity of the source of product ingredients.

____ Sales or other commercial/financial information.

____ A draft product label.

____ The product confidential statement of formula.

____ Information about a pending registration action.

✓ FIFRA registration data.

____ The document is a duplicate of page(s) _____.

____ The document is not responsive to the request.

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.
