DP Barcode : D198211
PC Code No : 129011
EEB Out : / / 7-14-94

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 the 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) | 430580-01 | | 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

**DATA EVALUATION RECORD**

1. CHEMICAL: Fenbuconazole (RH7592)

2. TEST MATERIAL: 98% TGAI, white powder, CAS Number: 114369-43-6. Lot Number: BPP-3-1786R.

3. STUDY TYPE: §72-3 Estuarine Fish 96-hour Acute Toxicity Test.

4. CITATION:

Author: Mark W. Machado
Title: RH-57,692 Technical - Acute toxicity to Sheepshead minnow (*Cyprinodon variegatus*) under flow-through conditions.
Date: 16 December 1993
Laboratory Report #: 93-10-5017
Any Other Study #: 86.0493.6166.505
Sponsor: Rohm and Haas Company
Sponsor #: 93RC-0071
Laboratory: Springborn Laboratories, Inc.
MRID No.: 430580-01

5. REVIEWED BY:

Regina M. Hirsch, Wildlife Biologist Signature:
Ecological Effects Branch
Environmental Fate and Effects Division (7507 C) Date: 7/12/94

6. APPROVED BY:

Les Touart, Chief, Section 1 Signature:
Ecological Effects Branch
Environmental Fate and Effects Division (7507C) Date: 7/14/94

7. CONCLUSION

This study is scientifically sound and fulfills the guideline requirements for an acute toxicity test using the sheepshead minnow (*Cyprinodon variegatus*). Under the conditions of the test, the 96-hour $LC_{50}$ was 1.8 mg ai/L, which classifies Fenoxycarb as moderately toxic to sheepshead minnows.

8. RECOMMENDATIONS

9. BACKGROUND

2

10. MATERIALS AND METHODS

A. Test Organisms: Sheepshead minnow

| Guideline Criteria | Reported Information |
|---|---|
| Species (Scientific Name) | *Cyprinodon variegatus* |
| Mean Weight (0.5-5 grams) | 0.30 (0.12-0.56) grams |
| Mean Length(S.L. longest not > 2x shortest | 26 (20-32) mm |
| Supplier | Aquatic Biosystems |
| All fish from same source (yes or no) | yes |
| All fish from the same year class (yes or no) | yes |
| Other Comments | |

B. Source/Acclimation

| Guideline Criteria | Reported Information |
|---|---|
| Acclimation Period (minimum 14 days) | 14 days |
| Wild caught 7 day quarantine (yes or no) | no |
| Check for signs of disease or injury (yes or no, if yes describe) | no, only checked for mortality |
| 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) | no mortality in fish 48 hours prior to start of the test. |
| No feeding during the study (When last fed) | 48 hours prior to testing. |
| <3% mortality 48 hours prior to testing (% mortality, if any) | 0% mortality prior to testing. |

C. Test System:

| Guideline Criteria | Reported Information |
|---|---|
| Describe source of dilution water (prefer soft reconstituted water) | Collected from Cape Cod Canal, Bourne, MA.Seawater was then passed through a series of polypropylene core filters & then recirculated within an epoxy-lined concrete reservoir prior to use. |
| Does water support test animals without observable signs of stress? | yes |
| Salinity of water used. (reconstituted seawater of 30-34% salinity) (weekly range of salinity is less than 6%) | 32% |
| Water Temperature (22 ± 1) | 22 ± 1 |
| pH (8.0-8.3 for marine-stenohaline fish and 7.7-8.0 for estuarine-euryhaline fish species) (monthly range is less than 0.8 of a pH unit) | 7.8-7.9 |
| Dissolved Oxygen (Static 1st 48 hrs 40%; 2nd 48 hrs 60%; Flow-through 60%) (% of lowest conc. & hour) | >80% in all test and controls vessels over 96 hours of testing. |
| Test Aquaria<br>1. Material (glass or stainless steel)<br>2. a. Static volume (18.9 L (5 gal or 19000 cc) with 15 L solution)<br>b. Static or flow-through volume (300x600x300 = 54000 cc.) | each glass test aquaria measured 39X20X25 cm. |
| Type of Dilution System (Reproducible supply of toxicant) | flow-through, reproducible. Tested and verified 16 days prior to start of the test. |

| | |
|---|---|
| Flow rate<br>Consistent flow rate-meter systems calibrated before study and checked 2*24 hours - 5 to 10 vol/24 hours | Flow of exposure to each test aquarium was approx. 500 ml/cycle, which equaled approx. 8.4 volume repalcements per 24 hours per aquarium. |
| Biomass Loading Rate<br>(Static no > 0.8 g/L ≤ 17°C; >17°C 0.5g/L; Flow-through 1 g/L/24 | 0.0032 g/L of flowing test solution per day. |
| Photoperiod<br>(16 L & 8 D) | 16 hours light, 8 hours dark. |
| Solvents<br>1. (Do not exceed 0.5 ml/L for static tests)<br>2. (Do not exceed 0.1 ml/L for flow-through) | 0.43 ml/ml |
| Other Comments | |

D. Test Design:

| Guideline Criteria | Reported Information |
|---|---|
| Range Finding Test<br>($LC_{50}$ >100 mg/L with 30 fish, no definitive test required.) | 0.39, 0.65, 1.1, 1.8, & 3.0 mg ai/L plus dilution water control |
| Definitive Test | |
| Nominal Concentrations<br>(control+5 treatment levels; dosage should be 60% of the next highest concentration; concentrations should be geometric series) | 0.39, 0.65, 1.1, 1.8, 3.0 mg ai/L |
| Controls<br>(Minimum control mortality; static 10%; flow-through 5% | 5% mortality observed in the solvent control, 0% mortality in non-solvent control. |
| Number of Test Organisms; (Minimum 10/level can be divided among containers) | 20 fish (10 per test aquaria) per concentration and controls were used. 140 fish total. |
| All organisms must be randomly assigned to test vessels. (yes or no, describe if no) | impartially selected. |



5

| | |
|---|---|
| Biological Observations (yes or no) | yes, at test initiation and every 24 hours. |
| Water Parameter Measurements<br>1. Temperature - record every 6 hrs;>1°C.<br>2. D.O. beginning,48 hrs,end for control high, medium, and low dose.<br>3. pH beginning,48 hrs, end for control, high, medium, and low dose. | recorded continuously in one control aquaria.<br>pH, temperature, and DO were measured in each replicate vessel daily throughout exposure period. |
| Chemical Analysis (needed if aeration, volatile, insoluble, precipitate, not steel or glass, known to adsorb, and flow-through) (yes or no) | yes, sample from each replicate solution of high, medium, and low treatment levels and dilution water control prior to definitive test. In addition, water samples were taken both replicate test solutions of each treatment level and the controls at 0-hour and 96 - hours of exposure for analysis. |
| Other Comments | |

11. REPORTED RESULTS:

| Guideline Criteria | Reported Information |
|---|---|
| Mean Measured Concentrations (report conc.) | 0.32, 0.54, 0.89, 1.5, 2.3 mg ai/L |
| Recovery of Chemical (% recovery) | 81% of nominal concentrations |
| Mortality & Observations (Describe observations & attach mortality tables) | 2.3 mg/L -- 100% mortality<br>1.5 & solvent control -- 5% mortality (sublethal effects observed in all surviving fish)<br>0.32 -- 10% mortality (no sublethal effects observed in remaining fish)<br>0.54 & 0.89 -- no mortality & no sublethal effects observed. |
| Author's Comments | |



6

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

Lack of a dose-response in the 0.54 and 0.89 mg/l treatment levels, indicate that the mortality (10%) observed in the 0.32 mg/L treatment level is not considered an adverse response from exposure to RH57,592. Therefore, based on these results, the 96-hour LC50 value was estimated by nonlinear interpolation to be 1.8 mg ai/L (95% C.I. 1.5-2.3 mg ai/L). And the NOEC established would be 0.89 mg ai/L.

Submitted Quaility Assurance statement which states the report accurately reflects the raw data collected.

13. REVIEWER'S DISCUSSION AND INTERPRETATION

A. Test Procedure:

The following items did not meet the guideline criteria:

1. Study fish weighed less than what is generally recommended (0.12-0.56), should be between 0.5-5.0 grams.

2. Small amount of precipitate was observed in the mixing chamber of diluter system, however analyticl data indicates the test concentrations were maintained to be 81% on nominal.

B. Statistical Analysis

| Guideline Criteria | Reported Information |
|---|---|
| Binomial (yes, no, or not reported) | yes, 96-hour $LC_{50}$ = 1.8 (C.I. 1.5 - 2.3) mg ai/L |
| Moving Average Angle (yes, no, or not reported) | no |
| Probit (yes, no, or not reported) | no |
| Other Comments | |

C. Discussion/Results:

This study is scientifically sound and fulfills the guideline requirements for an acute toxicity test using sheepshead minnows. Under the conditions of the test, the 96-hour $LC_{50}$ was 1.8 mg ai/L, which classifies Fenoxycarb as moderately toxic to sheepshead minnows..

D. Adequacy of the Study:

1. Classification: Core

2. Rational:

3. Reparability:

14. COMPLETION DATE OF ONE-LINER FOR STUDY:



8

RIN 3477-95

EEB REVIEW OF FENBUCONAZOLE

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.

---