US EPA ARCHIVE DOCUMENT

(2)

DATA EVALUATION RECORD

1. CHEMICAL: α-butyl-α-(4-chlorophenyl)-1H-1,2,4-triazole-1-propanenitrile

SHAUGHNESSY NUMBER 128857

2. TEST MATERIAL:

RH-53,866, Lot LSPL 83/0017E, 84.5% a.i.

3. STUDY IDENTIFICATION:

McAllister, W.A., 1984. Acute Toxicity of RH-53,866 to Bluegill Sunfish (Lepomis macrochirus) Report #30725, Analytical Bio-chemistry Laboratories, Inc., P.O. Box 1097, Columbia, Missouri. EPA Eup Nos. 707-EUP-RNL and 707-EUP-RNU, Acc. No. 072894

4. STUDY TYPE:

Acute Toxicity Test for Freshwater Fish

5. REVIEWED BY:

Robert W. Pilsucki Robert W Pilsucki 1/2/85
Microbiologist
Ecological Effects Branch/HED

6. APPROVED BY:

for Raymond Matheny Dennis McFarl
Head, Review Section 1

7. REPORTED CONCLUSIONS:

The 96-hour LC_{50} for the bluegill sunfish was 2.4 (95% C.L. = 1.5-4.7) mg/L.
NOEC = 1.5 mg/L

8. REVIEWER S CONCLUSIONS:

This study is scientifically sound and with an LC_{50} of 2.4 RH-3866 is moderately toxic to the bluegill sunfish. This study fulfills the requirement for an LC_{50} to warmwater fish.

9. MATERIALS AND METHODS

Species: Bluegill sunfish (*Lepomis macrochirus*)

Fish weight: $\overline{X} = 0.12 \pm 0.03$ g

Fish holding period:

Fish were observed for at least 14 days in culture tanks where they were fed commercial fish food. Fish were acclimated to the dilution water at 22°C for at least 48 hours without food.

Fish source:

Osage Catfisheries
Osage Beach, Missouri

Food withholding: At least 48 hours

Test vessel:

Size/Volume: The test vessels were 5-gallon size containing 15 L of dilution water.

Construction: Glass

Loading: 0.08 g/L (Calculated by this reviewer based on 10 fish per vessel)

Test water:

Temperature: 22 ± 1°C

Water source and chemistry: Soft reconstituted water (containing $NaHCO_3$, 48 mg; $CaSO_4.2H_2O$, 30 mg; $MgSO_4$, 30 mg; KCl, 2 mg per liter deionized water) was used and had the following parameters: hardness, 40-45 mg/L as $CaCo_3$; alkalinity, 30-35 mg/L as $CaCO_3$; conductivity, 700 mho/cm; D.O., 9.2-10.2 ppm; pH, 7.8-8.3.

The dilution water was also analyzed for organo-phosphorous pesticides, organo-chlorine pesticides and PCB s (see attached tables).

Aeration: None

D.O.: During the test, the dissolved oxygen measurements were (in mg/L):

Time (hr)	Control	Low Concentration	High* Concentration
0	8.7	7.6	7.3 (8.4)
48	9.0	7.5	6.7 (2.7)
96	9.0	7.5	6.2 (2.7)

*Number in parentheses indicates concentration in mg/L at which D.O was measured.

pH: During the test, the pH measurements were:

Time (hr)	Control	Low Concentration	High* Concentration
0	7.3	7.3	7.2 (8.4)
48	7.3	7.3	7.2 (2.7)
96	7.4	7.3	7.1 (2.7)

*Number in parentheses indicates concentration in mg/L at which D.O. was measured.

Solvent: Acetone. The maximum amount of solvent did not exceed 0.5 ml/L.

Controls:

Both negative and solvent controls were run concurrently. Neither showed any mortalities.

Number of fish/concentration: 10

Concentrations - mortalities:

Bluegill 96-hour LC_{50}

Concentration[a] (mg/L)	Number Exposed	Number Dead	Percent Mortality
8.4	10	10	100
4.7	10	10	100
2.7	10	7	70
1.5	10	0	0
0.84	10	0	0

[a]Dose adjusted to reflect 100% a.i.

Toxic symptoms:

Quiescence and loss of equilibrium were observed at the 2.7 mg/L concentration prior to death. No toxic symptoms were observed at the 1.5 mg/L level.

10. STATISTICAL ANALYSIS:

The LC_{50} and 95% confidence limits were calculated by the computerized method of Stephan et al.

11. DISCUSSION: There was no Discussion section in this study.

12. REVIEWER s EVALUATION:

Test procedure: The test procedures generally follow EPA s guidelines for an acute toxicity study for warmwater fish.

Statistical analysis: EEB verification of the results showed that neither the moving average nor the probit method could give a statistically sound LC_{50}. The binominal test gave an LC_{50} of 2.4 (95% C.L. = 1.5 and 4.7) mg/L.

Discussion: The conclusions reached in this study generally coincide with those attained by EEB. This study indicates that RH 3866 is moderately toxic to warmwater fish under the conditions tested.

13. CONCLUSIONS:

Category: Core

Rationale: This study follows EPA s guidelines for an acute toxicity test for freshwater fish.

Repairability: N/A

PILSUCKI RH-3866 ACUTE TOXICITY FOR FRESHWATER FISH - Bluegill
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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
8.4	10	10	100	.0976563
4.7	10	10	100	.0976563
2.7	10	7	70	17.1875
1.5	10	0	0	.0976563
.84	10	0	0	.0976563

THE BINOMIAL TEST SHOWS THAT 1.5 AND 4.7 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 2.36097

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.

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