5-17-89

Accession No. 407009-11

DATA EVALUATION RECORD

1. **CHEMICAL:** Ethyltrianol
   Shaughnessey Number: 128997

2. **TEST MATERIAL:** HWG-1608 Technical; Lot No. 86R00 82I 96.28% and 94.7% active ingredient; an off-white powder

3. **STUDY TYPE:** Acute Toxicity Test for Freshwater Fish.
   Species Tested: Rainbow trout (Salmo gairdneri)

4. **CITATION:** Surprenant, D. C. 1987. Acute Toxicity of HWG-1608 (Technical Grade) to Rainbow trout (Salmo gairdneri) under Flow-Through Conditions: SLS Report #87-5-2394: SLS Study #274.1186.6127.108. Prepared by Springborn Life Sciences, Inc., Wareham, Massachusetts. Submitted by Mobay Corporation, Stilwell, Kansas. Accession No. 407009-11.

5. **REVIEWED BY:**

   Kimberly D. Rhodes
   Associate Scientist
   KBN Engineering and
   Applied Sciences, Inc.

   Signature: Kimberly D. Rhodes
   Date: April 5, 1989

6. **APPROVED BY:**

   Prapimpan Kosalwat, Ph.D.
   Staff Toxicologist
   KBN Engineering and
   Applied Sciences, Inc.

   Signature: P. Kosalwat
   Date: 4/5/89

   Henry T. Craven, M.S.
   Supervisor, EEB/HED
   USEPA

   Signature:
   Date: 5/17/89
   Henry T. Craven 5/17/89

7. **CONCLUSIONS:** This study appears scientifically sound and fulfills the Guideline requirements for a 96-hour acute flow-through toxicity study for a coldwater fish species. The 96-hour LC50, based upon mean measured concentrations, of HWG-1608 to rainbow trout (Salmo gairdneri) was 4.4 mg a.i./L. Therefore, HWG-1608 is considered moderately toxic to rainbow trout. The NOEC was determined to be 1.5 mg a.i./L.

8. **RECOMMENDATIONS:** N/A

9. **BACKGROUND:**

10. **DISCUSSION OF INDIVIDUAL TESTS:** N/A

11. **MATERIALS AND METHODS:**

A. **Test Animals:** Rainbow trout sunfish (Salmo gairdneri) used in this test were obtained from a commercial fish supplier in California. The fish were held in a 500-L fiberglass tank containing well water for a minimum of 14 days at 12 - 14°C. The fish were fed a dry commercial pelleted food, ad libitum, daily except during the 48 hours prior to testing. There was no mortality in the test fish population during the two days prior to testing. The rainbow trout used for this experiment had a mean wet weight of 0.29 gram (g) with a range of 0.17 to 0.47 g and a mean standard length of 34 millimeters (mm) with a range of 30 to 38 mm. The resulting test organism loading was 0.19 g of biomass per liter of test solution.

B. **Test System:** The test was conducted using an exposure system consisting of a continuous flow serial diluter (Benoit et al., 1982), a temperature controlled water bath, and a set of 14 test aquaria. The dilution water was from the same source as the water which flowed into the fish holding tank and was characterized as having a total hardness of 30 mg/L as $CaCO_3$, a total alkalinity of 33 mg/L as $CaCO_3$, a pH of 7.1, and a specific conductance range of 110 umhos/cm during the study period.

The test system was designed to provide five concentrations of test material with a 0.65 dilution factor, a dilution water control and solvent control. Each glass test aquarium measured 39 x 20 x 25 centimeters (cm) with a 19.5-cm high standpipe which maintained a constant test water volume of 15 L. The diluter provided approximately 6.5 volume additions per aquarium every 24 hours. The aquaria were impartially positioned in a water bath containing circulating water cooled by a Frigid Unit refrigeration system designed to maintain the test water temperature at 12 $\pm$ 1°C. A photoperiod of 16 hours of light and 8 hours of darkness was provided each day.

C. **Dosage:** 96-hour acute flow-through test.

D. **Design:** The test was initiated when 10 rainbow trout were impartially distributed to each aquarium. A control, solvent control, and five nominal HWG-1608 concentrations of 1.3, 2.1, 3.2, 4.9, and 7.5 mg a.i./L were tested. The solvent control solution contained the maximum amount of acetone present in any test concentration (324 uL/L). All concentrations were observed at 24, 48, 72, and 96 hours for mortality and abnormal effects. The water quality parameters (dissolved oxygen, pH, and temperature) were measured in both replicates of the controls and all test concentrations at 0, 24, 48, 72, and 96 hours of testing. Analytical determination of HWG-1608 was performed on all test solutions, control and solvent control at 0, 48, and 96 hours using high pressure liquid chromatography (HPLC).

E. **Statistics:** The concentrations of test substance lethal to 50 percent of the test population (LC50) was determined by the computerized calculation program (Stephan et al., 1978). LC50 values were empirically estimated as being greater than the highest concentration tested when no test concentrations caused 50% or more mortalities.

12. **REPORTED RESULTS:** The mean measured test concentrations, the corresponding mortalities and the physical and biological observations made during the 96-hour test are presented in Table 2 (attached). The mean measured concentrations of HWG-1608 (Technical grade) in exposure solutions during the 96-hour definitive test were 1.1, 1.5, 2.5, 3.9, and 6.1 mg/L. The mean measured concentrations of HWG-1608 (Technical grade) ranged from 71 to 85% of the nominal concentrations. The 96-hour LC50 for rainbow trout exposed to HWG-1608 was calculated by probit analysis to be 4.4 mg/L with a 95% confidence interval of 3.8 to 5.2 mg/L. Based on the results of this study, the no-observed-effect concentration for rainbow trout and HWG-1608 (Technical grade) was determined to be 1.5 mg/L. The water quality parameters measured during this study remained within acceptable ranges for the survival of the rainbow trout and were unaffected by the concentrations of HWG-1608 (Technical grade) tested.

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:** Based on the results of this study, the 24-, 48-, 72-, and 96-hour LC50 values for rainbow trout exposed to HWG-1608 (Technical grade) were calculated to be > 6.1, > 6.1, > 6.1, and 4.4 mg a.i./L based on mean measured concentrations. The no-observed-effect concentration for rainbow trout and

HWG-1608 (Technical grade) was determined to be 1.5 mg a.i./L.

A GLP compliance statement was included in the report and the study was audited by a QA unit. A statement of quality assurance was included in the report, indicating that the study was conducted in accordance with U.S. EPA Good Laboratory Practice Standards: Pesticide Programs (40 CFR 160).

14. REVIEWER'S DISCUSSION AND INTERPRETATION OF STUDY RESULTS

A. Test Procedure: The test procedures were generally in accordance with protocols recommended by the Guidelines, but deviated from the SEP as follows:

o The SEP states that the concentration of solvent is not to exceed 0.10 mL/L under flow-through conditions. During this test, a solvent concentration of 0.324 mL/L was used.

o The SEP states that individual fish should weigh between 0.5 and 5 grams. The fish used in this study weighed between 0.17 and 0.47 grams.

o The SEP states that use of a natural dilution water with a hardness of 40 to 48 mg/L as $CaCO_3$ can be used in lieu of reconstituted water. The dilution water used for the toxicity test was well water with a total hardness of 30 mg/L as $CaCO_3$.

B. Statistical Analysis: The concentration of test substance lethal to 50 percent of the test population (LC50) and the slope of the concentration-response curve were determined by the EPA's Toxanal Computer program. The 96-hour LC50 value was estimated by the probit method to be 4.4 mg a.i./L with a 95 percent confidence interval of 3.8 to 5.2 mg a.i./L. The slope of the concentration-response curve was estimated to be 6.4.

C. Discussion/Results: The study results appear to be scientifically valid. The concentration of solvent used in this test (0.324 mL/L) exceeded the 0.1 mL/L limit for a flow-through test. However, the test is acceptable since no mortality was observed in the solvent control. The 96-hour LC50 value, based upon mean measured concentrations, was estimated to be 4.4 mg a.i./L. Therefore, HWG-1608 is considered moderately toxic to rainbow trout (Salmo gairdneri).

D. **Adequacy of the Study:**

(1) **Classification:** Core

(2) **Rationale:** N/A

(3) **Repairability:** N/A

15. **COMPLETION OF ONE-LINER:** Yes, 03-31-89

Shaughnessey No. 128997 (HWG-1608) Chemical Name Ethyltriano | Chemical Class ____ Page ____ of ____

Study/Species/Lab/ Accession	Chemical % a.i.	Results	Reviewer/ Date	Validat Statu
14-Day Single Dose Oral LD_{50}		LD50 = mg/kg (95% C.L.) Contr. Mort.(%)=		
Species ____		Slope= # Animals/Level= Age(Days)= Sex =		
Lab		14-Day Dose Level mg/kg/(% Mortality) ( ), ( ), ( ), ( ), ( )		
Acc.		Comments:		
14-Day Single Dose Oral LD_{50}		LD50 = mg/kg. (95% C.L.) Contr. Mort.(%)=		
Species ____		Slope= # Animals/Level= Age(Days)= Sex =		
Lab		14-Day Dose Level mg/kg/(% Mortality) ( ), ( ), ( ), ( ), ( )		
Acc.		Comments:		
8-Day Dietary LC_{50}		LC50 = ppm (95% C.L.) Contr. Mort.(%)=		
Species		Slope= # Animals/Level= Age(Days)= Sex =		
Lab ____		8-Day Dose Level ppm/(%Mortality) ( ), ( ), ( ), ( ), ( )		
Acc.		Comments:		
8-Day Dietary LC_{50}		LC50 = ppm (95% C.L.) Contr. Mort.(%)=		
Species		Slope= # Animals/Level= Age(Days)= Sex =		
Lab ____		8-Day Dose Level ppm/(%Mortality) ( ), ( ), ( ), ( ), ( )		
Acc.		Comments:		
48-Hour LC_{50}		LC50 = pp__ (95% C.L.) Contr. Mort.(%)= Sol. Contr. Mort.(%)=		
Species		Slope= # Animals/Level= Temperature =		
Lab ____		48-Hour Dose Level pp /(%Mortality) ( ), ( ), ( ), ( ), ( )		
Acc.		Comments:		
96-Hour LC_{50}		LC50 = 4.4 ppm (95% C.L. 3.8 - 5.2) Con. Mor(%)= 0 Sol. Con. Mor.(%)= 0	K.R. 05/31/89	Core
Species Salmo gairdneri 94.7% x 96.28%		Slope= 6.4 # Animals/Level= 20 Temp.= 12 ± 1°C		
Lab Springborn Life Sciences		96-Hour Dose Level ppm/(%Mortality) 1.1 (0), 1.5 (0), 2.5 (5), 3.9 (40), 6.1 (80)		
Acc. 407009-11		Comments: Based on mean measured concentrations		
96-Hour LC_{50}		LC50 = pp__ (95% C.L.) Con. Mort.(%)= Sol. Con. Mort.(%)=		
Species		Slope= # Animals/Level= Temp.=		
Lab ____		96-Hour Dose Level pp /(%Mortality) ( ), ( ), ( ), ( ), ( )		
Acc.		Comments:		

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