10 6-12-00

MRID No. 449017-03

DATA EVALUATION RECORD
§ 72-1 - ACUTE LC_{50} TEST WITH A COLDWATER FISH

1. **CHEMICAL:** Mesotrione PC Code No.: 122990

2. **TEST MATERIAL:** 4-(methylsulfonyl)-2-nitrobenzoic acid (MNBA) A metabolite of mesotrione - 97.1% purity

3. **CITATION:**

Authors: D.V. Smyth, S.J. Kent, and N. Shillabeer
Title: MNBA: Acute Toxicity to Rainbow Trout (*Oncorhynchus mykiss*)
Study Completion Date: August 22, 1997
Laboratory: Brixham Environmental Laboratory, Devon, England
Sponsor: ZENECA Ag Products, Wilmington, DE
Laboratory Report ID: BL6064/B
MRID No.: 449017-03
DP Barcode: D259964

4. **REVIEWED BY:** Mark Mossler, M.S., Toxicologist, Golder Associates Inc.

Signature: [signature] **Date:** 12/21/99

APPROVED BY: Max Feken, M.S., Environmental Toxicologist, Golder Associates Inc.

Signature: [signature] **Date:** 12/21/99

5. **APPROVED BY:** James Goodyear, USEPA

Signature: [signature] **Date:** 6/12/00

6. **STUDY PARAMETERS:**

Age or Size of Test Organism: 38-52 mm
Definitive Test Duration: 96 hours
Study Method: Static
Type of Concentrations: Nominal

7. **CONCLUSIONS:** This study is FOR MNBA scientifically sound and fulfills the guideline requirements. A 96-hour LC_{50} of >120 ppm classifies MNBA as practically non-toxic to the rainbow trout.

Results Synopsis:

LC_{50}: >120 ppm 95% C.I.: N/A
NOEC: not determined Probit Slope: N/A

8. **ADEQUACY OF THE STUDY:**

   A. Classification: Core

   B. Rationale: N/A

   C. Repairability: N/A

9. **GUIDELINE DEVIATIONS:** No guideline deviations of consequence were noted.

10. **SUBMISSION PURPOSE:**

11. **MATERIALS AND METHODS:**

   A. Test Organisms

Guideline Criteria	Reported Information
Species Preferred species is the rainbow trout (*Oncorhynchus mykiss*)	*Oncorhynchus mykiss*
Mean Weight 0.5-5 g	Range: 0.78-2.1 g Mean: 1.2 g
Mean Standard Length Longest not > 2x shortest	Range: 38-52 mm Mean: 44 mm
Supplier	West County Trout, Cornwall, England
All fish from same source?	Yes
All fish from the same year class?	Not reported

   B. Source/Acclimation

Guideline Criteria	Reported Information
Acclimation Period Minimum 14 days	Held under similar conditions to testing for 15 days prior to testing
Wild caught organisms were quarantined for 7 days?	N/A

Guideline Criteria	Reported Information
Were there signs of disease or injury?	Fish reported to be in good condition
If treated for disease, was there no sign of the disease remaining during the 48 hours prior to testing?	No medical treatment
Feeding No feeding during the study	Last fed 51 hours prior to testing
Pretest Mortality < 3% mortality 48 hours prior to testing	<2% mortality in the 9 weeks prior to testing

C. **Test System**

Guideline Criteria	Reported Information
Source of dilution water Soft reconstituted water or water from a natural source, **not** dechlorinated tap water	Dechlorinated (sodium thiosulphate) city water, particle and carbon filtered, and UV irradiated
Does water support test animals without observable signs of stress?	Yes
Water Temperature 12°C	11.7-12.9°C
pH Prefer 7.2 to 7.6	5.2-7.6
Dissolved Oxygen Static: ≥ 60% during 1st 48 hrs and ≥ 40% during 2nd 48 hrs, flow-through: ≥ 60%	≥62% of saturation during the first half of the test, ≥58% of saturation during the second half of the test
Total Hardness Prefer 40 to 200 mg/L as $CaCO_3$	45 mg/L as $CaCO_3$

Guideline Criteria	Reported Information
Test Aquaria 1. Material: Glass or stainless steel 2. Size: Volume of 18.9 L (5 gal) or 30 x 60 x 30 cm 3. Fill volume: 15-30 L of solution	 Glass 68-L 50 L
Type of Dilution System Must provide reproducible supply of toxicant	N/A
Flow Rate Consistent flow rate of 5-10 vol/24 hours, meter systems calibrated before study and checked twice daily during test period	N/A
Biomass Loading Rate Static: ≤ 0.8 g/L at ≤ 17°C, ≤ 0.5 g/L at > 17°C; flow-through: ≤ 1 g/L/day	0.74 g/L
Photoperiod 16 hours light, 8 hours dark	16 hours light, 8 hours dark
Solvents Not to exceed 0.5 mL/L for static tests or 0.1 mL/L for flow-through tests	Solvent: none Maximum conc.: N/A

D. Test Design

Guideline Criteria	Reported Information
Range Finding Test If LC_{50} >100 mg/L with 30 fish, then no definitive test is required.	30 fish tested at 120 ppm

Guideline Criteria	Reported Information
Nominal Concentrations of Definitive Test Control & 5 treatment levels; dosage should be 60% of the next highest concentration; concentrations should be in a geometric series	Control and 120 ppm
Number of Test Organisms Minimum 10/level, may be divided among containers	30
Test organisms randomly or impartially assigned to test vessels?	Yes
Biological observations made every 24 hours?	Yes
Water Parameter Measurements 1. Temperature Measured constantly or, if water baths are used, every 6 hrs, may not vary > 1°C 2. DO and pH Measured at beginning of test and ever 48 h in the high, medium, and low doses and in the control	Temperature was measured constantly in one test chamber and daily in each test chamber DO and pH were measured daily in each test chamber
Chemical Analysis Needed if solutions were aerated, if chemical was volatile, insoluble, or known to absorb, if precipitate formed, if containers were not steel or glass, or if flow-through system was used	Samples were collected from each vessel at 0, 48, and 96 hours after test initiation and analyzed using HPLC.

12. **REPORTED RESULTS:**

A. General Results

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes, but compliance was to UK GLPs

Guideline Criteria	Reported Information
Recovery of Chemical Percent of nominal, procedural recovery, limit of determination (LOD)	100% of nominal, procedural recovery not reported, LOD = 0.0084 ppm
Control Mortality Not more than 10% control organisms may die or show abnormal behavior.	0% mortality
Raw data included?	Yes
Signs of toxicity (if any) were described?	Yes

Analytical results

Nominal concentration (ppm)	Measured concentration (ppm)		
	Hour of Study		
	0	48	96
Control	<LOD	<LOD	<LOD
120	120	120	120

Mortality

Concentration (ppm)		Number of Fish	Cumulative Number Dead			
			Hour of Study			
Nominal	Mean Measured		24	48	72	96
Control	<LOD	30	0	0	0	0
120	120	30	0	0	0	0

Other Significant Results: Signs of test material toxicity noted in one fish included surfacing at 72 hours, and loss of balance at 96 hours.

B. Statistical Results

Method: visual assessment

96-hr LC_{50}: >120 ppm	95% C.I.: N/A
Probit Slope: N/A	NOEC: 120 ppm

13. VERIFICATION OF STATISTICAL RESULTS:

Method: visual assessment

96-hr LC_{50}: >120 ppm	95% C.I.: N/A
Probit Slope: N/A	NOEC: not determined

14. REVIEWER'S COMMENTS: This study is scientifically sound, fulfills the guideline requirements, and is classified as **Core.** Based on mean measured concentration, the 96-hour LC_{50} of >120 ppm classifies MNBA as practically non-toxic to the rainbow trout. The NOEC was not determined.