6-12-00

MRID No. 443735-10

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

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

2. **TEST MATERIAL:** ZA1296 — Purity: 95.1%

3. **CITATION:**

Authors:	H. Kelso, S.J. Kent, D.S. Morris, J.E. Caunter, and D.M. Vegh
Title:	ZA1296: Acute Toxicity to Rainbow Trout (*Oncorhynchus mykiss*)
Study Completion Date:	September 9, 1994
Laboratory:	Brixham Environmental Laboratory, Brixham Devon, UK
Sponsor:	ZENECA Ag Products, Wilmington, DE
Laboratory Report ID:	BL5492/B
MRID No.:	443735-10
DP Barcode:	D245475

4. **REVIEWED BY:** Max Feken, M.S., Environmental Toxicologist, Golder Associates Inc.

Signature: [signature] **Date:** 8/25/98

APPROVED BY: Pim Kosalwat, Ph.D., Senior Scientist, Golder Associates Inc.

Signature: P. Kosalwat **Date:** 8/25/98

5. **APPROVED BY:**

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

6. **STUDY PARAMETERS:**

Age or Size of Test Organism:	39-56 mm
Definitive Test Duration:	96 hours
Study Method:	Static
Type of Concentrations:	Mean measured

7. **CONCLUSIONS:** This study is scientifically and fulfills the guideline requirements for an acute toxicity test using the rainbow trout. The LC_{50} was >120 ppm, which classifies ZA1296 as practically non-toxic to the rainbow trout. The NOEC was 120 ppm.

Results Synopsis

LC_{50}: >114 ppm ai 95% C.I.: N/A

NOEC: 114 ppm ai Probit Slope: N/A

8. ADEQUACY OF THE STUDY:

A. Classification: Core

B. Rationale: Meets guideline requirements

C. Repairability: N/A

9. GUIDELINE DEVIATIONS:

1. Dilution water was dechlorinated tap water.
2. The pH of the test solution (6.35) was lower than recommended (7.2 - 7.6).
3. The dissolve oxygen (DO) fell below 60% of saturation during the first 48 hours. Aeration was introduced at 48 hours and DO returned to >90% of saturation for the remainder of the test.

10. SUBMISSION PURPOSE:

11. MATERIALS AND METHODS:

A. Test Organisms

Guideline Criteria	Reported Information
Species Preferred species is the rainbow trout (*Oncorhynchus mykiss*)	Rainbow trout (*Oncorhynchus mykiss*)
Mean Weight 0.1-5 g	1.75 g
Mean Standard Length Longest not > 2x shortest	39-56 mm
Supplier	Chalk Valley Trout Farm, Wiltshire, UK
All fish from same source?	Yes

Guideline Criteria	Reported Information
All fish from the same year class?	Yes

B. Source/Acclimation

Guideline Criteria	Reported Information
Acclimation Period Minimum 14 days	27 days
Wild caught organisms were quarantined for 7 days?	N/A
Were there signs of disease or injury?	No
If treated for disease, was there no sign of the disease remaining during the 48 hours prior to testing?	Fish were fed a medicated diet, with 0.6 g amoxicillin in 100 g Promin®, 8 days prior to test. No signs of disease were reported.
Feeding No feeding during the study	Last fed 48 hours prior to or during testing.
Pretest Mortality < 3% mortality 48 hours prior to testing	< 1% mortality 5 days 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	Filtered tap water, dechlorinated with sodium thiosulphate.
Does water support test animals without observable signs of stress?	Yes
Water Temperature 12°C	11.4 - 12.5°C
pH Prefer 7.2 to 7.6	6.35 - 7.64

Guideline Criteria	Reported Information
Dissolved Oxygen Static: ≥ 60% during 1st 48 hrs and ≥ 40% during 2nd 48 hrs, flow-through: ≥ 60%	≥52% during the test; aeration introduced at 48 hours
Total Hardness Prefer 40 to 200 mg/L as $CaCO_3$	41 mg/L as $CaCO_3$
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 100 L 80 L
Type of Dilution System Must provide reproducible supply of toxicant	Static test
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	0.66 g/L
Photoperiod 16 hours light, 8 hours dark	16 h light, 8 h 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.	The study was a limit test.
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	Negative control and one treatment concentration of 120 mg/L, not corrected for purity.
Number of Test Organisms Minimum 10/level, may be divided among containers	30 fish per treatment and control
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, DO, and pH were measured in each test chamber at test initiation and daily thereafter. Temperature was also measured hourly in the control vessel.
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	Solutions were collected from each test vessel at 0, 48, and 96 hours and analyzed by HPLC.

12. REPORTED RESULTS:

A. General Results

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes
Recovery of Chemical	120 mg/L (100% of nominal)
Control Mortality Not more than 10% control organisms may die or show abnormal behavior.	0% mortality in the negative control.
Raw data included?	Yes
Signs of toxicity (if any) were described?	No signs of test material toxicity were observed.

Mortality

Concentration (mg/L)		Number of Fish	Cumulative Number Dead			
			Hour of Study			
Nominal	Mean Measured		24	48	72	96
Negative Control	<0.073	30	0	0	0	0
120	120	30	0	0	0	0

Other Significant Results: No sublethal signs of test material toxicity were observed. Aeration was introduced to each test vessel at 48 hours due to the dissolved oxygen level falling below 60% of saturation. By 72 hours, the dissolved oxygen concentrations in the test solution returned to greater than 90% of saturation.

B. Statistical Results

Statistical method: Visual observation; based on the nominal concentration

LC_{50}: >120 mg/L 95% C.I.: N/A

Probit Slope: N/A NOEC: 120 mg/L

13. VERIFICATION OF STATISTICAL RESULTS:

Statistical method: Visual observation; based on the mean measured concentration

LC_{50}: >120 mg/L 95% C.I.: N/A

Probit Slope: N/A NOEC: 120 mg/L

14. REVIEWER'S COMMENTS: This study is scientifically sound and fulfills the guideline requirements for an acute toxicity test using the rainbow trout. The LC_{50} for rainbow trout exposed to ZA1296 was >120 ppm, the only concentration tested. This product is classified as practically non-toxic to the rainbow trout. The NOEC was determined to be 120 ppm. This study is classified as **Core**.