

**DATA EVALUATION RECORD**  
**§ 72-1 - ACUTE LC<sub>50</sub> 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

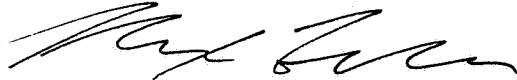
**Laboratory Report ID:** BL5492/B

**MRID No.:** 443735-10

**DP Barcode:** D245475

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

**Signature:**

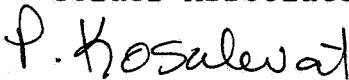


**Date:**

8/25/98

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

**Signature:**

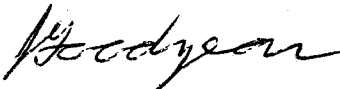


**Date:**

8/25/98

5. **APPROVED BY:**

**Signature:**



**Date:**

8/12/00

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<sub>50</sub> was >120 ppm, which classifies ZA1296 as practically non-toxic to the rainbow trout. The NOEC was 120 ppm.

**Results Synopsis**LC<sub>50</sub>: >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
<b><u>Species</u></b> Preferred species is the rainbow trout ( <i>Oncorhynchus mykiss</i> )	Rainbow trout ( <i>Oncorhynchus mykiss</i> )
<b><u>Mean Weight</u></b> 0.1-5 g	1.75 g
<b><u>Mean Standard Length</u></b> Longest not > 2x shortest	39-56 mm
<b><u>Supplier</u></b>	Chalk Valley Trout Farm, Wiltshire, UK
<b>All fish from same source?</b>	Yes

Guideline Criteria	Reported Information
<b>All fish from the same year class?</b>	Yes

**B. Source/Acclimation**

Guideline Criteria	Reported Information
<b><u>Acclimation Period</u></b> Minimum 14 days	27 days
<b>Wild caught organisms were quarantined for 7 days?</b>	N/A
<b>Were there signs of disease or injury?</b>	No
<b>If treated for disease, was there no sign of the disease remaining during the 48 hours prior to testing?</b>	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.
<b><u>Feeding</u></b> No feeding during the study	Last fed 48 hours prior to or during testing.
<b><u>Pretest Mortality</u></b> < 3% mortality 48 hours prior to testing	< 1% mortality 5 days prior to testing.

**C. Test System**

Guideline Criteria	Reported Information
<b><u>Source of dilution water</u></b> Soft reconstituted water or water from a natural source, not dechlorinated tap water	Filtered tap water, dechlorinated with sodium thiosulphate.
<b>Does water support test animals without observable signs of stress?</b>	Yes
<b><u>Water Temperature</u></b> 12°C	11.4 - 12.5°C
<b><u>pH</u></b> Prefer 7.2 to 7.6	6.35 - 7.64

Guideline Criteria	Reported Information
<b><u>Dissolved Oxygen</u></b> Static: $\geq 60\%$ during 1 <sup>st</sup> 48 hrs and $\geq 40\%$ during 2 <sup>nd</sup> 48 hrs, flow-through: $\geq 60\%$	$\geq 52\%$ during the test; aeration introduced at 48 hours
<b><u>Total Hardness</u></b> Prefer 40 to 200 mg/L as $\text{CaCO}_3$	41 mg/L as $\text{CaCO}_3$
<b><u>Test Aquaria</u></b> 1. <b><u>Material:</u></b> Glass or stainless steel 2. <b><u>Size:</u></b> Volume of 18.9 L (5 gal) or 30 x 60 x 30 cm 3. <b><u>Fill volume:</u></b> 15-30 L of solution	Glass  100 L  80 L
<b><u>Type of Dilution System</u></b> Must provide reproducible supply of toxicant	Static test
<b><u>Flow Rate</u></b> Consistent flow rate of 5-10 vol/24 hours, meter systems calibrated before study and checked twice daily during test period	N/A
<b><u>Biomass Loading Rate</u></b> Static: $\leq 0.8$ g/L at $\leq 17^\circ\text{C}$ , $\leq 0.5$ g/L at $> 17^\circ\text{C}$ ; flow- through: $\leq 1$ g/L/day	0.66 g/L
<b><u>Photoperiod</u></b> 16 hours light, 8 hours dark	16 h light, 8 h dark
<b><u>Solvents</u></b> 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
<b><u>Range Finding Test</u></b> If $LC_{50} > 100$ mg/L with 30 fish, then no definitive test is required.	The study was a limit test.
<b><u>Nominal Concentrations of Definitive Test</u></b> 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.
<b><u>Number of Test Organisms</u></b> Minimum 10/level, may be divided among containers	30 fish per treatment and control
<b>Test organisms randomly or impartially assigned to test vessels?</b>	Yes
<b>Biological observations made every 24 hours?</b>	Yes
<b><u>Water Parameter Measurements</u></b> 1. <u>Temperature</u> Measured constantly or, if water baths are used, every 6 hrs, may not vary $> 1^{\circ}C$ 2. <u>DO and pH</u> 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.
<b><u>Chemical Analysis</u></b> 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
<u>Recovery of Chemical</u>	120 mg/L (100% of nominal)
<u>Control Mortality</u> 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			
Nominal	Mean Measured		Hour of Study			
			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<sub>50</sub>: >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<sub>50</sub>: >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<sub>50</sub> 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**.