DATA EVALUATION RECORD
§ 72-2 -- ACUTE LC_{50} TEST WITH A FRESHWATER INVERTEBRATE

1. **CHEMICAL:** Glyphosate Acid PC Code No.:417300

2. **TEST MATERIAL:** Glyphosate Acid Purity: 95.6%

3. **CITATION**

Authors: Morris, D.S., Kent, S.J., Banner, A.J. and Wallace, S.J.
Title: Acute Toxicity To *Daphnia magna*
Study Completion Date: July 26, 1995
Laboratory: Brixham Environmental Laboratory
Sponsor: Zeneca Ag Products
Laboratory Report ID: BL5551/B
MRID No.: 443206-31
DP Barcode: 249306

4. **REVIEWED BY:** Curtis E. Laird, Fishery Biologist, EHB, EFED

Signature: Curtis E. Laird **Date:** 2-11-99 ✓

5. **APPROVED BY:** Tom A. Bailey, Chief, EHB, EFED

Signature: Tom A. Bailey **Date:** 2-17-99

6. **STUDY PARAMETERS**

Scientific Name of Test Organism: *Daphnia magna*
Age of Test Organism: <24 hours old
Definitive Test Duration: 48-hours
Study Method: Static
Type of Concentrations: Nominal

7. **CONCLUSIONS:** This study indicates Glyphosate Acid is practically nontoxic to daphnids with an LC50 of 134 ppm. The NOEC is 100 ppm. This study does fulfill the guideline requirements in support of registration for a freshwater invertebrate LC50 study.

Results Synopsis
LC_{50}: 134 ppm ai 95% C.I.: 100-180 ppm ai
NOEL: 100 ppm ai Probit Slope: N/A

8. **ADEQUACY OF THE STUDY**

A. Classification: Core

B. Rationale: N/A

C. Repairability: N/A

9. **Guideline Deviations**

1. None

10. **SUBMISSION PURPOSE:** This study was submitted in support of registration for glyphosate acid.

11. **MATERIALS AND METHODS**

A. **Test Organisms**

Guideline Criteria	Reported Information
Species Preferred species is *Daphnia magna*	Yes
All organisms are approximately the same size and weight?	Yes
Life Stage Daphnids: 1st instar (<24 h). Amphipods, stoneflies, and mayflies: 2nd instar. Midges: 2nd & 3th instar.	First instar
Supplier	
All organisms from the same source?	Yes, Laboratory culture

B. **Source/Acclimation**

Guideline Criteria	Reported Information
Acclimation Period Minimum 7 days	adults were held for 18 days days
Wild caught organisms were quarantined for 7 days?	No
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?	N/A)

Guideline Criteria	Reported Information
Feeding No feeding during the study.	Yes, defined diet of algae
Pretest Mortality No more than 3% mortality 48 hours prior to testing.	0% mortality 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.	Reconstituted water
Does water support test animals without observable signs of stress?	Yes
Water Temperature Daphnia: 20°C Amphipods and mayflies: 17°C Midges and mayflies: 22°C Stoneflies: 12°C	21 ± 1°C
pH Prefer 7.2 to 7.6.	Ranged from 6.12 to 8.79
Dissolved Oxygen Static: ≥ 60% during 1st 48 h and ≥ 40% during 2nd 48 h, flow-through: ≥ 60%.	DO ranged from 8.8 to 8.9
Total Hardness Prefer 40 to 48 mg/L as $CaCO_3$.	263 mg/L as $CaCO_3$
Test Aquaria 1. Material: Glass or stainless steel. 2. Size: 250 ml (daphnids and midges) or 3.9 L (1 gal). 3. Fill volume: 200 ml (daphnids and midges) or 2-3 L.	Yes

Guideline Criteria	Reported Information
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.	1 daphnid per 10 mls of test solution
Photoperiod 16 hours light, 8 hours dark.	Yes, with a 20 minute transition period
Solvents Not to exceed 0.5 ml/L for static tests or 0.1 ml/L for flow-through tests.	No solvent used

D. **Test Design:**

Guideline Criteria	Reported Information
Range Finding Test If LC_{50} >100 mg/L, then no definitive test is required.	None mentioned
Nominal Concentrations of Definitive Test Control & 5 treatment levels; a geometric series with each concentration being at least 60% of the next higher one.	56%
Number of Test Organisms Minimum 20/level, may be divided among containers.	Yes
Test organisms randomly or impartially assigned to test vessels?	Yes

Water Parameter Measurements 1. Temperature Measured continuously or, if water baths are used, every 6 h, 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.	Yes
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	Test solution parameters satified the guideline requirements.

12. **REPORTED RESULTS:**

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes
Control Mortality Static: ≤10% Flow-through: ≤5%	0%
Percent Recovery of Chemical	ranged from 83% to 100%
Raw data included?	Yes

Mortality

Concentration (ppm)		Number of Organ-isms	Cumulative Number Dead			
			Hour of Study			
Nominal	Mean Measured		24	48	72	96
Control	<0.0039	20	0	0	0	0
10	8.5	20	0	0	0	0
18	16	20	0	0	0	0

Concentration (ppm)		Number of Organ-isms	Cumulative Number Dead			
			Hour of Study			
Nominal	Mean Measured		24	48	72	96
32	28	20	0	0	0	0
56	49	20	0	0	0	0
100	93	20	0	0	0	0
180	180	20	20	0	0	0

Other Significant Results: N/A

B. Statistical Results

Method: Bionmial

48-hr LC_{50}: 134 ppm ai 95% C.I.: 100-180 ppm ai

Probit Slope: N/A NOEC: 100 ppm ai

13. VERIFICATION OF STATISTICAL RESULTS

Parameter	Result
Binomial Test LC_{50} (C.I.)	134 (100-180) ppm ai
Moving Average Angle LC_{50} (95% C.I.)	N/A (____-____) ppm ai
Probit LC_{50} (95% C.I.)	N/A (____-____) ppm ai
Probit Slope	
NOEC	100 ppm ai

14. REVIEWER'S COMMENTS:

This study indicates glyphosate acid is practically nontoxic to *Daphnia magna* with an LC50 of 134 ppm. This study does fulfill the guideline requirements in support of registration for a freshwater invertebrate LC50 study.