MRID 00108172

DATA EVALUATION RECORD

1. Chemical: Glyphosate, S# 103601

2. Test Material: Technical glyphosate - 83%

3. Study Type: 48-hour LC_{50} - Daphnia magna

4. Study ID: McAllister, W.; Forbis, A. (1978) Acute Toxicity of Technical Glyphosate (AB-78-201) to Daphnia magna. (Unpublished study received December 27, 1978, under 524-308; prepared by Analytical BioChemistry Laboratories, Inc., submitted by Monsanto Co., Washington, DC; CDL:097759-C and 097661.)

5. Reviewed by: Dennis J. McLane, Wildlife Biologist, EEB/HED — Signature: Dennis McLane — Date: 8-25-85

6. Approved by: Raymond W. Matheny, Section Head, EEB/HED — Signature: Raymond W. Matheny — Date: 8-30-85

7. Conclusion:

This study can be used for hazard assessment purposes. Also, it meets the guideline requirements. Using the toxicity categories of Brooks et al. (1973) the acute LC_{50} of 780 mg/l would place technical glyphosate into the category of practically nontoxic.

8. Recommendation:

N/A

9. Background:

Previously reviewed by D. McLane on August 8, 1979. This validation is due to the Registration Standard for the chemical glyphosate.

10. Discussion of Individual Test:

N/A

11. Materials and Methods:

a. Test Animals - were Daphnia magna from ABC facilities; first instar less than 18 hours old.

Test System - 500 ml glass beaker/250 ml of ABC well water, at 19 °C; 48 hours duration.

b. Dose - Static bioassay using nominal concentrations; no solvent used.

c. Design - Thirty Daphnia per level; 5 dose levels plus control (0, 560, 650, 750, 870, and 1000 mg/l).

d. Statistics - The Litchfield and Wilcoxon method was used to determine the LC_{50}.

12. Reported Results (Excerpted from Citation):

The results of the 48-hour static Daphnia magna toxicity study are summarized below.

Compound	48-hour LC_{50} (95% CI)
Technical Glyphosate	780 (696 - 874) mg/l

The no-effect level observed for technical glyphosate was 560 mg/l after 48 hours.

13. Study Author's Conclusions/QA Measures:

The author made no further conclusions than those under 12., Reported Results. Reported quality assurance measures are limited to references to acceptable protocols and statistical methods.

14. Reviewer's Discussion and Interpretation of the Study:

a. Test Procedures: The study meets the guideline procedures for an acute Daphnia study.

b. Statistical Analysis: The Litchfield and Wilcoxon method is adequate in this case. The reported LC_{50} 780 (696 to 874) mg/l is within the binomial confidence limits and nearly the same as the upper limit for the moving average method.

c. Discussion/Results: The study is adequate for hazard assessment and meeting the guidelines.

d. Adequacy of Study:

1. Classification: Core

2. Rationale: The guideline procedures were followed and reported.

3. Repairability: N/A

15. Completion of One-Liner for Study

Completed July 12, 1985

16. CBI Appendix:

N/A

103601

00108172

Data Evaluation Record

1. Chemical: Glyphosate

2. Formulation: Technical

3. Citation:

McAllister, W.A., A.D. Forbis, Static acute bioassay report, Acute toxicity of technical glyphosate (AB-78-201) to Daphnia magna, Analytical BioChemistry Laboratories, Inc. P.O. Box 1097, Columbia, MO 65205, submitted by Monsanto Company, St. Louis, Missouri (1978) for Registration No. 524-308, petition numbers 9F2163 and 9H5204, accession number 097759.

4. Reviewed by

Name	Dennis J. McLane	Signature	Dennis J McLane
Title	Biologist	Date:	8-8-79
Organization	EEB/HED		

5. Test Type

Fresh water aquatic invertebrate acute 48 hr. LC_{50}

6. Conclusion

The study is scientifically sound and with an LC_{50} of 780 mg/l is practically non-toxic to aquatic invertebrates. The study does fulfill the requirement for an aquatic invertebrate acute LC_{50} and is acceptable as "core" data.

7. Methods and Materials

Once the initial range finding experiment had determined the toxic level, four concentrations (870, 750, 650, 560 mg/l) were set up in triplicate with ten Daphnia (first, instar less than 18 hours old) per container (250 ml beaker). The protocol followed that recommended by USEPA with the exception that only 4 dosage levels were used.

8. Reported Results

The 48 hr. LC_{50} to Daphnia magna is 780 (696-874) mg/l. The no effect level observed for technical glyphosate was 560 mg/l.

9. Discussion

The Ecological Effects Branch has calculated an LC_{50} value of 761.663 mg/l with 95 percent confidence limits of 740.474 to 784.077 by the Finney probit method. This encompasses the value 780 mg/l derived by Analytical BioChemistry Laboratories. They also used on 4 dosage levels in the 48 hours test after finding that the two highest concentrations of the 24-hour test were both sufficient to cause 100 percent mortality. Therefore, the 100 mg/l and higher concentration were eliminated in the 48-hour test.

RECORD OF TELEPHONE CALL OR VISITOR

INCOMING CALL ☐ OUTGOING CALL ☒ VISITOR ☐

DATE 5/29/85 Time 1:34pm

NAME OF PERSON

LYLE GINGERICIL

NAME & ADDRESS OF COMPANY

MONSANTO COMPANY

COMPANY TEL. NO. (Include Area Code)

223-6968

REGISTRATION NO. OR FILE SYMBOL

DATE OF LATEST SUBMISSION

BRIEF SUMMARY OF CONVERSATION

Mr. Gingericil returned my call inquiring as to the purity of the glyphosate technical used in the following three studies.

ACC. NO.	MRID NO.	AUTHOR(s)
234395	MCOGLY07	McALLISTER & FORBIS
097661	MCOGLY08	THOMPSON & McALLISTER
097759-C	00108172	McALLISTER & FORBIS

All three tested the 83% technical glyphosate.

ACTION TAKEN

RECORDED BY (Name)

D. McLANE

REFERRED TO (Name)

PR FORM 1-5 (OCT. 1968)

USDA-ARS

00108172

MCLANE GLYPHOSATE DAPHNIA

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
870	30	30	100	0
750	30	10	33.3333	0
650	30	1	3.33333	0
560	30	0	0	0

THE BINOMIAL TEST SHOWS THAT 750 AND 870 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 771.589

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
2	.0395548	759.734	740.79	779.907

NO CONVERGENCE IN 25 ITERATIONS. THE PROBIT METHOD PROBABLY CANNOT BE USED WITH THIS SET OF DATA.

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MCLANE GLYPHOSATE DAPHNIA

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
870	30	30	100	9.31321E-08
750	30	10	33.3333	4.93685
650	30	1	3.33333	2.8871E-06
560	30	0	0	9.31321E-08

THE BINOMIAL TEST SHOWS THAT 650 AND 870 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 771.589

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
2	.0395548	759.734	740.79	779.907

NO CONVERGENCE IN 25 ITERATIONS. THE PROBIT METHOD PROBABLY CANNOT BE USED WITH THIS SET OF DATA.

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