

US EPA ARCHIVE DOCUMENT

Shaughnessy No. 900497

DATA EVALUATION RECORD

1. CHEMICAL: Dichlormid
2. TEST MATERIAL: 97.2% purity
3. TEST TYPE: Acute Toxicity Test for Freshwater Invertebrates
4. STUDY IDENTIFICATION:
Hamer, M.J., "An Investigation of the Toxicity to First Instar Daphnia magna" Prepared by ICI Agrochemicals Jealotts Hill Research Station, Study For: ICI Americas Inc.
MRID No.: 41561418
5. REVIEWED BY: Carol J. Belew, Biologist
EFED/EEB *Carol J. Belew 7/30/91*
6. APPROVED BY: Les Touart, Section Head
EFED/EEB *Les T. 2/30/91*
7. CONCLUSION:
ICI Agrochemicals Inc. determined that the 48 hour EC₅₀ value was 161 mg/l¹ based on mean measured concentrations. The 48 hour no observed effect level (NOEL) was 72 mg/l¹, based on mean measured concentrations. The study was scientifically sound and met the EPA requirements for a core study. This indicates that Dichlormid is relatively non-toxic to Daphnia magna
8. RECOMMENDATIONS: N/A
9. BACKGROUND: N/A
10. DISCUSSION OF INDIVIDUAL TESTS: N/A
11. METHODS AND MATERIALS:
 - A. Test Organisms:
Age/ Stage of maturity- Less than 24 hours old. First instar.
Source- Jealott's Hill Research Station
 - B. Dosage Form:
Solvents- No solvents were used
Route of administration- Daphnia were placed in 200 ml beakers with test solution.
 - C. Referenced Protocol
Test levels- 16, 26, 43, 72, 120, 200, 333 mg/l
Number per level- 10
Holding/acclimation- N/A
Feeding- Daphnia were fed a diet of Chlorella vulgaris prior to testing. They were not fed during the test.
Physical condition- Not given



Test Conditions-

Temperature- 20°C

Dissolved oxygen- Remained at 89% saturation level throughout the test.

pH/hardness- pH range = 8.1-8.3, hardness = hard.

Source of dilution water- Does not list source of water.

However, reconstituted water was prepared by dissolving the following reagents in de-ionized water: 192 mg/l NaHCO₃, 120 mg/l CaSO₄.2H₂O, 245 mg/l Mg SO₄.7H₂O and 8 mg/l KCl.

Test Vessels- 250 ml glass beakers containing 200 ml of the test solution.

Static/Renewal/Flow-through- Static

Photoperiod- 16 hours

Controls- Reconstituted water.

Measured test levels- 16, 26, 43, 72, 120, 200, 333 mg/l.

Observation period- 48 hours

Statistical methods- Statistical analysis of the results was done by using the Statistical Analysis System Package, version 5.16. Estimates of slope, log EC₅₀, EC₅₀ and 95% confidence intervals were obtained by the technique of iteratively reweighted least squares of probit response on log₁₀ (dose). Estimates of No Observed Effect Level (NOEL) were obtained by contrasting the effect at each dose with the effect in the control group using a t-test and a pooled estimate of error variance from a one-way analysis of variance using tests as replicates.

12. REPORTED RESULTS:

Effects criteria- The toxicity of the test chemical to the organism was assessed after 3, 9, 24, and 48 hours. Daphnia were recorded as affected if they were immobilized or showing only minor movements of appendages after gentle agitation of the vessel.

EC₅₀ Value- 161 mg/l⁻¹ based on mean measured concentrations.

NOEL Value- 72 mg/l⁻¹ based on mean measured concentrations.

Dose response data- No deaths occurred below the 120 mg/l level. At 200 mg/l level significant deaths did not occur until 24 hours. Deaths were observed at every level in the 300 mg/l dose level.

Observation period- 3, 9, 24 and 48 hours.

Test Conditions-

Temperature- 20°C

Dissolved oxygen- 89% saturation level

pH- 8.1-8.3

Hardness- Hard

13. STUDY AUTHOR'S CONCLUSION/QUALITY ASSURANCE MEASURES:

The EC₅₀ values at 24 and 48 hours were 217 and 161 mg /l₁, respectively, based on mean concentrations. Mean measured concentrations were in the range 84-110% nominal, measured at 0 and 48 hours. The 48 hour no observed effect level was 72 mg/l₁, based on mean measured concentrations. Compliance With

Good Laboratory Practice Standards sheet was signed by P.I. Davies, Study Director on June 18, 1989. The Compliance information states:

So far as can be reasonably established the methods described and results incorporated in this report accurately reflect the raw data produced during the study.

14. REVIEWER'S DISCUSSION AND INTERPRETATION OF THE STUDY:

- A. Test Procedures- This study is scientifically sound and is generally in accordance with the recommended protocols outlined in the SEP.
- B. Statistical Analysis-
This test was run twice using 3 replications at each concentration level. Statistics were ran on the worst case scenario to allow for genetic variability and sensitivity of the test. The LC_{50} of the worst case data set was 141 mg/l^{-1} with 95% confidence limits of 113 and 176 mg/l^{-1} .
- C. Discussion /Results- The study was generally thorough and scientifically sound.
- D. Adequacy of Test
 - 1. Validation Category: This study meets the requirements for a core study.
 - 2. Rationale: This study indicates that Dichlormid is practically non-toxic to Daphnia.