3-21-89

DATA EVALUATION RECORD

1. Chemical: GX-071

2. Test Material: 98% (technical a.i.)

3. Test Type: 48-Hour LC_{50}

   Test Species: Daphnia Magna

4. Study ID: Forbis, A.D. (1988) Acute Toxicity of GX-071 to Daphnia Magna; Report No. 37184; Prepared by Analytical BioChemistry Laboratories, Inc., for Griffin Corporation, P.O. Box 1847; Valdosta, Georgia 31603-1847; Accession No. 408475-01, -02.

5. Reviewed By: Curtis E. Laird
   Fishery Biologist
   EEB/EFED
   Signature: Curtis Laird
   Date: 3-21-89

6. Approved By: Norman J. Cook
   Supervisory Biologist
   EEB/EFED
   Signature: Norman J. Cook
   Date: 3.21.89

7. Conclusions:

   This study appears to indicate that GX-071 is moderately toxic to Daphnia magna with a 48-hour EC_{50} of > 10 ppm nominal (> 2 ppm measured) concentration. This study does not fulfill the requirement for a freshwater invertebrate study for any outdoor uses. It can be used, however, to support an indoor use only (cockroach use).

8. Recommendation: N/A

9. Background:

   This study was submitted in support of GX-071 registration.

10. Discussion of Individual Test: N/A

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11. Material and Methods:

A. Test Animals - Test animals were Daphnia magna from lab stock; age = > 24 hours old.

B. Test Design - Daphnids were tested in 250 mL glass beakers; temperature was 20 ± 2 °C; Photoperiod was 16L/7D and 30 minutes simulated dawn and dusk period.

C. Dose - Static bioassay using both nominal and measured concentrations; five dose levels; twenty daphnids per dose level plus negative and solvent controls. The dose levels were 1.0, 1.8, 3.2, 5.6, and 10 ppm nominal. At 0-hour and 48-hours, the measured concentrations were: 0.88, 1.6, 2.8, 5.0, 8.3 and 0.38, 0.59, 0.93, 1.0, and 2.0, respectively. Dimethyl formamide (DMF) was used as a solvent and the solvent control was DMF.

D. Statistical Analysis: Stephan's program (1978)

12. Reported Results:

The study author found the 48-hour LC_{50} to be greater than 2.0 ppm measured concentration. Precipitates were not observed (as in the rainbow trout study), but were concluded to be present because of extraneous material seen trailing from Daphnia in levels 1.0, 1.8, and 10 ppm.

13. Study Author's Conclusion/Quality Assurance Measures:

The 48-hour LC_{50} was > 2.0 ppm measured concentrations after 48 hours exposure. All the aquatic toxicity tests conducted at ABC facility followed Good Laboratory Practice. ABC's study director for the above test confirms that the study was conducted in compliance with the U.S. EPA Good Laboratory Practice standard; Pesticide Programs (40 CFR 160). Although no precipitates were observed (as in the rainbow trout study), the author concluded that GX-071 was out of solution because:

A. GX-071 precipitated out in a rainbow trout study using acetone; and

B. The extraneous material seen trailing from Daphnia in levels 1.0, 1.8, and 10 ppm was concluded to be a mechanical effect due to the insolubility of GX-071 in water.

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Other than the mechanical effect observed, which the author concluded is not an abnormal effect, no other adverse effects were noted. The author concluded that the 48-hour EC_{50} is greater than the water solubility of the test material.

14. Reviewer's Discussion and Interpretation of the Study

A. Test Procedure - The test procedure appears to comply with the recommended EPA protocol of October 1982. The analytical methodolgy for determining measured residues requires validation by EFGWB.

B. Statistical Analysis - No statistics were performed due to lack of mortality.

C. Discussion/Result - GX-071 appears to be moderately toxic to Daphnia magna with a 48-hour EC_{50} > 10 ppm nominal (> 2.0 ppm measured) concentration. DMF was used in this study and appeared to keep GX-071 in solution similar to acetone (as shown in the rainbow trout study). A product information sheet indicates GX-071 is 82 percent soluble in acetone and this study seems to show that DMF provides similar solubility. The author observed extraneous material trailing from daphnids in levels 1.0, 1.8, and 10 ppm and concluded this was a mechanical effect due to the insolubility of the compound. It appears to us that this may be the case, but we also note on a raw data sheet that some organisms were observed surfacing at the 1.8 ppm level at 48-hours. It is possible, therefore, that a toxic effect may have been occurring, but apparently immobility did not occur. It appears then that the 48-hour EC_{50} is > 2.0 ppm measured concentration and that the material may have been precipitating out of solution.

Also, analysis of water samples was based on a method provided by the sponsor to the laboratory. This method requires validation by EFGWB.

D. Adequacy of Study

1) Category: Supplemental

2) Rationale: This study is classified supplemental because an adequate dose response was not achieved. Further, it appears the material may have precipitated out of solution based on the residue analyses data, the results of the rainbow trout study, and the observance of extraneous

material trailing from daphnids. Even though concentrations were measured, another study (e.g., a flow-through study) will be required to support any outdoor uses proposed for registration. However, this study can be used to support an indoor only cockroach use.

3) Reparability: Not reparable

15. Completion of One-Liner for Study: Yes

16. CBI Appendix: N/A

Sulfluramid

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