2/27/90

7.

DATA EVALUATION RECORD

1.) CHEMICAL: XRM-5019 (sulfonylurea herbicide)

2.) TEST MATERIAL: XRD-498, 99.6% active ingredient. The formulated product XRM-5019 contains 74.9% active ingredient.
EPA No. 464-EUP-RNG; PM-23.

3.) STUDY TYPE: Acute toxicity to the Atlantic silversides under flow-through conditions.

4.) CITATION: Manning, S. C. 1988. XRD-498 Herbicide: Acute Toxicity To Atlantic Silversides (Menidia menidia) Under Flow-Through Conditions. Hunter ESE Inc. Gainesville, Fl.
MRID: 412632-25

5.) REVIEWED BY:
Richard C. Petrie
Agronomist
EEB/EFED

Signature: Richard C. Petrie
Date: 2/27/90

6.) APPROVED BY:
Ann Stavola
Head, Section 3
EEB/EFED

Signature: Ann Stavola
Date: 2/27/90

7.) CONCLUSIONS:
This study is scientifically sound and is acceptable for use in hazard assessments (CORE). Solubility above 380 ppm was not achieved for the test material. The LC50 level of >380 mg/L was determined for Atlantic silversides. XRD-498 is categorized as "practically non-toxic" to Atlantic silversides.

8.) RECOMMENDATIONS:
N/A

9.) BACKGROUND:
No background information was found in EEB files.

10.) DISCUSSION OF INDIVIDUAL TESTS:

11.) MATERIALS AND METHODS:

A. TEST ANIMALS

Atlantic silversides were obtained from Cultured Aquatics, Northport, N.Y. . Test fish were observed for 20 days before testing, acclimated in natural sea water 20 to 22 parts per thousand salinity. The fish were fed brine shrimp naupoli and NovaLek, Inc. maintenance flakes. Mortality of test lot was <2% in the 2 days before testing. No food was given during the test period.

B. DOSAGE

Zero, 48, and 96 hour concentrations were measured with HPLC.

	DOSAGES
Nominal:	400,240,144, 86, 52 mg/L
Measured 0hr:	432,251,141, 90, 47 mg/L
Measured 48hr:	353,212,127, 71, 42 mg/L
Measured 96hr:	352,210,124, 72, 37 mg/L
Measured Mean:	379,224,131, 78, 42 mg/L
Mean % of Nominal:	95, 93, 91, 91, 81 %

C. STUDY DESIGN

The test system consisted of 6 glass aquaria designed to maintain 9 liters of test solution. No solvents were used in this 96 hour flow-through test. The dilution factor was 0.6. The flow rate was adjusted to provide 9.1 volume turnovers daily. Daily water temperature ranged from 21 to 22 degrees C. Salinity of water ranged from 20 to 22 ppthousand. DO remained at >89% of saturation throughout the study. The pH ranged from 6.9 to 7.6, pH of the control was 7.6 to 7.7. Photoperiod was 14 hours light/ 10 hours dark. Fish were fed immediately prior to test initiation without the required 48 hour wait, but were not fed during the test. The DO, pH, temperature, and salinity levels were recorded daily.

D. STATISTICAL ANALYSIS

LC50 was by inspection of data.

12.) REPORTED RESULTS:

The measured concentrations at day 0 ranged from 47 to 432 mg/L with a pH range of 6.9 to 7.6 on day zero and 7.7 to 7.1 on day 4. The test substance was fairly stable with final concentrations 90% of first day measured concentrations. The LC50 was determined to be 376 mg/L. One mortality occurred in the control fish (5%). No sublethal effects were observed at any test level during the test except for one control fish that showed partial loss of equilibrium. XRD-498 is classified as "practically non-toxic" to Atlantic silversides.

TEST CONC.	% DEAD 24hr.	48hr.	72hr.	96hr.
400 (376)*	0	5	5	5
240 (224)	0	5	5	5
144 (131)	0	0	0	5
86 (78)	0	5	5	10
52 (42)	0	0	0	0
water cont.	0	5	5	5

* Measured Concentration (Average).

No sublethal effects were observed at any test concentration during the test except for one control fish that showed partial loss of equilibrium.

13.) STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:
Due to the low mortality, statistical analysis was not possible. By observation, solubility was attained at approximately 380 mg/L. The XRD-498 technical 96 hour LC50 for Atlantic silversides appears to be greater than 380 mg/L as mortality at this dosage level was the same as the control. This level is categorized as "practically non-toxic" to Atlantic silversides.

Three deviations from protocol occurred as follows:
1.) The test was conducted at 14 hours light/10 hours dark photoperiod instead of the required 16 hours light/8 hours dark. This deviation occurred due to a mysid chronic study running concurrently in the same lab area.
2.) The temperature deviated 2 degrees C as opposed to the maximum allowable 1 degree C deviation. The temperature changes were reported as gradual and not prolonged.
3.) The fish in culture were fed immediately prior to test initiation instead of allowing a 48 hour non-feeding period before test initiation.

14.) REVIEWER'S DISCUSSION AND INTERPRETATION OF STUDY RESULTS:
A. Test Procedure:
Except for the 3 deviations listed above, this study was generally in compliance with EPA GLP standards. The deviations listed above are not believed to significantly alter test results.

B. Statistical Analysis:
No statistical analysis was possible due to low mortality at the highest dose tested. The LC50 is greater than 100 ppm.

C. Discussion/Results:
This study is judged scientifically sound and acceptable for use in a hazard assessment.

D. Adequacy Of The Study:
(1) Classification: Core
(2) Rationale: N/A
(3) Repairability: N/A