6-17-88

DATA EVALUATION RECORD

1. CHEMICAL: Dithane F-45 SN: 014504

2. TEST MATERIAL:

The test material used in this study was Flowable Dithane F-45, a formulated product, Lot # 2-4262, containing 37 percent active ingredient.

3. STUDY/ACTION TYPE: Marine fish LC50

4. STUDY IDENTIFICATION:

Ward, G.S. Acute Toxicity of Dithane Flowable F-45 to Sheepshead minnow (Cyprinodon variegatus) Under Static Conditions. Environmental Sciences and Engineering Inc. Project ID # 87369-0400-2130. Study sponsor: Rohm and Haas Company. Study location: Gainesville FL. EPA Acc. No. 405868-04.

5. REVIEWED BY:

Robert W. Pilsucki, Microbiologist
Ecological Effects Branch
Hazard Evaluation Division

Signature: Robert W. Pilsucki
Date: 6/16/88

6. APPROVED BY:

Raymond W. Matheny, Head, Section 1
Ecological Effects Branch
Hazard Evaluation Division

Signature: Raymond W. Matheny
Date: JUN 17 1988

7. CONCLUSIONS:

This study is considered supplemental because there was a precipitate in some of the test vessels and the actual chemical concentrations in these test vessels were not measured. It appears that Dithane F-45 may be moderately toxic to the sheepshead minnow. This study does not fulfill the guideline requirement for an estuarine/marine acute fish toxicity study.

8. RECOMMENDATION:

None

9. BACKGROUND:

This study was submitted in response to the Mancozeb Registration Standard data call-in.

10. DISCUSSION OF INDIVIDUAL STUDIES OR TESTS: NA

11. METHODS AND MATERIALS:

Species. Sheepshead minnow (Cyprinodon variegatus)

Size. (measurements performed on control fish at test end)

Length: 8 to 13 mm
Weight: 0.02 to 0.06 g.

Fish source.

SP Inc.
Salem, MA

Fish holding period.

The fish were held for 19 days in filtered seawater and were fed commercial fish food and brine shrimp daily. The fish were observed daily during acclimation. Salinity was maintained at 20 ppt and water temperature was maintained at 20 to 23 ^{o}C.

Food withholding.

Fish were not fed during the test period.

Test vessel.

Size/Volume: The test vessels were 3.8 L containers with 3 L of test solution.

Construction: Glass

Loading: 0.13 g/L

Test water.

Temperature: 22 1 ^{o}C

Water source and chemistry: The water, natural seawater, was obtained at Marineland, FL and was filtered through a 5-micron filter. After filtering, it

was diluted to achieve a salinity of 20 ppt. See attached table for detailed characterization.

Aeration: None

Solvent. Seawater

Controls.

There was one nondosed control performed concurrently with the treatment groups.

Number of fish per concentration. 10

Observations.

Fish were observed daily for mortality, toxic signs and abnormal behavior.

Statistical analysis.

Mortality data were analyzed using Stephan's computerized program.

12. REPORTED RESULTS:

A range-finding experiment was performed using levels of test material between 0.3 and 30 mg/L. The results indicated that the LC50 lay between 3 and 30 mg/L.

The definitive test showed the following 96-hour mortality results.

Concentration (ppm)	Number Exposed	Number Dead	Percent Mortality
30	10	10	100
18	10	10	100
11	10	10	100
6.5	10	10	100
3.9	10	4	40
2.3	10	0	0
Control	10	1	10

The author reported a control mortality of 10 percent. There was mortality in all treatment groups, with 100 percent mortality occurring at 30, 18, 11 and 6.5 ppm. The NOEC was determined to be 2.3 ppm. The 96-hour LC50 was calculated as 4.2 (95% C.L. = 2.3 and 6.5) ppm.

The author noted that the test solutions at the two lowest levels were cloudy. Salinity remained at 20 ppt during the test. Dissolved oxygen remained equal to or above 64% saturation in all vessels. The mean temperature throughout the test was 22.1 ^{o}C, standard deviation 0.6 ^{o}C. The pH ranged from 7.4 to 7.9 in all test vessels.

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

There were no actual conclusions in this report. A quality assurance statement was attached to this report.

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

A. Test Procedure.

This study generally follows EPA's Pesticide Assessment Guidelines: Subdivision E. There were no major deviations from recommended guidelines except that there was a precipitate in two of the treatment tanks and the concentration of chemical was not measured in these vessels.

B. Statistical Analysis.

The statistics were validated and Abbott's Correction applied because there was control mortality and none of the lower concentrations produces zero mortality. The LC50 obtained was the same as the author's, using the binomial test.

C. Results/Discussion.

It appears, from the data, that Dithane F-45 is moderately toxic to the sheepshead minnow on an acute basis. However, because there was a precipitate in the lowest two levels and the actual concentration of the chemical was not measured, it is not possible to to make this conclusion with certainty. As such, this study provides only supplemental information as to the toxicity is Flowable Dithane F-45.

In his report, the author pointed out that the pH was 0.3 pH units below the minimum specified in the Guidelines. This is not a significant deviation and probably did not affect the outcome of the test.

D. Adequacy of the Study.

1. Category: Supplemental

2. Rationale: The actual concentration were not measured in two of the treatment vessels that had precipitates. Thus,

toxicity values derived from this test cannot be considered completely reliable.

3. Repairability: None, unless the actual concentrations of chemical were measured in the treatment tanks containing precipitates.

15. COMPLETION OF ONE-LINER One-liner completed 06-14-88.

NOTE: THERE WAS CONTROL MORTALITY, BUT AT LEAST ONE
OF THE LOWER CONCENTRATIONS HAD ZERO MORTALITY.
THEREFORE, ABBOTT'S CORRECTION IS NOT APPLICABLE.

FILBUCK1 DITHANE F-45 SHEEPSHEAD MINNOW 06-15-88

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
30	10	10	100	9.765625E-02
18	10	10	100	9.765625E-02
11	10	10	100	9.765625E-02
6.5	10	10	100	9.765625E-02
3.9	10	4	40	37.69531
2.3	10	0	0	9.765625E-02

THE BINOMIAL TEST SHOWS THAT 2.3 AND 6.5 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 4.160982

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE
PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE
NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

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Mancozeb

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Pages _____ through _____ are not included.

The material not included contains the following type of information:

____ Identity of product inert ingredients.

____ Identity of product impurities.

____ Description of the product manufacturing process.

____ Description of quality control procedures.

____ Identity of the source of product ingredients.

____ Sales or other commercial/financial information.

____ A draft product label.

____ The product confidential statement of formula.

____ Information about a pending registration action.

X FIFRA registration data.

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