CASE GS0071   BUTYLATE   PM 400   ~~06/05/82~~

- -

CHEM 041405   S-Ethyl diisobutylthiocarbamate

BRANCH EEB   DISC 40 TOPIC 05103047

FORMULATION 15 - SOLUBLE CONCENTRATE

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FICHE/MASTER ID 00016542   CONTENT CAT 01

Vilkas, A.G. (1978) The Acute Toxicity of Banvel 4S + Sutan 6.7EC
    to the water Flea,~Daphnia magna~Straus: UCES Proj. # 11506-03-
    34. (Unpublished study received Mar 3, 1978 under 876-EX-33;
    prepared by Union Carbide Corp., submitted by Velsicol Chemical
    Corp., Chicago, Ill.; CDL:236667-F)

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SUBST. CLASS = M; OTHER CHEMS: 029801

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DIRECT RVW TIME = 4 hr. (MH)   START-DATE 12-13-82 END DATE 12-13-82

- -

REVIEWED BY: *Carol M. Natella*
      TITLE: *Wildlife Biologist*
        ORG: *EEB/HED*
    LOC/TEL: *557-7695*

    SIGNATURE: *Carol M. Natella*   DATE: 3-10-83

- -

APPROVED BY:
      TITLE:
        ORG:
    LOC/TEL:

  SIGNATURE: DATE:

Conclusions

This study is scientifically sound and indicates that a mixture (proportions
unspecified) of Banvel 4S (% a.i. unknown) and Sutan 6.7 EC (85.1% a.i.) is
practically non-toxic to Daphnia magna (48 hour LD50 = 158.6 ppm). The study
does not fulfill any requirements for an aquatic invertebrate LC50 (unless
a requirement on this mixture develops).

MATERIALS/METHODS

Test Procedures

Test Animals: Daphnia magna were obtained from a laboratory stock culture. The original stock was obtained from the National Water Quality Laboratory in Duluth, Minnesota. Test organisms were newly released instars (less than 20 hours old).

Water Quality: Filtered lake water, having a pH of 7.39, total hardness of 48 mg/l as $CaCO_3$, total alkalinity of 30 mg/l as $CaCO_3$ and a specific conductivity of 130 micromhos/cm. Testing was conducted at 18°C.

Test Containers: 250 ml glass beakers containing 200 ml of water.

Exposure: Five Daphnia/beaker, with four replicates. No solvent was used in preparing the stock solution.

Statistical Analysis

The LC_{50} was determined by the Spearman-Karber Estimator (Finney, 1971).

Discussion/Results

Percent mortality after 48 hours at each concentration (nominal) is as follows:

ppm	1000	560	320	180	100	Control
%	100	100	90	65	15	0

24h LC50 = 376.7 ppm (95% CL 290.9-487.8)
48h LC50 = 158.6 ppm (95% CL 133.0-189.2)

REVIEWER'S EVALUATION

A. **Test Procedure**

The test procedure complies with the recommended US EPA protocol.

B. **Statistical Analysis**

The LC_{50} value was verified using Stephan's computer program.

C. **Conclusions**

1. Category: Supplemental

2. Rationale: A mixture of formulated products was used.

3. Repairability: Would fulfill any future study requirements with this mixture.

DAPHNIA 16542
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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
1000	20	20	100	9.536743E-05
560	20	20	100	9.536743E-05
320	20	18	90	0.02012253
180	20	13	65	13.1588
100	20	3	15	0.1288414

THE BINOMIAL TEST SHOWS THAT 100 AND 320 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 152.3298

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
2	0.1462128	157.4988	124.0423	191.242

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
6	0.1484798	1	0.9077843

SLOPE   =   4.802565
95 PERCENT CONFIDENCE LIMITS = 2.951989   AND   6.653141

LC50 =   158.8207
95 PERCENT CONFIDENCE LIMITS = 128.5874 AND 190.56

LC10 =   86.39033
95 PERCENT CONFIDENCE LIMITS = 53.00294 AND 110.6176
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