(TDR03R) DATA EVALUATION RECORD PAGE 1 OF 3-10-83

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

CHEM 041405 S-Ethyl diisobutylthiocarbamate

BRANCH EEB DISC 40 TOPIC 05103043

FORMULATION 15 - SOLUBLE CONCENTRATE

FICHE/MASTER ID 00016531 CONTENT CAT 01

Kuc, W.J. (1977) The Acute Toxicity of Banvel 4S + Sutan 6.7EC to the Bluegill Sunfish,"Lepomis macrochirus"Rafinesque: UCES Proj. #11506-03-32. (Unpublished study received Mar 3, 1978 under 876-EX-33; prepared by Union Carbide Corp., submitted by Velsicol Chemical Corp., Chicago, Ill.; CDL:236666-K)

SUBST. CLASS = M; OTHER CHEMS: 029801

DIRECT RVW TIME = 5 hrs (MH) START-DATE 10-12-82 END DATE 10-13-82

REVIEWED BY: Carol M. Natella
TITLE: Wildlife Biologist
ORG: EEB/HED
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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 bluegill sunfish (LC50 = 202.5 ppm). The study would only fulfill a requirement for a warm water fish LC50 on the mixture of the products in question.

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MATERIALS/METHODS

Test Procedures

Test animals: Bluegill sunfish obtained from a commercial hatchery in Nebraska and maintained in a stock culture. At the time of testing, fish were approximately 3 months old (mean length 32 mm, mean weight 0.36 grams). Food was withheld 48 hours prior to testing. Loading was 0.24 mg/l.

Water quality: Reconstituted well water; pH 7.40, total hardness 42 mg/l $CaCO_3$, total alkalinity 35 mg/l $CaCO_3$, and specific conductance 150 micromhos/cm. Temperature was maintained at 22.2°C $\pm$ 1.8°C.

Test containers: 5 gallon glass jars containing 15 liters of water.

Exposure: 10 fish/test vessel/concentration. Toxicant was first added to test vessels, followed by the fish.

Statistical Analysis

LC_{50}'s were estimated by the Spearman-Karber Estimator (Finney, 1971).

Discussion/Results

Mortality after 96 hours at each concentration was as follows:

Conc. (ppm)	320,	180,	100,	56,	32,	0
% mortality	100,	20,	0,	10,	0,	0

LC_{50} values obtained are as follows:

24 hour LC_{50} = 214.6 ppm (95% C.I. 184.0 - 250.2)
48 hour LC_{50} = 214.6 ppm (95% C.I. 184.0 - 250.2)
96 hour LC_{50} = 202.5 ppm (95% C.I. 167.1 - 245.5)

Fish exposed to concentrations of 180 ppm and higher became darkly discolored, excitable and exhibited rapid respiration. The 96 hour no effect level was determined to be 100 ppm based on behavior observations. The death at the 56 ppm level was not considered to be toxicant related.

REVIEWERS'S EVALUATION

A. Test Procedure

The test procedure generally complies with the recommended US EPA protocol except that fish were fasted for only 48 hours.

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B. Statistical Analysis

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

C. Conclusions

1. Category: Supplemental

2. Rationale: Test material is a mixture of formulated products.

3. Repairability: Would fulfill any future data requirements on this mixture.

3 92

BLUEGILL 16531

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
320	10	10	100	0.09765625
180	10	2	20	5.46875
100	10	0	0	0.09765625
56	10	1	10	1.074219
32	10	0	0	0.09765625

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 215.7353

THE MOVING AVERAGE METHOD CANNOT BE USED WITH THIS DATA SET
BECAUSE NO SPAN WHICH PRODUCES MOVING AVERAGE ANGLES THAT BRACKET
45 DEGREES ALSO USES TWO PERCENT DEAD BETWEEN 0 AND 100 PERCENT.

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
10	4.010964	5.263572	0.001251765

SINCE THE PROBABILITY IS LESS THAN 0.05, RESULTS CALCULATED
USING THE PROBIT METHOD PROBABLY SHOULD NOT BE USED.

SLOPE = 4.400017
95 PERCENT CONFIDENCE LIMITS =-4.412069 AND 13.2121

LC50 = 196.5772
95 PERCENT CONFIDENCE LIMITS = 0 AND +INFINITY

LC10 = 101.1342
95 PERCENT CONFIDENCE LIMITS = 0 AND +INFINITY

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