1. Chemical: SC-0224

2. Formulation: Trimethyl sulfonium carboxymethylamino-methylphosphate 58.5% a.i.

3. Citation: Sousa, J.V. 1982. "Acute Toxicity of SC-0224 To Bluegill Sunfish (Lepomis macrochirus). Unpublished study prepared by EG & G Bionomics Aquatic Toxicology Laboratory, Wareham, Mass., for the Stauffer Chemical Co., Farmington Conn.

4. Reviewed by: Miachel Rexrode
Fishery Biologist
OPP/HED/EEB

5. Date Reviewed: June 20, 1983

6. Test Type: FIsh acute 96-hour LC_{50}

Test Species: Bluegill sunfish (Lepomis macrochirus)

7. Reported Results: The 96-hour LC_{50} for bluegill sunfish exposed to SC-0224 estimated by the moving average angle method was 3500 (2800-4400) mg/l.

8. Reviewers Evaluation: This study scientifically sound and with an LC_{50} = 3500 mg/l, SC-0224 appears to be practically non-toxic to bluegill sunfish. This study fulfills Guideline requirements for registration.

9. Methods/Materials

Bluegill were obtianed from a commercial fish supplier in Connecticut and held in a 500-L fiberglass tank for acclimation. The mean wet weight and total length of these fish 0.34g (0.20-0.52g) and 34mm (30-38mm), respectively.

Testing was conducted in 19.6-L glass jars which contained 15 L of test solution. The dilution was soft water reconstituted from deionized water. Water parameters were as follows: Total hardness and alkalinity as $CaCO_3$ of 44 mg/l and 32 mg/l, respectively; pH of 7.7; specific conductance of 150 umhos/cm; temperature 22 $\pm$ 1°C.

Ten bluegills were randomly distributed to each test jar within 30 minutes afte the test solutions had been prepared. All test jars were capped and vented under continuous vaccum.

Statistical analysis amounted to estimating LC_{50} values using moving averages, probit analysis and binomial probability. The concentrations tested and the resulting percentage mortalities of bluegill exposed to SC-0224 are noted in Table 1.

Table 1. Concentrations tested and corresponding percentage mortalities of bluegill to SC-0224 for 24, 48, 72 and 96 ours

Nominal Concentration mg/l	Cumulative % mortality			
	24 h	48 h	72h	96h
5,000	50	60	70	80
3,000	10	30	30	40
1,800	0	0	0	0
1,100	0	0	0	10
650	0	0	0	0
control	0	0	0	0

10. Reviewers Conclusion: This test appears to be scientifically sound, and will fulfill Guideline requirements for the technical. Dissolved oxygen dropped below the recommended levels of 60% and 100% saturation during the first 48-hours (48-hour saturation 45%-55%) of testing and 40% and 100% saturation after 48 hours, (96 hours saturation 6.8%-31%). Because of the high LC_{50} value, (LC_{50} = 3500 mg/l), it appears that stress did not adversely affect fish mortality. The puriety of SC-0224 was clarified by Stauffer's represenative, R. Carver. Aparently 58.5% active was nthe puriest form of this chemical [redacted]

Category: Core

ANN AS-0224 ACUTE FISH BLUEGILL

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
5000	10	8	80	0
3000	10	4	40	0
1800	10	0	0	0
1100	10	1	10	0
650	10	0	0	0

THE BINOMIAL TEST SHOWS THAT 3000 AND 5000 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 3391.66

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
2	.214883	3469.73	2820.82	4621.64

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
18	.298443	1	.25098

SLOPE = 4.00385
95 PERCENT CONFIDENCE LIMITS = 1.81655 AND 6.19115

LC50 = 3413.37
95 PERCENT CONFIDENCE LIMITS = 2590.37 AND 5265.46

LC10 = 1644.33
95 PERCENT CONFIDENCE LIMITS = 764.421 AND 2224.37

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