

US EPA ARCHIVE DOCUMENT

CASE GS0121 COPPER SULFATES PM 03/28/83

CHEM 024401 COPPER SULFATE

BRANCH EEB DISC 40 TOPIC 05054543

FORMULATION 03 - DUST (D)

FICHE/MASTER ID 00099389 CONTENT CAT 02

Pitcher, F.; McCann, J. (1974) Traco Brand SICI Copper Zinc 25-25: Rainbow Trout (S. gairdneri): Test No. 766. (U.S. Environmental Protection Agency, Chemical & Biological Investigations Branch, Technical Services Div., Unpublished study; CDL:131098-A)

SUBST. CLASS = S.

DIRECT RWV TIME = 1.0 (MH) START-DATE END DATE

REVIEWED BY: Miachel Rexrode
TITLE: Fishery Biologist
ORG: EEB - HED (TS-769)
LOC/TEL:

SIGNATURE: DATE: 1-16-85

APPROVED BY:
TITLE:
ORG:
LOC/TEL:

SIGNATURE: DATE:

DATA EVALUATION RECORD

1. Chemical: Traco Brand Copper Zinc 25-25
2. Test Material: Copper 25% Zinc 25%
3. Study Type: Rainbow Trout LC₅₀
4. Study ID: Pitcher, F.; McCann, J. 1974. Traco Brand Copper Zinc 25-25: Rainbow Trout (S. gairdneri) Test No. 766. (U.S. Environmental Protection Agency, Chemical and Biological Investigation Branch.

5. Reviewed by: Miachel Rexrode
Fisher Biologist
HED/EEB

Signature:

Date: 1-16-85

6. Approved by: Henry C. Craven
Section Head
HED/EEB

7. Conclusions:

This test appears to be scientifically sound but will not support Registration. Test material was a formulation. At 2.2 ppm, this formulation appears to be moderately toxic to trout.

8. Materials and Methods:

Test organisms were obtained from Wytheville National Fish Hatchery averaging 38.1 mm in length and .51 g in weight. Test vessels were 5-gallon glass jars with a water volume of 15 liters. Ten fish were allocated per vessel and test concentration. Water parameters were as follows: Temperature: 12°C; Alkalinity: 41.04 ppm; Calcium hardness: 17.1 ppm; Dissolved CO₂: <10 ppm; pH: 7.0; Total hardness: 51.3 ppm; Dissolved O₂: 6 ppm. Concentration levels and toxicity are listed in Table 1.

TABLE 1. Concentration and Toxicity of Traco Brand Copper Zinc 25-25 to Rainbow Trout.

<u>Concentration (ppm)</u>	<u>Mortality</u>		
	<u>24 hr.</u>	<u>48 hr.</u>	<u>96 hr.</u>
10	9/10	10/10	10/10
6.5	4/10	10/10	10/10
4.2	2/10	6/10	8/10
2.8	1/10	4/10	7/10
1.8	1/10	2/10	3/10
1.2	0	1/20	2/10

9. Results:

Traco Brand Copper Zinc 25-25 can be expected to kill rainbow trout at a concentration of 1.5 ppm within 24 hours of exposure. The 96-hour LC₅₀ was 2.28 ppm.

10. Reviewer's Interpretation and Comments:

This appears to be a scientifically sound study but will not support registration. Testing was conducted on a formulation. Results were confirmed by EEB.

Category: supplemental

TRACO BRAND COPPER ZINC RAINBOW TROUT LC50 ppm

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
10	10	10	100	.0976563
6.5	10	10	100	.0976563
4.2	10	8	80	5.46875
2.8	10	7	70	17.1875
1.8	10	3	30	17.1875
1.2	10	2	20	5.46875

THE BINOMIAL TEST SHOWS THAT 0 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 2.24499

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
3	.514433	2.24499	1.38443	3.64049

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
4	.205449	1	.875711

SLOPE = 3.94704
95 PERCENT CONFIDENCE LIMITS = 2.15798 AND 5.73609

LC50 = 2.19126
95 PERCENT CONFIDENCE LIMITS = 1.60674 AND 2.81016

LC10 = 1.04456
95 PERCENT CONFIDENCE LIMITS = .477503 AND 1.46482
