5/6/83

CASE GS0097 CHLOROTHALONIL PM 400 ~~08/03/82~~

CHEM 081901 Chlorothalonil (tetrachloroisophthalon

BRANCH EEB DISC 40 TOPIC 05103043

FORMULATION Technical

FICHE/MASTER ID RIOCHL08 CONTENT CAT

Ward, G. Scott. 1982. Acute Toxicity of T-117-11 (chlorothalonil) to pink shrimp (Panaeus duorarum). An unpublished report submitted to EPA by Diamond Shamrock. Acc # 071552

SUBST. CLASS = S.

DIRECT RVW TIME = (MH) START-DATE END DATE

REVIEWED BY: Daniel Rieder
TITLE:
ORG:
LOC/TEL:

SIGNATURE: Daniel Rieder DATE: 5/6/83

APPROVED BY:
TITLE:
ORG:
LOC/TEL:

SIGNATURE: DATE:

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DATA EVALUATION SHEET

1. CHEMICAL: Chlorothalonil

2. FORMULATION: Technical

   Shaughnessy Number: 081901

3. CITATION: Ward, G. Scott 1982. Acute Toxicity of T-117-11 (Chlorothalonil) to pink shrimp (Penaeus duorarum). An unpublished report submitted to EPA by Diamond Shamrock. Acc#. 071552

4. REVIEWER: Daniel Rieder
   Wildlife Biologist
   EEB/HED

5. REVIEW DATE: 5/6/83

6. TEST TYPE: 96 hr acute toxicity to estuarine invertebrate

   A. Species: pink shrimp (Penaeous duorarum)

   B. Material: Technical chlorothalonil

7. RESULTS: 96 hr LC50 = 165 ppb (with 95% C.L. of 100 to 270 ppb)

8. REVIEWERS CONCLUSION:

   Category: Core

   This study fulfills guideline requirements for a 96-hr acute toxicity study on an estuarine/marine shrimp. It shows chlorothalonil to be highly toxic to pink shrimp.

METHODS

Young adult shrimp (40-69 mm rostrum-telson length and 0.49-2.56 grams wet weight) were collected from an adjacent estuary. They were held 2-16 days before testing. Test water was filtered seawater. The test lasted 96 hours. Twelve shrimp were tested in each of 5 nominal concentrations (75, 100, 150, 200, 300 ppb) and a control and solvent control. Test containers were 19 liter glass jars containing 15 liters of test solution. There were 6 test contains per level, with 2 shrimp per container. The shrimp were distributed to the test containers within 1 hour of the addition of the test material. Temperature was maintained at 220 C. Loading factor was 0.15 g/liter.

The LC50, the 95% confidence limits and the slope were calculated by the probit analysis method.

RESULTS

Nominal Concentration (ppb)	Number Tested	% Mortality	(#)
Control	12	8	(1)
Solvent Control	12	0	(0)
75	12	0	(0)
100	12	67	(8)
150	12	42	(5)
200	12	33	(4)
300	12	83	(10)

96 hr LC50 = 165 ppb (95% C.L. = 100 to 270 ppb)
Slope = 0.11

DISCUSSION

The results do not reflect a smooth dose/mortality response. This and the mortality in the control suggest problems with some of the organisms tested. Presumably if all the organisms had been healthy, the LC50 would have been higher, so these test results probably err on the side of safety. Therefore the LC50 of 165 ppb for pink shrimp will be accepted.

CONCLUSION

Category: Core

Rationale: The inconsistent dose/mortality responses are not severe enough to downgrade this test category.

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

REIDER CHLORTHALINOL 96-HR LC50 PINK SHRIMP

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
300	12	10	83.3333	1.92871
200	12	4	33.3333	19.3848
150	12	5	41.6667	38.7207
100	12	8	66.6667	19.3848
75	12	0	0	.0244141

THE BINOMIAL TEST SHOWS THAT 75 AND 300 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 187.055

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
4	.14519	153.898	133.034	181.337

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
4	5.74695	4.86208	2.20615E-03

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

SLOPE = 2.42047
95 PERCENT CONFIDENCE LIMITS =-3.38208 AND 8.22301

LC50 = 167.589
95 PERCENT CONFIDENCE LIMITS = 0 AND +INFINITY

LC10 = 50.0672
95 PERCENT CONFIDENCE LIMITS = 0 AND 156.984