US EPA ARCHIVE DOCUMENT

8/28/84

Data Evaluation Record

1. Chemical: Naled

2. Test Material: Dibrom 14 Concentrate (with and without fuel oil)

3. Study Identification: Tuskes, P.M. Date not found. "An investigation into effects of Dibrom 14 Concentrate on adult Brine Shrimp (*Artemia salina*)." Submitted by Chevron Chemical Co. Under EPA Acceession No. 253450. Reference No. 9.

4. Study Type: Acute toxicity study on a shrimp species (*Artemia salina*)

5. Review By: Elizabeth E. Zucker
Wildlife Biologist
EEB/HED

Date: August 28, 1984
Review Time: 4 hrs.

6. Reported Conclusions:

Concentration of Dibrom

% mortality at 48 hours	0.5	1.0	2.0	3.0	4.0	Control
	95	99	100	100	100	12

7. Reviewer's Conclusions:

This study cannot be used to fulfill the guidelines requirement for an acute toxicity test on a shrimp species. This is because the exact formulation of the test material was not stated in the report and it could not be determined if nominal concentrations were based on amounts of active ingredient or total product. Also the brine shrimp is not a recommended species. Study procedures and water and test animal characteristics were not adequately described.

Materials/Methods

Test Procedures

Two liters of ocean water were placed into 9 inch diameter round glass containers. Approximately 200 adult brine shrimp were distributed to containers holding either Dibrom 14, Dibrom 14 plus fuel oil (Dibrom 5% v/v) or just fuel or/at concentration levels of 0; 0.5; 1.0; 2.0; 3.0 and 4.0 ppm. Tests were run in triplicate at ambient temperature (31 to 27 C). Shrimp were observed for 48 hours.

Statistical Analysis

Method of analysis was not reported.

Results/Discussion

Mortality Data

Dibrom 14

Experimental Conc (ppm)	0.5	1.0	2.0	3.0	4.0	Control
% mortality at 24 hours	45	65	70	70	75	3
48 hrs	95	99	100	100	100	12

Dibrom and Fuel Oil

Concentration	0.5	1.0	2.0	3.0	4.0	Control
% mortality at 24 hrs	32	60	80	85	90	3
48 hrs	56	85	95	97	100	7

The results of the test with fuel oil alone were not provided.

One minute after treatment, shrimp exposed to test material were observed to increase swimming speed and general activity.

Reviewer's Evaluation

A. Test Procedures

This study was performed under conditions that deviated from current protocols.

1. Test water characteristics were not adequately described.
2. Temperature was allowed to vary 4 C.
3. Source and holding procedures of test organisms were not reported.
4. It was not stated whether test concentrations are based on amounts active ingredient or total product.
5. Exact formulation of test material was not given in the report.
6. Brine shrimp are not a recommended test species.
7. The results of the study on Dibrom 14 plus fuel or/cannot be used to determine toxicological properties of naled.
8. Size of test animals were not reported.

B. Statistical Analysis

Data from the study with Dibrom were validated through Stephan's computer program. Results are appended.

C. Results/Conclusions

The probit method determined that the LC_{50} was 0.30 ppm (95% CL 0.013 to 0.237). These results should not be utilized via hazard assessment until the formulation of test material and the information on nominal concentrations are substantiated. (See Reviewer's Evaluation of Test Procedures). The results of the binomial method indicated that the LC_{50} occurred at a concentration greater than lowest the nominal dosage which caused 95% mortality. The results of the probit method seem to be a better indication of toxicity.

D. Conclusions

1. Category: Invalid
2. Rationale: Exact formulation of the test material was not stated in the report and it could not be determined if nominal concentrations were based on amounts of active ingredient or total product. Additionally, study procedures and water and test animal characteristics were not adequately described.
3. Repairability: Even if all the above information was provided and found acceptable this study could only be upgraded to supplemental because the brine shrimp is not a recommended tests species.

ZUCKER NALED DIBROM 14 CONCENTRATE ACUTE SHRIMP
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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
4	176	176	100	0
3	176	176	100	0
2	176	176	100	0
1	176	174	98.8636	0
.5	176	166	94.3182	0

THE BINOMIAL TEST SHOWS THAT 0 AND .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 .663041

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
7	-.356145	1	.960464

SLOPE = 2.67452
95 PERCENT CONFIDENCE LIMITS = 1.07842 AND 4.27062

LC50 = .12973
95 PERCENT CONFIDENCE LIMITS = .0129006 AND .237077

LC10 = .0434698
95 PERCENT CONFIDENCE LIMITS = 8.66484E-04 AND .118226
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Data Evaluation Record

1. Chemical: Naled

2. Test Material: Technical

3. Study Identification: Sanders, H.O. June 1, 1970. Pesticide toxicities to Tadpoles of the Western Chorus Frog (*Pseudacris triseriata*) and Fowler's Toad (*Bufo woodhousii fowleri*). *Copeia*. No. 2. p. 246. EPA Accession No. 253450. Reference No. 8.

4. Study Type: Acute toxicity study on tadpoles
   Species: Western Chorus Frog (*Pseudacris trigeriata*)

5. Review By: Elizabeth E. Zucker
   Wildlife Biologist
   EEB/HED

   Date: August 27, 1984
   Review time: 2 hours

6. Reported Conclusions:

   Estimated TL_{50} values and confidence limits (± 2 SE) in mg/l for naled with one week old frogs are:

24 hr	48 hr	96 hr
2.2 (0.8-4.0)	2.0 (0.9-5.0)	1.7 (0.5-?)

7. Reviewer's Conclusions:

   This study relating the acute toxicity of technical naled to tadpoles is not of a type required under current guidelines.

Materials/Methods

Test Procedures

Egg masses were collected from ponds and placed in aquaria containing water held at 15.5 C. Test water was reconstituted at a pH of 7.1.

Static assays, without aeration were conducted in 5.7 liter glass aquaria containing 4 liters of diluent. Temperature was maintained at 15.5 $\pm$ 0.5°C. Ten tadpoles were placed in each aquarium. Stock solutions of toxicant were made using ethanol. Four or five concentrations of material were tested.

Statistical Analysis

A modification of Litchfield and Wilcoxon (1949) method was used for analyzing data.

Discussion/Results

The TL_{50} for naled (at 96 hours) was 1.7 mg/l

Symptoms of pesticide poisoning include: irritability, loss of equilibrium, followed by death.

Reviewer's Evaluation

A. Test Procedures

This study is not of the type generally required by current guidelines. However, the following deviations from recommended testing procedures were noted:

1. Dosage level and mortality data were not provided.

2. Water characteristics (including D.O. and pH monitored during the study) were not reported.

B. Statistical Analysis

Results could not be validated because dosage level and mortality data were not provided in the test report.

C. Discussion/Results

This study is not of type normally required under current guidelines.

D. Conclusions

1. Category: Supplemental
2. Rationale: Mortality data and dosage levels tested were not reported.
3. Repairability: This study is not of a type normally required under current guidelines, however, it does provide supplemental information.