Text Searchable File

000 85963

DATA EVALUATION RECORD

1. CHEMICAL: Profenofos

2. FORMULATION: Technical - 90.6% active ingredient

3. CITATION: Hollister, T. (1980) Acute and chronic toxicity of profenofos to mysid shrimp (Mysidopsia bahia), Research Report, Project Number L26, Report Number BP-80-2-40, EG&G, Bionomics, submitted by Ciba-Geigy Corp. CDL Acc. # 246216, p. 501.

4. REVIEWED BY: Dennis J. McLane
Biologist
EEB/HED

5. DATA REVIEWED: 12-2-81

6. TEST TYPE: Invertebrate life cycle test - Mysidopsia bahia

7. REPORTED RESULTS: The estimated MATC of profenofos for mysid shrimp, based on mean measured concentrations was >220 <350 pptr and the application factor limits were 0.09 - 0.14.

8. REVIEWER'S CONCLUSIONS: This study meets the guideline requirements. The results indicate that the average number of offspring per hatch was significantly reduced in mysids exposed to >350 pptr profenofos. The estimated MATC of profenofos for mysid shrimp was >220 <350 pptr.

9. METHODS/MATERIALS

A. Test Procedures

Five juvenile mysids were placed in test containers and aquaria. During the test, the number of dead animals, the time to formation of brood pouches, and the number of offspring were recorded. After hatching, a maximum of 10 F_1 juveniles were isolated for continued exposure and observation in the same test concentration as the parental shrimp.

B. Statistical Analysis

The statistical differences among the percentage mortality of solvent control and the exposed mysids were determined by analysis of variance (ANOVA). Comparison between the solvent control and each concentration was made by using Williams' method (Williams, 1971).

Williams, D.A. 1971. A test for the differences between treatment means when several dose levels are compared with a zero dose control. Biometrics, 27:103-117.

C. Discussion/Results

After 28 days of exposure to profenofos, mortality of parental mysid shrimp in mean measured concentrations $\geq$350 pptr was significantly increased, but there was no mortality of F_1 juvenile mysids in any concentration or control during a 6- to 9-day posthatch period.

The average number of offspring per hatch was significantly reduced in mysids exposed to 350 and 590 pptr propenofos.

10. REVIEWER'S EVALUATION

A. Test Procedures

The procedures were adequate.

B. Statistical Analysis

The methods used to determine statistical significance are acceptable for this data. The percent mortality increased dramatically between the 220 and 350 measured levels. Hence, statistical verification was not warranted.

C. Discussion/Results

The study meets guideline requirements and is acceptable for use in hazard assessments.

D. Conclusion

The study is "core."

EEB/HED:MC LANE:DCR-15972:WANG-0070E:pjb:RAVEN:479-2013:2/26/82

TABLE 5. Percentage mortality of mysid shrimp (Mysidopsis bahia) during a chronic (28-day) exposure to profenofos. The mysids were 24-48 hours old at the initiation of the test. Salinity was 26±3 °/oo and temperature was 24±1°C.

	Measured concentration (ng/ℓ;pptr)											
			140		220		350		590		1,10	
Day	Control	Solvent control	A	B	A	B	A	B	A	B	A	
1	0	0	0	0	0	0	0	0	0	0	0	
2	0	0	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	10	0	30	
4	0	0	0	0	0	0	0	0	10	10	70	
5	0	0	0	0	0	0	0	0	10	10	90	
6	0	0	0	0	0	0	0	0	10	10	100	1(
7[a]	0	0	0	0	0	0	0	0	20[b]	30[b]	100[b]	1(
8	0	0	0	0	0	0	0	0	30	40	100	1(
9	0	0	0	0	0	0	0	0	40	60	100	1(
10	0	0	0	0	0	0	0	0	40	60	100	1(
11	0	0	0	0	0	0	0	0	50	70	100	1(
12	0	0[c]	0[c]	0	0	0[c]	0	0	50	70	100	1(
13	0	0	0	0[c]	0[c]	0	0	0[c]	60	80	100	1(
14[a]	0[c]	0	0	0	0	0	0[c]	0	60[b]	90[b]	100[b]	1(
15	0	0	0	0	0	0	0	0	70	90	100	1(
16	0	0	0	0	0	0	0	0	70	90	100	1(
17	0	0	0	0	0	0	0	0	70	90	100	1(
18	0	0	0	0	0	0	10	0	70	90	100	1(

[a] Statistical analysis performed.
[b] Significantly greater ($P \leq 0.05$) than the solvent control.
[c] Formation of brood pouches first observed.

TABLE 5. Percentage mortality of mysid shrimp (Mysidopsis bahia) during a chronic (28-day) exposure to profenofos. The mysids were 24-48 hours old at the initiation of the test. Salinity was 26±3 °/oo and temperature was 24±1°C.

	Measured concentration (ng/ℓ;pptr)											
			140		220		350		590		1,100	
Day	Control	Solvent control	A	B	A	B	A	B	A	B	A	B
1	0	0	0	0	0	0	0	0	0	0	0	
2	0	0	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	10	0	30	1
4	0	0	0	0	0	0	0	0	10	10	70	5
5	0	0	0	0	0	0	0	0	10	10	90	7
6	0	0	0	0	0	0	0	0	10	10	100	10
7[a]	0	0	0	0	0	0	0	0	20[b]	30[b]	100[b]	10
8	0	0	0	0	0	0	0	0	30	40	100	10
9	0	0	0	0	0	0	0	0	40	60	100	10
10	0	0	0	0	0	0	0	0	40	60	100	10
11	0	0	0	0	0	0	0	0	50	70	100	10
12	0	0[c]	0[c]	0	0	0[c]	0	0	50	70	100	10
13	0	0	0	0[c]	0[c]	0	0	0[c]	60	80	100	10
14[a]	0[c]	0	0	0	0	0	0[c]	0	60[b]	90[b]	100[b]	10
15	0	0	0	0	0	0	0	0	70	90	100	10
16	0	0	0	0	0	0	0	0	70	90	100	10
17	0	0	0	0	0	0	0	0	70	90	100	10
18	0	0	0	0	0	0	10	0	70	90	100	10

[a] Statistical analysis performed.
[b] Significantly greater ($P \leq 0.05$) than the solvent control.
[c] Formation of brood pouches first observed.

TABLE 5, continued.

	Measured concentration (ng/ℓ;pptr)											
			140		220		350		590		1,100	
Day	Control	Solvent control	A	B	A	B	A	B	A	B	A	B
19	0	0	0	0	0	0	20	10	90	90	100	100
20	0	0	0	0	0	0	20	20	90	90	100	100
21[a]	0	0	0	0	0	10	50[b]	30[b]	90[b]	90[b]	100[b]	100
22	10	0	0	0	0	10	50	40	90	90	100	100
23	10	0	0	0	0	10	50	40	90	90	100	100
24	10	0	0	0	0	10	50	40	90	90	100	100
25	10	0	0	0	0	10	50	40	90	90	100	100
26	10	0	0	0	0	10	50	40	90	90	100	100
	10	0	0	0	0	10	50	40	90	90	100	100
28[a]	10	0	0	0	0	10	50[b]	40[b]	100[b]	90[b]	100[b]	100
Average:												
	10	0	0		5		45[b]		95[b]		100[b]	

[a] Statistical analysis performed.
[b] Significantly greater ($P \leq 0.05$) than the solvent control.