

DATA EVALUATION RECORD

1. Chemical: Pydrin: cyano (3-phenoxyphenyl) methyl-4-chloro-alpha-(methylethyl)benzeneacetate
2. Test Material: SD 43775 technical 95% ai  
SD 43775 formulation ? ai
3. Study Type: 96-hour Daphnia LC50
4. Study ID: Sanborn, J.R.; Barber, G.F.; Brown, L.J.; Bunding, I.M. (1978) Acute Toxicity of SD 43775 to Daphnia. Biological Sciences Research Center of Shell Development Company, Modesto, California.
5. Reviewed by: Miachel Rexrode  
Fishery Biologist  
EEB/HED  
Signature: *Miachel Rexrode*  
Date: 6/25/86
6. Approved by: Norman Cook  
Section Head  
EEB/HED  
Signature: *Norman Cook*  
Date: 6.25.86
7. Conclusions:

These tests appear to be scientifically sound, but only the technical SD 43775 bioassay will support registration. An LC50 = 1.099 ppb suggest that SD 43775 is very highly toxic to Daphnia (the formulation produced an LC50 = 1.61 ppb, also indicating very high toxicity).

8. Materials and Methods:

a. Test Species:

The Daphnia magna were the descendants of a colony obtained from Dahl Biological Supply, 25 Hegenberger Place, Oakland, CA, 1977. The stock colony has been maintained on well water previously soiled with sterilized Hanford silt loam. Test specimens are young Daphnia < 24 hours old, five per test vessel.

b. Test System: Static testing was conducted with 250 mL Pyrex beakers containing 200 mL of filtered dilution water. Aquatic parameters were as follows: pH, 8.36; conductivity, 400 micromhos/cm 25 °C; hardness as HCO<sub>3</sub>, 131.8 mg/L; temperature 17 ± 2 °C; photoperiod 16L/8D (160 footcandles at surface).

c. Dose: Testing was conducted on technical SD 443775 and formulated SD 43775. Actual and nominal concentrations are as follows:

<u>Nominal</u> (ppb)	<u>SD 43775 observed</u> (average)	
	<u>Technical</u>	<u>Formulated</u>
5.00	3.66	4.64
.50	.33	.36
.05	.032	.039

d. Statistical Analysis: Probit analysis

9. Reported Results: Young (24 hours old)

Daphnia magna were exposed to concentrations of either technical SD 43775 or formulated SD 43775. The 96-hour LC<sub>50</sub> for technical SD 43775 was 1.39 ppb (95% CL = 1.11 to 1.95) and for formulated SD 43775 was 1.86 ppb (95% CL = 1.46 to 2.35).

Table 1. Dose Mortality of Technical SD 43775 to Daphnia magna

<u>Measured</u> <u>Concentration</u> (ppb)	<u>Mortality</u>		
	<u>24 hr</u>	<u>48 hr</u>	<u>96 hr</u>
3.66	0/21	9/121	18/20
.33	0/20	0/120	2/20
.032	0/20	0/120	0/20
0	0/20	0/120	0/20

Table 2. Dose Mortality of Formulated SD 43775 to Daphnia magna

<u>Measured Concentration</u> (ppb)	<u>24 hr</u>	<u>Mortality</u>	
		<u>48 hr</u>	<u>96 hr</u>
4.64	/20	/20	17/20
.36	0/20	0/20	1/20
.039	0/20	0/20	1/20
0	0/20	0/20	0/20

10. Reviewer's Discussion:

- a. Test Procedure: Technical test follows guidelines; however, the percent active for formulation SD 43775 was not given.
- b. Statistical Analysis: Binomial test from EPA's "Toxanal" program yielded a 96-hour LC<sub>50</sub> = 161 ppb (1.03 to 2.68 ppb) for formulated SD 43775 and 1.099 ppb (.61 to 2.4 ppb) for technical SD 43775.
- c. Discussion/Results: These tests appear to be scientifically sound; however, only the technical SD 43775 bioassay will support registration. At 1.099 ppb, technical SD 43775 is very highly toxic to Daphnia.
- d. Adequacy of Studies:
  1. Classification: Technical SD 43775, core.
  2. Classification: Formulation SD 43775, supplemental.
  3. Repairability: Submission of percent active in formulation.

SD 43775 LC50 DAPHNIA TECHNICAL (ppb)

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
3.66	20	18	90	.0201225
.33	20	2	10	.0201225
.032	20	0	0	9.53674E-05

THE BINOMIAL TEST SHOWS THAT .33 and 3.66 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 1.099

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
2	.0760279	1.099	.609678	2.40756

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
5	.167981	1	.967563

SLOPE = 2.45548  
 95 PERCENT CONFIDENCE LIMITS = 1.44909 AND 3.46187

LC50 = 1.09949  
 95 PERCENT CONFIDENCE LIMITS = .638709 AND 1.89774

LC10 = .33418  
 95 PERCENT CONFIDENCE LIMITS = .118459 AND .584393

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SD 43775 FORMULATED LC50 DAPHNIA (ppb)

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
4.64	20	17	85	.128841
.36	20	1	5	2.00272E-03
.039	20	1	5	2.00272E-03

THE BINOMIAL TEST SHOWS THAT .36 and 4.64 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 1.61175

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
1	.119814	1.61175	1.02826	2.68287

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS

	G	H	GOODNESS OF FIT PROBABILITY
6	60.1955	7.72385	5.44924E-03

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

SLOPE = 1.56779  
 95 PERCENT CONFIDENCE LIMITS = -10.596 AND 13.7316

LC50 = 1.418144  
 95 PERCENT CONFIDENCE LIMITS = 0 and +INFINITY

LC10 = .219661  
 95 PERCENT CONFIDENCE LIMITS = 0 and +INFINITY

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