

US EPA ARCHIVE DOCUMENT



2002028

7a-2 Daphnia acute w/TEP

DATA EVALUATION REPORT

ECOLOGICAL EFFECTS BRANCH

1. Chemical: Tilt 3.6E

Shaughnessey Number: 122101

2. Formulation: 41.8% a.i.

MRID# 00132932

3. Study ID: Data Accession No: 072209 Reference 13
 Suprenant, Donald C. 1983. Acute Toxicity of Tilt 3.6E to the Water Flea (*Daphnia magna*). Prepared by EG&G Bionomics, Aquatic Toxicology Laboratory Wareham, Mass.

4. Study Type: 48-hour LC50, *Daphnia magna*

5. Review By: Daniel Rieder
 Wildlife Biologist
 Ecological Effects Branch

Daniel Rieder
 Date: 9/11/84
 Review Time: 3 Hrs

6. Results:

	<u>Reported</u>	<u>Reviewer</u>
48-hour LC ₅₀	= 3.2 ppm*	: 1.3 ppm**
95% Confidence Limits	= 2.6-3.8 ppm*	: 1.07 - 1.57 ppm
Slope	=	:
No Observed Effect Level	= < 1.2 ppm*	: < 0.5 ppm
*measured Tilt 3.6E		
** measured CGA-64250	100% a.i.	

7. Reviewers Conclusions:

This study fulfills the guideline requirements for an aquatic invertebrate 48-hour LC50. The results show that Tilt is slightly toxic to aquatic invertebrates.

8. Methods/materials

Test Material: Tilt 3.6E

Percent active ingredient: 41.8%

Test Organism: Water flea

Species: Daphnia magna

Age/Stage: <=24 hours

Source: laboratory stocks cultured at EG&G Bionomics

Acclimation: cultured at test conditions

Number per concentration: 15

Test Containers: glass

Size: 250 ml

Replicates: 3

Organisms per container: 5

Aerated: no

Test Conditions: protocol closely followed "Methods for Acute Toxicity..." USEPA, 1975

Photoperiod: not given

Temperature: 22 +/- 1°C

Controls: untreated

Way test was begun: daphnids added 30 minutes after test material

Test solution: fortified well water

9. Results:

48-hour LC₅₀=3.2 ppm*
95% Confidence Limits=2.6-3.8 ppm*

Reviewer
: 1.3 ppm **
: 1.07 - 1.57 ppm **
:
: <0.5 ppm **

Slope=

No Observed Effect Level=<1.2 ppm*

* concentration in ppm of Tilt 3.6E (41.8 % a.i.)

CONCENTRATION PPM	MORTALITY %		CONDITIONS	
	24HRS	48HRS	DO	pH (48HRS)
Measured				
18*/7.5**	53	100 ¹⁵	7.4	8.4
11*/4.5**	7	100 ¹⁵	-	-
6.2*/2.6**	7	100 ¹⁵	7.6	8.4
2.9*/1.2**	0	73 ¹¹	-	-
2.2*/0.9**	0	0 ⁰	-	-
1.2*/0.5**	7	7 ¹	7.4	8.4
control	0	0 ⁰	7.6	8.4

*Calculated Tilt 3.6E concentration based on measurements

**Measured CGA-64250 concentration in ppm 100% a.i.

10. Statistical Analysis:

Reported: Stephens moving average angle analysis

Reviewer:

11. Reviewer Evaluation: This study fulfills guideline requirements for an aquatic invertebrate 48-hour LC₅₀. The results show that Tilt is moderately toxic to Daphnids.

12. Conclusions:

Category: Core

Rationale: This study is core in spite of the test material being a formulation because the test levels were measured.

2

122101 TILT AQUATIC INVERTEBRATE LC50 072209 REF 13

CONC.	NUMBER	NUMBER	PERCENT	BINOMIAL
100% a.a.	EXPOSED	DEAD	DEAD	PROB. (PERCENT)
7.5	15	15	100	3.05176E-03
4.5	15	15	100	3.05176E-03
2.6	15	15	100	3.05176E-03
1.2	15	11	73.3333	5.92346
.9	15	0	0	3.05176E-03
.5	15	1	6.66667	.0488281

THE BINOMIAL TEST SHOWS THAT .9 AND 2.6 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 1.11474

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
4	.0594346	1.30234	1.07142	1.57006

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
8	1.81302	3.19215	.0124629

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

SLOPE = 6.7699
95 PERCENT CONFIDENCE LIMITS = -2.34567 AND 15.8855

LC50 = 1.12503
95 PERCENT CONFIDENCE LIMITS = 0 AND +INFINITY

LC10 = .730412
95 PERCENT CONFIDENCE LIMITS = 0 AND 1.0724

3

122101 TILT AQU. INV. LC50

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
Tilt 3.6E	15	15	100	3.05176E-03
18	15	15	100	3.05176E-03
11	15	15	100	3.05176E-03
6.2	15	15	100	3.05176E-03
2.9	15	11	73.3333	5.92346
2.2	15	0	0	3.05176E-03
1.2	15	1	6.66667	.0488281

THE BINOMIAL TEST SHOWS THAT 2.2 AND 6.2 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 2.70185

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
4	.0623362	3.15356	2.58628	3.81855

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY	
8	1.8394	3.31732	.010033	

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

SLOPE = 6.69415
 95 PERCENT CONFIDENCE LIMITS = -2.38476 AND 15.7731

LC50 = 2.73017
 95 PERCENT CONFIDENCE LIMITS = 0 AND +INFINITY

LC10 = 1.76389
 95 PERCENT CONFIDENCE LIMITS = 0 AND 2.6132
