Draft # 14

DATA EVALUATION RECORD

1. Chemical: Neurolidol SN: 128911

2. Test Material: The test material used for this study was considered to be 100% technical.

3. Study/Action Type: Freshwater Aquatic Invertebrate LC_{50}

4. Study ID: Surprenant, D.C., Acute Toxicity of Neurolidol to Daphnids (Daphnia magna). Springborn Bionomics, Inc. (1986) Report No. BW-86-04-2006. Study No. 11,373.0286.6101.110. Study Sponsor: Fermone Chemicals, Inc. Study Location: Wareham, MA EPA Accession No. 264426.

5. Reviewed by: Robert W. Pilsucki
Microbiologist
EEB/HED
Signature: Robert W. Pilsucki
Date: 1/8/87

6. Approved by: Raymond W. Matheny
Head, Section 1
EEB/HED
Signature: Raymond W. Matheny
Date: 1/8/87

7. Conclusions:

This study is considered core. The 48 hr LC_{50} is 1.8 (95% CL = 1.3 and 2.2) ppm.

8. Recommendations: N/A.

9. Background: N/A.

10. Discussion of Individual Studies or Tests: N/A.

11. Materials and Methods:

Species: Daphnia magna

Age: 1st instar

Source: Bionomics Laboratory Culture

Daphnid rearing conditions and selection

The daphnids were cultured in 20 °C water under a photoperiod of 16 hours light and 8 hours darkness. They were fed a suspension of green algae and yeast once daily.

For the test, 1st instar daphnids were distributed "impartially" to test and control vessels. Each vessel contained 20 daphnids.

Solvent:

The solvent was acetone. There was no more than 0.5 ml added to any treatment vessel.

Test vessel:

Size, volume, construction: The test was carried out in 250 ml glass beakers containing 200 ml of test solution.

Test water:

The water used in this study had the following characteristics: hardness as $CaCO_3$, 160-180 mg/L; alkalinity as $CaCO_3$, 110-130 mg/L; pH, 7.9-8.3; specific conductance, 400-600 nmho/cm.

Aeration: None

Temperature: 20 $\pm$ 1 °C

Number of organisms/treatment: 20

Controls:

Both a negative, nondosed, and a solvent control were performed concurrently with the treatment groups.

Statistical analysis:

The data were analyzed using the Stephan computerized probit method.

12. Reported Results:

The author reported that the LC_{50} of farnesol for Daphnia magna was 2.2 (1.9 - 2.5) mg/L. The no-observed-effect level was < 1.4 mg/L.

Mortality Data - D. magna

Concentration (ppm)	Number Exposed	Number Dead	Percent Mortality
10	20	20	100
6.0	20	20	100
3.6	20	20	100
2.2	20	17	85
1.3	20	0	0
0	20	0	0
0*	20	0	0

*Indicates solvent control.

pH and D.O. Values During Test

	Ph		% Saturation D.O.	
Concentration	0 hr	48 hr	0 hr	48 hr
Solvent Control	7.8	7.9	99	90
Negative Control	8.0	7.9	99	90
1.4	7.8	7.8	97	89
3.6	7.8	7.8	97	89
1.0	7.8	7.9	97	89

13. Study Author's Conclusions/Quality Assurance Measures:

The study author concluded that neurolidol is moderately toxic to Daphnia magna.

The data in this study were audited by the QAU in April 1986.

14. Reviewer's Discussion and Interpretation of the Study:

a. Test Procedure: This test procedure follows that outlined in EPA's Pesticide Assessment Guidelines: Subdivision E.

b. Statistical Analysis: EEB verification of the statistical analysis, using Stephan's computerized program yielded the same results as the author's

c. Discussion/Results: It appears that the EC_{50} or LC_{50} if one immobilization of Daphnia as death, of neurolidol is 1.8 ppm. Thus, neurolidol can be classified as moderately toxic to D. magna.

d. Adequacy of the Study:

1. Category: Core.

2. Rationale: This study follows the procedures outlined in EPA's Pesticide Assessment Guidelines: Subdivision E.

3. Repairability: N/A.

PILSUCKI NEUROLIDOL DAPHNIA 12-5-86

****

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
10	20	20	100	9.536742E-05
6	20	20	100	9.536742E-05
3.6	20	20	100	9.536742E-05
2.2	20	17	85	.1288414
1.3	20	0	0	9.536742E-05

THE BINOMIAL TEST SHOWS THAT 1.3 AND 2.2 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 1.828752

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

****