EFED Document

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Selenastrum
c.

DATA EVALUATION REVIEW

ECOLOGICAL EFFECTS BRANCH

1. Chemical: Tilt

2. Test Material: CGA-64250, 90.7%

3. Study Type: Nontarget Area Phytotoxicity, freshwater green algae - Selenastrum capricornutum.

4. Study I.D.: MRID 00132937
Hollister, T. (1981). The effect of CGA-64250 to freshwater algae (Selenastrum capricornutum). An unpublished study prepared by EG&G Bionomics for Ciba - Geigy Corp. ACC #4324-011-31.

5. Reviewed By: Dana Barrett
Biologist
EEB
Signature: Dana Barrett
Date: 5/3/91

6. Approved By: Charles Lewis
Head, Section III
EEB
Signature: Charles Lewis
Date: 5/3/91

7. Conclusions: This study fulfills the guideline requirements for the freshwater algae nontarget phytotoxicity test - S. capricornutum. Several discrepancies are noted in Section 14a. This study is classified as "core".

8. Recommendations:

9. Background: This study was submitted in support of registration. This D.E.R. is one of two submitted for this study; new requirements deemed reevaluation necessary. The original (D. Reider, 10-17-84) agrees with the classification of "core".

10. Discussion of Individual Tests or Studies:

11. Materials and Methods:

a. Test Organism - The freshwater algae Selenastrum capricornutum was obtained from the US EPA Laboratory in Corvallis, OR. Upon initiation of the study the cultures were 5 days old.

Test System - 125 mL flasks, each of which contained 50 mL of test medium housed the cultures. The cultures were incubated at 24C under 4300 Lux illumination. Flasks were placed on a shaker set at 100 r.p.m.

b. Dosage - The following nominal concentrations were used: control, solvent control (acetone), 125, 250, 500, 1000, and 2000 ppb. Three replicates were utilized at each concentration. See Table 1.

c. Description - Observations were made on test days 3, 4, 7, and 9. Measurements of in vivo chlorophyll-a were performed by using a Turner Model-III fluorometer. Gravimetric methods for measurement of dry-cell weight followed EPA guidelines.

d. Statistics Employed - The 9 day maximum standing crop dry-cell weight values were subjected to analysis of variance (ANOVA) and Williams' method (Williams, 1971) to locate significant difference among treatment means. The EC10 and EC50 were calculated by linear regression after converting each test concentration to a logarithm and the corresponding percentage decrease of maximum standing crop to a probit.

12. Reported Results: The calculated 9 day EC50 was 716 ppb with confidence limits of 461 - 5086 ppb. The test was terminated after 9 days because measurements indicated maximum standing crop had been achieved. See Table 2.

13. Study Authors Conclusions: "Based on decrease of in vivo chlorophyll a, growth of S. capricornutum exposed to concentrations >119 ppb appeared to be adversely affected. Based on dry-cell weight, growth of cultures exposed to concentrations > 978 ppb was significantly less than growth of solvent control cultures". (Excerpt from study).

14. Reviewers Discussion:

a. Test Procedures - The study, although classified as "core", deviated from the protocol outlined in "Subdivision-J-Guidelines" in the following manner:

- pH data was not submitted
- Photoperiod data was not submitted
- Illumination was 4300 instead of the recommended 4000 Lux
- Concentration of cells used was 10,000/ml instead of the recommended 300

b. Statistical Analysis: Using the Moving Average Method the EC50 was determined to be 1574 ppb with confidence limits of 1453 - 1783 ppb. Analysis of variance (ANOVA) determined the NOEL to be <511 ppb.

c. Conclusion -

1) Classification - core
2) Rationale -
3) Repairability -

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