

US EPA ARCHIVE DOCUMENT

4-6-98

DATA EVALUATION RECORD
ALGAE OR DIATOM EC₅₀ TEST
GUIDELINE 122-2 OR 123-2 (TIER I OR II)

1. CHEMICAL: SAN 836H (Diflufenzopyr) PC Code No.:005107

2. TEST MATERIAL: SAN 836H Purity:99.47%

3. Citation

Author: Hoberg, James R

Title: SAN836H-Toxicity to the freshwater Green Alga, *Selenastrum capricornutum*

Study Completion Date: February 6, 1995

Laboratory: Springborn Laboratories, Inc.

Sponsor: Sandoz Agro, Inc.

Laboratory Report ID: 95-4-5787

MRID No.: 443074-25

DP Barcode:D238406

4. REVIEWED BY: Fred Jenkins, Aquatic Biologist, ERBII, EFED

Signature: Fred Jenkins

Date: 4/6/98

5. APPROVED BY: Mike Davy, Agronomist, ERBII, EFED

Signature: Michael Davy

Date: 4-6-98

6. STUDY PARAMETERS

Scientific Name of Test Organism: *Selenastrum capricornutum*

Definitive Test Duration: 5 days

Type of Concentrations: Mean measured

7. CONCLUSIONS:

Results Synopsis

EC₅₀: 0.1 ppm A.E.

95% C.I.: 0.1-7.8 ppm A.E.

NOEL: 0.0078 ppm A.E.

Slope: N/A

8. ADEQUACY OF THE STUDY

A. Classification: Core

B. Rationale: The study meets guidelines.

C. Repairability: N/A

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9. **GUIDELINE DEVIATIONS**

The light intensity reported in the study (3.2-5.4 K Lux) falls outside the recommended light intensity (2 K Lux) of *The Hazard Evaluation Division Standard Evaluation Procedure for Non-Target Plants: Growth and Reproduction of Aquatic Plants-Tiers 1 and 2* (SEP).

10. **SUBMISSION PURPOSE:** Section 3 Registration.

11. **MATERIALS AND METHODS**

A. **Test Organisms**

Guideline Criteria	Reported Information
<u>Species</u> <i>Skeletonema costatum</i> <i>Anabaena flos-aquae</i> <i>Selenastrum capricornutum</i> <i>Navicula pelliculosa</i>	<i>Selenastrum capricornutum</i>
<u>Initial Number of Cells</u> 3,000 - 10,000 cells/ml	10000 cells/ml
<u>Nutrients</u> Standard formula, e.g. 20XAAP	AAP medium prepared with sterile, and deionized water.

B. **Test System**

Guideline Criteria	Reported Information
<u>Solvent</u>	N/A
<u>Temperature</u> <i>Skeletonema</i> : 20°C Others: 24-25°C	24±°C
<u>Light Intensity</u> <i>Anabaena</i> : 2.2 K lux (+15%) Others: 4.3 K lux (+15%)	3.2-5.4 K Lux
<u>Photoperiod</u> <i>Skeletonema</i> : 14 h light, 10 h dark or 16 h light, 8 h dark Others: Continuous	Continuous

Guideline Criteria	Reported Information
<u>pH</u> Skeletonema: approx. 8.0 Others: approx. 7.5	7.2 to 7.6 at test initiation. 8.3 to 9.6 at test termination

C. Test Design

Guideline Criteria	Reported Information
<u>Dose range</u> 2X or 3X progression	2X progression
<u>Doses</u> at least 5	Mean Measured (ppm A.E.): 0.0041, 0.0078, 0.018, 0.041, 0.066, 0.15, 0.31. Nominal (ppm A.E.): 0.0063, 0.013, 0.025, 0.05, 0.10, 0.20, 0.40.
<u>Controls</u> negative and/or solvent	Negative
<u>Replicates per dose</u> 3 or more (4 or more for Navicula)	3
<u>Duration of test</u> 120 hours	120 hours
<u>Daily observations were made?</u>	Yes
<u>Method of Observations</u>	Cellular counts
<u>Maximum Labeled Rate</u>	0.2 lb A.E./acre

12. REPORTED RESULTS

Guideline Criteria	Reported Information
<u>Quality assurance and GLP compliance statements were included in the report?</u>	Yes
<u>Initial and 120 h cell densities were measured?</u>	Yes

Guideline Criteria	Reported Information
Control cell count at 120 hr \geq 2X initial count?	Yes
Initial chemical concentrations measured? (Optional)	Yes
Raw data included?	Yes

Dose Response

Mean Measured Dose ¹ (ppm A.E.)	Cell Density ($\times 10^4$ cells/ml)	% Inhibition	120-Hour pH
Control	120	N/A	9.6
0.0041	128	-6.2	9.6
0.0078	112	6.5	9.4
0.018	99	18	9.3
0.041	79	34	9.2
0.066	65	46	9.0
0.15	46	61	8.9
0.31	46	62	8.3

¹Nominal test concentration were as follows (ppm A.E.): 0.0063, 0.013, 0.025, 0.050, 0.10, 0.20, and 0.40. The mean measured concentrations ranged from 60% to 82% of the nominal concentrations.

Other Significant Results:Statistical Results

Statistical Method:

The Williams test was used to determine the NOEC. The EC50 values and their 95% confidence limits were determined by linear regression of response vs. mean measured exposure concentration over the range of test concentration where a clear exposure-response relationship was observed.

EC₅₀: 0.1 ppm A.E.

95% C.I.: 0.05 and 0.22 ppm A.E.

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Slope: N/A

NOEC: 0.0078 ppm

13. Verification of Statistical Results

Statistical Method: Moving Average Method (For LC₅₀);
Williams Test (For NOEC)

EC₅₀: 0.1 ppm

95% C.I.: 7.8×10^{-2} -0.14 ppm A.E.

Slope: N/A

NOEC: 0.0078 ppm A.E.

14. REVIEWER'S COMMENTS:

The study was scientifically sound and meets all core the guideline requirements of the SEP. There was a deviation from the guidelines (see Guideline Deviations), but this deviation did not seem to significantly impair the results of the study.