

TRADE SECRET

Study Title

H-24516: Influence on Growth and Growth Rate of the Green
Alga Selenastrum capricornutum

Laboratory Project ID: DuPont-6011

AUTHOR: Terry Lee Sloman, B.S.

STUDY COMPLETED ON: March 12, 2001

PERFORMING LABORATORY: E.I. du Pont de Nemours and Company
Haskell Laboratory for Toxicology and Industrial Medicine
Elkton Road, P.O. Box 50
Newark, Delaware 19714-0050

[REDACTED]
[REDACTED]

Company Sanitized. Does not contain TSCA act

STUDY INFORMATION

Substance Tested:

Synonyms/Codes:

• H-24516

Haskell Number: 24516

Composition:

Purity:

Known Impurities:

Physical Characteristics: Pale to medium tan waxy solid

Stability: The test substance appeared to be stable under the conditions of the study; no evidence of instability was observed.

Company Sanitized. Does not contain TSCA CBI

STUDY INFORMATION (Continued)

Stability: The test substance appeared to be stable under the conditions of the study; no evidence of instability was observed.

Sponsor: E. I. du Pont de Nemours and Company
Wilmington, Delaware 19898
U.S.A.

Study Initiated/Completed: March 1, 2001 / (see report cover page)

In-Life Initiated/Completed: March 1, 2001 / March 4, 2001

Company Sanitized. Does not contain TSCA CBI

SUMMARY

A study was conducted to determine the effect of [REDACTED] (H-24516) on the growth and growth rate of the green alga *Selenastrum capricornutum*. The algae were exposed to nominal concentrations of 0.01, 0.1, 1, 10, 100, and 1000 mg H-24516/Liter of nutrient medium (ppm).

The algae were exposed for 72 hours (3 days) without test medium renewal. The effect was expressed as percent inhibition in growth based on healthy cell count (also referred to as cell density) relative to the blank (culture medium) control for the 72-hour (day 3) interval of the test.

The 72-hour EC₅₀, including the 95% confidence intervals (C.I.), and the NOEC^a based on nominal concentrations are as follows:^{b,c,d}

Healthy Cell Count

EC₅₀

>1000 mg/L

H-24516 exhibited low concern^e under TSCA in a 72-hour, acute test using the green alga *Selenastrum capricornutum*.

-
- a The EC₅₀ is defined as the "effective concentration" producing a 50% inhibition of growth relative to the control. The NOEC is defined as the highest concentration of test substance that has no significant effect on the measured parameter relative to the control.
- b BBN Software Products Corp., (1998). An RS/1[®] RPL procedure conducting Williams' test and probit analysis.
- c McCullogh, L.P. and Nelder, J.A. (1989). *Generalized Linear Models*, 2nd edition, Chapter 9, pp 328. Chapman and Hall, London.
- d Snedecor, G.W. and Cochran, W.G. (1967). *Statistical Methods*, 6th edition, Table A4, pp 469. The Iowa State University Press, Ames.
- e Smrcek, J., Clements, R., Morcock, R., and Rabert, W. (1993). Assessing ecological hazard under TSCA: methods and evaluation of data. *Environmental Toxicology and Risk Assessment, ASTM STP 1179*. (W.G. Landis, J.S. Hughes, and M.A. Lewis, Eds.), pp 22-39. American Society for Testing and Materials, Philadelphia.

CERTIFICATION

I, the undersigned, declare that this report provides an accurate evaluation of data obtained from this study.

Issued by Study Director:

Terry Lee Sloman
Terry Lee Sloman, B.S.
Associate Scientist

12 MAR 2001
Date

Company Sanitized. Does not contain TSCA CBI

RESULTS

Based on visual observations, the blank (normal culture medium) control solution and the 0.01, 0.1, 1, 10, 100, and 1000 mg/L test solutions were clear and had no color before addition of algal cells. After the addition of algal cells, the test and blank control flasks were placed on a shaker table in a chamber with a temperature of approximately 25°C. The algae were incubated for 72 hours (3 days) without medium renewal. Illumination was supplied by cool-white fluorescent tubes. The mean light intensity in the chamber was 9718 lumens/m² (= lux). The shaking speed was 108 revolutions per minute (rpm). The pH measurement of the culture medium was 7.50 at study start. The pH measurements of the definitive test solutions at test initiation ranged from 6.94 to 7.50, and at test termination ranged from 6.97 to 7.83.

TABLES

TABLE 1
pH MEASUREMENTS OF TEST SOLUTIONS

Nominal Concentration (mg/L)	Test Initiation (0 hours)	Test Termination (72 hours)
	pH	pH
Blank Control	7.50	6.97
0.01	7.21	7.17
0.1	7.15	7.42
1	7.04	7.52
10	7.03	7.64
100	7.00	7.83
1000	6.94	7.78

TABLE 2
DATA SUMMARY

Nominal Concentration	Day 0 Healthy Cell Count (cells/mL)	Day 3 Healthy Cell Count (cells/mL)
Blank Control		
Replicate 1	10,000	2,760,000
Replicate 2	10,000	2,340,000
0.01 mg/L		
Replicate 1	10,000	2,570,000
Replicate 2	10,000	2,820,000
0.1 mg/L		
Replicate 1	10,000	3,020,000
Replicate 2	10,000	3,280,000
1 mg/L		
Replicate 1	10,000	2,550,000
Replicate 2	10,000	2,310,000
10 mg/L		
Replicate 1	10,000	3,250,000
Replicate 2	10,000	3,120,000
100 mg/L		
Replicate 1	10,000	2,580,000
Replicate 2	10,000	2,960,000
1000 mg/L		
Replicate 1	10,000	2,770,000
Replicate 2	10,000	1,260,000

Company Sanitized. Does not contain TSCA CBI

APPENDIX

Quadruply Replicated, does not contain TSCA CB

APPENDIX A

72-Hour Healthy Cell Count Statistics

Company Sanitized. Does not contain TSCA CBI

72-HOUR HEALTHY CELL COUNT STATISTICS

WILLIAMS TEST OF #ALGAE@SCREEN@H24516 72 Hr Healthy Cell Count (#cells/mL)

W.T. Rank	Dose	Mean Response	Std Error	Transform Mean	Transform Std Error	n	$\hat{m}$	$\bar{t}$
0	0.00	2550000	210000	6.405062	0.035847	2		
0	0.01	2695000	125000	6.430091	0.020158	2	6.464016	-0.609894
0	0.10	3150000	130000	6.497940	0.017933	2	6.464016	-0.609894
0	1.00	2430000	120000	6.385076	0.021464	2	6.444048	-0.403315
0	10.00	3185000	65000	6.503019	0.008864	2	6.444048	-0.403315
0	100.00	2770000	190000	6.441456	0.029836	2	6.441456	-0.376502
0	1000.00	2015000	755000	6.271425	0.171055	2	6.271425	1.382528

W.T.
Rank $\bar{t}$ crit.

0	
0	1.895
0	2.002
0	2.039
0	2.058
0	2.069
0	2.076

One-sided test at the 95% CL for a decreasing trend.
Common logarithm transformation, i.e. $Y = \log_{10}(X)$, applied to the data.
MSE = 0.009343 with 7 df.
Ref: Williams, D. A. Biometrics 28: 519-531 (1972).