

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

1. CHEMICAL: Cloransulam-methyl (DE-565) PC Code No.: 129116

2. TEST MATERIAL: 5-Hydroxy-DE-565 Acid Purity: >97%
(A metabolite of DE-565)

3. CITATION:

Authors: H.D. Kirk, M.M. Gilles, D.L. Rick, L.G. McFadden

Title: Phytotoxicological Evaluation of 5-Hydroxy-DE-565 Acid Exposed Freshwater Green Alga, *Selenastrum capricornutum* Printz

Study Completion Date: July 28, 1998

Laboratory: Health & Environmental Research Laboratories, The Dow Chemical Company, Midland, MI

Sponsor: Dow AgroSciences, Indianapolis, IN

Laboratory Report ID: 981076

DP Barcode: D252903

MRID No.: 447445-09

4. REVIEWED BY: Max Feken, M.S., Environmental Toxicologist, Golder Associates Inc.

Signature: 

Date: 4/2/99

APPROVED BY: Pim Kosalwat, Ph.D., Senior Scientist, Golder Associates Inc.

Signature: P. Kosalwat

Date: 4/2/99

5. APPROVED BY:

Signature: 

Date: 4/15/99

6. STUDY PARAMETERS:

Definitive Test Duration: 96 hours

Type of Concentrations: Mean measured

7. CONCLUSIONS: This study is scientifically sound and fulfills the guideline requirements for an aquatic plant toxicity test.

Results Synopsis

EC₅₀: 32.6 ppm

95% C.I.: 30.1 - 35.3 ppm

NOEC: 23.1 ppm

Probit Slope: 15.6

8. ADEQUACY OF THE STUDY:

A. **Classification:** Core

B. **Rationale:** N/A

C. **Repairability:** N/A

9. GUIDELINE DEVIATIONS:

1. The duration of this study was 96 hours; however, the guidelines recommend a study duration of 120 hours.
2. The pH of the two highest test concentrations were lower than recommended as a result of the acidic nature of the test substance. Reduction in algal growth (or no growth) was observed at these two concentrations and was, more than likely, directly related to the low pH of the test solutions.

10. SUBMISSION PURPOSE:

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	6,400 cells/mL
<u>Nutrients</u> Standard formula, e.g. 20XAAP	Algal Assay Medium

B. Test System

Guideline Criteria	Reported Information
Solvent	DMF (0.04 mL/L)
Temperature Skeletonema: 20°C Others: 24-25°C	23.9 - 24.1°C
Light Intensity Anabaena: 2.0 Klux (±15%) Others: 4.0-5.0 Klux (±15%)	3.6 - 5.1 Klux
Photoperiod Skeletonema: 14 h light, 10 h dark or 16 h light, 8 h dark Others: Continuous	Continuous
pH Skeletonema: approx. 8.0 Others: approx. 7.5	Without alga: 3.5 - 7.1 With growth: 3.6 - 8.5

C. Test Design

Guideline Criteria	Reported Information
Dose range 2X or 3X progression	2X
Doses at least 5	Six doses: 3.13, 6.25, 12.5, 25, 50, and 100 mg/L
Controls negative and/or solvent	Negative and solvent control
Replicates per dose 3 or more	3
Duration of test 120 hours	96 hours
Daily observations were made?	Yes
Method of Observations	Cellular counts
Maximum Labeled Rate	Not reported

12. REPORTED RESULTS:

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

Measured Concentrations

Nominal Conc. (mg/L)	Measured Concentration (mg/L)			
	0-Hour	96-Hour	Mean	% Nominal
Control	<0.8	<0.8	--	--
Solvent Control	<0.8	<0.8	--	--
3.13	3.57	1.99	2.78	89
6.25	7.14	4.44	5.79	93
12.5	14.4	9.51	12.0	96
25.0	27.9	18.3	23.1	92
50.0	52.4	39.6	46.0	92
100	106	87.3	96.7	97

14. REVIEWER'S COMMENTS: This study is scientifically sound and fulfills the guideline requirements for an aquatic plant toxicity test. Based on mean measured concentrations, the 96-hour EC₅₀ for *Selenastrum capricornutum* exposed to 5-hydroxy-DE-565 Acid was 32.6 ppm. The NOEC was 23.1 ppm. This study is categorized as Core.

MAX FEKEN 5-OH-DE-565 ACID SELENASTRUM 03-23-99

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
96.7	100	100	100	0
46	100	99	99	0
23.1	100	1	1	0
12	100	0	0	0

BECAUSE THE NUMBER OF ORGANISMS USED WAS SO LARGE, THE 95 PERCENT CONFIDENCE INTERVALS CALCULATED FROM THE BINOMIAL PROBABILITY ARE UNRELIABLE. USE THE INTERVALS CALCULATED BY THE OTHER TESTS.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 32.59755

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
3	8.831131E-03	33.0794	30.73817	35.59896

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
11	4.946407E-02	1	.9994584

SLOPE = 15.55304
95 PERCENT CONFIDENCE LIMITS = 12.09397 AND 19.01212

LC50 = 32.59754
95 PERCENT CONFIDENCE LIMITS = 30.13452 AND 35.26187

LC10 = 27.01026
95 PERCENT CONFIDENCE LIMITS = 24.44409 AND 29.26746

5-OH-DE-565 ACID
File: 44744509

Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	SOLVENT	3	526615.000	526615.000	601439.250
2	2.78	3	647416.667	647416.667	601439.250
3	5.79	3	607899.667	607899.667	601439.250
4	12.0	3	623825.667	623825.667	601439.250
5	23.1	3	520699.000	520699.000	520699.000
6	46.0	3	2767.667	2767.667	2767.667
7	96.7	3	2236.000	2236.000	2236.000

5- I-DE-565 ACID
File: 44744509

Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
SOLVENT	601439.250				
2.78	601439.250	1.034		1.76	k= 1, v=14
5.79	601439.250	1.034		1.85	k= 2, v=14
12.0	601439.250	1.034		1.88	k= 3, v=14
23.1	520699.000	0.082		1.89	k= 4, v=14
46.0	2767.667	7.241	*	1.90	k= 5, v=14
96.7	2236.000	7.248	*	1.91	k= 6, v=14

s 88604.280

Note: df used for table values are approximate when v > 20.

NOEC = 23.1 mg/L