

DATA EVALUATION RECORD  
ALGAE OR DIATOM EC<sub>50</sub> 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: >96%  
(A metabolite of DE-565)

3. CITATION:  
Authors: H.D. Kirk, M.M. Gilles, J.M. Hugo, and L.G. McFadden  
Title: Phytotoxicological Evaluation of 5-Hydroxy-DE-565 Acid Exposed Freshwater Diatom, *Navicula pelliculosa*  
Study Completion Date: July 29, 1998  
Laboratory: Health and Environmental Research Laboratories, The Dow Chemical Company, Midland, MI  
Sponsor: Dow AgroSciences, Indianapolis, IN  
Laboratory Report ID: 981075  
DP Barcode: D252903  
MRID No.: 447445-07

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: 120 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**

EC<sub>50</sub>: 11.9 ppm                      95% C.I.: 11.1 - 12.8 ppm  
 NOEC: 8.7 ppm                        Probit Slope: 13.9

**8. ADEQUACY OF THE STUDY:****A. Classification:** Core**B. Rationale:** N/A**C. Repairability:** N/A

**9. GUIDELINE DEVIATIONS:** The pH of the three highest test concentrations were lower than recommended as a result of the acidic nature of the test substance. Algal growth inhibition was highest 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
<b><u>Species</u></b> <i>Skeletonema costatum</i> <i>Anabaena flos-aquae</i> <i>Selenastrum capricornutum</i> <i>Navicula pelliculosa</i>	<i>Navicula pelliculosa</i>
<b><u>Initial Number of Cells</u></b> 3,000 - 10,000 cells/mL	11,000 cells/mL
<b><u>Nutrients</u></b> Standard formula, e.g. 20XAAP	Algal Assay Medium with added selenium and silicon

**B. Test System**

Guideline Criteria	Reported Information
<b><u>Solvent</u></b>	DMF (0.4 mL/L)
<b><u>Temperature</u></b> Skeletonema: 20°C Others: 24-25°C	23.3 - 23.7°C

Guideline Criteria	Reported Information
<u>Light Intensity</u> Anabaena: 2.0 Klux ( $\pm 15\%$ ) Others: 4.0-5.0 Klux ( $\pm 15\%$ )	3.5 - 5.4 Klux
<u>Photoperiod</u> Skeletonema: 14 h light, 10 h dark or 16 h light, 8 h dark Others: Continuous	Continuous
<u>pH</u> Skeletonema: approx. 8.0 Others: approx. 7.5	Without alga: 3.4 - 7.0 With alga: 3.3 - 8.2

### C. Test Design

Guideline Criteria	Reported Information
<u>Dose range</u> 2X or 3X progression	2X
<u>Doses</u> at least 5	Six doses: 3.13, 6.25, 12.5, 25, 50, and 100 mg/L
<u>Controls</u> negative and/or solvent	Negative and solvent control
<u>Replicates per dose</u> 3 or more	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>	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	120-Hour	Mean	% Nominal
Control	<0.5	<0.5	--	--
Solvent Control	<0.5	<0.5	--	--
3.13	2.93	1.71	2.32	74
6.25	5.64	3.47	4.56	73
12.5	10.7	6.72	8.71	70
25.0	21.7	13.2	17.5	70
50.0	46.9	29.2	38.1	76
100	101	60.3	80.7	81



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 120-hour EC<sub>50</sub> for *Navicula pelliculosa* exposed to 5-hydroxy-DE-565 Acid was 11.9 ppm. The NOEC was 8.7 ppm. This study is categorized as Core.

MAX FEKEN 5-OH-DE-565 NAVICULA 03-24-99

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
17.5	100	99	99	0
8.71	100	3	3	0
4.56	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 12.12195

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
2	9.743822E-03	11.95895	11.23715	12.80356

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
6	4.388776E-02	1	.9800452

SLOPE = 13.88393  
95 PERCENT CONFIDENCE LIMITS = 10.97533 AND 16.79253

LC50 = 11.89824  
95 PERCENT CONFIDENCE LIMITS = 11.11726 AND 12.84567

LC10 = 9.638511  
95 PERCENT CONFIDENCE LIMITS = 8.906528 AND 10.32056

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5-OH-DE-565 ACID - NAVICULA

File: 44744507

Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	SOLVENT	3	2081312.000	2081312.000	2087877.556
2	2.32	3	2068901.333	2068901.333	2087877.556
3	4.56	3	2113419.333	2113419.333	2087877.556
4	8.71	3	2010510.000	2010510.000	2010510.000
5	17.5	3	18972.333	18972.333	18972.333
6	38.1	3	12432.000	12432.000	12432.000
7	80.7	3	6598.333	6598.333	6598.333

5-OH-DE-565 ACID - NAVICULA

File: 44744507

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	2087877.556				
2.32	2087877.556	0.114		1.76	k= 1, v=14
4.56	2087877.556	0.114		1.85	k= 2, v=14
8.71	2010510.000	1.230		1.88	k= 3, v=14
17.5	18972.333	35.829	*	1.89	k= 4, v=14
38.1	12432.000	35.942	*	1.90	k= 5, v=14
80.7	6598.333	36.044	*	1.91	k= 6, v=14

s = 70497.762

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

NOEC = 8.71 mg/L