

DATA EVALUATION RECORD
AQUATIC PLANT EC₅₀ TEST
GUIDELINE 123-2 (TIER II)

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

2. TEST MATERIAL: 5-hydroxy-DE-565 Purity: >95%
(A metabolite of DE-565)

3. CITATION:

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

Title: Phytotoxicological Evaluation of 5-
Hydroxy-DE-565 Exposed Aquatic Plant,
Duckweed, *Lemna gibba* L. G-3

Study Completion Date: August 20, 1998

Laboratory: The Dow Chemical Company, Midland, MI

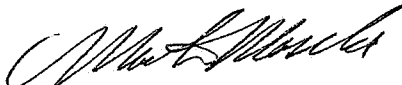
Sponsor: Dow AgroSciences, LLC, Indianapolis, IN

Laboratory Report ID: 981106

DP Barcode: D252903

MRID No.: 447445-05

4. REVIEWED BY: Mark A. Mossler, M.S., Toxicologist,
Golder Associates Inc.

Signature: 

Date: 3/30/99

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

Signature: P. Kosalwat

Date: 3/30/99

5. APPROVED BY:

Signature: 

Date: 4/13/99

6. STUDY PARAMETERS:

Definitive Test Duration: 14 days

Type of Concentrations: Initial measured

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

Results Synopsis:

EC₅₀: 116 ppm

95% C.I.: could not be determined

NOEC: 58.3 ppm

Probit Slope: N/A

8. ADEQUACY OF THE STUDY:

A. Classification: Core.

B. Rationale: N/A.

C. Repairability: N/A.

9. GUIDELINE DEVIATIONS: The growth medium pH (7.9-8.5) was higher than recommended (5.0).

10. SUBMISSION PURPOSE:

11. MATERIALS AND METHODS:

A. Test Organisms

Guideline Criteria	Reported Information
<u>Species</u> <i>Lemna gibba</i>	<i>Lemna gibba</i>
<u>Number of Plants/Fronds</u> 5 plants, 3 fronds each	4 plants/16 fronds per replicate
<u>Nutrients</u> Standard formula, e.g. 20XAAP	20X AAM

B. Test System

Guideline Criteria	Reported Information
<u>Solvent</u>	DMF
<u>Temperature</u> 25°C	23.4-23.9°C
<u>Light Intensity</u> 5.0 KLux ($\pm 15\%$)	4.3-6.5 KLux
<u>Photoperiod</u> Continuous	Continuous
<u>Test System</u> Static or Renewal	Static
<u>pH</u> Approx. 5.0	Initial: 7.9-8.5 Final: 8.5-9.0

C. Test Design

Guideline Criteria	Reported Information
<u>Dose range</u> 2X or 3X progression	2X
<u>Doses</u> at least 5	6: 3.1, 6.3, 12.5, 25, 50, and 100 ppm
<u>Controls</u> negative and/or solvent	Negative and solvent (453 μ L DMF/L) control groups
<u>Replicates per dose</u> 3 or more	3
<u>Duration of test</u> 7 or 14 days	14 days
Daily observations were made?	Counts and observations made on days 2, 5, 8, and 14
<u>Method of Observations</u>	Number of fronds
<u>Maximum Labeled Rate</u>	Test material is a metabolite

12. REPORTED RESULTS:

Guideline Criteria	Reported Information
Initial and 7/14 day frond numbers were measured?	Yes
Control frond at 7/14 days \geq 2X initial count?	Yes
Initial chemical concentrations measured? (Optional) Percent of nominal, Procedural recovery, Limit of quantitation (LOQ)	Samples analyzed by HPLC 66-120%, Procedural recovery not reported, LOQ = 1 ppm
Raw data included?	Yes

Analytical Results

Concentration (ppm)	Measured concentrations (ppm)	
	Day of Study	
	0	14
Nominal		
Control	<LOQ	<LOQ
Solvent Control	<LOQ	<LOQ
3.1	3.4	2.1
6.3	7.3	4.8
12.5	14.6	9.9
25	29.1	22.4
50	58.3	48.0
100	120	102

Dose Response

Initial measured concentration (ppm)	Avg. Frond Number	% Inhibition*	14-day pH
Control	256	N/A	8.8
Solvent Control	211	N/A	8.8
3.4	239	-13	8.8-8.9
7.3	271	-28	8.9-9.0
14.6	264	-25	9.0
29.1	286	-36	8.9-9.0
58.3	251	-19	8.9
120	97	54	8.7

*Comparison to the solvent control and negative values indicate growth stimulation

Other Significant Results: No other results were presented.

Statistical Results:

Statistical Method: Dunnett's test were used to determine the NOEC. Regression analysis was used to estimate the EC value.

EC₅₀: 132 ppm
Probit Slope: N/A

95% C.I.: 49.4 - 215 ppm
NOEC: 53.2 ppm

13. VERIFICATION OF STATISTICAL RESULTS:

Statistical Methods: Dunnett's test was used to determine the NOEC. The binomial probability test was used to estimate the EC value.

EC₅₀: 116 ppm
Probit Slope: N/A

95% C.I.: could not be determined
NOEC: 58.3 ppm

- 14. REVIEWER'S COMMENTS:** This study is scientifically sound and fulfills the guideline requirements for an aquatic plant toxicity test. The 14-day EC₅₀ and NOEC for *L. gibba* exposed to 5-hydroxy-DE-565 were 116 and 58.3 ppm, respectively. This study can be categorized as Core.

Lemna frond number

File: lem Transform: NO TRANSFORMATION

DUNNETT'S TEST - TABLE 1 OF 2

Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	Sol. Con.	211.333	211.333		
2	3.4 ppm	238.667	238.667	-3.163	
3	7.3 ppm	271.333	271.333	-6.944	
4	14.6 ppm	264.333	264.333	-6.134	
5	29.1 ppm	286.000	286.000	-8.641	
6	58.3 ppm	250.667	250.667	-4.552	
7	120 ppm	96.667	96.667	13.270	*

Dunnett table value = 2.53 (1 Tailed Value, P=0.05, df=14,6)

Lemna frond number

File: lem Transform: NO TRANSFORMATION

DUNNETT'S TEST - TABLE 2 OF 2

Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	Sol. Con.	3			
2	3.4 ppm	3	21.862	10.3	-27.333
3	7.3 ppm	3	21.862	10.3	-60.000
4	14.6 ppm	3	21.862	10.3	-53.000
5	29.1 ppm	3	21.862	10.3	-74.667
6	58.3 ppm	3	21.862	10.3	-39.333
7	120 ppm	3	21.862	10.3	114.667

NOEC = 58.3 ppm

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mossler 5-hydroxy DE565 Lemna gibba 3-18-99

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
120	100	54	54	0
58.3	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 115.6503

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.
