4-21-98

DATA EVALUATION RECORD
EC_{50} TEST WITH *LEMNA GIBBA*
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**

Authors:	Hoberg, James R.
Title:	San 836H-Toxicity To Duckweed
Study Completion Date:	14 April 1995
Laboratory:	Springborn Laboratories, Inc.
Sponsor:	Sandos Agro, Inc.
Laboratory Report ID:	95-5-5849
DP Barcode:	D238406 4-3/99
MRID No.:	443074-22

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

Signature: Fred Jenkins **Date:** 4/21/98

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

Signature: Michael Davy **Date:** 4-21-98

6. **STUDY PARAMETERS:**

Definitive Test Duration: 14 days
Type of Concentrations: Mean measured

7. **CONCLUSIONS:**

Results Synopsis

EC_{50}: > 0.35 ppm A.E. 95% CI: N/A
NOEC: 0.0039 ppm A.E. Slope: N/A

8. **ADEQUACY OF THE STUDY:**

A. Classification: Core

B. Rationale: Meets guideline criteria

9. **GUIDELINE DEVIATIONS**

The light intensity range was slightly lower than the recommended range of the *Hazard Evaluation Division Standard Evaluation Procedure for Non-Target Plants(SEP).*

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

11. **MATERIALS AND METHODS**

A. Test Organisms

Guideline Criteria	Reported Information
Species *LEMNA GIBBA*	*Lemma gibba*
Number of Plants/Fronds 5 plants, 3 fronds per plant.	5 plants 3 fronds per plant
Nutrients Standard formula, e.g. Highland E + EDNA, M-Highland (no EDNA, no sucrose), or 20XAAP	M-Highland

B. Test System

Guideline Criteria	Reported Information
Solvent	N/A
Temperature 25°C	25±1°C
Light Intensity 4.2-5.8 K lux (±15%)	3.2-5.4 K Lux
Photoperiod Continuous	Continuous
pH Varies with media used, as follows: Highland E + EDNA, 4.60; M-Highland (no EDNA, no sucrose), 5.00 ± 0.1; 20XAAP, 7.50 ± 0.01.	5.0-5.6 throughout the test period
Test System Static or renewal	Static

C. Test Design

Guideline Criteria	Reported Information
Dose range 2X or 3X progression	3x Progression
Doses at least 5	5
Controls negative and/or solvent	negative
Replicates per dose 3 or more	3
Duration of test 14 days	14 days
Daily observations were made?	Observations were made every 3 days.
Method of Observations	visual
Maximum Labeled Rate	o.2 lb A.E./A, 0.15 mg A.E./L

12. REPORTED RESULTS

Guideline Criteria	Reported Information
Quality assurance and G.P. compliance statements were included in the report?	Yes
Initial and 14 day frond count?	Yes
Control frond count at 14 day ≥x initial count?	Yes
Initial chemical concentrations measured? (Optional)	Yes
Raw data included?	Yes

Dose Response

Mean Measured Dose (ppm A.E.)[1]	Frond Production	% Inhibition	14-Day pH
Control	442	NA	5.6
0.039	411	7.1	5.6
0.012	365	17	5.6
0.034	360	19	5.6
0.11	310	30	5.5
0.35	339	23	5.5

[1] The nominal concentrations were as follows (ppm A.E.):0.0041, 0.014, 0.15, and 0.50). The mean measured test concentrations ranged from 71% to 95% of the nominal concentrations.

Other Significant Results:
Statistical Results

Statistical Method: Williams Test

EC_{50}: > 0.35 ppm A.E. 95% CI: N/A

Slope: N/A NOEC: 0.0039 A.E. ppm

Because of the weak response in frond reduction, the EC_{50} was empirically estimated to be > 0.35 ppm.

13. Verification of Statistical Results

Statistical Method: Williams (for NOEC value); None (for EC_{50} value)

EC_{50}: > 0.35 ppm 95% CI: N/A ppm

Slope: N/A NOEC: 0.0039 ppm

Adjusted for active ingredient:

EC_{50}: N/A 95% CI: N/A

NOEC: N/A

4

14. REVIEWER'S COMMENTS:

This study was scientifically sound and meets the guide criteria of the SEP. There were slight deviations from the guideline criteria but they were not significant enough to impair the results of the study (see guideline deviations).

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	CONTROL	3	442.333	442.333	442.333
2	0.0039	3	411.000	411.000	411.000
3	0.012	3	365.000	365.000	365.000
4	0.034	3	360.000	360.000	360.000
5	0.11	3	310.000	310.000	324.667
6	0.35	3	339.333	339.333	324.667

SAN 836H LEMMA FROND PRODUCTION
File: 836 Transform: NO TRANSFORM

WILLIAMS TEST (Isotonic regression model) TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG	TABLE WILLIAMS P=.05	DEGREES OF FREEDOM
CONTROL	442.333				
0.0039	411.000	1.196		1.78	k= 1, v=12
0.012	365.000	2.952	*	1.87	k= 2, v=12
0.034	360.000	3.143	*	1.90	k= 3, v=12
0.11	324.667	4.492	*	1.92	k= 4, v=12
0.35	324.667	4.492	*	1.93	k= 5, v=12

s = 32.085
Note: df used for table values are approximate when v > 20.

SAN 836H LEMMA FROND PRODUCTION
File: 836 Transform: NO TRANSFORM

WILCOXON RANK SUM TEST W/ BONFERRONI ADJUSTMENT -
Ho:Control<Treatment

ble 4. Frond production and observations recorded for *Lemna gibba* after 3, 6, 9, 12, and 14 days exposure to SAN 836H .

ean easured ncentration g A.E./L)		Fronds/replicate Day 3	Day 6	Day 9	Day 12	Day 14	14-Day Inhibition (%)
ntrol	A	38	110	192	422	462	
	B	39	103	197	412	441	
	C	38	118	207	407	424	
Mean(SD)[a]		38(1)	110(8)	199(8)	414(8)	442(19)	NA[b]
0039	A	38	98	177	378	409	
	B	39	112	215	400	428	
	C	38	114	196	372	396	
Mean(SD)[a]		38(1)	108(9)[c]	196(19)[c]	383(15)[c]	411(16)[c]	7.1
012	A	40	119	188	283	317	
	B	43	129	202	398	442	
	C	39	126	203	272	336	
Mean(SD)[a]		41(2)	125(5)[c]	198(8)[c]	318(70)[c]	365(67)[cf]	17
034	A	38	111	208	316	374	
	B	34	89	183	324	368	
	C	36	96	194	318	338	
Mean(SD)[a]		36(2)	99(11)[cde]	195(13)[cde]	319(4)[cde]	360(19)[cdef]	19
0.11	A	39	93	188	324	315	
	B	41	112	202	386	309	
	C	36	104	212	361	306	
Mean(SD)[a]		39(3)	103(10)[cde]	201(12)[cde]	357(31)[cde]	310(5)[cdef]	30
0.35	A	34	87	195	288	368	
	B	35	101	190	310	328	
	C	37	96	184	358	322	
Mean(SD)[a]		35(2)	95(7)[cde]	190(6)[cde]	319(36)[cde]	339(25)[cdef]	23

[a]Mean and standard deviation (SD) were calculated from original raw data (Appendix V), not from the rounded values presented in this table.
NA = not applicable
Fronds were observed to be slightly chlorotic compared to the control.
Fronds were observed to be smaller in comparison to control.
Fronds were observed to have less root formation in comparison to the control.
Significantly reduced ($p \leq 0.05$) as compared to the control based on Williams' Test.

7