



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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6-13-96

OFFICE OF
PREVENTION, PESTICIDES, AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Pyriproxyfen (129032): review of aquatic plant (*Lemna gibba*) toxicity study (122-2); D225442; S503789; Case 031299; McLaughlin Gormley King Co.

FROM: Anthony F. Maciorowski, Chief
Ecological Effects Branch
Environmental Fate and Effects Division (7507C)

TO: Rick Keigwin/Joseph Tavano
Product Manager 10
Registration Division (7505C)

EEB has completed its review of the aquatic plant toxicity study submitted by McLaughlin Gormley King Co. to support registration of pyriproxyfen. The DER is attached. The following citation and comments apply to this study:

Citation: Hoberg, J. R. 1996. Toxicity to duckweed, *Lemna gibba*. Conducted by Springborn Laboratories, Inc., Wareham, MA. Lab. Report # 96-1-6354. Sponsored by Sumitomo Chemical Company, Osaka, Japan. MRID No. 439583-01.

Guideline	MRID No.	Acceptability
122-2	439583-01	yes

Comments: The study is considered core for a Tier I test (122-2). Because inhibition of frond growth was <50% at a test concentration exceeding the maximum label application rate of 0.1 lb ai/acre, Tier II testing is not required for *Lemna gibba*.

Contact Bill Erickson at 305-6212 or Harry Craven at 305-5320 if you have any questions about this review.

DP Barcode : D225442
 PC Code No : 129032
 EEB Out :

To: Rick Keigwin/Joseph Tavano
 Product Manager 10
 Registration Division (7505C)

From: Anthony F. Maciorowski, Chief
 Ecological Effects Branch/EFED (7507C)

Attached, please find the EEB review of...

Reg./File # : 1021-Ratn Nylar Fire Ant Bait 2629
 Chemical Name : Pyriproxyfen
 Type Product : Insecticide
 Product Name : _____
 Company Name : McLaughlin Gormley King Co.
 Purpose : Aquatic plant toxicity study - Lemna gibba
 Action Code : 116 Date Due : 08/13/96
 Reviewer : William Erickson Date In : 04/19/96

EEB Guideline/MRID Summary Table: The review in this package contains an evaluation of the following:

Gdln No.	MRID No.	Cat.	Gdln No.	MRID No.	Cat.	Gdln No.	MRID No.	Cat.
71-1(a)			72-2(a)			72-7(a)		
71-1(b)			72-2(b)			72-7(b)		
71-2(a)			72-3(a)			122-1(a)		
71-2(b)			72-3(b)			122-1(b)		
71-3			72-3(c)			122-2	439583-01	Y
71-4(a)			72-3(d)			123-1(a)		
71-4(b)			72-3(e)			123-1(b)		
71-5(a)			72-3(f)			123-2		
71-5(b)			72-4(a)			124-1		
72-1(a)			72-4(b)			124-2		
72-1(b)			72-5			141-1		
72-1(c)			72-6			141-2		
72-1(d)						141-5		

Y=Acceptable (Study satisfied Guideline)/Concur

P=Partial (Study partially fulfilled Guideline but additional information is needed)

S=Supplemental (Study provided useful information but Guideline was not satisfied)

N=Unacceptable (Study was rejected)/Nonconcur

DATA EVALUATION RECORD
EC₅₀ TEST WITH *LEMNA GIBBA*
GUIDELINE 122-2/123-2 (TIER I/II)

1. CHEMICAL: Pyriproxyfen (129032)
2. TEST MATERIAL: Pyriproxyfen (Sumilarv TG); 98.4%
3. CITATION:

Author: Hoberg, J. R.
Title: Toxicity to duckweed, *Lemna gibba*
Date: 1996
Laboratory: Springborn Laboratories, Inc., Wareham, MA
Lab. Report #: 96-1-6354
Sponsor: Sumitomo Chemical Company, Osaka, Japan
MRID No.: 439583-01

4. REVIEWED BY:

William Erickson
Biologist
EEB/EFED/EPA

Signature: *W. Erickson*

Date: 6/07/96

5. APPROVED BY:

Harry Craven
Section Head 4
EEB/EFED/EPA

Signature: *Harry Craven*

Date: 6/12/96

6. STUDY PARAMETERS/RESULTS SYNOPSIS:

Definitive Test Duration: 14 days
Type of Concentrations: mean measured
EC₅₀: >0.18 mg ai/l
95% C.I.: n/a
NOEC: 0.18 mg ai/l

7. CONCLUSIONS: The study is scientifically sound and fulfills the guideline requirement for a Tier I aquatic plant growth toxicity test with *Lemna gibba*. Because inhibition was <50% at a test concentration exceeding the maximum label application rate of 0.1 lb ai/acre, a Tier II test is not required.
8. ADEQUACY OF THE STUDY: Core for Tier I.
9. MAJOR GUIDELINE DEVIATIONS: None.
10. SUBMISSION PURPOSE: Registration.

11. MATERIALS AND METHODS:

Test Organism:

Guideline Criteria	Reported Information
<u>Species</u> <i>Lemna gibba</i>	<i>Lemna gibba</i> G3
<u>Number of Plants/Fronds</u> 5 plants/rep; 3 fronds per plant.	5 plants with 3 fronds per plant per replicate
<u>Nutrients</u> Standard formula, e.g. 20XAAP	Hoagland's medium prepared w/sterile deionized water

Test System:

Guideline Criteria	Reported Information
<u>Solvent</u>	acetone
<u>Temperature</u> 25°C	25 ± 1°C
<u>Light Intensity</u> 5.0 Lux (±15%)	4300-5800 lux (400-530 footcandles)
<u>Photoperiod</u> Continuous	continuous
<u>pH</u> Approximately 5.0	5.0
<u>Test System</u> Static or renewal	static

Test Design:

Guideline Criteria	Reported Information
<u>Dose range</u> 2X or 3X progression	2X
<u>Doses</u> at least 5	5
<u>Controls</u> negative and/or solvent	negative and solvent
<u>Replicates per dose</u> 3 or more	3

Guideline Criteria	Reported Information
Duration of test 14 days	14 days
Observations made at least every 3 days?	yes
Maximum Labeled Rate	0.1 lb ai/acre

12. REPORTED RESULTS:

Guideline Criteria	Reported Information
Initial and 14 day frond count?	yes
Control frond count at 14 day ≥2X initial count?	yes
Initial chemical concentrations measured? (Optional)	yes
Raw data included?	yes

Dose Response for Frond Counts:

Dose (mg ai/L)	Plant/Frond density	% Inhibition	14-day pH
control	392	n/a	6.0
solvent control	357	n/a	6.2
0.016	358	4	6.2
0.026	500	-33	6.2
0.049	424	-13	6.2
0.078	398	-6	6.2
0.18	380	-2	6.2

Statistical Results for Frond Counts:

Methods: n/a for EC₅₀
Williams' Test for NOEC
EC₅₀: >0.18 mg ai/l
95% C.I.: n/a
NOEC: 0.18 mg ai/l

Other Findings: At test termination, fronds exposed to the highest test concentration and to the solvent control were slightly chlorotic. Fronds exposed to all other test concentrations had reduced root formation when compared to the controls. Control fronds appeared normal throughout the test.

Frond biomass (dry weight) was also measured at test termination. Statistical analysis (Williams' Test) determined no significant reduction in frond biomass in any treatment level tested as compared to the pooled control.

13. **VERIFICATION OF STATISTICAL RESULTS:** Visual inspection of the data confirm that an EC_{50} cannot be determined and that the NOEC is 0.18 mg ai/l.
14. **REVIEWER'S COMMENTS:** The study is scientifically sound and fulfills the guideline requirement for a Tier I aquatic plant growth toxicity test with *Lemna gibba*. An EC_{50} value was not determined. However, because inhibition was <50% at a test concentration exceeding the maximum label rate of 0.1 lb ai/acre, a Tier II test is not required.