6-6-94 File copy Metribuzin

DP Barcode : D200787
PC Code No : 101101
EEB Out : 06/06/94

To: Walter Waldrop
Product Manager 71
Special Review and Reregistration Division (7508W)

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

Attached, please find the EEB review of...

Reg./File # : 101101-
Chemical Name : Metribuzin
Type Product : Herbicide
Product Name : Sencor
Company Name : Miles, Inc.
Purpose : Submission of Green alga study to support reregistration of List A, Case No. 0181.

Action Code : 627 Date Due : 06/20/94
Reviewer : K. Valente Date In : 03/23/94

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		
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	431336-01	
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)
Unacceptable (Study was rejected)/Nonconcur

DP BARCODE: D200787 REREG CASE # 0181

CASE: 819350 DATA PACKAGE RECORD DATE: 03/22/94
SUBMISSION: S460988 BEAN SHEET

* * * CASE/SUBMISSION INFORMATION * * *

CASE TYPE: REREGISTRATION ACTION: 627 CORE DATA
CHEMICALS: 101101 Metribuzin %

ID#: 101101-
COMPANY:
PRODUCT MANAGER: 71 WALTER WALDROP 703-308-8062 ROOM: CS1 2C3
PM TEAM REVIEWER: ERIC FERIS 703-308-8048 ROOM: CS1 3N5
RECEIVED DATE: 02/22/94 DUE OUT DATE: 05/23/94

* * * DATA PACKAGE INFORMATION * * *

DP BARCODE: 200787 EXPEDITE: N DATE SENT: 03/22/94 DATE RET.: / /
CHEMICAL: 101101 Metribuzin
DP TYPE: 001 Submission Related Data Package
CSF: N LABEL: N

ASSIGNED TO	DATE IN	DATE OUT
DIV : EFED	03/22/94	/ /
BRAN: EEB	03/23/94	/ /
SECT: IO	/ /	/ /
REVR :	3/23/94	6/6/94
CONTR:	/ /	/ /

ADMIN DUE DATE: 06/20/94
NEGOT DATE: / /
PROJ DATE: / /

* * * DATA REVIEW INSTRUCTIONS * * *

LIST A REREGISTRATION CHEMICAL

Tier II Aquatic Plant Growth study.
Please review.

* * * DATA PACKAGE EVALUATION * * *

No evaluation is written for this data package

* * * ADDITIONAL DATA PACKAGES FOR THIS SUBMISSION * * *

DP BC	BRANCH/SECTION	DATE OUT	DUE BACK	INS	CSF	LABEL

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

June 6, 1994

JUN 8 1994

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Metribuzin Aquatic Plant Data Evaluation Record
(D200787)

TO: Walter Waldrop, PM 71
Special Review and Reregistration Division (7508W)

FROM: for Anthony F. Maciorowski, Chief
Ecological Effects Branch
Environmental Fate and Effects Division (7507C) 6/8/94

Miles, Inc., has submitted a freshwater green alga study (MRID #431336-01) in support of reregistration for metribuzin. The study has been reviewed and is classified as core. Additional testing with the four remaining species of aquatic plants is required before Guideline 123-2 can be fulfilled, however.

The following data requirements are **outstanding** for metribuzin:
71-4: Avian reproduction, gamebird and waterfowl (TGAI)
72-4a: Fish early life stage (TGAI)
123-2: Tier II aquatic plant testing--4 additional species (TGAI)

The following data requirements are **reserved** for metribuzin:
72-5: Fish life cycle (TGAI)
72-6: Aquatic organisms accumulation (TGAI)

If you have any questions on the above, please contact Kathryn Valente Montague (308-2804).

Data Evaluation Record

1. Chemical: Metribuzin, Shaughnessy No.:101101

2. Test Material: (4-Amino-6-(1,1-dimethyl)-3-(methylthio)-1,2,4-triazin-5(4H)-one; CAS # 21087-64-9, 94.1 % active ingredient,batch #0145346/0030147.

3. Study type: Tier II Aquatic plant growth (123-2)

   Test Species: *Selanastrum capricornutum*

4. Study ID: Gagliano, G.G. and W.B. Orr. 1994. "Acute Toxicity of Sencor Technical to the Green Alga (*Selanastrum capricornutum*)." Performed by Miles Incorporated, Agriculture Division, Research and Development Department, Environmental Research Station, 17745 South Metcalf, Stilwell, KS 66085 for Miles Incorporated, Agriculture Division, P.O. Box 4193, Kansas City, MO 64120. Study #106417. **MRID #431336-01.**

5. Reviewed by: Kathryn Valente Montague, M.S. Biologist EEB/EFED — Signature: Kathryn V. Montague Date: 6/6/94

6. Approved by: Norm Cook Head, Section II EEB/EFED — Signature: Norman J. Cook Date: 06.08.94

7. Conclusions: The study is scientifically sound and fulfills the requirements for a Tier II freshwater green alga study. The EC_{50} for growth based on cell density at test termination was 20.8 (18.3-23.3) µg a.i./L , the EC_{25} was 11.1 (9.5-12.7) µg a.i./L, and the NOEC was 4.1 µg a.i./L. The study is classified as core.

8. Recommendations: N/A

9. Background information: This study was submitted in support of reregistration.

10. Discussion of Individual Tests: N/A

11. Materials and Methods:
    a. Test plants: The original culture of *Selanastrum capricornutum* was from Carolina Biological Supply, Burlington, NC. The culture used in this test was maintained at Miles Incorporated. The culture medium was Sterile ASM-1 laboratory medium prepared with dechlorinated, filtered, deionized tap water, with a pH adjusted to 7.5. The medium used for the test was the same as that used for the stock culture. The medium used in the study was injected with vitamins at a rate

of 100 µL per 100 mL media.

b. Test conditions: The test was conducted in an environmental chamber designed to maintain a temperature of 24 ±2°C and provide constant illumination at 400 footcandles. Temperature was measured hourly from a centrally located flask containing 50 mL media. Conductivity and pH were measured in aliquots of freshly prepared high, medium and low concentrations on day 0, and in samples from the same treatment levels on day 5. Tests were conducted in sterile 250 mL borosilicate glass culture disks 100 mL of the appropriate solution, and capped. Dimethylformamide was used as a solvent at a rate of 50 µL per 100 mL media.

c. Study design: There were 3 replicates per treatment, including the solvent and negative controls. Each flask was randomly placed on an orbital shaker at 100 rpm at test initiation. Nominal test concentrations used were: 1.2, 2.3, 4.5, 9.0, 18 and 36 µg a.i./L. Testing began when the disks were innoculated with *Selanastrum capricornutum* at a nominal concentration of 3,000 cells/mL from a 48-hour old culture, aeseptically introduced into each disk. Cells were counted every 24 hours using hemacytometers and a compound light microscope. Two hemocytometer samples from each disk were taken, and 8 random fields were counted on each hemocytometer.

d. Statistics: Control and solvent control values were compared using a t-test; if there were no significant differences ($p \leq 0.05$), they were pooled for further analyses. One way ANOVA with Dunnett's mean separation was used to determine the NOEC. EC values were calculated using simple linear regression.

12. Reported Results: Mean measured concentrations were: 1.0, 2.2, 4.1, 8.4, 17.1, and 32.6 µg a.i./A. Percent recoveries of test concentrations ranged from 83-96% of nominal.

The t-test showed no significant difference between the control and solvent control, so they were pooled for further analyses. Significant differences in day 5 cell densities were seen at 17.1 and 32.6 µg a.i./L.

The cell density values on day 5 were as follows:

control - 14.3×10^4
solvent control - 14.9×10^4
pooled controls - 14.6×10^4
1.0 µg a.i./L - 14.6×10^4
2.2 µg a.i./L - 13.2×10^4
4.1 µg a.i./L - 13.5×10^4
8.4 µg a.i./L - 12.4×10^4

17.1 μg a.i./L - 10.4×10^4
32.6 μg a.i./L - 3.1×10^4

13. Study Author's Conclusions/Quality Assurance Report: No conclusions other than those given above were reported. Quality Assurance and Good Laboratory Practice statements were included in the report.

14. Reviewer's Discussion and Interpretation of the Results:
a. Test Procedure: The test design and procedure were generally in accordance with protocols recommended by the Guidelines.

b. Statistical Analysis: The statistical calculations were verified using Toxstat. One-way ANOVA with Dunnett's test showed a significant difference at the 8.4 μg a.i./L test level, as well as at the two highest levels tested; therefore, the NOEC will be accepted as 4.1 μg a.i./L, not 8.4 as reported by the authors. All other statistical calculations were in agreement with the reported results.

c. Discussion/Results: The study is scientifically sound and fulfills Guideline 123-2 for a freshwater green alga. Please note that testing with the additional 4 species of aquatic plants is required before this Guideline is completely fulfilled.

d. Adequacy of the study:
(1) Classification: Core
(2) Rationale: N/A
(3) Repairability: N/A