107901
SHAUGHNESSEY NO.

REVIEW NO.

EEB REVIEW

DATE: IN 12-11-85 OUT 2-6-86

FILE OR REG. NO 21137-4

PETITION OR EXP. NO.

DATE OF SUBMISSION

DATE RECEIVED BY HED 12-9-86

RD REQUESTED COMPLETION DATE 2-21-86

EEB ESTIMATED COMPLETION DATE 2-17-86

RD ACTION CODE/TYPE OF REVIEW 335

TYPE PRODUCT(S) : I, D, H, F, N, R, S Fungicide

DATA ACCESSION NO(S). 095811

PRODUCT MANAGER NO. H. Jacoby (21)

PRODUCT NAME(S) Funginex 20EC

COMPANY NAME EM Laboratories, Inc.

SUBMISSION PURPOSE Submission of data to support registration of almonds.

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
107901	Triforine N, N'-[1,4-Piperazinediylbis (2,2,2-trichloroethylidene)] bis (formamide	18.2%

EEB REVIEW

100.0 Pesticide Name: Triforine

100.3 Submission Purpose

Submission of 96-hour LC_{50} for both warmwater and coldwater fish to support almond use in California.

101.0 Chemical and Physical Properties:

101.1 Chemical Name:

Active Ingredient:

Triforine N,N'-[1,4-Piperazinediylbis (2,2,2-trichloroethylidene)] bis (formamide)	18.2%
Inert Ingredient.....	81.8%
	100.0%

101.2 Common Name: Triforine

103.0 Toxicological Properties:

96-hr. LC_{50} for rainbow trout
96-hr. LC_{50} for bluegill sunfish

104.0 Inadequacy of Toxicity Data:

The aquatic studies appear to indicate that triforine is practically nontoxic to both warmwater and coldwater (bluegill sunfish and rainbow trout) fish with an LC_{50} >1000 ppm. However, these studies do not fulfill the guideline requirements in support of registration for a warmwater and coldwater fish study because precipitation was formed in each concentration tested with the amount present being directly proportional to the concentration.

105.0 Conclusions

EEB has reviewed the proposed conditional registration of triforine for use on almonds. EEB is unable to complete an incremental risk assessment [3(c)(7)finding] for this use because pertinent ecological effects data are lacking. In order to assess the risks associated with this use, EEB requires the following data:

1. 96-hr LC_{50} for rainbow trout;
2. 96-hr LC_{50} for bluegill sunfish; and
3. Honey bee acute contact LD_{50}.

The above basic studies are required on the technical grade material of each active ingredient(s).

105.1 Recommendations

EEB recommends using one of the recommended solvents listed in the Standard Evaluation Procedure, EPA-540/9-85-006, dated June, 1985, Pg. 6. If an appropriate solvent system can not be obtained, test solution may have to be chemically analyzed to determine actual exposure concentration of triforine.

Curtis E. Laird
Curtis E. Laird, Fishery Biologist
Ecological Effects Branch
Hazard Evaluation Division (TS-769-C)

Norman J. Cook 2.6.86
Norman J. Cook, Head-Section 2
Ecological Effects Branch
Hazard Evaluation Division (TS-769-C)

M W Slimak 2/6/86
Michael W. Slimak, Chief
Ecological Effects Branch
Hazard Evaluation Division (TS-769-C)

DATA EVALUATION RECORD

1. Chemical: Triforine MRM158

2. Test Material: 100% (technical a.i.) a white powder

3. Study Type: 96-hour LC_{50}

   Species Tested: Bluegill Sunfish (Lepomis macrochirus)

4. Study ID: Sleight, III, B.H (1973) Acute toxicity of Triforine to bluegill sunfish; Prepared by EM Laboratories, Inc., for Bionomics, Inc., 790 Main Street, Wareham, MA: ACC. # 095811; and Report/Study # was not reported.

5. Reviewed By:

   Curtis E. Laird
   Fishery Biologist
   EEB/HED

   Signature: Curtis E. Laird
   Date: 2-6-86

6. Approved By:

   Norman J. Cook
   Supervisory Biologist
   EEB/HED

   Signature: Norman J. Cook
   Date: 2.6.86

7. Conclusions:

   This study appears to indicate triforine is practically non-toxic to bluegill sunfish with an LC_{50} > 1000 ppm. This study does not fulfill the guideline requirements in support of registration for a warmwater fish study because of precipitation was formed in each concentration tested.

8. Recommendations:

   EEB recommends using one of the recommended solvents listed in the Standard Evaluation Procedure EPA-540/9-85-006, dated June, 1985, pg. 6. If an appropriate solvent system can not be obtained, test solutions may have to be chemically analyzed to determine actual exposure concentration of triforine.

9. Background: EEB requested this study in order to fulfill a data gap.

10. Discussion of Individual Test: N/A

11. Materials and Methods

A. Test Animals: Bluegill sunfish were used (Lepomis macrochirus) from a commercial hatchery in Connecticut, Weight = 1.3 g, Mean Length = 44 mm

B. Test System: 5 gallon glass vessels; static exposure to reconstituted water at 21±1°C; 96-hour duration.

C. Dose: Static bioassay using nominal concentrations; no solvent used.

D. Design: 10 fish per dosage level; 5 dosage levels plus control (0, 100, 240, 490, 750, 1000 ppm).

E. Statistics: Probit analysis

12. Reported Results: The study author found that the 96-hr LC_{50} was > 1000 ppm for triforine. The 24-hr LC_{50} was > 1000 ppm. The No-Effect-level was 1000 ppm.

13. Study Author's Conclusions: The 96-hr LC_{50} was > 1000 ppm. This study is conducted following the bioassay procedure in the 1970 edition of Standard Method (APHA). This study was approved by Kenneth J. Macek, Ph.D. of EM Laboratories, Inc.

14. Reviewer's Discussion and Interpretation of the Study

A. Test Procedures: This study followed the recommended EPA Protocol of Oct. 1982 (Part 158), except there was precipitation in each concentration tested.

B. Statistical Analysis: No statistics were performed due to lack of mortality

C. Discussion/Results: EEB cannot verify the reported 96-hr LC_{50} value due to a precipitation problem.

D. Adequacy of Study:

1. Supplemental
2. Precipitation in each concentration tested
3. Repairability - not repairable to core

15. Completion of One-Liner: Yes

16. CBI Appendix: N/A

DATA EVALUATION RECORD

1. Chemical: Triforine MRM158

2. Test Material: 100% (technical a.i.) a white powder

3. Study Type: 96-hour LC_{50}

   Species Tested: Rainbow Trout (Salmo gairdneri)

4. Study ID: Sleight, III, B.H (1973) Acute toxicity of Triforine to rainbow trout; Prepared by EM Laboratories, Inc., for Bionomics, Inc., 790 Main Street, Wareham, MA: ACC. # 095811; and Report/Study # was not reported.

5. Reviewed By:

   Curtis E. Laird
   Fishery Biologist
   EEB/HED

   Signature: Curtis E. Laird
   Date: 2-6-86

6. Approved By:

   Norman J. Cook
   Supervisory Biologist
   EEB/HED

   Signature: Norman J. Cook
   Date: 2.6.86

7. Conclusions:

   This study appears to indicate triforine is practically non-toxic to rainbow trout with an LC_{50} > 1000 ppm. However, This study does not fulfill the guideline requirements in support of registration for a coldwater fish study because a precipitation was formed in each concentration tested.

8. Recommendations:

   EEB recommends using one of the recommended solvents listed in the Standard Evaluation Procedure EPA-540/9-85-006, dated June, 1985, pg. 6. If an appropriate solvent system can not be obtained, test solutions may have to be chemically analyzed to determine actual exposure concentration of triforine.

9. Background: EEB requested this study in order to fulfill a data gap.

10. Discussion of Individual Test: N/A

11. Materials and Methods

A. Test Animals: Rainbow trout were used (Salmo gairdneri) from a commercial hatchery in Massachusetts, Weight = 1 g, Mean Length = 30 mm

B. Test System: A five gallon glass vessel; static exposure to reconstituted water at 11±1°C; 96-hour duration.

C. Dose: Static bioassay using nominal concentrations; no solvent used.

D. Design: 10 fish per dosage level; 5 dosage levels plus control (0, 100, 240, 490, 750, 1000 ppm).

E. Statistics: Probit analysis

12. Reported Results: The study author found that the 96-hr LC_{50} was > 1000 ppm for triforine. The 24-hr LC_{50} was > 1000 ppm. The No-Effect-Level was 1000 ppm.

13. Study Author's Conclusions: The 96-hr LC_{50} was > 1000 ppm. This study is conducted following the bioassay procedure in the 1970 edition of Standard Method (APHA). This study was approved by Kenneth J. Macek, Ph.D. of EM Laboratories, Inc.

14. Reviewer's Discussion and Interpretation of the Study

A. Test Procedures: The test procedure complied with the recommended EPA Protocol of Oct. 1982 (Part 158), except there was precipitation in each concentration tested.

B. Statistical Analysis: No statistics were performed due to lack of mortality

C. Discussion/Results: EEB cannot verify the reported 96-hr LC_{50} value due to a precipitation problem.

D. Adequacy of Study:

1. Supplemental
2. Precipitation in each concentration tested
3. Repairability - not repairable to core

15. Completion of One-Liner: Yes

16. CBI Appendix: N/A