

US EPA ARCHIVE DOCUMENT

107901

19

SHAUGHNESSEY NO.

REVIEW NO.

EEB BRANCH REVIEW

DATE: IN 12/3/81 OUT 12/21/81

FILE OR REG. NO. 21137-4

PETITION OR EXP. PERMIT NO. \_\_\_\_\_

DATE OF SUBMISSION 11/4/81

DATE RECEIVED BY HED 12/2/81

DATE REQUESTED COMPLETION DATE 2/12/82

EEB ESTIMATED COMPLETION DATE \_\_\_\_\_

AD ACTION CODE/TYPE OF REVIEW 335/Amendment - New Food Use

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

DATA ACCESSION NO(S). \_\_\_\_\_

PRODUCT MANAGER NO. H. Jacoby (21)

PRODUCT NAME(S) Funginex E.C.

COMPANY NAME E. M. Industries, Inc.

SUBMISSION PURPOSE Proposed conditional Registration of  
Apple Use

SHAUGHNESSEY NO. CHEMICAL, & FORMULATION Z A.I.

107901 Triforine 18.2%

Funginex E.C.

100 Pesticide Label Information

100.1 Pesticide Use

Fungicide for use on Apples

100.2 Formulation Information

Funginex is 18.2% Triforine

100.3 Application Methods Directions and Rates

For full coverage spray only, mix 10 fluid oz. of Funginex per 100 gallons and apply to run-off for low volume sprayers, apply 40 oz. of undiluted Funginex per acre per application in sufficient water (50-200 gallons of water per acre). Make first application at 1/2 inch green tip and repeat every 7 days for a preventive control program. Do not exceed 5 blossom sprays of Funginex during the blossom period.

100.4 Target Organism

Scab (Venturia inaequalis)

Powdery Mildew (Podosphaera leucotricha)

rust (Gymnosporangium sp)

100.5 Precautionary Labeling

Keep out of Lakes, ponds and streams. Do not contaminate water by cleaning of equipment or disposal of wastes. Apply this product only as specified on the label.

101 Physical and Chemical Properties

See review by C. Laird dated 6/13/80.

102 Behavior in the Environment

The following summaries were taken from EEB review dated 3/20/76 by S. Fredricks.

Soil: 1/2 life about 2 weeks (slower in dry seasons) degradation is probably chemical rather than biological. Parent compound may not leach, but metabolites appear to be fairly mobile in soil.  
Water: Rapid degradation in water (2 days - 1 week). Solubility: 30 ppm.

Plant: Uptake by roots and transported to aerial portions of plant with half-life of 9-10 days (study done with 3-week old barley plants after a soil drench).

Animal: 96% of dose was excreted through urine and feces after 72 hours in the rat.

103

Toxicological Properties

<u>Study</u>	<u>Results</u>	<u>Category/Comment</u>
Rat 13-week dietary	NEL 500 ppm	Validation category unknown (Craven, 2/1/77)
Dog 13-week dietary	NEL 30,000 ppm	" " "
Bobwhite quail LD50	> 5000 mg/kg	Core (upgraded from supplemental) (C. Laird 9/10/79) (D. Rieder 12/10/81)
Bobwhite quail LC50	1849 ppm (1142-2994)	Core (Hitch 8/23/77)
Mallard duck LC50	>4640 ppm	Core (Hitch 8/23/77)
Rainbow trout LC50	<u>reported</u> as >1000 ppm*	* These studies were originally validated as core (R. Hitch 8/23/77), however he later changed the category to supplemental, possibly after learning of solubility problem in other studies. But the category change was not communicated to RD. For this registration action, these studies will be considered adequate, however an LC50 of >30 * ppm will be used since that is the solubility of Triforine.
Bluegill sunfish LC50	<u>reported</u> as >1000 ppm*	
Daphnia LC50	28 mg/l	Core (H. Craven 11/20/78)

104

Hazard Assessment

104.1

Discussion

Triforine, the active ingredient of funginex, will be applied at as much as 40 oz. (2.25 lb) per acre. This can be repeated five times at seven day intervals according to the label. It has a moderate half-life in soil and is taken up by plants. Triforine has a short half-life in water and has low solubility.

104.2 Likelihood of Adverse Effects to Non-Target Organisms

According to the 1978 Census of Agriculture, there are 570,000 acres of apple orchards in the United States. The top five apple producing states and their acreages are: Washington (115,244), New York (78,898), Michigan (71,877), Virginia (33,309), and California (28,367). Triforine is low in toxicity to mammals and birds, and at worst only slightly toxic to fish and aquatic invertebrates. In light of its relative non-persistence and low toxicity in conjunction with the small total acreage of apple orchards, it is unlikely that the use of Funginex on apples would result in adverse effects to the environment.

104.3 Endangered Species Consideration

Because of the low toxicity of triforine to birds, mammals and fish, it is not expected that this proposed use would have an adverse effect on any endangered species.

104.4 Adequacy of Toxicity Data

The data available on triforine are adequate to assess the hazard of this proposed use.

107 Conclusions

107.3 Environmental Hazards Labeling

The environmental hazards labeling is adequate.

107.4 Data Adequacy Conclusions

All six basic studies have been submitted and are considered acceptable.

107.7 Recommendations

EEB has completed an incremental risk assessment of the proposed conditional registration of Triforine for use on apple orchards. Based on the available data EEB concludes that the proposed use provides for no significant increase in exposure or risks to nontarget organisms.

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DATA EVALUATION SHEET

1. CHEMICAL: Triforine
2. FORMULATION: (N,N<sup>1</sup>-(1,4-piperazine diylbis (2,2,2-trichloroethylidene))  
bis(formamide))  
  
Shaughnessy Number: 107901
3. CITATION: Reno, Frederick. 1979. Acute Oral LD50 in Bobwhite Quail, Triforine  
Technical, Addendum to Final Report (Includes Food Consumption Data).  
Data Accession Number: 242629
4. REVIEWER: Daniel Rieder  
Wildlife Biologist  
EEB/HED
5. REVIEW DATE: 12/11/81
6. TEST TYPE: Avian Acute Oral
  - A. Species: Bobwhite Quail
  - B. Material: Technical Triforine, 99.2% pure
7. RESULTS: The results of the original study review by C. Laird on 9/10/79  
were an LD50 greater than 5,000 mg/kg. The food consumption data  
submitted later are acceptable.
8. REVIEWERS CONCLUSION:
  - A. Validation Category: This study is scientifically sound and meets  
guideline requirements. The study is con-  
sidered to be upgraded from supplemental to  
core.
  - B. Discussion: The original study and subsequent food con-  
sumption data indicate that triforine is  
practically non-toxic to birds.