1-23-76

EEE BRANCH REVIEW

DATE: IN _____ OUT _____ IN 12/30/75 OUT 1/23/76 IN _____ OUT _____

FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO. 10350-R

PETITION OR EXP. PERMIT NO. 6H5112

DATE DIV. RECEIVED _____

DATE OF SUBMISSION 12-17-75

DATE SUBMISSION ACCEPTED 3Cld status = No: Prior to 1-1-70

TYPE PRODUCT(S): I, D, (H) F, N, R, S Aquatic Weed Control

PRODUCT MGR. NO. Jacoby (24)

PRODUCT NAME(S) Mariner Brand Aquatic Herbicide System E

COMPANY NAME 3M Co.

SUBMISSION PURPOSE Registration and FAP

CHEMICAL & FORMULATION Dihydroxy aluminum salt of endothall

1. Introduction

Applicant proposes registration of new product called Mariner Brand Aquatic Herbicide System E which contains endothall acid in the form of the dihydroxy aluminum salt. Concurrent with the registration, applicant submits food additive petition to cover the above chemical in proposed use pattern. The petition is designated FAP 6H5112. The registration of this product has been pending since 1968 and therefore precedes the Jan. 1, 1970 date for data compensation requirements. Previous environmental chemistry evaluation of this product is dated 7-3-74 by F.D.R. Gee under File Symbol 10250-R.

2. Directions for Use

For use in non-flowing water in lakes, pond, and stagnant canals and waterways. Apply using centrifugal spreader-seeder or in water slurry to surface of water body.

Apply at rate of 20-40 lbs of Aquatic Herbicide System E per acre foot of water. Acid equivalent 2.68 - 5.36 lbs per acre foot.

Water temperature should be 60°F or higher. Treat only 1/3 to 1/2 the total water area in a single operation. Treated areas should be left undisturbed for two days. Do not use treated water for irrigation of lawns within two days. Do not use fish from treated area for food or feed within 14 days. If the treated water is subject to complete water exchange within 7 days, water may then be used to irrigate agricultural crops. If the treated water is a closed system, irrigation of agricultural crops should be delayed until 28 days post treatment. Do not use treated water for domestic purposes until 14 days post treatment.

3. Discussion of Data

Data is contained in volume entitled "Mariner Brand Aquatic Herbicide System E, Volume I" Section IV Residue Studies and Methods.

Part B Perimeter Treatments of Lakes

Study #1 Lake Gilfillan

Treated at rate of 0.066 ppm acid equivalent over 20% of lake area. Endothall acid remained at about treatment level 0.06 ppm for 7 days but was not detectable at 14 days at three sampling sites, two in treated area and one site away from treated area.

Study #2 Lake Gilfillan Minnesota Field Trial 75

Twenty-five acres of 101-acre lake treated on perimeter at 0.494 ppm endothall acid equivalent in treated area (assuming no diffusion into untreated area). By 14 days post treatment residues were 0.0 ppm at three sample points.

Study #3 Little Green Minnesota Field Trial 65

Perimeter treatment of 4.6 acres treated at 1.08 ppm endothall acid equivalent in treated area (assuming no diffusion). Water temperature dropped from 70°F to 53°F over 23 day sampling interval. At 15 days endothall was 0.04 ppm and at 23 days 0.0048 ppm.

Study #4 Tanners Lake Minnesota Field Trial 56

Small parts of lake treated at 1.0 ppm endothall acid equivalent. Two hours post treatment endothall was 0.29 ppm while at 14 days it was 0.0026 ppm.

Study #5 Canadian Lakes Michigan Field Trial 67

Small parts of lake treated at 1.2, 0.7 or 0.6 ppm. Rapid diffusion out of treated area is demonstrated. At 1 day, sampling sites in treated area, 200 feet out, 400 feet out, and 600 feet out showed 0.91, 0.165, 0.139, 0.078 ppm respectively.

Study #6 Silver Lake Minnesota Field Trial 55

One acre plot of lake treated at 0.6 ppm endothall acid equivalent. At 2 days post treatment 0.03 ppm found. Inadequate sampling interval.

Study #7 Lake Maitland, Florida Field Trial 68

130 acres (perimeter 35-200') treated at nominal rate 3.0 ppm but because of drift from 35' perimeter out to about 200' perimeter, calculated dosage about 0.1 ppm. At 1, 2 and three days, residues of endothall were 0.73, 0.13, and 0.0 ppm.

Study #8 Crystal Lake Minnesota

Small plot (0.69 acres) treated with 100 lbs. System E. Samples obtained from top of water and bottom of water 5-6 feet over 26 hour interval. No significant difference between concentration at top or bottom of water.

Part C. Closed Bodies of Water

Six small ponds 0.5 - 0.7 acre 3.5 feet deep treated at 2 or 4 ppm.

At 4 ppm, regression analysis showed 22 days to reach the 0.2 ppm proposed tolerance level. with estimated half life of initial residue at 9 days. At 2 ppm, regression analysis showed 22 days to reach 0.2 ppm proposed tolerance level with estimated half life of 12 days.

Study #7 Oakland Park Canal Field Trial 72

Inadequate sampling interval and inadequate information to evaluate this study.

Study #8

Inadequate data to evaluate study. In addition, the treatment was a mixture of System E and System M without any information as to System M.

Part D. Biotreatability of Aquatic System E By Activated Sludge

Activated sludge decomposed sodium endothall and dihydroxy aluminum salt of endothall. In a few days no endothall was detected.

(Note: No data or other evidence presented in support of the above conclusion)

Part E. Degradation of Endothall - A Literature Review

Summary abstracts of published literature were submitted.

1. "Metabolism of Endothall by Aquatic Microorganisms" Harish C. Sikka and Jetendra Saxena JAFC V 21 No 3 p 402-406 (1973).

2. "The Absorption and Metabolism of Radioendothall by Fish" V. H. Freed and Illo Ganditz, Weed Control Conference Proceedings and Supplement Vol. 15, 1961.

3. "Endothall" Marvin L. Montgomery and V. H. Freed Nov. 12, 1964.

4. "Uptake and Fate of Endothall in Submersed Aquatic Plants" Thomas Martin Thomas master's thesis Univ. of Cal. Davis, 1966.

5. "Dissipation of Endothall and Effects on Aquatic Weeds and Fish" R. R. Yeo, Weed Science Vol. 18 No 2 p. 282 (1970)

6. "Duration of the Toxicity of Endothall in Water" R. C. Hiltinbron Weeds 10, 17-19 (1962)

7. "Breakdown of Endothall in Soil" M. Horowitz, Weed Research 6, 168-171 (1966)

The above references have been previously reviewed or are not relevant to environmental chemistry data requirements.

4. Recommendations

No adverse environmental chemistry comments at this time on proposed use pattern.

RE Ney 2/3/76

Ronald E. Ney, Jr. 1/23/76

RW Cook 2-3-76

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Environmental Chemistry Section
Efficacy and Ecological Effects Branch

4 Recommendation

No adverse environmental chemistry comments at this time on proposed use patterns

Ronald E Ney 11/25/76

R W Cook 1-22-76

Environmental Chemistry Section

Efficacy and Ecological Effects Branch.

JHT