SHAUGHNESSEY NO. _____ REVIEW NO. _____

EEB BRANCH REVIEW

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FILE OR REG. NO. 3125 -GGR, -GGN, -GUE

PETITION OR EXP. PERMIT NO. _____

DATE OF SUBMISSION 4-4-83

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RD ACTION CODE/TYPE OF REVIEW 176,171/Old Chemical

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

DATA ACCESSION NO(S). _____

PRODUCT MANAGER NO. W. Miller (16)

PRODUCT NAME(S) Oftanol Products

COMPANY NAME Mobay Chemical Corporation

SUBMISSION PURPOSE Registration response of previous meeting with EEB and discussion of data

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

198

100.0 Pesticide Use

Oftanol 1.5% granular, 5% granular and 2 flowable are to be used for the control of turf insects on turf grasses.

100.1 Application Rates/Methods/Directions

Refer to Labels

100.2 Target Organisms

White grub larvae, Hyperodes weevil, mole crickets, Sod Webworm larvae, Chinch bug, Billbugs, Flea Beetle.

100.3 Formulation: 1' - Methyl lethyl - 2 - [[ethoxy[1-methylethyl) amino] phosphino thioyl] benzoate.

101.0 Physical and Chemical Properties

Refer to previous reviews

103.0 Toxicological Properties

103.1 Minimum Requirements

103.2.1 Avian Acute Oral LD_{50}

Organism	Test Result	Test Material	Acceptability
Bobwhite Quail	LD_{50} = 8.7 mg/kg	Technical	Core

103.2.2 Avian Dietary LC_{50}

Organism	Test Result	Test Material	Acceptability
Bobwhite Quail	LC_{50} = 145 ppm	Technical	Core
Mallard Duck	LC_{50} > 1000 ppm	Technical	Core

103.2.3 Fish Acute LC_{50}

Organism	Test Result	Test Material	Acceptability
Bluegill Sunfish	LC_{50} = 1.4 ppm	Technical	Core
Rainbow Trout	LC_{50} - 1.8 ppm	Technical	Core

103.2.4 Aquatic Invertebrate LC_{50}

Organism	Test Result	Test Material	Acceptability
Daphnia magna	LC_{50} = 3.9 ppb	Technical	Core

103.2.5 Fish Embryo larvae

Organisms	Test Results	Test Material	Acceptability
Rainbow trout	no-observed mortality at 1563 ppb	Technical	Core

103.2.6 Avian Small Pen

Organisms	Test Results	Test Material	Acceptability
Mallard duck	no mortality at 1.3 lb ai/A during 14 day treatment	20% granular	Core

103.2.7 Avian Reproductive

Organisms	Test Results	Test Material	Acceptability
Mallard duck	Reproductive impairment at 25 ppm (reduction in 14 day-old survivors of eggs set and normal hatching).	Technical	Core
Bobwhite quail	reproductive impairment at 50 ppm (reduction in percent of hatchlings of live 3-week bobwhite quail embryos).	Technical	Core

104.0 Hazard Assessment

Oftanol is an organophosphate that is presently registered on the following crops: Oftanol 15% and 20% granular, corn; Oftanol 6 EC, corn and termite control. Acute' studies indicate that oftanol is very highly toxic to aquatic invertebrates (Daphnia LC_{50} = 3.9 ppb), moderately toxic to fish (trout LC_{50} = 1.8 ppm) and very highly toxic to birds (bobwhite quail LD_{50} = 8.7 mg/kg). Chronic toxicity testing suggest that Oftanol can produce avian reproductive impairment in mallard ducks at 25 ppm and in bobwhite quail at 50 ppm. Fish embryo larvae studies indicate no significant difference in test mortality and control mortality at the 1563 ppb level. (refer to data evaluations accompaning this review). A previously reviewed fish embryo larvae study (refer to Rexrode 10/4/82) noted significant mortality in fish larvae at concentration levels between 66.1 and 206 ppb.

Mobay is seeking registration on the following formulations for turf use: two granulars (5% and 1.5% Granular) and one low pressure spray (2 Flowable). Both of these pesticide applications could be hazardous to fish and wildlife if residue or runoff values equal or exceed acute or chronic toxicity values.

Oftanol 2 Flowable (2.2 lb ai/A) is to be applied in a coarse low pressure spray at not more than two applications per year (refer to section 100.1). The expected residues of this formulation, after an initial application, are summarized in Table 1.

Table 1. - Expected Residues on Vegetation and other Food Items.

Vegetation/Insect Surface	Residue from 2.2 lb a.i./A
Short Range Grass	530 ppm
Long Grass	240 ppm
Insect/Small Seeds	160 ppm

Actual residues on weed seeds from a corn field treated with Amaze 6 EC (66% a.i.) were recorded as below 0.11 ppm. However, the sampling was conducted at 46-148 days after treatment when at least 33% of the pesticide had volatilized.

The expected residue from 2.2 lb ai/A exceeds the bobwhite acute toxicity value (LC_{50} = 145 ppm; (LD_{50} = 8.7 mg/kg) and the chronic toxicity value (reproductive impairment at about 25 ppm). However, the hazard potential to wildlife appears to be mitigated, since, application directions recommended watering-in of the pesticide within 12 hours of spraying.

Granulars create a different exposure to terrestrial wildlife than sprays. The pesticide impregnated granulars (5% granular formulation) are spread over the treatment area at the maximum rate of about 40 lbs product/A or 0.9 lbs/ 1000 sq ft. Assuming a granular weight of .08 mg, a 5% formulation will result in about .0040 mg of Oftanol per pellet. A .05 k bird (bobwhite) with an LD_{50} = 8.7 mg/k would have to consume about 108.75 granulars before an acute dosage is realised. Consumption of this number of granulars is unlikely.

The toxicity of Oftanol to aquatic organisms is well established. However, since the pesticide is not applied directly to water, contamination will result mainly from residues in runoff from the adiacent land. Mobay has estimated an EEC value which may occur under "worst case" conditions following the use of Oftanol on turf. Data pertaining to soil, drainage and water parameters were collected from 70 golf courses throughout the United States. The EEC values were calculated from the data and pertinent constants and using a method developed by EPA. The values were as follows: 84% yielded EEC values of 50 ppb or less; 10% were in the 50-100 ppb range and 5% were in the 100-130 ppb range. The highest relevant value was 128 ppb. The no-observed-effect level for fish in a life cycle study employing declining concentrations of oftanol was 1360 ppb. The EEC values in conjunction with the chronic fish data suggest that Oftanol runoff may not occur in significant amount to be hazardous to fish. However, aquatic invertebrates may be acutely and chronicly effected (Daphnia LC_{50} = 3.9 ppb) by runoff. The probability that Oftanol could runoff into an estuarine area, and impact commercial populations of shrimp, crabs or shell fish has not been evaluated by EEB.

105.0 Endangered Species

Endangered species are not likely to inhabit turf areas that might be treated by Oftanol. EEB concludes that Oftanol use, as outlined in the labels, will not be hazardous to endangered species.

106.0 Labeling Requirements

a) Do not apply directly to water or wetlands
b) Do not contaminate water by cleaning of equipment or disposal of wastes.

107.0 Conclusions:

The Ecological Effects Branch (EEB) has ccompleted the proposed registration review for the use of Oftanol 2 flowable, 5% Granular and 1.5% Granular on turf areas. Based upon the available data, EEB concludes that this proposed registration provides for no significant exposure to nontarget organisms.

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