SHAUGHNESSEY NO. REVIEW NO. 20

EEB BRANCH REVIEW

DATE: IN 4-6-83 OUT 6-13-83

FILE OR REG. NO. 3125-236/3125-283

PETITION OR EXP. PERMIT NO.

DATE OF SUBMISSION 5-5-82

DATE RECEIVED BY HED 4-6-83

RD REQUESTED COMPLETION DATE 6-21-83

EEB ESTIMATED COMPLETION DATE 6-14-83

RD ACTION CODE/TYPE OF REVIEW 316/Amendment

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

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. H. Jacoby (21)

PRODUCT NAME(S) Nemacur 3E and 15G

COMPANY NAME Mobay Chemical Company

SUBMISSION PURPOSE Proposed Conditional Registration of Carrots and Grapes.

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
100601	Ethyl-3-methyl-4-(methylthio)phenol	
	(1-methylethy) phosphoramidate	35
	Inert ingredients	65
	Total	100

7 pages

100. PESTICIDE USE

The registrant is requesting that Nemacur (3EC, and 15G) formulations be conditionally registered as a nematicide for use on carrots and grapes.

100.1 APPLICATION RATES/METHODS/DIRECTIONS

Proposed amendments to existing product (15G/3EC) labels are available in Appendix I.

101. CHEMICAL PHYSICAL PROPERTIES

See previous reviews by Gessner 12/3/80; Regelman (EFB) 1/19/83.

101.3 PRECAUTIONARY LABEL STATEMENTS

This product is toxic to fish, birds, and other wildlife. Keep out of lakes, streams or ponds. Bird feeding in treated areas maybe killed. In cleaning equipment or disposal of wastes, do not contaminate water.

103. TOXICOLOGICAL PROPERTIES

See previous reviews by Bowen (tobacco and non-bearing deciduous fruit trees), Bowen 3/9/83, Rabert 9/28/82, Gessner 12/3/80, Touart 12/28/79, and Gavin 1/10/76.

103.5 AGRICULTURAL USE PROFILE

Nemacur's active ingredient (fenamiphos) is currently registered for use on soybeans (71,586,000 acres), peanuts (1,549,700 acres), and cotton (13,947,000 acres). Existing Nemacur registrations provide for a potential usage on approximately 87,082,700 acres. The proposed registration for carrots (72,400 acres) and grapes (12,804 acres) could theoretically represents a 1% increase in incremental use.

The available use data indicate that the proposed registrations would represent no significant increase in use acreage. It is important to note, however, that the proposed grape use deviates significantly from past crop registrations and could result in the exposure of new populations of non-target organisms.

104. HAZARD ASSESSMENT

The registrant (Mobay Chemical Corporation) proposes to apply Nemacur to carrots (15G formulation) and grapes (3EC formulation). Labeled rates of application are 6 and 18 pounds active ingredient per acre, respectively. See attached product labels for specific methods of application and incorporation (Appendix I).

Terrestrial Exposure

Both technical and in use formulations of fenamiphos are highly toxic to mammals (rat LD_{50}'s range from 10 to 61 mg/kg), upland game birds (bobwhite LD_{50} = 1.6 mg/kg) and waterfoul (mallard LD_{50} = 1.68 mg/kg). The toxicological hazard posed by fenamiphos formulations to non-target birds and mammal is discussed in detail in an ongoing product review for tobacco and non-bearing deciduious fruit trees. Conclusions drawn from this assessment indicate that the labeled use of this product could pose an acute hazard to non-target birds. Avian exposure estimates suggest the need for additional (tier II) testing that would help quantify the impact of this product on non-target birds. Heavy wildlife utilization and large acreage (712,804) assoicated with grape culture suggests that an actual end-use field monitoring study would provide valuable information on this product.

Rabert (9/28/82) reviewed this product and concluded that a small pen field study was need to assess the acute hazard assicated with this product. As a result of this review the registrant conducted a 14 day small pen study with bobwhite quail (Bowen 3/9/830). Under the conditions of this study Nemacur had no significant effect on mortality or weight gains.

In this reviewers' opinion, the small pen study does not fully address the avian hazards assoicated with the intended use since the primary group at risk is significantly smaller (<100 g) than the adult bobwhite quail (>200 g) typically used in small pen studies. However, due to the small incremental increase (1 %) and the fact that one tier II study has already been completed, no additional studies will be requested.

In conclusion, the available data indicate that the registration of fenamiphos for an additional 785,000 acres will result in no significant increase in exposure or acute risks to non-target mammals and birds. The likelihood of a non-target organism ingesting a lethal dose will increase in areas where the product is not immediately or properly incorporated. Mortalities are expected to occur primarily in small mammals (< 13.9 grams) and birds (< 100 gram) and to be heaviest during the first week following product application. The hazard to wildlife should be significantly reduced following rainfall or irrigation of incorporated areas.

Aquatic Exposure

Fenamiphos is highly toxic to fish (bluegill LC_{50} = 9.5 ppb) and extremely toxic to freshwater invertebrates (Daphnia magna LC_{50} = 1.65 ppb). Estimated Environmental Concentration (EEC's) for fenamiphos have been determined for both lentic and lotic environemtns (Datla, P.R. 5/20/83). The maximum concentrations in the lentic water are 1.6 ppt and 0.65 for 1% and 0.4% runoff at the application rate of 20 lbs a.i./A, and 0.49 ppt and 0.19 ppt for 1% and 0.4 runoff at the application rate of 6 lbs a.i./A. The maximum concentrations in lentic sediment deposits on a dry weight basis are 1.4 ppt and 0.55 ppt for 1% and 0.4% runoff at the application rate of 20 lbs a.i./A, and 0.17 ppt for 1% and 0.4% runoff at the application rate of 6 lbs a.i./A. The recovery time (2 half-lives or 75% removal) is 12 hours and self-purification (5 half-lives or 97% removal) is 64 hours in all four cases of the input load. The maximum concentrations in the lotic water are 0.02 ppt and 0.0086 ppt for for 1% and 0.4% runoff at the application rate of 20 lbs a.i./A, and 0.0065 ppt and 0.0026 ppt for 1% and 0.4% runoff at the application rate of 6 lbs a.i./A. The maximum concentrations in the lotic sediment deposits on a dry weight basis are 0.00062 ppt and .00025 ppt for 1% and 0.4% runoff at 20 lbs a.i./A and 0.00019 ppt and 0.000074 ppt for 1% and 0.4% runoff at the application rate of 6 lbs a.i./A. The recovery time (2 half-lives or 75% removal) is 12 hours and self-purification (5 half-lives or 97% removal) is 2 hours in all four cases of the input load.

The above runoff estimates are well below the theoretical no-effect triggers (1/10 LC50) for non-target fish (0.95 ppb) and aquatic invertebrates (0.016 ppb). These data indicate that the labeled use of this product should pose no acute hazard to no-target fish and aquatic invertebrates. Chronic exposures are not anticipated due to the short duration (< 12 hours) of estimated residues.

In conclusion, the registration of fenamiphos on grapes and carrots will provide for no significant increase in exposure or acute risks to non-target fish and aquatic invertebrates.

Endangered Species Considerations

In previous OES biological opinions on pesticide use on grapes for Carbofuran (10G, 15G, and 4F) dated May 1, 1981 and for Endosulfan (3G, 34EC, 50WP, etc.) dated July 30, 1982, OES did not identify any endangered species as being in jeopardy. OES concluded that no jeopardy existed for either carbofuran which is similar to fenamiphos in formulation and toxicity to birds or endosulfan which has similar aquatic toxicity (Rabert 9/28/82).

Estimated environmental concentrations for lotic and lentic environments recieving contaimnated rainwater runoff are well below the theoretical no-effect trigger (1/20 LC50) for fish (0.47 ppb) and aquatic invertebrates (0.08 ppb).

In conclusion, the labeled use of this product on carrots and grapes should not adversely impact any federally threated and/or endangered species.

107.0 Conclusions

107.1 Data Adequacy

No additional data are needed to support the conditional registration of this product on carrots and grapes.

107.6 EEB Findings

EEB has completed an incremental risk assessment (3(c)(7) finding) of the proposed conditional registration of NEMACUR 15G on carrots and 3E on grapes. Based on the available data EEB concludes that the proposed use provides for no significant increase in exposure or acute risks to non-target organisms.

Charles A Bowen II 06/13/83

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C-0190

U.S. LABEL

Reason to Issue: To propose use on carrots. 6/3/76 Draft: To show correct EPA Reg. No. 9/30/80 Draft: Revise in line with internal comments. 4/26/82 Draft: To correct "Remarks".

Date of Draft: 4/26/82 (Pre-Reg) (H)
Supersedes Pre-Reg Draft Dated: 9/30/80

EPA Reg. No. 3125-236

®NEMACUR
15% Granular
SYSTEMIC INSECTICIDE - NEMATICIDE

ACTIVE INGREDIENT:
Ethyl 3-methyl-4-(methylthio)phenyl (1-methylethyl)phosphoramidate 15%

AMENDMENT
To Previously Registered Labeling

Add the Following:

RECOMMENDED APPLICATIONS

CROP	PEST	DOSAGE NEMACUR 15% G	REMARKS
rrots	Nematodes	5 to 7.5 ounces per 1,000 ft. of drill (based on a 4 to 6 inch band)	Band Application: Granules may be applied when beds are formed or duri planting if these are separate opera tions. For bedding application: Apply 5 ounces for each four inches of band width to be protected (see example). For at-planting application: Apply 5 ounces on a four inch band or 7.5 ounces on a six inch band directly i front of the planter shoe.*
		40 pounds per acre	Broadcast Application: Distribute t granules uniformly over the entire area to be treated. After the gran- ules are applied, disk or till thor- oughly to mix the product into the soil. Plant crop in usual manner.

*The action of some planters during planting operation may provide adequate incorporation. When using planters which do not disturb enough soil for incorporation or under dry conditions, additional incorporation can be achieved with scratchers, paddlewheels, ground driven rototillers or similar equipment behind the planter.

Band Width Example:	Band Width	Rate/1000 Ft. of Drill
	4 inches	5 ounces
	6 inches	7.5 ounces
	8 inches	10 ounces
	10 inches	12.5 ounces
	12 inches	15 ounces

6

U.S. LABEL

Reason to Issue: To propose claims for use on grapes. 12/21/82 Draft: To add "Restrictions."

Date of Draft: 12/21/82 Pre-Reg (H)
Supersedes Pre-Reg Draft Dated: 4/23/82

EPA Reg. No. 3125-283

®NEMACUR 3 18

EMULSIFIABLE SYSTEMIC INSECTICIDE - NEMATICIDE

ACTIVE INGREDIENT:
Ethyl 3-methyl-4-(methylthio)phenyl (1-methylethyl)phosphoramidate 35%

AMENDMENT TO PREVIOUSLY REGISTERED LABELING

ADD THE FOLLOWING:

RECOMMENDED APPLICATIONS

CROP	PEST	DOSAGE NEMACUR 3	REMARKS
Grapes (West of the Rocky Mountains)	Nematodes	6 gallons	Broadcast: With ground injection equipment, apply specified dosage per acre in 20 to 40 gallons of solution 2 or more inches below soil surface.*
		3 gallons (6 gallons per treated acre)	Band: With ground injection equipment, apply specified dosage per acre in 20 to 40 gallons of solution 2 or more inches below below the soil surface.* Center the treated band on the vine row using a minimum band width equal to 50% of the row spacing.
Grapes (East of the Rocky Mountains)	Nematodes	6 gallons 3/18	Broadcast: Apply specified dosage per acre in 20 to 40 gallons of spray solution per acre to the soil with suitable ground equipment and incorporate 2 to 4 inches deep.
		3 gallons (6 gallons per treated acre)	Band: Use proportionally less NEMACUR 3 per acre. Treated band should center on the vine row with a minimum width of 50% of the row spacing. Incorporate immediately. Example: To treat a 5-foot band on rows 10 feet apart (50% of the row spacing), use one-half the broadcast rate.

*NOTE: Control of nematodes is best obtained when there is adequate rainfall or irrigation after application to move the product into the root zone.

RESTRICTIONS

Up to 3 applications can be made per season, but do not apply more than 6 gallons of NEMACUR 3 (18 pounds active ingredient) per acre in one season. Do not graze or feed treated crop to livestock.