100601 — A N ✓ (7)

EEE BRANCH REVIEW

10/27/76

DATE: IN _____ OUT 27 OCT 76 IN _____ OUT _____ IN _____ OUT _____

FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO. _____

PETITION OR EXP. PERMIT NO. ~~3/25-EUP-136~~ 6G1863 /6H5148

DATE DIV. RECEIVED 9/10/76

DATE OF SUBMISSION 8/24/76

DATE SUBMISSION ACCEPTED _____

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

PRODUCT MGR. NO. Stubbs

PRODUCT NAME(S) Nemacur

COMPANY NAME Chemagro

SUBMISSION PURPOSE EUP — Apple, cherry, and peaches

CHEMICAL & FORMULATION Ethyl 3-methyl-4-(methylthio) phenyl (1-methylethyl) phosphoramidate EC
35% a.i.

6 pages

100.0 Pesticidal Use

Both Nemacur 3 or Nemacur 15% Granular will be applied as band or broadcast treatment to soil around apple, cherry and peach trees infested with nematodes.

100.1 Application Methods/Directions

RECOMMENDED APPLICATIONS

Crop	Pest	Gallons Nemacur 3	Remarks
		3-1/3 to 6-2/3	BROADCAST APPLICATION: Apply specified dosage in 20 to 40 gallons of water per acre as a water emulsion spray to the soil surface.
Apple Cherry Peach	Nematodes	3-1/3 to 6-2/3	BAND APPLICATION: Apply specified dosage in 20 to 40 gallons of water per treated acre as a water emulsion spray to the soil surface in a 4 to 6-foot band.
		SEE REMARKS	SINGLE-TREE APPLICATION: Apply proper dosage specified below in one gallon of water per tree as a soil drench in a band 2-1/2 to 5 feet wide around the base of each tree. Band width depends on size tree and treated area should extend out to dripline of tree.

Band width	Amount NEMACUR 3 per tree
2-1/2 ft.	0.2 to 0.4 fl. ounce
5 ft.	0.8 to 1.6 fl. ounce

100.2 Precautionary labeling

Restrictions:

Do not replant treated areas with any food crop not specified on this label within 12 months after last application. Any cover crops that are planted during the 12-month period must be plowed under and not grazed.

Oo not use on other crops. Use only according to label directions.

Do not allow livestock or poultry to feed on grass or grass clippings.

This product is toxic to fish and wildlife. Keep out of lakes, streams, or ponds. Birds feeding on treated areas may be killed.

Do not apply this product with a knapsack or similar equipment that is placed on the user's body.

100.3 Proposed EUP

1. Objectives

The purpose of this experimental program is to obtain data to be submitted to EPA in support of the registration of NEMACUR for nematode control on apple, cherry and peach trees. A principal objective of tests under the experimental use permits is to obtain data on yield and quality of fruit from treated trees. In addition to data on yield and fruit quality, nematode counts and measurements of terminal shoot growth will be taken wherever possible.

2. Pertinent Data

NEMACUR 3 or NEMACUR 15% Granular will be applied as band or broadcast treatments to soil around apple, cherry and peach trees infested with nematodes. Rates of application will be 10 to 20 pounds active ingredient per treated acre for both band and broadcast treatments. Treatments with either product may also be applied to single trees at a maximum rate of 0.6 ounce active per tree. Only one treatment per year will be applied. NEMACUR 15% Granular will be thoroughly incorporated into the soil following application.

The 75 acres requested for this permit represent total acreage, not treated acreage. It is estimated that less than 38 actual treated acres will be involved in this experimental program.

The states in which tests will be conducted and proposed acreage are specified below:

State	Acreage
Michigan	10
New Jersey	10
New York	10
Pennsylvania	10
New England States (Maine, Vermont, New Hampshire, Connecticut, Rhode Island)	10
California	10
Washington	16

101.0 A. Chemical and Physcial Properties

101.1 Chemical Name

Ethyl 3-methyl-4-(methylthio) phenyl (1-methylethyl) phosphoramidate

101.2 Common Name

NEMACUR 15% Granular and NEMACUR 3

102.0 B. Behaviour in the Environment

(No data in past reviews)

103.0 C. Toxicological Data

103.1 Mammal

Rat acute oral LD_{50} = 4.75 - 8.1 mg/kg.

103.2 Avian

Bobwhite quail acute oral LD_{50} = 4.75 - 8.1 mg/kg
Mallard duck acute oral LD_{50} = 0.9 - 1.1 mg/kg

103.3 Aquatic

Rainbow trout 96-hr. LC_{50} = 0.11 ppm
Catfish 96-hr. LC_{50} = 3.8 ppm

103.4 Chronic

Chronic toxicity

An 18-month carcinogenic study was conducted with groups of Swiss white mice fed Nemacur (BAY 68138) at dietary levels of 25 and 50 ppm. Nemacur did not affect the incidence or pattern of mortality. There were no signs of tumor formation noted grossly in any of the animals fed Nemacur. There was no tumor formation noted upon microscopic examination of tissues of mice fed Nemacur which could be attributed to the test material. There were no outstanding differences noted between test and control mice upon gross and microscopic pathologic examination.

104.0 Hazard Assessment

104.1 Discussion

The proposed program calls for an experimental application of two products, NEMACUR 3 and NEMACUR 15 Granular. Both are currently registered for soil application to control nematodes in several agricultural crops. Estimated maximum residues occurring immediately after applications are as follows:

Product	Dosage Rate	Estimated Residues on Soil
NEMACUR	10 lb./acre	220.5 ppm
NEMACUR	20 lb./acre	441.1 ppm

The direct exposure of terrestrial species would be minimized if the precautionary labeling included an immediate soil incorporation following application.

104.1.1 Adequacy of Toxicity Data. Basic data not submitted with this application. Previous review data adequate and sufficiently complete to comply with EPA regulations.

104.1.2 Additional Data Required

Avian subacute Dietary (LC_{50}) data are required for one species of upland game bird and one species of wild waterfowl.

In addition, a 48-hour LC_{50} static bioassay for an aquatic invertebrate is required.

Field data will be necessary to more fully evaluate the effects of this chemical under proposed use conditions. Such data should include the toxic effects on fish and wildlife.

104.1.3 Likelihood of exposure to non-target organisms

The most significant potential pathways of NEMACUR exposure to non-target species are:

1. Direct exposure of terrestrial inhabitants of soil and vegetation. Also, exposure of avian species which might rest, feed or loaf in treated areas.

2. Run-off from field irrigation

   Previous toxicity data on NEMACUR shows it to be a serious hazard to terrestrial species. This danger becomes even more acute when viewed in light of a proposed heavy application rate. There exists a real threat to those species which forage on the surface and those avian species which utilize orchards. Indirectly, a threat to aquatic species may exist where irrigation waters might find their way into nearby aquatic feature.

10D5.0 Conclusions

The Fish and Wildife review section concurs with the proposed experimental program. It is recommended that the precautionary labeling include soil incorporation immediately following application in order to minimize exposure to non-target terrestrial species.

Because this product is acutely toxic to wildlife at levels expected to occur in the environment after treatment, registration will require field data. Prior to consideration of registration, avian subacute dietary LC_{50} are required for one species of upland game bird and one species of wild waterfowl.

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