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EEE BRANCH REVIEW

DATE: IN 3/16/79 OUT 3/27/79 IN ____ OUT ____ IN ____ OUT ____

FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO. ____

PETITION OR EXP. PERMIT NO. Section 18

DATE DIV. RECEIVED ____

DATE OF SUBMISSION ____

DATE SUBMISSION ACCEPTED ____

TYPE PRODUCTS(S): (I) D, H, F, (N,) R, S ____

DATA ACCESSION NO(S). ____

PRODUCT MGR. NO. Emergency Response Section (TS-767)

PRODUCT NAME(S) Aldicarb Temik 15 G

COMPANY NAME Purdue University Indiana

SUBMISSION PURPOSE Emergency use on mint in Indiana

CHEMICAL & FORMULATION Aldicarb

Pesticide Name: Aldicarb

100 Section 18 - Emergency Use Permit

100.1 Nature and Scope of the Emergency

The lesion nematode is the organism of major concern to peppermint and spearmint growers in northern Indiana. This nematode is readily spread from field to field when contaminated planting stock from dormant stolons of existing plants are planted. Approximately 3000 to 5000 acres are affected, of which approximately 1500 to 2000 acres are more seriously affected.

There is an immediate need for control during the period from April 1 to May 10 on approximately 1200 to 1500 acres. No available registered product or cultural practice is effective to the extent necessary to control the nematode.

It is hoped that by controlling the nematode, yield will increase approximately 30%, representing a $200,000 to $300,000 increase.

100.2 Target Organism

Lesion nematode (Pratylenchus penetrans)

100.3 Application Methods, Directions, Rates

A single broadcast application of granular aldicarb at 3 lb a.i./A (Temik 15G) is to be made before new growth begins. The granules are tilled into the soil to a depth of at least 2 inches. Application is to be made from April 1 to May 10 depending upon the soil conditions.

100.4 Treatment Area

An estimated 1200 to 1500 acres in Jasper, Pulaski, Starke,

Porter, St. Joseph, Marshall and Kusciusko counties in northern Indiana are to be treated.

101 Physical and Chemical Properties

101.1 Chemical Name

2-methyl-2-(methylthio) propionaldehyde-O-(methylcarbamoyl) oxime

101.2 Common Name

Aldicarb

102 Behavior in the Environment

See previous reviews by R.W. Felthousen (4/9/77) and L.W. Turner (1/31/78, 5/18/78).

103 Toxicological properties

See previous reviews by R.W. Felthousen (4/19/77, 6/6/77, 2/15/77) and L.W. Turner (5/18/78, 6/6/78). See also RPAR Risk Analysis for aldicarb by John Leitzke.

104 Hazard Assessment

104.1 Discussion

Aldicarb is currently registered to control certain insects, mites and nematodes on peanuts, potatoes, soybeans, sugarbeets, sugarcane and sweet potatoes.

The proposed emergency use involves a single application at 3 lb a.i./A to mint to control the lesion nematode. It is not specified whether aerial or ground equipment is to be used. The aldicarb formulation, Temik 15G, is to be tilled into the soil to a depth of at least 2 inches.

Under the proposed use pattern the quantity of aldicarb active that can be expected to occur (R.W. Felthousen memo on classification of granulated formulations, 9/9/77) in one sq. ft. is equal to approximately 1.56 mg.

104.2 Likelihood of exposure to non-target organisms

Presently available toxicity data indicate that aldicarb is very highly toxic to mammals and birds. Principle wildlife species likely to be present in mint fields, according to personal communication with Mr. Robert Feldt - Superintendant of Wildlife research, Indiana Dept. Natural Resources, are pheasants, quail, songbirds, sparrows, deer and cottontail.

The likelihood of exposure of non-target organisms to Temik^{R} from this use pattern is great. The availability of aldicarb per square foot exceeds the estimated LD_{50} for avian species.

While field studies have indicated that rabbits and deer are not likely to be adversely affected (L.W. Turner, S/18/78), neither of these species are seedeaters. However, seed eating mammals, such as scuirid, heteromyid, and cricetine rodents, are likely to be affected. The availability of aldicarb per square foot exceeds the LD_{50} for small mammals.

Previous field studies give substantial evidence that quail and other birds will experience moderate to extensive adverse effects from aldicarb treatment.

104.2.1 Endangered Species Consideration

In the areas of proposed use, there is no threat to endangered species.

104.3 Adequacy of Toxicity Data

The only studies received by the Ecological Effects Branch thus far that satisfy regulatory requirements for registration are:

1. Avian subacute dietary LC_{50} - waterfowl.
2. Aquatic invertebrate 48-hour LC_{50}.

104.3.1 Additional Data Required

1. Avian Acute oral LD_{50}
2. Avian subacute dietary LC_{50} - upland gamebird
3. Fish acute 96-hour LC_{50} - warmwater, coldwater

105. Classification

Not required for a section 18.

106. RPAR Criteria

Based on the proposed label rate and application methods the estimated residues immediately after application of Temik 15G on mint exceeds the unreasonable adverse effects risk criteria

for wildlife as defined under 162.11 (a)(3)(i)(B)(1) and (2). However, any referral to SPRD will be withheld pending completion of environmental safety data requirements.

107. Conclusions / Recommendations

The Ecological Effects Branch will not object to the requested Section 18 for Temik 15G to control the lesion nematode. However, since aldicarb is known to be very highly toxic, every effort should be made to ensure the safety of non-target organisms.

Therefore, the Ecological Effects Branch recommends the following:

1. That application of Temik 15G on mint be restricted to certified applicators only.

2. That application be restricted to ground equipment only. Deep disc granules in turn areas and row ends as well as spill areas to prevent birds and other wildlife from feeding on exposed granules.

3. That the formulation, Temik 15 G, be tilled into the soil to a depth of 4 - 6 inches, rather than 2 inches.

4. Personnel from the Indiana Department of Natural Resources are to conduct pretreatment on - site inspections of designated treatment areas to ensure that large numbers of non-target wildlife (i.e. migratory waterfowl and other avian species) are not utilizing these areas.

5. These same personnel are to conduct a post - treatment (1 or 2 days post-treatment) census to determine non-target utilization and possible adverse effects.

6. In the event of high non-target mortality:
   a. all planned treatments are to be suspended at once.
   b. all dead or dying wildlife should be collected and necropsied where possible in order to check for the presence of aldicarb granules or residues.
   c. treated fields are to be either irrigated or deep disced to prevent further exposure to wildlife.

7. A complete report on the results of the program (i.e. number of acres treated, amount of chemical used, non-target effects, personnel involved, etc.) is to be submitted to this office.

8. Label restrictions / precautions must appear in a separately boxed paragraph entitled "Environmental Hazards" and must be incorporated into the section 18 program.

   Label restrictions / precautions should read:

   " This pesticide is extremely toxic to wildlife. Use with care when applying to areas frequented by wildlife. Treated granules exposed on soil surface may be hazardous to birds and other wildlife. Cover or incorporate granules which are spilled during loading.
   Incorporate granules visable on the soil surface in the turn areas. Keep out of lakes streams and ponds. Do not contaminate water by cleaning of equipment or disposal of wastes."

9. We suggest the applicant contact this office if there are any questions regarding the restrictions set forth in this review.

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Hazard Evaluation Division

March 29, 1979

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4"-6" Incorp

Hazard Calculation

1. Sabuhite LD_{50} = 3.4 mg/kg

LD_{50} (mg formul./bird) = 3.4 mg/kg × 0.19 kg

= 0.646 mg/bird

2. Incorp. granular 4"-6" a.i. Rate ÷ Availability

3 lb a.i./A ÷ 50 = 0.060 lb a.i./A

3. Change lb a.i./A to mg/ft²

(0.060 × 453.59 × 1000) ÷ 43,560

= 0.625 mg/ft²

Hazard Calculations

(Felthousen memo - 9/9/77)

1. Bobwhite LD_{50} = 3.4 mg/kg (6 mo-old)
(wt. = ≈ .19 kg)

LD_{50} (mg formulation / bird) = 3.4 $\frac{mg}{kg}$ × 0.19 kg

= 0.646 mg/bird

2. Incorp. granules 2" ea. Rate ÷ SAF (availability)

3 lb a.i./A ÷ 20 = 0.15 lb a.i./A

3. Change lb a.i./A to mg/sq/ft.

(0.15 × 453.59 × 1000) ÷ 43,560

= 1.56 mg/ft²

4. 0.646 mg/bird ÷ 2 mg/granule = 0.323 gran/bird

5. 1.56 mg/ft² ÷ 2 mg/gran = 0.78 gran/ft²

F. K. Stevens
3/28/79