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SHAUGHNESSEY NO.

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REVIEW NO.

EEB REVIEW

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TYPE PRODUCT(S) : I, D, H, F, N, R, S ~~Slug Bait~~

DATA ACCESSION NO(S):

PRODUCT MANAGER NO. J. Tompkins (41)

PRODUCT NAME(S) LARVIN (Thiodicarb)

COMPANY NAME States of Ohio and Indiana

SUBMISSION PURPOSE Proposed section 18(c) for slug control in field corn

SHAUGHNESSEY NO.	CHEMICAL & FORMULATION	A.I.

EEB REVIEW

LARVIN (THIODICARB)

100.1 Submission Purpose

Emergency exemption requests by Indiana and Ohio State Agencies for the use of Larvin to control slug infestations in field corn, presumably Statewide.

100.2 Formulation Information

Larvin 3.2 Thiodicarb (EPA Reg. No. 264-379)

Thiodicarb 34%
Inerts 66%
Contains 3.2 lb. ai/gal.

100.3 Application Methods, Directions, Rates
(Excerpted from submission requests)

PREPARATION DIRECTIONS FOR LARVIN BRAND THIODICARB 2% BAIT FOR SLUG CONTROL IN FIELD CORN

MATERIALS NEEDED TO PREPARE ENOUGH LARVIN 2% BAIT TO TREAT FIVE ACRES;

1-2 quarts of water
1 pint of feed grade molases
16 fluid ounces of a heavily-flavored beer
2.5 quarts of Larvin brand 3.2 Thiodicarb Insecticide/Ovicide
100 pounds of cracked corn

MIXING INSTRUCTIONS;

Thoroughly blend together the liquid ingredients and spray this mixture uniformly onto the cracked corn. Do not use excessively fine or dusty corn. Uniform coating of the cracked corn is an essential factor in obtaining desired performance. Spraying the cracked corn while rotating it in a cement mixer or spreading the corn in a thin layer on a hard surface and spraying while raking have been shown to be adequate methods of coating the corn.

APPLICATION INSTRUCTIONS:

Uniformly apply 20 pounds of this mixture per acre with a suitable bait applicator. Freshly made baits are generally more effective. Mix only enough bait for immediate use. Rainfall will decrease effeciveness of this bait. Do not treat field corn taller than 24 inches. Do not cultivate field corn for seven days after application.

100.4 Target Organisms

Unidentified Slug Species

101.0 Hazard Assessment

101.1 Terrestrial Organisms

Thiodicarb is considered slightly toxic to avian species (Bobwhite quail LC_{50} = 1100 ppm; Ring-necked pheasant LC_{50} = 1975 ppm) and highly toxic to small mammals (Rat acute oral LD_{50} = 37 mg/kg [90% a.i.]). The avenue of exposure to the pesticide would be the consumption of the cracked corn seeds coated with the pesticide mixture after it is applied to the field. Avian acute oral testing indicates that the pesticide is highly toxic on an acute oral basis (pheasant LD_{50} = 15.4 mg/kg). The attached computation data sheet indicates that acute oral poisoning is highly likely because of the high concentration of pesticide mixture to be used and the fact that avian species do feed in treated fields, expecially when there are open fields with easily retrievable foodstuff (i.e., freshly planted seeds, treated bait on soil surface, etc.,). Avian species are only required to eat a very small amount of treated seeds to cause acute poisoning and/or mortality, regardless of body size. On a treated field, this is very likely because the treated seeds are left out to attract the target organisms (slugs) which move much slower than avian species. It is presently unknown if avian species would feed on live contaminated or moribund slugs.

OPP's Registration Support and Emergency Response Branch received a call from the National Audobon Society in Washington, D.C. during the week of July 4, 1989. A suspected bird kill in Ohio was reported with thiodicarb being the suspected pesticide. It was not known if treated bait was involved. The reporting farmer was instructed to send bird carcasses to the Patuxent Wildlife Center for analysis. Until the results are known, the bird kill and any association with thiodicarb

cannot be confirmed. No additional information could be obtained through a follow-up call to the National Audobon Society. EEB's files do not contain any reported fish and wildlife kill incidences with thiodocarb. The existing registered use pattern hazard assessment information on thiocarb suggest low toxicity concerns for avian species. The proposed Section 18 action with thiodocarb-treated bait calls for coating cracked corn with very high levels of the pesticide where toxicity concerns for avian species becomes significantly higher.

101.2 Aquatic Organisms

Thiodicarb is described as highly toxic to aquatic organisms (channel catfish LC_{50} = 0.53 ppm; daphnia LC_{50} = 31.7 ppb). Chronic toxicity testing indicates that fathead minnow MATC > 57 mg/l <117 mg/l. There is little reason to believe that this emergency exemption use will result in exposure to aquatic organisms because of the use pattern, method of application, and low soil mobility.

101.3 Endangered Species Considerations

As previously indicated, non-target avian species are at risk of acute exposure to thiodicarb bait formulations. A review of EEB's endangered species files indicates that the Bald Eagle is listed in various counties of Ohio and Indiana. The Least
Tern is also listed in one Ohio county (Gibson). Please consult the attachments for the affected counties on both States.

It is unlikely that these endangered avian species will feed on the corn fields because of their known habits. However, in the case of the Bald Eagle there exists an avenue of exposure through secondary poisoning via the predation on smaller contaminated and/or dead birds. There is no secondary poisoning data that could confirm this scenario. The least tern is more associated with aquatic environments and does not prey upon birds. The potential for exposure is less than that of the Bald Eagle.

Record of Communications with USFWS

Dave Hodak (Indiana USFWS: 332-4261) and Bill Currie (Ohio USFWS: 743-6923) were contacted to determine possible association of Bald Eagle populations with corn fields. The USFWS officials could not address the issue because of the time frame of the crisis-exemption period and the variable locations of the populations. They agreed that a possibility of secondary poisoning via

predation on small birds exists. As a result, they requested that they be contactd if the crisis developed to the point requiring the use of pesticide. EEB agreed that pre-application contact by the State and/or growers is necessary.

101.4 Adequacy of Toxicity Date

The available toxicity database was adequate enough to conduct a hazard assessment of the emergency exemption request.

101.5 Adequacy of Labeling

Beyond the availability of a supplemental label with mixing directions, there was no registered label available for review. Environmental hazards labeling must be consistent with respect to current requirements prescribed by the Thiodicarb Registration Standard.

102 Conclusion

EEB concludes that the emergency exemption requests by the States of Indiana and Ohio have been strong potential to result in acute exposure to non-target avian species. If these exemption requests have been approved, EEB recommends that the State agencies contact the U.S. Fish and Wildlife Service (Indiana: Dave Hodak 332-4261, and Ohio: Bill Currie 443-6923) to determine the possible extent of possible exposure to the Bald Eagle and least tern. Further, the State and growers must be aware of possible bird kills which must be reported, as required by FIFRA.

John Noles, Biologist
Ecological Effects Branch
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John Noles 7/17/89

Henry T. Craven, Head, Section 4
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7/24/89

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Objective: To determine how much treated cracked corn seeds must be consumed by an avian (e.g., pheasant) to cause acute oral poisoning, assuming that the pheasant eats 10% of its body weight a day, and it normally does.

Assumptions:
pheasant LD_{50} = 15.4 mg/kg
pheasant weight = 1 kg
100 lbs of cracked corn to be treated and applied
3.2 lbs ai per gallon in pesticide product
2.5 quarts of pesticide product to be used in 100 lbs of cracked corn
1200 seeds in a pound

$\frac{2.5}{4}$ quarts of product / quarts/gallon = 0.625 quarts/gallon to be mixed in 100 lbs of cracked corn

3.2 lbs ai/gallon
x $\frac{0.625}{}$ gallons
2.0 lbs ai to be mixed in 100 lbs of cracked corn

or

0.02 lb ai/1.0 lbs of cracked corn

or

2 grams ai/100 grams of cracked corn

$\frac{454}{1200}$ grams/lb / seeds/lb = 0.37 grams per seed

$\frac{2}{x}$ grams ai = $\frac{100}{0.37}$ grams cracked corn

x = 0.0074 g/seed or 7.4 mg/seed

$\frac{15.4 \text{ mg/kg } (LD_{50} \text{ pheasant})}{7.4 \text{ mg/seed}}$ = 2.08 seeds to meet pheasant LC_{50}

Therefore, the consumption of 2.08 seeds at 0.77 g combined will be far less than 10% (200 g) of a pheasant's body weight. Since this is representive of a large bird, smaller birds will require a lesser quantity of treated seeds. A mourning dove weighing 130 grams will require 0.25 seeds, assuming the same LD50 of 15.4 mg/kg. Regardless of body sizes, bird populations feeding on treated fields will have the availability of 100 pounds of treated seeds over 5 acres which is 120,000 seeds per 5 acres or 24,000 seeds per acre. The number of seeds per square foot is~0.5 seeds.

ENDANGERED SPECIES

SPECIES	KNOWN IN COUNTY	LISTED STATUS	TAXON GROUP
** STATE: IN			
* COUNTY: GIBSON			
TERN, LEAST	.T.	E	BIRD
* COUNTY: GRANT			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: JACKSON			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: JENNINGS			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: KOSCIUSKO			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: MONROE			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: ORANGE			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: PERRY			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: POSEY			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: PULASKI			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: UNION			
EAGLE, BALD	.T.	E,T	BIRD

ENDANGERED SPECIES

SPECIES	KNOWN IN COUNTY	LISTED STATUS	TAXON GROUP
** STATE: OH			
* COUNTY: ASHTABULA			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: ERIE			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: HOLMES			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: LUCAS			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: OTTAWA			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: SANDUSKY			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: SENECA			
EAGLE, BALD	.T.	E,T	BIRD
* COUNTY: TRUMBULL			
EAGLE, BALD	.T.	E,T	BIRD

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