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Review No.

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Shaughnessey No.

EEB REVIEW

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FILE OR REG. NO. 064573-EUP-R

PETITION OR EXP. NO.

DATE OF SUBMISSION 1-22-91

DATE RECEIVED BY EFED 1-22-91

RD REQUESTED COMPLETION DATA 4-20-91

EEB ESTIMATED COMPLETION DATE 4-20-91

RD ACTION CODE/TYPE OF REVIEW 700 EUP

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

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. Hutton/Tavano (17)

PRODUCT NAME(S) Logic Fire Ant Bait

COMPANY NAME Texas Tech University

SUBMISSION PURPOSE Experimental use permit for use on pasture and rangland grass

| SHAUGHNESSEY NO. | CHEMICAL AND FORMULATION | % A.I. |
|---|---|---|
| | Fenoxycarb | |
| | | |
| | | |

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ECOLOGICAL EFFECTS BRANCH REVIEW

100.1 SUBMISSION PURPOSE AND PESTICIDE USE

Texas Tech University has submitted a request for an EUP to allow the use of LOGIC Fire Ant Bait (EPA Reg. NO. 35977-4) on up to 2500 acres of pasture and rangeland in the coastal plain of Texas.

100.2 FORMULATION INFORMATION (excerpted from label)

| | |
|---|---|
| Fenoxycarb ..... | 1.0 |
| Inerts ..... | 99.0% |

100.3 APPLICATION METHODS, DIRECTIONS, RATES (excerpted from submission request)

Apply LOGIC Fire Ant Bait when ants are actively foraging. This is usually when soil temperatures are above 60°F. Avoid application during excessively hot periods of the day or when grass is wet. Heavy rainfall within 2 to 3 hours of application may reduce effectiveness.

Broadcast Application: Apply LOGIC Fire Ant Bait uniformly with ground equipment calibrated to apply 1 to 1.5 lb/A (0.010 to 0.015 lb ai/A).

Aerial Application: Apply LOGIC Fire Ant Bait uniformly with aerial equipment calibrated to apply 1 to 1.5 lb/A (0.010 to 0.015 lb ai/A). Do not apply when weather conditions favor drift from the treated areas.

Early season applications (April to June) are most effective in providing long term control. In cases where reinfestation occurs or when very large mounds remain active, retreatment may be desirable after 3 to 4 months. (However, the research protocol submitted with this request specifies only one application per year.)

100.4 TARGET ORGANISMS AND OBJECTIVES

Target Organism - Imported Red Fire Ant (Solenopsis invicta)

Objectives of the Program -

a. To determine the effect of fire ant control on deer fawn recruitment.

b. To determine the effect of fire ant control on bobwhite quail densities.

c. To determine the effect of fire ant control on small mammal relative abundance.

d. To determine the effect of fire ant control on lizard (Cnemidophorus sp.) densities.

e. To determine the effect of fire ant control on forb and grass biomass.

f. To determine the cost-effectiveness of fire ant control as related to a-e above.

Note: This research program is not designed to evaluate parameters related to rates or specific timings of application of the pesticide.

## 101.0 HAZARD ASSESSMENT

Following application, LOGIC Fire Ant Bait is collected by worker ants and distributed throughout the colony. Studies have shown that typically 30% and 100% of the bait is taken into the colony within 2 and 24 hours respectively. Ant populations begin to decline within six to eight weeks after treatment.

Environmental fate studies show that fenoxycarb is relatively insoluble in water. It binds tightly to the soil and shows little potential for leaching. It is not subject to hydrolysis at a pH of 3-9 or to photolysis in the absence of water. The photolytic half-life of fenoxycarb in water in the laboratory is <6 hours. Breakdown of the chemical in the outdoor environment is due primarily to microorganisms. The half-life of fenoxycarb in water is <24 hours and on soil a few days. Fenoxycarb is not a cholinesterase inhibitor. The compound shows little tendency for bioaccumulation (bioaccumulation factors of 138.9 - 439.6 in three species of fish).

## 101.1 TERRESTRIAL SPECIES

Fenoxycarb is practically nontoxic to birds and mammals with $LD_{50}$ values for rats and mallard ducks exceeding 3,999 mg/kg and an $LC_{50}$ for bobwhite quail of 11,574 mg/kg. No adverse effects to terrestrial non-target species is expected from this proposal because of the low toxicity, low application rate, transport of the bait to subsurface ant colonies and limited acerage involved.

## 101.2 AQUATIC SPECIES

Fenoxycarb is moderately toxic to fish (rainbow trout $LC_{50}$ = 1.6 ppm, tidewater silverside $LC_{50}$ = 1.07 ppm) but highly toxic to freshwater invertebrates (Daphnia magna $LC_{50}$ = 0.4 ppm) and estuarine invertebrates (oyster embryo-larvae $EC_{50}$ = 0.15 ppm). The aquatic invertebrate life cycle MATC for Daphnia is between 1.6 and 2.3 pptr and the rainbow trout early life stage MATC is < 0.062 ppm.

Under a worse case senario of rainfall induced transport of the bait to an adjacent aquatic environment, a 2% runoff from a ten acre watershed to a one acre pond would produce estimated environmental concentrations (EEC) of 0.183ppb and 2.196 ppb at 6.0 feet and 0.5 feet respectively. Accidental direct application to a body of water six inches deep would result in residues of 11 ppb. This concentration is less than the risk criterion of 1/2 the $LC_{50}$ for Daphnia (200 ppb). The low application rate, mode of action, removal from the surface, and tendency to bind to the soil is expected to minimize impact to aquatic organisms.

101.3 ENDANGERED SPECIES CONSIDERATION

The proposed research program involved only Victoria and (possibly) Goliad Counties. Birds are the only endangered species found in these counties. Thus, endangered species are not expected to be adversely affected by this proposed use.

101.4 ADEQUACY OF THE TOXICITY DATA

The available toxicity database was adequate to conduct a hazard assessment of this registration request.

101.5 ADEQUACY OF LABELING

EEB is providing the following statements for possible incorporation into supplemental labeling:

"This pesticide is toxic to fish and aquatic invertebrates. Do not apply directly to water or to swamps, bogs, marshes or potholes. Runoff may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment washwater or rinsate."

102 CONCLUSIONS

Adverse impact to nontarget organisms is not anticipated from this proposed experimental program.

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Attachment A

## EEC CALCULATION SHEET

I. For un-incorporated ground application

A. Runoff

0.015 lb(s) x 0.02 (2% runoff) x 10 (A) (from 10 A. drainage basin) = 0.003 lb(s) (tot.runoff)

EEC of 1 lb a.i. direct application to 1 A. pond 6-foot deep = 61 ppb

Therefore, EEC = 61 ppb x 0.003 (lb) = 0.183 ppb (6 feet)
~~2.202 ppb~~ (0.5 feet)
2.196

II. For incorporated ground application

A. Runoff

___ lb(s) ÷ _____ (cm) (depth of incorporation) x 0.0_ (_% runoff) x 10 (A) (10 A d.basin) = _____ lb(s) (tot.runoff)

Therefore, EEC = 61 ppb x _____ (lbs) = _____ ppb

III. For aerial application (or mist blower)

A. Runoff

____ lb(s) x 0.6 (appl. efficiency) x 0.0 (_% runoff) x 10 (A) (10 A. d.basin) = _____ lb(s) (tot.runoff)

B. Drift

_____ lb(s) x 0.05 (5 % drift) = _____ lb(s) (tot. drift)

Tot. loading = _____ lb(s) (tot. runoff) + _____ lb(s) (tot. drift) = _____ lb(s)

Therefore, EEC = 61 ppb x _____ (lbs) = _____ ppb

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