111601
SHAUGHNESSEY NO.

8
REVIEW NO.

EEB BRANCH REVIEW

DATE: IN 9-26-84 OUT OCT 3 1984

FILE OR REG. NO. 84-CA-39

PETITION OR EXP. PERMIT NO.

DATE OF SUBMISSION 9-20-84

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RD ACTION CODE/TYPE OF REVIEW 510/Section 18

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

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. D. Stubbs (41)

PRODUCT NAME(S) Goal 1.6E

COMPANY NAME California Dept. of Food and Agriculture

SUBMISSION PURPOSE Proposed Section 18 for use on Artichokes in California

| SHAUGHNESSEY NO. | CHEMICAL, & FORMULATION | % A.I. |
|---|---|---|
| 111601 | Oxyfluorfen | 19.4 |

(1)

111601

Goal 1.6E
19.4% oxyfluorfen

100 Submission Purpose and Label Information

Section 18 application by California to use Goal on artichokes.

100.1 Nature and Scope of Emergency

California artichoke growers are experiencing serious crop losses due to infestations of bermuda buttercup. Artichokes are grown in the coastal counties of central California; primarily Monterey, Santa Cruz and San Mateo Counties. About 50% of the 11,000 acres of Artichokes grown in California are infested.

100.2 Target Organism

Bermuda buttercup

100.3 Date, Duration

From November 1, 1984 through March 31, 1985.

100.4 Application Methods, Directions, Rates

Ground application with low pressure sprayer equipped with flat fan nozzles. Apply after weeds have emerged.

Apply maximum of 10 pints of Goal per acre. This is 2 lbs. a.i. per acre. Two applications are permitted, the second 8-10 weeks after the first.

100.5 Treatment Areas

Monterey, Santa Cruz, and San Mateo Counties.
Maximum of 5,500 acres.

100.6 Precautionary Labeling

Goal is highly toxic to aquatic invertebrates, aquatic plants, wildlife and fish. Do not apply directly to any body of water. Do not contaminate water by cleaning of equipment or disposing of waste or excess pesticide.

A maximum of 5,500 acres may be treated.

101 Hazard Assessment

101.1 Discussion

There are few acres involved in this propsed section 18. Application is limited to ground application only.

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101.2 Likelihood of Adverse Effects to Non-target Organisms

Oxyfluorfen is practically nontoxic to mammals and waterfowl. However, it is highly toxic to bobwhite quail (LC50=390 ppm), and fish (bluegill LC50=200 ppb, rainbow trout LC50=410 ppb). It is moderately toxic to aquatic invertebrates (Daphnia magna LC50=1.5 ppm).

Terrestrial

Based on the nomograph the maximum expected concentrations (in ppm or mg/kg) on terrestrial food materials are:

| Appl. Rate | short grass | long grass | leafy crops | insects forage | seed pods | fruit |
|---|---|---|---|---|---|---|
| 2 lbs | 480 | 220 | 250 | 116 | 24 | 14 |

These levels are not high enough to adversely effect mammals or waterfowl. A 1 kg mammal or bird would have to eat 10 kg of short grass to ingest a lethal dose (5000 mg) of oxyfluorfen. This value would be higher for food items with lower residues.

These levels do exceed or approach the LC50 for bobwhite quail. Oxyfluorfen is persistent (t 1/2 = 50-70 days). It is expected that some upland birds could be acutely and chronically affected by eating treated vegetation. However, the estimated residues are maximum estimations and would not occur continuously even within a treated area. Furthermore, the acreage involved is minimal. The effects to birds would not be unreasonable.

Terrestrial animals are not expected to experience unreasonable adverse effects.

Aquatic

Exposure to aquatic organisms could occur through runoff but not drift. Drift would be negligible because treatment is limited to ground application only. Runoff should therefore, be the major source of contamination of aquatic habitat.

However, aquatic organisms occurring in a pond or slow-moving stream next to a treated field would be exposed to no more than 24 ppb based on the following:

A 10 acre field draining into a 1 acre pond 3 feet deep.
x 2 lbs/acre
20 lbs
x 0.01 (1 % runoff assumed)
0.2 lbs into the pond
x 122 ppb (residue from nomograph)
24.4 ppb (EEC in water 3 feet deep)

It is unlikely that fish or aquatic invertebrates would be adversely affected by this use.

101.3 Endangered Species

Mammalian endangered species are not likely to be affected because of the low toxicity of oxyfluorfen to this group. The following are the bird, reptile, and amphibian species which occur in artichoke counties. No endangered fish or insect species were noted in those counties.

| Species | Exposure | Rationale |
|---|---|---|
| California brown pelican | no | Low toxicity to waterfowl, pelican feeds only on fish which would not be directly treated. |
| California clapper rail | no | Low toxicity to waterfowl, feeding habits preclude exposure. |
| San Francisco garter snake | yes | The garter snake occurs near artichoke growing areas. Since reptilian toxicity data is not available, avian and/or mammalian data is used. The bobwhite quail LC50= 390 ppm, 1/10 of 390 = 39 ppm. Many terrestrial food items have estimated residues which exceed this trigger. If garter snake prey food items were treated with goal in or near an artichoke field and subsequently be eaten by this endangered snake, it would result in exposure. |
| Santa Cruz long-toed salamander | yes | This salamander occurs near artichoke growing areas. Since amphibian toxicity data is not available, fish toxicity data is used to represent toxicity to the aquatic stage of the salamander life cycle. The estimated residues in adjacent aquatic habitat (24 ppb) exceed the endangered species trigger for determining potential for risk. (Trigger is 10 ppb, 1/20 of 200 ppb, the bluegill LC50.) |
| Mission blue butterfly | no | does not occur in agricultural area |
| San Bruno elfin butterfly | no | does not occur in agricultural area |
| Smith's blue butterfly | no | does not occur in agricultural area |

101.4 Adequacy of Toxicity Data

The available data were adequate to complete this hazard assessment.

103 Conclusion

The EEB has completed a risk assessment on this proposed section 18 to use goal 1.6 E on 5,500 acres of artichokes in California. Based on the use information and toxicity data the proposed use provides for minimal hazards to most organisms. However, there would be a potential for exposure and adverse effects to two endangered species, the San Francisco garter snake and the Santa Cruz long-toed salamander.

It is recommended that the use of goal 1.6E be avoided in areas adjacent to habitat where the San Francisco garter snake or the Santa Cruz long-toed salamander occur. For information on these species contact the California Department of Fish and Game.

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