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RECORD NO.

10/29/1990

111601
SHAUGHNESSEY NO

REVIEW NO.

EEB REVIEW

DATE: IN 8-28-90 OUT OCT 24 1990

FILE OR REG. NO. 90-OR-18

PETITION OR EXP. NO.

DATE OF SUBMISSION 8-9-90

DATE RECEIVED BY EFED 8-23-90

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RD ACTION CODE/TYPE OF REVIEW 510

TYPE PRODUCT(S) HERBICIDE

DATA ACCESSION NO(S)

PRODUCT MANAGER, NO. 41

PRODUCT NAME(S) GOAL

COMPANY NAME OREGON DEPT. OF AGRICULTURE

SUBMISSION PURPOSE SECT. 18-TO CONTROL VARIOUS WEEDS IN GRASSES GROWN FOR SEED.

| SHAUGHNESSEY NO. | CHEMICAL | % A.I. |
|---|---|---|
| 111601 | OXYFLUORFEN | |

(1)

ECOLOGICAL EFFECTS BRANCH REVIEW
SECTION 18

**Oxyfluorfen**

**100 Section 18 Application**

**100.1 Nature and Scope of Emergency**

The state of Oregon is requesting an emergency exemption (Section 18) for the use of Goal 1.6E Herbicide to control weeds in grasses grown for seed.

**100.2 Target Organisms**

Bromus carinatus
Poa trivialis
Vulpia myuros
Poa annua
Lollium multiflorum
Volunteer crop seedlings

**100.3 Date, Duration**

September 1, 1990 to January 15, 1991

**100.4 Application Methods, Directions, Rates**
(excerpted from the submission)

Proposed rates of oxyflourfen:

a. Pounds of active ingredient per acre and total in Oregon

| | | |
|---|---|---|
| Tall fescue, orchardgrass, bentgrass, Kentucky bluegrass and perennial rygrass | 0.375 lbs. a.i./acre | 67,688 lbs. total |
| Fine fescues | 0.125 lba. a.i./acre | 875 lbs. total |
| Total all crops | | 68,563 lbs. total |

b. Formulated product per acre and total in Oregon

| | | |
|---|---|---|
| Tall fescue, orchardgrass, bentgrass, Kentucky bluegrass and perennial ryegrass | 30 ounces/acre | 42,305 gal. total |
| Fine fescues | 10 ounces/acre | 547 gal. total |
| Total all crops | | 42,852 gal. total |

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100.6 Precautionary Labeling

No precautionary labeling was provided with this submission. Although a copy of the first page of the 1990-91 proposed label was included in the package, the section regarding the environmental hazards was not included.

101 Hazard Assessment

101.1 Discussion

The State of Oregon is requesting an emergency exemption for the use of Goal 1.6E to control weeds and volunteer crops. (A similar request was made in 1989) Multiple applications are allowed but cannot exceed the maximum application rate of 30 oz. per acre (0.375 lbs a.i. per acre). Goal 1.6E is recommended for late preemergence through early postemergence control of annual broadleaf weeds, annual grasses, and the seedling stage of perennial grasses, including volunteer crops, in established perennial grasses grown for seed.

101.2 Likelihood of Adverse Effects on Nontarget Organisms

Environmental Fate Data (information obtained from Environmental Fate and Groundwater Branch (EFGWB) Pesticide Environmental Fate One Line Summary, last update, 10/12/89.)

(V) = validated study (S) = supplemental study

- Oxyfluorfen is stable to hydrolysis at pH 4, 7, and 10. (V)
- Oxyfluorfen is stable to photolysis. (S)
- Oxyfluorfen has a half life of 120 - 130 weeks in aerobic soils. (S)
- Oxyfluorfen degraded to 2-7% of the applied in 60 days. (S)
- Runoff study showed that oxyfluorfen will not translocate to nearby aquatic compartments.

Terrestrial organisms

Oxyfluorfen is considered to be practically nontoxic to moderately toxic to birds and practically nontoxic to

mammals (Northern bobwhite $LC_{50}$ 390 ppm; Mallard $LC_{50}$ >4000 ppm; Rat $LD_{50}$ >5000).

If Oxyfluorfen is applied at 0.375 lbs. a.i./ Acre, the following residues (ppm) are expected to occur on terrestrial food items immediately after treatment as calculated using a nomograph presented in Hoerger and Kenaga (1972) based on historical measured residue data.

Upper limits and typical limits of residue on differing groups of plants

(residues in ppm)

| | Upper Limit | Typical Limit |
|---|---|---|
| Range Grass (short) | 90.00 | 46.88 |
| Grass (long) | 41.25 | 34.50 |
| Leaves and Leafy Crops (vegetables and fruit) | 46.88 | 13.13 |
| Forage Crops (alfalfa, clover) | 21.75 | 12.38 |
| Pods Containing Seeds (legumes) | 4.50 | 1.13 |
| Fruit (cherries, peaches, grapes, citrus) | 2.63 | 0.56 |

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The data indicate that Oxyfluorfen is not expected to pose hazard to nontarget mammals. The residue limits do surpass the trigger for presumed hazard to nontarget birds (1/5 lowest avian $LC_{50}$ of 390 ppm = 78ppm), however due to the limited acreages involved this hazard is expected to be minimal.

Aquatic Organism

Oxyfluorfen may be characterized as highly to moderately toxic to fish and aquatic invertebrates, respectively (Bluegill sunfish (Lepomis macrochirus) $LC_{50}$=200 ppb; Rainbow trout (Oncorhyncus mykiss) $LC_{50}$=410 ppb; Channel catfish (Ictaluras punctatus) $LC_{50}$=400 ppb; Daphnia magna $LC_{50}$=1.5 ppm).

Assuming 1% runoff, an aquatic EEC was calculated using the formula for unincorporated ground application (see attached). An application rate of 0.375 lbs. a.i./Acre is estimated to result in an EEC of 2.29 ppb. a.i. in a 1 acre pond 6 ft. deep. Since this level is less than 1/10 the $LC_{50}$ values for fish and invertebrates, the proposed use of Oxyfluorfen should not pose an acute hazard to aquatic organisms. Since the EEC is less than the Fathead minnow (Pimephales promelas) MATC of >



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38 ppb < 74 ppb, the proposed use of Oxyfluorfen should not pose a chronic hazard to aquatic organisms.

**101.3 Endangered Species Considerations**

Since maximum residues do not exceed the fish and aquatic invertebrate endangered species triggers, the proposed use of oxyfluorfen is not expected to pose hazard to endangered aquatic wildlife.

The proposed use of oxyfluorfen is expected to pose a significant hazard to endangered plants. There are three endangered plants in Oregon; Bradshaw's Lomatium, Malheur Wire-Lettuce, and MacFarlane's Four-O'Clock. Of these only the Bradshaw's Lomatium is expected to be adversely affected by the proposed use. To prevent hazard the applicant should abide by the recommendations set forth in the attached September 19, 1989 letter by Russell D. Petersen, Field Supervisor, United States Fish and Wildlife Service, Portland Field Office.

With maximum residues of 2 to 90 ppm of oxyfluorfen expected on plants the trigger for risk to endangered birds (1/10 of the northern bobwhite $LC_{50}$ (390 ppm) = 39 ppm) has been exceeded. Although there are several species of endangered birds in Oregon (American Peregrine Falcon, Bald Eagle, Brown Pelican, Northern Spotted Own, and the Aleutian Canada Goose) the only one that has the potential to be impacted by the proposed use of Oxyfluorfen is the Aleutian Canada Goose. This goose has been found in association with grain and grass fields. However, due its large size and its closer similarity to the mallard duck as opposed to the northern bobwhite, the Aleutian Canada Goose $LC_{50}$ is expected to be nearer that of the mallard duck ($LC_{50}$ = >4000 ppm). Since the expected residues do not exceed 1/10 the mallard duck $LC_{50}$ (400 ppm) the proposed use of Oxyfluorfen is not expected to pose significant hazard to the Aleutian Canada Goose.

**101.4 Adequacy of Data**

The available data were adequate to quantify the risks of this section 18.

**101.5 Adequacy of Labeling**

The following labeling would be required on any Oxyfluorfen label.

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"This product is toxic to birds and aquatic invertebrates. Birds feeding in treated areas may be killed. Cleanup spilled product to reduce exposure to wildlife. Do not apply directly to water or swamps, bogs, marshes and potholes. Runoff may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment washwater or rinsate."

102 **Conclusions**

The data indicate that Oxyfluorfen is not expected to pose hazard to nontarget mammals.

Although the expected residues do surpass the trigger for presumed hazard to nontarget birds (1/5 lowest avian $LC_{50}$ of 390 ppm = 78ppm), due to the limited acreages involved this hazard is expected to be minimal.

The data indicate that the proposed use of Oxyfluorfen should not pose an acute hazard or chronic hazard to aquatic organisms.

The proposed use of oxyfluorfen is expected to pose a significant hazard to endangered plants. There are three endangered plants in Oregon; Bradshaw's Lomatium, Malheur Wire-Lettuce, and MacFarlane's Four-O'Clock. Of these only the Bradshaw's Lomatium is expected to be adversely affected by the proposed use. To prevent hazard the applicant should abide by the recommendations set forth in the attached September 19, 1989 letter by Russell D. Petersen, Field Supervisor, United States Fish and Wildlife Service, Portland Field Office.

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Attachments

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AQUATIC EEC CALCULATION SHEET FOR Oxyfluorfen

I. For un-incorporated ground application

A. Runoff

0.375 lb(s) X 0.01 X (% runoff) 10 (A) = (from 10 A drainage basin) 0.0375 lb(s) (total runoff

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

Therefore EEC = 61 ppb X 0.0375 = 2.2875 ppb

II. For Incorporated ground application

A. Runoff

---------lb(s) X --------- (cm) X ---------X 10(A) = 0 lb(s)
(depth of incorporation) (% runoff) (10 A drainage basin) (total runoff)

Therefore, EEC = 61 ppb X 0 (lbs) = 0 ppb

III. For aerial application (or mist blower)

A. Runoff

---------lb(s) X 0.6 X (application efficiency) ---------X 10(A)= (% runoff) (10 A drainage basin) 0 (total runoff)

B. Drift

- lb(s) X 0.05 (5% drift) = 0 lb(s) (total drift)

Total loading = 0 lb(s) + (total runoff) 0 lb(s) = (total drift) 0 lb(s)

Therefore, EEC = 61 ppb X 0 lbs = 0 ppb

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