

file

111601
SHAUGHNESSY NO.

REVIEW NO.

EEB BRANCH REVIEW

DATE: IN August 6, 1985 OUT SEP 16 1985

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PETITION OR EXP. PERMIT NO. _____

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

DATA ACCESSION NO(S). N/A

PRODUCT MANAGER NO. 23-Mountfort

PRODUCT NAME(S) Oxyfluorfen (Goal)

COMPANY NAME Oregon Department of Agriculture

SUBMISSION PURPOSE Use in cottonwood plantings

SHAUGHNESSY NO.	CHEMICAL & FORMULATION	% A.I.
<u>111601</u>	<u>Oxyfluorfen</u>	_____
_____	_____	_____
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ECOLOGICAL EFFECTS BRANCH
SECTION 24(c) REVIEW

GOAL 1.6E

100 Pesticide Label Information

100.1 Pesticide Use

Goal is an herbicide. The Oregon Department of Agriculture proposes to use Goal in dormant cottonwood plantings for weed control.

100.2 Formulation Information

Goal 1.6E is 19.4% ai oxyfluorfen.

100.3 Application Methods, Directions, Rates

Application rate is 5 to 10 pints (1 to 2 lbs ai) per acre. It is intended as a postemergent or preemergent weed control. Applications must be made only prior to bud break. Label restricts rate to a maximum of 2 lbs ai per growing season. These may be in single or multiple applications. Treatment is restricted to ground equipment.

100.4 Specific Use Sites

Cottonweed plantings in Oregon.

100.5 Target

Broadleaf weeds.

100.6 Label Restrictions

Environmental Hazards

Do not apply directly to water. Do not contaminate water by cleaning of equipment or disposal of wastes.

This product is highly toxic to aquatic invertebrates, aquatic plants, wildlife and fish. Use with care when applying in areas frequented by wildlife or adjacent to any body of water or wetland area. Do not apply when weather conditions favor drift or erosion from target areas.

2

101 Hazard Assessment101.1 Discussion

Cottonweeds are grown on plantations to provide pulp for paper and possibly fodder or fuel. The land is cleared and competition from other plants eliminated. Intensive management is involved. Cottonwoods must be fertilized and watered; harvest is more frequent than with other types of trees. Cottonwoods are very similar to hybrid poplars.

Harvest cycle may be from more than once a year to once every 8 to 10 years. If the cycle is longer than 3 years, no weed control is necessary ^{after 3 years} as canopy closes and blocks sunlight. Trees are planted on 6' centers with rows 6 or 10 feet apart, depending on proposed harvest techniques.

Crown Zellerbach Paper Company is involved with developing cottonwood agriculture. Their methods include an 8- to 10-year harvest cycle and harvest by hand with chain saws. They anticipate growing cottonwoods on floodplains where it is too wet to grow most other agricultural crops.

The above is based on a telephone conversation with Dr. David Hibbs, Oregon St. Univ., Corvallis (503) 754-2244.

There are four main areas presently used for cottonweeds in Oregon. See attached map.

"Cottonwood fiber plantings are being grown primarily in Northwestern Oregon. The largest planting is one along the Columbia River in the St. Helens area. This plantation covers some 2000+ acres and is owned and managed by Crown Zellerbach Corporation. Other plantations of note include Joe Dula's nursery and operation in the Canby area and Rob Miller's Mt. Jefferson Farms' plantings in the Salem area. O.S.U. and a number of other people have smaller trials. Test plantations have been installed near Boardman in Eastern Oregon and in the coast range, south of Astoria. Total plantings may currently be in the 3000 to 4000 acre range." Excerpt from July 12, 1985, letter from Rick Fletcher, Extension Forestry Agent to Tom Harrison, Oregon Department of Agriculture.

101.2 Likelihood of Adverse Effects For Nontarget Organisms

Excerpted from January 22, 1985, review.

Toxicity

Oxyfluorfen is practically nontoxic to mammals and waterfowl. However, it is highly toxic to bobwhite quail (LC_{50} = 390 ppm), and fish (bluegill LC_{50} = 200 ppb; rainbow trout LC_{50} = 410 ppb). It is moderately toxic to aquatic invertebrates (*Daphnia magna*) (LC_{50} = 1.5 ppm). Oxyfluorfen is very highly toxic to shrimp (LC_{50} = 31.7 ppb). Fish MATC > 38 < 74 ppb; no aquatic invertebrate chronic study results are available, this study is being requested. It is practically nontoxic to mammals. Oxyfluorfen did not affect avian reproduction in bobwhite quail or mallard ducks at 100 ppm.

Chemical

Oxyfluorfen adsorbs strongly to soil and leaches very little. Its half-life in soil is from 50 to 70 days. Oxyfluorfen bioaccumulates in fish at up to 3900X (viscera/bluegill) and 7000X (channel catfish). If Goal gets into an aquatic habitat it will concentrate in the sediment rather than remain in the water column.

Hazards to Terrestrial Organisms

This use is unlikely to affect mammals or waterfowl. The maximum residue on shortgrass may exceed the upland gamebird LC_{50} (residue = 480 ppm compared to 390 ppm LC_{50}). However, typical levels are less than the quail LC_{50} . This use would have minimal adverse effects to terrestrial wildlife.

Hazards to Aquatic Organisms

Since this is ground application only, direct application to water should not occur and drift should be minimal.

However, since cottonwoods are grown in floodplains, the opportunity for transport to water exists. EEB has a runoff EEC for the application of 2 lbs ai per acre (see review 12, June 30, 1981). According to the Exposure Assessment Branch calculation, the residues would be:

<u>Water</u>	<u>Sediment</u>
0.09 ppb	50 ppb

9

Further, a residue monitoring field study has been conducted to determine the fate of oxyfluorfen when applied to agricultural crops such as corn. (DER by D. Rieder, June 13, 1984, Acc. #246782). The study was validated as supplemental because substantial data were lacking from the report. However, it is possible to use some of the results in this hazard assessment. Six different sites across the country were treated and samples were taken from runoff, adjacent pond water, and pond sediment. Of the samples taken none had measurable residues in pond water (minimum measurable concentration not specified). Three sites had measurable residues (>10 ppb) in pond sediment. Of those three, only one (site D-213) had consistent repeated measurements reflecting a substantial transport of Goal from the field. It is not clear what the application rate was for that field site during the year of the sampling. If the rate was similar to the previous 4 years, it would have been about 1 lb ai per acre. The maximum residue in the sediment was 690 ppb at the pond edge and 20 ppb in the pond middle.

Based on the above EEC and field study discussion, it is not likely that oxyfluorfen will occur in the water column at levels high enough to have an adverse acute or chronic effect on aquatic organisms.

Goal is presently registered on many nut and fruit trees, conifer seed beds, corn, cotton, spearmint and peppermint, and soybeans. This 24(c) SLN would be a minor increase in area of use.

101.3 Endangered Species Considerations

This proposed use should have no adverse effect on endangered mammal or bird species because of low toxicity and lack of exposure potential.

There are no endangered aquatic species in Oregon.
There are 2 endangered plant species in Oregon:

MacFarlane's four o'clock
Malheur wire lettuce

Wallowa County
Harney County

Neither occurs where cottonwoods are presently grown. In the event that cottonwood growing expands, it is unlikely that the use of Goal would affect these species because of the cultivation methods involved. Growing cottonwoods requires thorough clearing of land prior to planting. Goal is not proposed for use in clearing land and it would not be applied until dormant cottonwoods were in place.

EEB does not expect any adverse effects to endangered species.

101.4 Adequacy of Toxicity Data

The data are adequate to assess the hazard of this use. No new data were submitted.

101.5 Adequacy of Labeling

The labeling on the Goal 1.6E label is adequate.

103 Conclusions

EEB has completed a risk assessment of the proposed SLN 24(c) for use of oxyfluorfen on cottonwood plantations in Oregon. Based on available data such use should have minimal adverse effects on nontarget organisms.

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