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SHAUGHNESSEY NO.

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REVIEW NO.

EEB REVIEW

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PETITION OR EXP. NO. _____

DATE OF SUBMISSION 1-3-89

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RD ACTION CODE/TYPE OF REVIEW 510

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

DATA ACCESSION NO(S). _____

PRODUCT MANAGER NO. J. Tompkins (41)

PRODUCT NAME(S) PROWL (Pendimethalin)

COMPANY NAME Oregon Dept. of Agriculture

SUBMISSION PURPOSE Proposed Sec. 18 for use on

alfalfa grown for seed.

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
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EEB REVIEW

Pesticide Name: Pendimethalin

100.0 Submission Purpose and Label Information

100.1 Submission Purpose and Pesticide Use

The Oregon Department of Agriculture requests a section 18 emergency exemption to use PROWL Herbicide (pendimethalin) for the control of dodder in alfalfa grown for seed.

100.2 Formulation Information

Prowl herbicide (active ingredient, pendimethalin, 4 lbs/gal) EPA Reg. No. 241-243-ZA manufactured by American Cyanamid, Wayne, New Jersey, is the product requested for use.

100.3 Application Methods, Directions, Rates

Program: This request is for one application of Prowl to be applied from February 1, 1989 to March 31, 1989 to a maximum of 9,700 acres of alfalfa grown for seed in Malheur and Umatilla Counties of Oregon.

Application: PROWL will be applied pre-emergence to dormant established alfalfa at a rate of 2 to 4 quarts per acre (2 to 4 lbs ai) in sufficient water to obtain good coverage.

100.4 Target Organisms

Largeseed Dodder	- <u>Cuscuta indecora</u>
Field Dodder	- <u>C. campestris</u>
Smallseed Dodder	- <u>C. planiflora</u>

According to the Oregon Department of Agriculture, dodder has not been an emergency problem prior to this time because the principal dodder control herbicide, Furloe (chlorpropham) was registered. In 1988, however, the registrant elected to withdraw registration of Furloe for use in alfalfa seed. Dacthal herbicide (chlorthal dimethyl) has been the second most common dodder control agent. This herbicide has been detected in groundwater samples taken in Malheur County. Dacthal concentrations are below health advisory levels, but there are concerns of potential increases in contamination levels.

Other registered herbicides, according to the applicant, are prohibitively expensive, have unacceptable efficacy, can cause phytotoxicity to alfalfa, or have feeding restrictions.

100.5 Precautionary Labeling

No label was submitted for review by EEB.

101.0 Hazard Assessment

101.1 Discussion

Pendimethalin is very insoluble in water (0.5 ppm); it is strongly adsorbed on soil organic matter and clay and does not leach through the soil.

101.2 Likelihood of Adverse Effects on Nontarget Organisms

Pendimethalin is only slightly toxic to birds, with an LD₅₀ of 1421 mg/kg to mallard ducks and a dietary LC₅₀ of 4187 ppm to bobwhite quail. According to EPA's nomograph giving maximum expected residue values on various types of vegetation (based on work by Hoerger and Kenaga, 1972), the pesticide residue on alfalfa (forage) resulting immediately after one application would be 230 ppm. However, Prowl is applied pre-emergence to dormant alfalfa. It would seem that residues on dormant stubble would possibly be greater than 230ppm, and that the "short rangegrass" vegetation type would more nearly describe such a substrate. According to the nomograph, then, expected residues on short rangegrass and similar vegetation are 960 ppm, still well below the dietary LC₅₀ to bobwhite quail. The requested use of Prowl, therefore, is not expected to result in adverse effects to avian species.

Pendimethalin is highly toxic to aquatic organisms, with acute LC₅₀ values ranging from 140 ppb to 420 ppb. In order to calculate an EEC (Estimated Environmental Concentration), the scenario will be employed of a pond one acre in size supported by a 10-acre drainage basin. Because of the low solubility of pendimethalin (0.5 ppm), 1 percent runoff will be assumed. The resulting EEC is 24 ppb (see Attachment A). Using the aquatic organism hazards trigger of 1/2 the LC₅₀ (1/2 140 ppb = 70 ppb), this EEC is seen to be below the level at which acute adverse effects to aquatic organisms may be expected.

Studies show reproductive impairment to aquatic organisms at low environmental concentrations. However, since pendimethalin is to be applied only once, no chronic exposure to aquatic organisms is anticipated.

101.3 Endangered Species

Based on information in EEB's Endangered Species information files, it has been determined that no aquatic endangered species are found in Malheur and Umatilla Counties. A bird species, the American Peregrine Falcon occurs in Umatilla County, however, no threat is anticipated for this species based on this species' food habits and the fact that the requested use of pendimethalin will be very limited in extent (9,700 acres).

101.4 Adequacy of Labeling

In view of the toxic nature of pendimethalin to fish, the following statement should appear on the product label:

This product is toxic to fish. Do not apply directly to water or wetlands (swamps, bogs, marshes, potholes). Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent aquatic sites. Do not contaminate water when disposing of equipment washwaters.

102 Conclusions

EEB has reviewed the proposed Section 18 Emergency Exemption for the use of PROWL Herbicide to control dodder in alfalfa grown for seed. This use, totaling 9,700 acres, will not present a significant increase in exposure nor will it result in unacceptable hazard to fish and wildlife. This proposed use is also not expected to result in exposure or hazard to endangered or threatened species.

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EEC CALCULATION SHEETI. For foliar application

A. Runoff

$$\underline{4} \text{ lbs} \times \frac{0.0}{(\underline{1} \% \text{ runoff})} \times \frac{10 \text{ (A)}}{(\text{from 10 A. drainage basin})} = \underline{0.4} \text{ lb (tot. runoff)}$$

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

Therefore, EEC = 61 ppb $\times$ 0.4 (lb) = 24.4 ppb

II. For aerial application

A. Runoff

$$\underline{\quad} \text{ lbs} \times \frac{0.6}{(\text{appl. efficiency})} \times \frac{0.0}{(\underline{\quad} \% \text{ runoff})} \times \frac{10 \text{ (A)}}{(10 \text{ A. d. basin})} = \underline{\quad} \text{ lbs (tot. runoff)}$$

B. Drift

$$\underline{\quad} \text{ lbs} \times \frac{0.05}{(5 \% \text{ drift})} = \underline{\quad} \text{ lb (tot. drift)}$$

$$\text{Tot. loading} = \underline{\quad} \text{ lb} + \underline{\quad} \text{ lb} = \underline{\quad} \text{ lbs}$$

$$\text{Therefore, EEC} = 61 \text{ ppb} \times \underline{\quad} \text{ (lbs)} = \underline{\quad} \text{ ppb}$$