108501

Shaughnessy No: 108501

Date Out of EAB: MAY 17 1985

To: Donald Stubbs
Product Manager 41
Registration Division (TS-767)

From: Samuel M. Creeger, Chief
Environmental Chemistry Review Section 1
Exposure Assessment Branch
Hazard Evaluation Division TS-769c

Attached, please find the EAB review of:

Reg./File # : 85-OR-02

Chemical Name: Pendimethalin

Type Product : Herbicide

Product Name : Prowl

Company Name : Oregon Department of Agriculture

Purpose : Emergency exemption for use on onions grown for bulbs in Oregon

Action Code : 510

EAB #(s) : 5428

Date Received : 3/15/85

TAIS Code: 21

Date Completed: 5/16/85

Reviewing Time: 0.3 day

Deferrals to:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

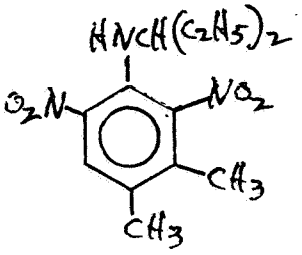
_____ Toxicology Branch

1. CHEMICAL: Common Name- Pendimethalin

Chemical Name- N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine

Trade Name- Prowl

Chemical Structure-



2. TEST MATERIAL: Not applicable. No new data were submitted.

3. STUDY/ACTION TYPE: Request by the Oregon Department of Agriculture for an Emergency Exemption (Section 18) to use pendimethalin for weed control in onions produced for bulbs in Oregon. Prowl is registered for use on corn, cotton, peanuts, potatoes, soryhum, soybeans, sunflowers, and tobacco at application rates of 0.5-2.0 lbs ai/A. Supporting information is attached.

4. STUDY IDENTIFICATION: Not applicable. No new data were submitted.

5. REVIEWED BY:

Herbert L. Manning, Ph.D.
Microbiologist
EAB/HED

Signature: Herbert L. Manning
Date: 17 May 1985

6. APPROVED BY:

Samuel M. Creeger
Chief, Section 1
EAB/HED

Signature: Samuel M Creeger
Date: MAY 17 1985

7. CONCLUSIONS:

EAB data on the environmental fate of pendimethalin indicates that most requirements needed to support an emergency exemption on onions (field crop) are satisfied, with the exceptions of anaerobic soil metabolism and rotational crop.

Previously reviewed rotational crop data were adequate for a 120-day restriction

with winter wheat and barley for an EUP, but were deficient in several respects:

- No accumulation data in grain alone were submitted.
- A radiolabeled study was not done.

8. RECOMMENDATIONS:

EAB environmental fate data on pendimethalin is deficient in two areas: anaeobic soil metabolism and rotational crop data, and will not support an emergency exemption for use on onions.

9. BACKGROUND:

A. Introduction

See Section 3 of this review.

B. Directions for Use

See attached information.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

A. Study Identification

Not applicable. No new data were submitted.

11. COMPLETION OF ONE-LINER:

No new data submitted.

12. CONFIDENTIAL APPENDIX:

There was no CBI in this submission.

Oregon Department of Agriculture

635 CAPITOL STREET NE, SALEM, OREGON 97310-0110

March 8, 1985

Mr. Donald R. Stubbs, Section Head
Emergency Response Group (TS-767C)
Environmental Protection Agency
1921 Jefferson Davis Highway
Arlington, VA 22202

Dear Mr. Stubbs:

The Oregon Department of Agriculture requests approval of this application for a specific exemption under Section 18, FIFRA, as amended, in Part 166, Title 40, CFR 166, for use of pendimethalin (Prowl) herbicide for weed control in onions produced for bulbs in Oregon.

(1) Onions are produced in two distinct locations in Oregon. In western Oregon, they are produced on old lakebeds where organic matter levels are generally high. For many years, onion growers used Randox as a preemergence herbicide to control grassy and broadleaf weeds. Randox is no longer available. Handweeding is not practical because of excessive cost and an insufficient number of field laborers. Ramrod (propachlor) had been shown to be effective for weed control and also nonphytotoxic to the onions grown on high organic soils. This herbicide was used under emergency exemption in 1983 and 1984, but we have been informed that no specific exemptions for propachlor are to be granted in 1985. Because Dacthal does not perform on soils with high organic matter (mostly 6-60%), Prowl herbicide will provide some weed control in onions in western Oregon. Thus, we request a specific exemption be considered for Prowl for general preemergence weed control in western Oregon.

(2) The following products are, or were, registered for weed control in onions; some are no longer available, and others are not effective under Oregon conditions. As stated above, Randox is no longer available. Dacthal is not effective on peat soils, the type of soil in which onions are produced in western Oregon. Roundup is registered as a preemergence herbicide, but has no residual activity. Additionally, Roundup can not be used at planting time because weeds are not present and post-plant application would damage onion plants. Furloe (Chloro IPC) causes injury on onions grown in muck soils in western Oregon due to the irregularity of soil types in lake bottoms and it does not control all weed species which are a problem in this area. Treflan is not effective on high organic soils and is difficult to apply and incorporate between 8 to 14 inch rows, which is the system of

planting in western Oregon. Treflan also will cause phytotoxicity to emerging onions when incorporated to reduce volatility. Goal is registered for use at the 2-true leaf stage and works satisfactorily on some broadleaf weeds but injury will occur if this herbicide is applied preemergence to the crop; additionally, Goal will not provide late season weed control, especially with grasses.

(3) The time period for use of Prowl in onions in Oregon is May 1, 1985 through June 30, 1985.

(4) The following weeds are serious problems in onions in Oregon:

Pigweed (Amaranthus retroflexus)
Purslane (Portulaca oleracea)
Lamb's Quarters (Chenopodium album)
Barnyardgrass (Echinochloa crusgalli)
Yellow Fox Tail (Setaria lutescens)
Annual Ryegrass (Colium sp.)
Annual Bluegrass (Poa annua)
Shepherd's Purse (Capsella bursa-pastoris)
Chickweed (Stellaria media)
Groundsel (Senecio vulgaris)
Prostrate Spotted Spurge (Euphorbia supina)
Yellow Nutsedge (Cyperus esculentus)
Carpetweed (Mollugo verticillata)
Smartweed (Polygonum persicaria)

(5) This specific exemption is requested for the following Oregon counties: Washington, Clackamas, Multnomah, and Marion. It is anticipated that 2,600 acres of bulb onions will require treatment. The total onion acreage in the above counties is approximately 3,600 acres. Soils in the onion growing areas range from 0.125-60% organic matter.

(6) Economic Information:

(a) Economic benefits and losses (emergency areas only) expected with and without use of requested chemical:
Weeding costs without herbicides range from $72 to $250 per acre. Use of herbicides reduces weeding costs by approximately 75%.

Average weeding costs without Prowl herbicide	=	$200/acre X 2,600	= $520,000
Average weeding costs with Prowl herbicide	=	$50.00/acre X 2,600	= $130,000
Savings in weeding costs	=		$390,000

If weeds are not removed, yields and quality of onion bulbs will be reduced significantly and harvest costs will be increased. Depending on weed densities, bulb yields could be reduced by 30-5[illegible] percent.

Research and extensive grower use of registered herbicides, either singly or in combination indicate these products will not control prostrate spurge, purslane and carpetweed, three of the most serious weed problems in western Oregon onion fields.

(b) Crop production costs per acre for the last four years:

Western Oregon:

1984	$1,423/A
1983	1,525/A
1982	1,520/A
1981	1,419/A

(c) Crop yields over four years:

Western Oregon:

1984	395 CWT
1983	350 CWT
1982	400 CWT
1981	372 CWT
1980	378 CWT

(d) Estimation of percent control of the pests with registered pesticides over the last four years: 25-35% control of broadleaf and grassy weeds. Research has shown that weed control with Prowl alone will improve weed control, giving a range depending on weed species, of 60-75%.

(e) Estimation of percent of control of the pests for the upcoming year with:

(1) Registered pesticides: 25-35%

(2) Proposed pesticide: 60-75%

(f) Economic value of onions to Western Oregon for four years:

1984	$16,671,407
1983	$7,791,600
1982	$3,346,560
1981	$33,365,000
1980	$14,111,510

(g) Price received for the crop for four years:

Western Oregon

1984	$2,567/A	$ 6.50/CWT
1983	$3,624/A	$ 8.95/CWT
1982	$1,492/A	$ 3.60/CWT
1981	$6,503/A	$14.45/CWT

(7) Name and formulation of product to be used:

Prowl 4E (pendimethalin)
EPA Registration No.241-243
Manufactured by American Cyanimid Company
Agricultural Division
Wayne, N.J. 07470

(8) Rates of application to be used for the aforementioned product in western Oregon:

(a) Pounds of active ingredients/acre and total pounds a.i. required:

0.75-1.0 lbs. a.i./acre broadcast. Estimated number of acres to be treated in western Oregon is 2,600. Total material needed for one application on 2,600 acres is 2,600 lbs. active ingredient.

(b) Pounds of formulated product per acre and total pounds of formulation required:

Broadcast - 4E formulation
(1.5 to 2.0 pts./acre on 2,600 acres x 1 application) = 650 gallons

(c) Pre-harvest interval and restrictions:

Planting of onions is expected to begin March 15, 1985; the last planting date will be about May 15, 1985. The earliest harvest date is expected to be September 1, 1985. A preharvest interval of 50 days is requested.

(d) Example of label directions/information for Prowl 4E herbicide for western Oregon:

Prowl can be applied at the 1 to 5 true leaf stage of crop development. Uniformily apply Prowl treatments at 1.5 to 2.0 pts. of product in 10 or more gallons of water per acre by ground or aerial equipment. Use the high rate on high organic soils and the low rate on low organic soils. Do not use on mineral soils or soils with less than 5% organic matter.

Do not make more than one application per season. Prowl treatments will not control emerged weeds. Destroy existing weeds before applying Prowl. Prowl treatments are most effective in controlling weeds when adequate rainfall or overhead irrigation is received within 7 days after application.

Do not graze treated fields or feed treated onions to livestock.

If there is a poor stand of onions, do not replant onions for one growing season. Do not plant winter wheat or winter barley as fallow crops in Prowl treated land if the fallow crop is planted using no-tillage procedures, as crop injury may result.

Do not apply within 50 days of harvest.

When applied as directed under the conditions described, this product controls those weed species listed on the product label. See the product label for general mixing and spraying instructions.

(9) No residues of pendimethalin in onions are anticipated. An experimental use permit for Prowl 4E was granted on May 1, 1984 to May 1, 1985. The EPA permit number is 241-EUP-104.

(10) Knowledgeable Experts:

Dr. Ray D. William
Extension Hort. Weed Spec.
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Mr. Ron Collins
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Sincerely,

Leonard Kunzman

Leonard Kunzman
Director
(503) 378-4152

PL50/54#2
cc: Ray William
Ron Collins
Garvin Crabtree
Robert Linkfield
Lyn Frandsen
Bill Kosesan