

US EPA ARCHIVE DOCUMENT

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Record No.

Review No.  
108501  
Shaughnessey No.

EEB REVIEW

DATE: IN March 1, 1990 OUT March 1, 1990

FILE OR REG. NO. 90-MN-04

PETITION OR EXP. NO. \_\_\_\_\_

DATE OF SUBMISSION January 25, 1990

DATE RECEIVED BY EFED February 7, 1990

RD REQUESTED COMPLETION DATA February 22, 1990

EEB ESTIMATED COMPLETION DATE February 22, 1990

RD ACTION CODE/TYPE OF REVIEW 510

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

MRID NO(S). none

PRODUCT MANAGER NO. J. Tomkins/Rebecca Cool 557-7700

PRODUCT NAME(S) Pröwl 4E, Pendimethalin

COMPANY NAME Minnesota Dept of Agriculture

SUBMISSION PURPOSE Section 18 for use on onion field

SHAUGHNESSEY NO.	CHEMICAL AND FORMULATION	% A.I.
<u>108501</u>	<u>Pendimethalin, emulsifiable</u>	<u>42.3%</u>
_____	_____	_____
_____	_____	_____

*pending*

Emergency Use Application  
(Section 18)

**Pendimethalin (Prowl®)**

In onion fields in Minnesota

Ecological Effects Branch Review

100. REASON FOR APPLICATION:

100.1 NATURE AND SCOPE OF THE EMERGENCY:

*Applicant and Request-* Jim Nichols, Commissioner  
Calvin E. Blanchard, Pesticide Advisor  
Minnesota Department of Agriculture  
90 West Plato Blvd.  
St. Paul, MN 55107

*Knowledgeable Expert-* Dr. Vincent A Fritz  
Horticulturist and Assistant Professor  
Southern Experiment Station  
University of Minnesota  
Waseca, MN 56093

*Alternatives-* Mechanical control methods damage the fragile seedling and their beds. Other herbicides cannot be used in muck soils (Paraquat®), have no residual activity (Roundup®) or give little early weed control (Fusilade® and Goal®).

100.2 TARGET ORGANISMS:

<i>Setaria</i> spp.	Foxtail grasses
<i>Digitaria</i> spp.	Crabgrass
<i>Panicum dichotomiflorum</i>	Fall panicum
<i>Echinochloa crusgalli</i>	Barnyardgrass
<i>Euphorbia supina</i>	Prostrate spurge

100.3 DATE AND DURATION OF THE TREATMENT:

The submission did not give the dates of the treatment, but a telephone conversation revealed that the request is for the 1990 growing season. There will be preemergence application about April 10 and, perhaps, a post emergence treatment 30 days later.

## 100.4 APPLICATION METHODS, DIRECTIONS AND RATES:

Since the label was not included, EEB called Dr. Vincent Fritz and found that it would be applied by ground broadcasting about April 10 as a preemergence (the onions are planted as seeds) herbicide. They will only apply a second treatment if prostrate spurge remained about one month later. The submission states that, "The rate of application in terms of active ingredient and product is two pounds and two quarts per acre, respectively, for a single application."

## 100.5 TREATMENT AREAS:

Onions are grown on high organic matter soils (muck soils) primarily in southern counties. The Census of Agriculture (1987) lists Clay, Douglas, Chippewa, Hennepin, Washington, Dakota and Freeborn counties as having 34 of the 64 dry bulb onion farms in the State. Freeborn county had 566 acres under cultivation against 152 acres for the rest of the State. The total acreage will be no more than 1,000 acres.

## 100.6 PRECAUTIONARY LABELING:

Not given.

## 101. PHYSICAL AND CHEMICAL PROPERTIES:

## 101.1 NAMES:

Pendimethalin  
N-(1-Ethylpropyl) 3,4-dimethyl-2,6-dinitro benzenamine  
Prowl

## 101.2 FORMULATION:

The label was not included in the submission and the formulation was not given, but the rate given above (two pounds and two quarts per acre) show that it is Prowl 4 E.

N-(1-Ethylpropyl) 3,4-dimethyl-2,6-dinitro benzenamine	42.3%
Inert ingredients	<u>57.7</u>
	100%

## 101.3 BEHAVIOR IN THE ENVIRONMENT:

Pendimethalin is stable at pH 5, 7 and 9 at 25 °C in the dark but volatilizes under photolysis. It is "quite persistent in an aquatic ecosystem" (Turner, EEB Chemical Profile, 1984). Its half life is 90 days and it may bioaccumulate.

## 102. HAZARD ASSESSMENT:

## 102.1 TOXICOLOGY:

There is enough toxicological information to make a hazard judgement for this use.

## 102.2 NON-TARGET ORGANISMS:

*Terrestrial*- Pendimethalin is only slightly toxic to birds (dietary LC<sub>50</sub>>4,000 ppm for both Bobwhite quail (*Colinus virginianus*) and Mallard duck (*Anas platyrhynchos*)). Mammalian oral LD<sub>50</sub>s range from 2,000 to >5,000 mg/kg.

*Aquatic-* Pendimethalin is highly toxic to aquatic organisms. The Rainbow trout (*Salmo gairdneri*) LC<sub>50</sub> is 0.14 ppm (supplemental); the Bluegill sunfish (*Lepomis macrochirus*) LC<sub>50</sub> is 0.20 ppm (supplemental) and *Daphnia magna*'s LC<sub>50</sub> is 0.28 ppm.

*Plants-* Test results are pending.

*Discussion-* The maximum expected EEC from runoff is 0.2 lbs ai/10 A. If drained directly into a one acre, six inch deep pond it would produce an EC<sub>50</sub> of 12 ppb.

102.3 ENDANGERED SPECIES:

The endangered plants that occur in the area are not found on cultivated land. Previous, informal consultation with the U.S. Fish and Wildlife Service revealed that the only endangered species, Higgins' eye pearly mussel, would not be affected unless the chemical was toxic to invertebrates at >10 ppb., which it is not.

102.4 ADEQUACY OF LABELING:

The submission had no labeling.

102.4 DISCUSSION:

Pendimethalin is slightly toxic to birds and mammals, but is highly toxic to aquatic organisms. Runoff from treated areas could pose a risk to aquatic nontarget species and endangered species. The possibility of this occurring is small because: 1) herbicide applications do not show a tendency to drift because of their large droplet size, 2) runoff is minimal since onions are grown in former swamp areas, which are level, 3) it binds to the high organic content in the "muck" soil, and 4) the area to be treated is less than 1,000 acres.

103. CONCLUSIONS:

EEB has reviewed the proposed emergency exemption to use Pendimethalin in onion fields in Minnesota and has concluded that the proposed use will not result in hazard to terrestrial nontarget organisms. However, aquatic organisms in freshwater habitats near treatment areas may be at risk from the proposed use.

104. REVIEWED BY:

James J. Goodyear  
Biologist, Section 1  
Ecological Effects Branch  
Environmental Fate and Effects Division (H7507C)

Signature: James Goodyear  
Date: March 1, 1990

105. APPROVED BY:

Raymond W. Matheny  
Head, Section 1  
Ecological Effects Branch  
Environmental Fate and Effects Division (H7507C)

Signature: Raymond W. Matheny  
Date: 3/1/90

James W. Akerman  
Branch Chief  
Ecological Effects Branch  
Environmental Fate and Effects Division (H7507C)

Signature: James W. Akerman  
Date: 3/1/90

## LITERATURE CITED

Census of agriculture. 1987. Geographic area series. Superintendent of Documents no. C 3.31/4:987/v.1. U.S. Government Printing Office, Washington, DC 20402.