121001
SHAUGHNESSEY NO.

10
REVIEW NO.

EEB BRANCH REVIEW

DATE: IN 9-22-83 OUT 10-28-83

FILE OR REG. NO. 7969-58

PETITION OR EXP. PERMIT NO.

DATE OF SUBMISSION 8-17-83

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RD ACTION CODE/TYPE OF REVIEW 335/Amendment

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

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. R. Taylor (25)

PRODUCT NAME(S) Poast

COMPANY NAME BASF Wyandotte Corporation

SUBMISSION PURPOSE Proposed condition registration of sugarbeets, sunflowers, and peanuts

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
121001	2-[1-(ethoxyimino) butyl-5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one	20

100 Pesticide Label Information

100.1 Pesticide Use

Post-emergence grass herbicide for use in peanuts, sugarbeets, and sunflower.

100.2 Formulation Information

2-[1-(ethoxyimino) butyl-5-[2-(ethylthio) propyl]-3-hydroxy-2-cyclohexen-1-one.....20%
(1.53 lb ai/gallon)

Insert ingredient.....80%

100.3 Application Methods, Directions, Rates

"Apply Poast herbicide postemergence to actively growing grasses when they are within the recommended stage of growth given in recommendations for grass control. A timely cultivation in row crops no sooner than 7 days after application may aid in providing season-long control.

Do not make applications to grasses under stress, such as stress due to lack of moisture or herbicide injury, as unsatisfactory control will probably result."

[The recommendations for grass control are included on the supplemental labeling attached to this review].

Application rates are 1-2 1/2 pints per acre.

Water volume and Spray Volume

Thorough spray coverage is essential.

Ground Equipment - Use minimum of 10 gallons water per acre with minimum of 40 psi - standard high pressure hollow cone or flat fan nozzel. Increase water volume to 20 gallons per acre with minimum 60 psi if grass foliage is dense. Do not use - flood or whirl chamber nozzles or selective application equipment such as recirculating sprayers or wiper applicators.

Air Equipment (not applicable in California)

Use a minimum of 5 gallons of water per acre. Increase water volume to 10 gallons per acre if grass foliage is dense.

100.4 Target Organisms

Annual and perennial grass weeds - see supplemental labeling attached to review.

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100.5 Precautionary Labeling

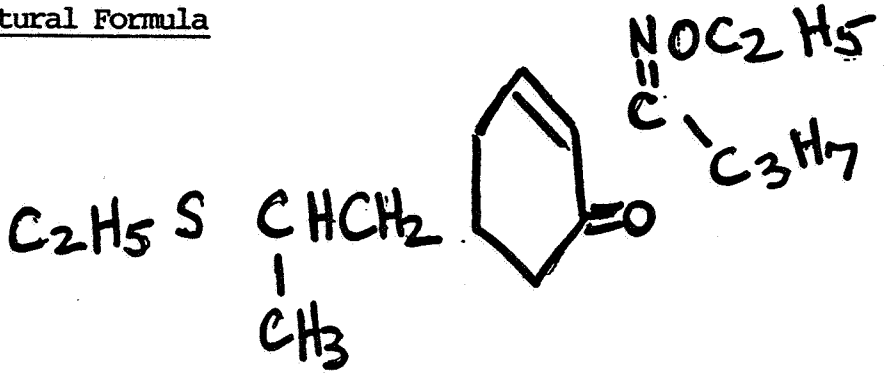
None appears on supplemental labeling.

101 Physical and Chemical Properties

101.1 Chemical Name

2-[1-(ethoxylmino)butyl]-5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one

101.2 Structural Formula



101.3 Common Name

Sodium salt of bentazon

101.4 Trade Name

Poast

101.5 Molecular Weight

240.3

101.6 Physical State

White Solid

101.7 Solibility

Water 0.05
Acetone 150.7
Ethanol 86.1

102 Behavior in the Environment

(from EAB review 7/22/82 by C. Fletcher).

102.1 Soil

Poast will photodegrade on soil surfaces, with a half-life of approximately 3.6-3.7 hours.

Poast degrades in loamy sand soil under aerobic, sterile/ aerobic and anaerobic conditions. Microbial activity is primarily responsible for its disappearance. Half-life in loamy sand was determined to be 4-5 days and in loam about 11 days.

Laboratory soil leaching data shows that aged Poast residues could leach in soils. This is supported by the low soil adsorption coefficient (K = 0.3039 and 0.740 for soil with 0.69% and 2.44% organic matter, respectively). However, in a field leaching/dissipation study, Poast did not leach beyond the first 4 inches of soil and did not persist.

102.2 Water

Poast is fairly stable to hydrolysis with a half-life of about 40 days at pH 6 and 25°C. The major hydrolysis metabolite is M2S, an oxazole derivative.

Photolytic half-lifes of Poast were about 23 and 38 minutes under anaerobic and aerobic aqueous solutions. M2S is the major hydrolysis product.

102.3 Plant

Poast does not accumulate in rotational crop tissues. Measured residues were all below 0.066 ppm.

102.4 Animal

Fish accumulation data for bluegill and channel catfish indicate they will not accumulate residues of Bentazon when exposed to Bentazon residues in water, maximum concentration for bluegill whole fish was about 7X the water concentration at day 14. After 14 days depuration, over 90% of the maximum accumulated residues were eliminated. Accumulation levels in catfish are not expected to exceed 1X.

103 Toxicological Properties

103.1 References from Toxicology Branch

Species	Test	Results
Rat	A.O. LD_{50}	2676-3125 mg/kg
Mouse	A.O. LD_{50}	5600-6500 mg/kg
Rabbit	A.O. LD_{50}	4600 mg/kg

103.2 Minimum Requirements

Mallard duck	A.O. LD_{50}	>2000 mg/kg	CORE
Mallard duck	8-day dietary LC_{50}	>5000 ppm	CORE
Bobwhite quail	8-day dietary LC_{50}	>5000 ppm	CORE
Bluegill Sunfish	96-hr LC_{50}	=265 ppm	CORE
Rainbow Trout	96-hr LC_{50}	=170 ppm	CORE
Daphania magna	48-hr LC_{50}	=78.1 ppm	CORE

104 Hazard Assessment

104.1 Discussion

This hazard assessment is carried out as an incremental risk assessment for the registration of Poast as a post-emergence grass herbicide for peanuts, sugarbeets, and sunflowers, at application rates ranging from 1.0-2.5 pints per acre. At 1.53 lb. a.i./gallon these rates range from 0.191-0.478 lb. ai/acre (rounded off to 0.2 - 0.5 lb a.i. per acre). EEB has already reviewed and approved the use of Poast at similar application rates for cotton, ornamentals and nursery crops.

The sunflower use would constitute a major (>4 million acres) new increment, as peanuts and sugarbeets are already grown in cotton producing states. The sunflower use would be a new exposure for the midcontinent "prairie pothole region" (the Dakotas and Minnesota) which is a major aquatic and waterfowl production resource. A large sunflower crop is also produced in California.

104.2 Likelihood of Adverse Effects to Non-target Organisms

Applications of Poast at label recommended rates can be expected to result in the following maximum residues (0-hour) on plants and invertebrate fauna:

	PPM	
	at 0.2 lb/A	at 0.5 lb/A
short rangegrass	48	120
long grass	22	55
leaves and leafy crops	25	63
forage/small insects	11.5	29
legumes/large insects	2.4	6.0
fruit	1.4	3.5

No acute or dietary toxicological effects are expected to materialize considering the residues relative to the acute and chronic tox. values

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(LD_{50} + LC_{50}'s) for mammals and birds.

A direct application of the maximum rate (0.5 lb ai/A) to a 6'-acre body of water could be expected to result in immediate residues no greater than 367 ppb, or about 90 X below the no effect level for the most sensitive aquatic indicator organism (Daphnia magna) tested. No direct applications to water are expected, giving an ample margin of safety for the prairie pothole region. Any accidental drift or runoff would result in aquatic residues well below the expected aquatic or waterfowl effects levels.

Chronic effects are not considered likely for this chemical in this use as the chemical photodegrades rapidly in soil and water (T 1/2 = < 1 day), although it is fairly stable to hydrolysis (T 1/2 = 40 days). It is not expected to have significant bioaccumulation problems (levels in catfish not expected to exceed 1X according to Exposure Assessment Branch).

104.3 Endangered Species Considerations

Given the low rates of application, low toxicity and low persistence, no significant impact is expected to any endangered animal species.

The Poast label clearly states plant species in the grass family would be "extremely susceptible" to applications of Poast since it is a selective grass herbicide. Endangered plants in this family include:

Texas - Texas wild rice (Zizania texana)
California - Solano grass (Crompton's Orcutt) (Orcuttia mucronata)
California - Eureka dune grass (Swallenia alexandrae)

Based on consideration of distribution and range we expect no significant concern for Texas wild rice and Eureka dune grass because they are not located in areas which might receive indirect applications of Poast in peanuts, sugarbeets or sunflowers. A biological opinion the U.S. Dept. of the Interior, Fish & Wildlife Service, the Office of Endangered Species, dated 18 May 1983, listed Solano grass as being jeopardized by the use of certain chemical pesticides in corn. The opinion went further to state that the conversion of the "vernal pool" habitat of the Solano grass, to agriculture posed a threat to the continued existence of Orcuttia mucronata. The following section is quoted from the above referenced biological opinion:

"Solano Grass (Orcuttia mucronata)

> Solano grass occurs in a single location in east central Solano County, California, in an area of intensive agriculture. It occurs in vernal pools and is associated with the Delta green ground beetle in the general vicinity of Dozier.
>
> Spring rains and agricultural runoff supply the only source of water to the pools, which may dry up by

mid to late summer. Seeds of this species germinate in March and April in deep vernal pools. Full growth is obtain and individual plants flower in late spring to early summer with seed production occurring shortly thereafter. The seeds then lie dormant until the following April.

Agricultural conversion of vernal pools in central California was the primary reason supporting the listing of Solano grass as a endangered species.

Thus, agricultural pesticide use (herbicides) may be an important present and future threat to the species. No herbicide toxicity data was provided but some of the herbicides are toxic to grass species and therefore may be a problem.

Herbicide use may pose several threats to this species from both aerial spraying and runoff. Those chemicals hindering germination may potentially pose the greatest problem. Solano grass is wind pollinated, so insecticides should not affect this species.

The following reasonable and prudent alternative is recommended to avoid jeorpardy to Solano grass: the use of any herbicides toxic to graminoides should be prohibited within the following sections; T5N RlE S. 1 through 3, 10 through 15, and 25 through 27. This area is included within that recommended earlier for the Delta green ground beetle."

Orcuttia mucronata has a two-phased life cycle. Seeds are thought to germinate under the flooded or partially flooded conditions (environmental conditions triggering germination are unknown) as the water in "vernal pools" recedes in May on June, as suggested by the recovery plan. Flowering occurs in mid-July and pollination is by wind action. At this time the pool beds may be dry.

All of the Olcott Pool, the only known locality for Solano grass is currently owned by the Nature Conservancy and is managed as the Jespen Prairie Preserve. A county road does run through the middle of Olcott Pool and is subject to county matainance (which presumably could include herbiciding) (see Recovery Plan for Solano Grass).

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2-9-2

According to Solano County Agricultural Extension Service personnel the area in question (surrounding the town of Dixon, CA.) is currently used to grow the following crops:

- field corn
- tomatoes
- alfalfa
- sugarbeets
- wheat
- sunflowers (seed crop)
- almonds
- walnuts
- pasture land

In the area surrounding the Olcott Pool there are approximately 25,000 acres of of sugarbeets currently cultivated, as well as aproximately 3000 acres of sunflowers. There is no cotton or peanuts. Thus, the registration of Poast represents a new potential exposure for the area in which Solano grass is located.

104.4 Adequacy of Toxicity Data

Animal data submitted is adequate to support the conditional registration.

No phytotoxicity data are available for this review.

104.5 Additional Data Required

No additional data is requested to support this conditional registration

107 Conclusions

107.1 Environmental Fate and Toxicology Acknowdedgement

The EAB review of C. Fletcher dated 7/22/82 was cited in Section 102 of this review.

107.3 Environmental Hazards Labeling

The environmental hazards precautionary statement section should be updated to read:

"Do not apply directly to water or wetlands"

107.7 Summary

EEB has completed an incremental risk assessment (3(c)(7) finding) of the proposed conditional registration of Poast for use on peanuts, sugarbeets, and sunflowers. Based upon the available data, EEB concludes that the proposal provides for a significant increase in exposure but not in risk to nontarget organisms. A potential new exposure may result for Orcuttia mucronata, an endangered grass species in Solano County, California.

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