195180
RECORD NO.

109801
SHAUGHNESSY NO.

REVIEW NO.

EEB REVIEW

DATE: IN 08/20/87 OUT 10-22-87

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PETITION OR EXP. PERMIT NO. 5G3525

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

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. L. Rossi (21)

PRODUCT NAME(S) Rovral

COMPANY NAME Rhone-Poulenc, Inc.

SUBMISSION PURPOSE Proposed EUP for Use on Stored Corn Grain

SHAUGHNESSY NO.	CHEMICAL & FORMULATION	% A.I.
109801	Rovral (Iprodione)	50.0

Pesticide Name

100.0 Submission Purpose and Label Information

100.1 Submission Purpose and Pesticide Use

Proposed EUP for use of Rovral on stored corn grain to control Penicillium, Fusarium, Aspergillus, and Nigrospora in commercial bins/silos.

Objectives

The major objectives of this program are to obtain:

1. Efficacy and phytotoxicity data for Rovral applied to storage corn using commercial equipment, and

2. Residue samples from storage corn treated with Rovral using commercial equipment.

100.2 Formulation Information

ACTIVE INGREDIENT:	
Iprodione: 3-(3,5-dichlorophenyl)-N-(1-methyl-ethyl)-2,4-dioxo-1-imidazolidinecarboxamide . . .	50.0%
INERT INGREDIENTS:	50.0%

100.3 Application Methods, Directions, Rates

CORN GRAIN (IN STORAGE)

DISEASE	DOSAGE RATE	HOW AND WHEN TO USE
Aspergillus spp. Penicillium spp.	Apply Rovral at 4 to 8 oz of product per 100 bushels of corn using 300 to 400 oz of water.	Apply Rovral as a single application per the following schedules: Ambient Air (low temperature) Drying - Harvest corn at 25% moisture or less - Treat corn immediately with Rovral - Turn on fan immediately and achieve 1 CFM air flow

CORN GRAIN (IN STORAGE) (cont'd)

DISEASE	DOSAGE RATE	HOW AND WHEN TO USE
Aspergillus spp. Penicillium spp.		- Continue to dry until corn moisture is 16%. Combination Drying (heated and ambient air) - Harvest corn at 25% moisture or less - Use heat to dry corn to 18% moisture - Apply Rovral to corn after drying - Turn on fan immediately and achieve 0.5-0.1 CFM air flow - Continue drying until corn moisture is 16%. Rovral must be used in conjunction with good cultural practices designed to minimize conditions conducive to storage rots (Aspergillus and Penicillium). Excessive moisture and/or seed coat damage may reduce the effectiveness of Rovral.

100.3.1 Explanation To Justify the Quantity of Rovral Requested

The information in Item G.2 shows the following:

- A total of 72,030 bushels will be treated with Rovral.
- The tests will have a maximum of 1 application. Therefore,

  72,000 bushels x 20 ppm x 1 application = 174.45 lb
  30 bushels x 40 ppm x 1 application = 0.15 lb

- The total Rovral required will be 174.5 lb + 20% = 218.0 lb.

100.3.2

STATES AND AMOUNT OF PESTICIDE TO BE USED (G.2)

State	Rovral (ppm) ai	Number of Tests	Total Bushels	Number of Applications	Total Pounds
IA	20	1	8000	1	19.38
	40		5	1	0.02
IN	20	1	8000	1	19.38
	40		5	1	0.02
IL	20	2	16,000	1	38.77
	40		10	1	0.05
OH	20	1	8000	1	19.38
	40		5	1	0.02
MN	20	1	8000	1	19.38
MD	20	1	8000	1	19.38
NE	20	1	8000	1	19.38
	40		5	1	0.02
WI	20	1	8000	1	19.38
			72,030		174.56
					+ 20% extra
					218.00 lb

20 ppm = 1.1 gram product/bushel.
40 ppm = 2.2 gram product/bushel.

100.3.3 Program Details

Target Pest	Penicillium, Fusarium, Aspergillus, and Nigrospora
Crop	Corn (storage)
Sites	Commercial Bins/Silos
Major Geographical Areas	See Item G.2

Desired Months for Application to Begin	September
Use Pattern	One (1) application as corn is placed in storage.
Plot Size	8000 bushels for 20 ppm 5 bushels for 40 ppm
Number of Replications	None: The plots will be divided into at least 4 subplots for evaluation
Dosage Rates	20 and 40 ppm/bushel
Methods of Application	Commercial Application Equipment
Season of Use	September
Timing of Applications	As corn is placed in storage.

100.3.4 Proposed Suitable Duration for the Permit Program

A duration of 1 year should be adequate to evaluate Rovral on storage corn.

100.4 Target Organisms

Penicillium, Fusarium, Aspergillus, and Nigrospora fungus.

100.5 Precautionary Labeling

This pesticide is toxic to invertebrates. Do not contaminate water by cleaning of equipment of disposal of wastes.

100.6.0 Toxicological Properties (See review by J. Tice dated July 6, 1978)

Acute Toxicity

1. Mammal

Rat Acute Oral LD_{50} 3700 mg/kg (Technical)
Rat Acute Oral LD_{50} 12,500 mg/kg (50% WP)

2. Bird, Avian Acute LD_{50}

Bobwhite Quail 930 mg/kg (Core)
Mallard Duck 10,400 mg/kg (Supplemental)

3. Fish, Fish Acute 96-Hour LC_{50}

Rainbow Trout 6.70 ppm (Core)
Bluegill Sunfish 2.25 ppm (Core)
Channel Catfish 2.63 ppm (Core)

4. Aquatic Invertebrate Acute Toxicity--LC_{50}

Daphnia pulex 4.0 ppm (Supplemental)
D. magna 0.43 ppm (Core)
D. magna 7.2 ppm (Core)

100.6.1 Subacute Toxicity

Avian Subacute Dietary LC_{50}

Bobwhite Quail 9200 ppm (Core)
Mallard Ducks > 20,000 ppm (Core)

100.7 Behavior in the Environment (See review by J. Tice dated July 6, 1978)

The following information was abstracted from the environmental chemistry review of R.F. Carsel dated October 16, 1978. For further information see the environmental safety review by G.L. Garvin dated March 21, 1977.

Water

1. Half-life in water is:

pH 3	Stable
pH 6	≅ 20 days
pH 9	1 day

Degradates are more stable than parent product at pH 6 and 9.

2. Photodegradation in water

Half-life of RP 26019 was reported to be between 72 and 187 hours.

101.0 Hazard Assesssment

101.1 Discussion

The proposed EUP is for use of Rovral on stored corn grain in commercial bins/silos to control fungus (Penicillium, Fusarium, Aspergillus, and Nigrospora). Rovral will be applied at the rate of 4 to 8 oz of product per 100 bushels of corn using 300 to 400 oz of water. A treatment of 20 ppm = 1.1 g product/ bushel and a 40 ppm treatment = 2.2 g product/bushel. This experiment will be conducted in eight diffferent States using a total of 72,030 bushels of corn and (174.56 + 20% extra) 218.0 lb of product.

101.2 Likelihood of Adverse Effects to Nontarget Organisms

Based on available data, the proposed EUP for use of Rovral should provide for minimal acute hazard to both terrestrial wildlife species and aquatic organisms due to lack of exposure. Corn grain will be treated with Rovral as it is placed in storage. The only exposure of treated grain to nontarget terrestrial wildlife species will be through spill, which is very unlikely from a commercial operation. Most commercial storage operations take place inside or under cover with good spill control.

For operations that will allow spilled grain to be exposed to terrestrial wildlife, exposure will be as follows:

Application rate = 8 oz/100 bushels

- 40 ppm per bushel (2.2 g of product/bushel)
- 72 lb of shelled corn/bushel
- 3 grains of corn/g
- 3 x 453.45 = 1360 grains/lb of corn
- 1360 grains x 72 lb = 97,920 grains/bushel of shelled corn
- 97,920 grains/bushel x 100 = 97,920,000 grains
- 16 oz = 1.0 lb

- 453.4 g = 1.0 lb
- $\frac{453.4\ g}{16\ oz}$ = 28.3 g/oz
- 2 8.3 g/oz x 8 oz = 226 g/100 bushels of corn x 50% WP = 113 g/bushel
- 113 g x 1000 = 113,000 mg/100 bushels of shelled corn
- $\frac{113{,}000\ mg}{97{,}920{,}000\ grains}$ = 0.0115 mg/grain

- $\frac{930\ mg/kg}{0.0115\ mg}$ (bobwhite quail LD_{50} value) = 80,870 grains

  Therefore, it takes 80,870 grains of corn to produce an LD_{50} for bobwhite quail.

  An adult (170 g) bobwhite usually consumes 8.8% of its body weight/day (14.9 g) in food.

Bobwhite quail can only consume 44.7 grains (14.9 g x 3 grains per g = 44.7) per day, but the bird must consume 80,870 grairs per day in order to prduce an LD_{50}. Therefore, there is no acute hazard to bird.

101.3 Endangered Species Considerations

The proposed EUP for use of Rovral on stored corn grain should provide for minimal acute hazard to both nontarget terrestrial wildlife species and aquatic organisms.

101.4 Adequacy of Toxicity Data

No data were submitted with this submission. However, there are sufficient data in EEB's files from previous submissions to support this EUP (see reviews under EPA File Symbols or Registration Nos. 359-AIU, 359-AIL, Report No. 33434 and 34385; most of these studies were conducted in 1978).

101.5 Adequacy of Labeling

The labeling should include:

This pesticide is toxic to invertebrates. Do not contaminate water by cleaning of equipment or disposal of wastes.

102.0 Conclusions

EEB has reviewed the proposed EUP for use of Rovral on stored corn grain in commercial bins/silos to control fungus (Pencillium, Fusarium, Aspergillus, and Nigrospora).

Based on the available data, use pattern, and EEC calculations, Rovral should provide for minimal acute hazard to both terrestrial wildlife species and aquatic organisms for the following reasons:

1. Most of commercial grain treatment operations take place indoors;

2. No exposure to nontarget organisms is anticipated; and

3. Use is restricted to a single application.

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