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EEB REVIEW

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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) RH-0611; (Myclobutanil/Mancozeb)

COMPANY NAME Rohm & Haas

SUBMISSION PURPOSE Proposed EUP on Apples

SHAUGHNESSY NO.	CHEMICAL & FORMULATION	% A.I.
128857/014504	Mancozeb/Myclobutanil	60/2.25

EEB REVIEW

Pesticide Name: RH-0611 (Myclobutanil/Mancozeb)

100.0 Submission Purpose and Label Information

100.1 Submission Purpose and Pesticide Use

Rohm & Haas Company has applied for an experimental use permit (EUP) to apply RH-0611 Fungicide on apples.

100.1.1 Proposed EUP Program

100.1.1.1 Objective

1. To confirm product performance when applied in standard grower spray schedules and equipment.

2. To define optimum use rates, application timing, and number of applications required for disease control and maximum fruit quality.

3. To provide opportunities to define and demonstrate product performance characteristics for Rohm & Haas Company Sales and Marketing personnel, agricultural chemical dealers and distributors, University and Cooperative Extension Service personnel.

100.1.1.2 Date/Duration

January 1988 to March 1989 (15 months).

100.2 Formulation Information

ACTIVE INGREDIENTS:

Myclobutanil

α-butyl-α-(4-chlorophenyl)-1H-1,2,4-triazole-1-propanenitrile. 2.25%

Mancozeb

A coordination product of zinc ion and manganese ethylene bisdithiocarbamate 60.0%

In which the ingredients are

Manganese + + ...	12.0
Zinc + + ...	1.5
Ethylene bisdithiocarbamate ion ($C_4H_6N_2S_4$) .	46.5

INERT INGREDIENTS:	37.75
TOTAL	100.00%

100.3 Application Methods, Directions, Rates

FOR DISEASE CONTROL ON APPLES

RH-0611 is a systemic curative and protectant fungicide product. Best control of labeled diseases is achieved when the fungicide is applied on a 7- to 10-day schedule.

Use recommendations are based on dilute sprays with a 400 gallon per acre basis.

Disease	Lb RH-0611 per 100 gal	Use Recommendations	Restrictions
Scab Prebloom	1 1/2 to 2	Begin applications at green tip. During periods favorable for primary scab development, use high rate and a 7-day application schedule.	Do not apply within 21 days in Arkansas, Delaware, Illinois, Indiana, Kansas, Kentucky, Maryland, Missouri, New Jersey, North Carolina, Ohio, Pennsylvania, South Caroline, Tennessee, Virginia, and West Virginia, or within 30 days of harvest in other States not mentioned above.
Postbloom	1 1/2 to 2		
Postinfection	2	RH-0611 fungicide has 96 hours of "kick-back" or curative activity. Apply as soon as possible after an infection period. Follow with standard protectant spray schedule.	Do not apply more than 80 pounds product per acre per season.

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Disease	Lb RH-0611 per 100 gal	Use Recommendations	Restrictions
Powdery Mildew	2	Begin applications at tight cluster and continue on a 7- to 10-day schedule through the second cover spray. Additional sprays beyond second cover may be needed on susceptible varieties or under heavy disease pressure.	Do not graze livestock in treated areas or feed cover crops grown in treated areas of livestock.
Rusts	1 1/2	Begin applications at green tip and continue through the second cover spray.	
Summer Diseases	1 1/2	FOR USE ON FRESH MARKET APPLES ONLY	

100.4 Geographical Distribution and Amounts

Region	State	No. Trials	Acres	Total Lb ai myclobutanil	Total Lb ai mancozeb
Northeast and Southeast	Connecticut	1	5	10	266.7
	Georgia	2	10	20	533.3
	Maine	1	5	10	266.7
	Maryland	2	10	20	533.3
	Massachusetts	2	10	20	533.3
	New Jersey	2	10	20	533.3
	New York	4	20	40	1066.8
	North Carolina	3	15	30	780.0
	Pennsylvania	4	20	40	1066.8
	South Carolina	2	10	20	533.3
	Virginia	4	20	40	1066.8
	West Virginia	3	15	30	780.0
	TOTAL	30	150	300	7960.3

Region	State	No. Trials	Acres	Total Lb ai myclobutanil	Total Lb ai mancozeb
Midwest and Southwest	Arkansas	2	5	10	266.6
	Illinois	2	10	20	533.3
	Indiana	2	10	20	533.3
	Michigan	3	15	30	780.0
	Missouri	2	10	20	533.3
	Ohio	2	10	20	533.3
	Tennessee	2	10	20	533.3
	Wisconsin	2	10	20	533.3
	Total	17	80	160	4266.4
Intermountain and West	California	2	10	20	533.3
	Oregon	2	10	20	533.3
	Washington	2	10	20	533.3
	Total	6	30	60	1599.9
	Grand Total	53	260	520	13826.6

Total Treated Acres	Pounds Product	Pounds ai Mancozeb	Pounds ai Myclobutanil
260	23,044	13,826.6	520

100.5 Target Organisms

Bitter rot
Black rot
Brown rot
Fly speck
Sooty blotch

100.6 Precautionary Labeling

Environmental Hazards

This product is toxic to fish. Do not apply directly to water or wetlands. Do not contaminate water by cleaning of equipment or disposal of wastes. Do not apply when weather conditions favor drift or runoff from areas treated.

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101.0 Hazard Assessment

101.1 Discussion

Approximately 53 grower trials are required to meet the objectives of the EUP program. The average size of a large scale test will be five acres and will consist of varied product dosages and application timings which will be compared to standard grower treatments. Each test will represent a statistically sound experimental design, including an equal size and number of replicated test blocks (minimum of 3 replicates per treatment and grower's standard treatment). A total of 260 acres will be involved in the program and will require the application of a maximum of 520 pounds active (myclobutanil) ingredient (ai). Specific growers and field locations will be reported as part of the EUP program.

101.2 Likelihood of Adverse Effects to Nontarget Organisms

Terrestrial

1. Mancozeb

Mancozeb is considered "slightly toxic" to "practically nontoxic" to avian species on an acute oral basis. EEB only has avian multiple-dose and LD_{50} studies available indicating the LD_{50}s for the English house sparrow and mallard duck are 1500 mg/kg and > 6400 mg/kg, respectively. A memorandum from EEB to Rohm & Haas (Pilsucki 1987) explains that the multiple dosing over a period of time exceeds the duration of the dietary study and therefore is a more severe test of a chemical's toxicity than a dietary test. Therefore, EEB's requirement for dietary testing on avian species has been satisfied.

2. Myclobutanil

Myclobutanil is considered "slightly toxic" to avian species on an acute oral basis with an LD_{50} value of 510 mg/kg. Myclobutanil is considered "practically nontoxic" to avian species on a dietary basis with LC_{50} values for both bobwhite and mallard of greater than 5000 ppm.

Aquatic

1. Mancozeb

Mancozeb is considered "moderately toxic" to both warmwater and coldwater fish with LC_{50} value of 1.35 ppm to bluegill and a 48-hour LC_{50} for rainbow trout of 1.9 ppm.

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No data are available on aquatic invertebrates.

Residues

Terrestrial

With a maximum application rate of 1.2 lb/ai/A of mancozeb and 0.05 lb/ai/A of myclobutanil, the following maximum residues are expected:

	Myclobutanil		Mancozeb		RH-0611
Short Grass	12 ppm	+	288 ppm	=	300 ppm
Long Grass	6 ppm	+	132 ppm	=	138 ppm
Leafy Crops	6 ppm	+	150 ppm	=	156 ppm
Forage/Alfalfa	3 ppm	+	70 ppm	=	73 ppm
Seeds	0.6 ppm	+	14 ppm	=	14.6 ppm
Fruit	0.4 ppm	+	8 ppm	=	8.4 ppm

These residues are well below the avian toxicity values. EEB feels there is minimum chance of acute hazard to avian species with this EUP.

Aquatic

The estimated environmental concentration (EEC) for RH-0611 was calculated using mancozeb because of mancozeb's higher aquatic toxicity and the higher rate of application in the combination product of RH-0611 (mancozeb 60% myclobutanil 2.25%). The EEC was determined to be 15 ppb (see Attachment A). This exposure value provides a safety value of ninetyfold. Therefore, EEB feels there is minimum chance of hazard to aquatic organisms with this EUP.

101.3 Endangered Species

The EEC's for endangered species do not reach the aquatic organisms (1/20 the LC_{50}) or terrestrials (1/10 the LC_{50}) concern levels. EEB feels there is low potential for hazard to aquatic or terrestrial endangered species with this EUP.

101.4 Adequacy of Toxicity Data

The toxicity data available to EEB are adequate for this EUP.

In the event the registrant requests a full registration for this use, EEB will require the following data as previously stated as data gaps in the Ecological Effects Chapter of the Registration Standard for Mancozeb. Rationale for these tests are included in the November 17, 1986 Registration Standard.

1. Avian Reproduction (71-4).
2. Freshwater Fish LC_{50} (72-1).
3. Acute Aquatic Invertebrate (72-2).
4. Acute LC_{50} Estuarine and Marine Organisms (72-3).
5. Fish Early Life Stage and Aquatic Invertebrate Life Cycle (72-4).
6. Aquatic Organism Accumulation (72-6).

101.5 Adequacy of Labeling

For this EUP the labeling is adequate.

102.0 Conclusions

EEB has reviewed the proposed EUP for use of RH-0611 Fungicide on apples. Based on the available data, EEB concludes the proposed experimental use will not pose significant increased adverse effects to nontarget organisms or endangered species.

In the event the registrant requests a full registration for this use, EEB will require further aquatic and avian testing to determine the potential hazards to nontarget organisms (see 101.4 Adequacy of Toxicity Data).

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Attachment A

RH 0611 EEC CALCULATION SHEET

I. For foliar application

A. Runoff

1.2 lbs x 0.02 (2 % runoff) x 10 (A) (from 10 A. dranage basin) = 0.24 lb (tot. runoff)

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

Therefore, EEC = 61 ppb x 0.24 (lb) = 15 ppb

II. For aereal application

A. Runoff

_____ lbs x 0.6 (appl. efficiency) x 0.0 (__ % run-off) x 10 (A) (10 A. d. basin) = _____ lbs (tot. runoff)

B. Drift

_____ lbs x 0.05 (5 % drift) = _____ lb (tot. drift)

Tot. loading = _____ lb + _____ lb = _____ lbs

Therefore, EEC = 61 ppb x _____ (lbs) = _____ ppb