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123301
SHAUGHNESSY NO.

6
REVIEW NO.

EEB REVIEW

DATE: IN 7/2/85 OUT 7/15/85

FILE OR REG. NO. 359-706

PETITION OR EXP. PERMIT NO. 5F3267

DATE OF SUBMISSION 6/26/85

DATE RECEIVED BY HED 6/28/85

RD REQUESTED COMPLETION DATE 9/10/85

EEB ESTIMATED COMPLETION DATE 9/3/85

RD ACTION CODE/TYPE OF REVIEW 335/Amendment

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

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. H. Jacoby

PRODUCT NAME(S) Aliette

COMPANY NAME Rhone-Poulenc, Inc.

SUBMISSION PURPOSE Proposed registration of citrus use

SHAUGHNESSY NO.	CHEMICAL & FORMULATION	% A.I.
123301	Aluminium tris (O-ethyl	
	phosphonate)	80%
	Inert ingredients	20%

100 Submission Purpose and Label

100.1 Submission Purpose and Pesticide Use

Proposed registration of Aliette fungicide for use on citrus trees.

100.2 Formulation Information

Aluminium tris (O-ethyl phosphonate). 80%
Inerts. 20%

100.3 Application Methods, Directions, Rates

(from Aliette label)

Citrus (Bearing) (In all areas except California)

Apply Aliette using ground equipment in accordance with the directions in the following table:

Disease	Dosage Rate lbs Product/Acre	Gallons per Acre	Spray Schedule
Phytophthora foot and root rot	5.0	100-250	Apply as a foliar spray at each leaf flush (March, May, July, and September) Do not exceed 4 applications per year. Do not apply within 90 days of harvest.

100.4 Target Organism

Phytophthora foot and root rot.

100.5 Precautionary Labeling

Environmental Hazards - Do not apply directly to water or wetlands. Do not contaminate water by cleaning of equipment or disposal of wastes.

101 Hazard Assessment

This is a request for the foliar application of Aliette to citrus trees. An application rate of 4 lbs active ingredient per acre is requested on the label. Four applications per year are requested. Use would not be permitted in the State of California.

101.2 Likelihood of Adverse Effects to Nontarget Organisms

Exposure

Application of fosetyl-Al at the maximum suggested rate of 4 lbs active ingredient per acre provides for the following maximum expected residues. Estimates were derived using the methods of Hoerger and Kenaga (1972) and Kenaga (1973):

Vegetation Type/Insect/ Soil Surface	Expected Concentrations from 4.0 lbs ai/A (ppm)
Sparse foliage (short grasses)	960
Long grasses	440
Leafy situations	500
Dense foliage	323
Pods/seeds/large insects	48
Fruits	28
Soil (.1 inch)	882

Estuarine species are expected to be exposed to fosetyl-Al under the proposed use. As noted in a prior review (Mclane, 1984), the Florida coastal counties of Indian River, St. Lucie, Martin, Pasco, and Hillsborough each have 25,000 to 10,000 acres of commercial citrus. Much of this acreage borders highly productive and ecologically fragile estuarine regions, notably, the Indian River lagoon and Tampa Bay. It is, therefore, likely that estuarine species would be exposed to some level of contaminant if Aliette is used on citrus.

To estimate the aquatic environmental concentration of Aliette that could be expected from runoff, the following method was used: (This calculation derives EEC from a 1-acre drainage basin running into a 1-acre body of water 1-half foot deep).

Assumptions:

1. Maximum application rate = 4 lbs ai/A.
2. Drainage basin = 1 A.
3. Percent runoff = 5%.
4. Surface area = 1 A.
5. Average depth = .5 ft (6 inches).

$$EEC = \frac{\text{(Maximum application rate) (size of drainage basin) (\% runoff)}}{\text{(Surface area of body of water) (Average depth) } (ft^2/acre) \text{ (lbs water/} ft^3)}$$

$$EEC = \frac{\text{(4 lbs ai/acre) 1.0 acres) (.05\% runoff)}}{\text{(1 acre) (.5 ft) (43560 } ft^2/acre) \text{ (62.3 lbs water/} ft^3)}$$

EEC = .148 ppm

Because Aliette is an extremely water soluble fungicide, the assumption of 5 percent runoff is justified. Water bodies adjacent to citrus groves could be expected to receive contamination from spray drift as well as runoff. To estimate spray drift contamination, the following method was used. Spray application of pesticide on citrus using conventional methods at a rate of 10 lbs ai/acre has been determined to result in mean contaminant levels of 140 ppb in adjacent water bodies (Nigg et al., 1984).

Assuming a linear relationship between water contam^ination from spray drift and application rate, the EEC of Aliette in water from spray drift would be 56 ppb or .056 ppm. The combined effects of runoff and spray drift could therefore be expected to produce surface water contamination of .204 ppm. This estimate assumes a worst case scenario in which spray drift and runoff would occur immediately after application.

This calculation does not take into consideration the effect of aerobic microbial degradation of fosetyl-Al. As noted in a prior review (McLane, 1984), the half-life of fosetyl-Al under aerobic conditions in loamy sand, silt loam, and clay soil is 1 to 1.5 hours. In sandy loam soil the half-life is even shorter, only 20 minutes. Runoff contribution to the contamination of aquatic ecosystems is therefore expected to be minimal.

The estimated aquatic environmental concentration of Aliette derived above (.204 ppm) does not exceed the LC_{50}'s of marine and freshwater species tested:

Species	Test	Results
Rainbow trout	LC_{50}	> 5.8 ppm (51.4-111.8 ppm)
Bluegill sunfish	LC_{50}	> 150 < 200 mg/l
Sheepshead minnow	LC_{50}	120 ppm (49-160 ppm)
Oyster embryolarvae (Crassostrea virginica)	EC_{50}	1.9 ppm (1.7-2.0 ppm)

The EC_{50} calculated for oyster larvae is 9.3 times greater than the worst case environmental concentration of .204 part per million. Only under conditions of immediate and severe runoff would aquatic concentrations be expected to approach this level. This proposed use of Aliette does not therefore appear to present an acute hazard to marine or freshwater aquatic species.

The proposed use of aliette does not appear to present an acute hazard to birds and small mammals. Expected residue levels on foliage are well below acute toxicity levels.

101.3 Endangered Species Consideration

No potential adverse effect on endangered species is expected to result from the proposed use of Aliette because of rapid bacterial degradation (half-life 1.5 hrs) in soil. Although the endangered species trigger (a EEC $\geq$ 1/10 LC50) is exceeded for oyster larvae, it is not expected that aquatic residues could approach this level, except under conditions of immediate and extreme runoff. The compound would be degraded in soil prior to entering aquatic systems.

101.4 Adequacy of Toxicity Data

The toxicity data provided are adequate for this use.

101.5 Adequacy of Labeling

The proposed label is acceptable.

102 Classification

The toxicity data indicate that the general use category of classification may be applied.

103 Conclusion

EEB has completed a full risk assessment (3(c)(5) finding) of the proposed registration of Aliette for use on citrus. Based upon the available data and use information, EEB concludes that the use on citrus provides for minimal hazards to nontarget organisms.

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REFERENCES

McLane, D. (1984) EEB Review of the Fungicide Aliette for use on Citrus. U.S. EPA, Ecological Effects Branch/Hazard Evaluation Division, Washington.

Nigg, H.N.; Stamper, J.H.; Queen, R.M.; Knapp, J.L. (1984) Fish Mortality Following Application of Phenthoate to Florida Citrus. Bull. Environ. Contam. Toxicol (1984) 32:587-596.