1-18-83

113501
SHAUGHNESSEY NO.

REVIEW NO.

EEB BRANCH REVIEW

DATE: IN 11-19-82 OUT 1/18/83

FILE OR REG. NO. 100-607

PETITION OR EXP. PERMIT NO.

DATE OF SUBMISSION 11-3-82

DATE RECEIVED BY HED 11-18-82

RD REQUESTED COMPLETION DATE 2-3-83

EEB ESTIMATED COMPLETION DATE 1-27-83

RD ACTION CODE/TYPE OF REVIEW 335/Amendment

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

DATE ACCESSION NO(S).

PRODUCT MANAGER NO. H. JACOBY (21)

PRODUCT NAME(S) Ridomil 2E

COMPANY NAME Ciba-Geigy

SUBMISSION PURPOSE Proposed conditional Registration of Bearing Citrus Use

SHAUHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
113501	Metalaxyl	

(1) ~~208~~

100 Pesticide Label Information

100.1 Pesticide Use

Fungicide to control the Oomycete class of fungi on bearing citrus.

100.2 Formulation Information

A.I. - N - (2,6-dimethylphenyl)-N-(methoxyacetyl) alanine methyl ester - - - - - - - - - - 25.11%
Inert Ingredients - - - - - - - - - - - - - - - - 74.89%

Ridomil 2E contains 2 lb. active ingredient (metalaxyl) per gallon.

100.3 Application Methods, Direction, Rates

Soil Application (Control of Phytophthora foot and root rot) - Apply 2-4 lb A.I. Ridomil per acre of treated soil (0.75-1.5 oz. A.I. per 1000 sq. ft.) in a banded surface spray under the canopy of the trees. Two additional applications may be made per year. Use the table as a guide for treating individual trees.

Diameter of Tree Canopy (Ft.)	Oz. A.I. Ridomil 2E per 10 Trees
5	0.14 - 0.29
10	0.58 - 1.16
15	1.3 - 2.6
20	2.3 - 4.6

Trunk Spray (Gummosis caused by Phytophthora spp.) - Add 2 2/3 to 4 oz. A.I. Ridomil 2E to one quart of water and spray the surface of the trunks using enough spray to thoroughly wet the lesions. Up to 3 applications per year may be made.

Note: Trunk sprays for use only in Texas, California and Arizona.

100.4 Target Organisms

Phytophthora spp. fungi

100.5 Precautionary Labeling

Environmental Hazards

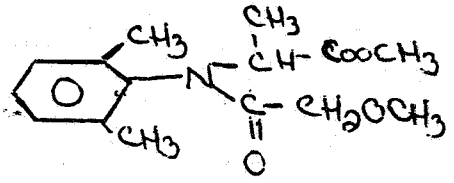
Do not apply directly to water. Apply only as specified on this label. Do not apply when weather conditions favor drift from treated areas. Do not contaminate water by cleaning of equipment or disposal of wastes.

101 Physical and Chemical Properties

101.1 Chemical Name

N-(2,6-dimethylphenyl)-N-(methoxyacetyl) alanine methyl ester

101.2 Structural Formula



101.3 Common Name

Metalaxyl

101.4 Trade Name

Ridomil

101.5 Molecular Weight

279.34

101.6 Physical State

White to beige, odorless crystals

101.7 Solubility

(Temperature unknown)

Water	0.7%
Methanol	65%
Benzene	55%
Hexane	0.9%
Methylene chloride	75%
Isopropanol	.27%

102 Behavior in the Environment

Refer to Registration Standard, December 1981, for more details.

102.1 Soil

Metalaxyl is stable to soil surface hydrolysis under normal environmental conditions. Under aerobic conditions, the half-life in soil is about 7 weeks. The only degradation product is CGA-62826 which degrades to non-extractable material and Co_2. Under anaerobic conditions the half-life is about 9 weeks. Soil microbes contribute to the degradation process. Under field conditions the half-life is about 2 weeks.

Metalaxyl leaches readily in sandy soils low in organic content. Leaching decreases as the organic matter content in the soil increases. Soil adsorption is minor.

102.2 Water

Metalaxyl appears to be resistant to hydrolysis under "normal" environmental conditions (pH, temperature). Under test conditions at pH 5, 7 and 9 and at 20-30°C the half-life is greater than 4 weeks.

The chemical photodegrades in water; the half-life is one week.

Ground water contamination is possible because of metalaxyl's strong potential to leach in sandy soils.

102.3 Plant

Metalaxyl is a systemic fungicide having a specific mode of action for control of the Oomycete class of fungi.

The rotational crop data support a rotational crop restriction of one application per season.

102.4 Animal

Exposure of fish to the parent compound or soil aged residues will not result in accumulation values above 10 X in the whole fish. Metalaxyl readily depurates within 14 days.

103 Toxicological Properties

From Registration Standard, December 1981.

103.1 References from Toxicology Branch

Organism	Test	Result
Rat	Oral LD_{50}	669 mg/kg
Rabbit	Dermal LD_{50}	>6000 mg/kg
Rat	Dermal LD_{50}	>3170 mg/kg
Rat	90-day dietary	NOEL = 250 ppm
Rat	3-generation reproduction	NOEL = 1250 ppm for reproductive and teratologic parameters.

103.2 Minimum Requirements

Organism	Test	Result
Mallard	A.O. LD_{50}	1466 mg/kg
Mallard	Dietary	>10000 ppm
Bobwhite	Dietary	>10000 ppm
Rainbow trout	96-h LC_{50}	>100 ppm
Bluegill	96-h LC_{50}	>100 ppm
Daphnia magna	48-h LC_{50}	28 ppm

All the above studies were conducted with technical metalaxyl and are core. The following studies were conducted with formulated EC metalaxyl (27.9% A.I.).

Daphnia magna	48-h LC_{50}	12.5 ppm
Bluegill	96-h LC_{50}	27 ppm
Rainbow trout	96-h LC_{50}	18.4 ppm

103.3 Additional Aquatic Studies

Organism	Study	Test Chemical	Result
Daphnia magna	life-cycle	Tech., 90. 1% A.I.	minimum threshold conc. between 1.2 and 2.7 mg/l
Sheepshead minnow	embryo-larvae	Tech., 90.1% A.I.	minimum threshold conc. to eggs and fry >9.1 mg/l

104 Hazard Assessment

104.1 Discussion

Ridomil 2E is a systemic fungicide that controls the Oomycete class of fungi. It is currently registered for use on tobacco, cotton, avocados, conifers in nurseries, certain vegetable crops and non-bearing citrus.

5

It is to be applied to bearing citrus at the rate of 2-4 lb A.I. per acre for the soil appliction. There may be three applications per year. It may also be sprayed on the trunks of trees to the point of runoff.

104.2 Likelihood of Adverse Effects to Non-Target Organisms

Immediately after are application of 4 lb A.I. pre acre the followings residues may be found on vegetation:

Vegetation Type	Upper Limit (ppm)	Typical Limit (ppm)
Short rangegrass	950	500
Long rangegrass	440	368
Leaves	500	140
Forage small insects	230	132
Seeds, large insects	49	12
Fruits	28	6

(From: Kenaga, "Factors to be Considered in the Evaluation of the Toxicity of Pesticides to the Birds in Their Environment").

Metalaxyl is not expected to cause a hazard to birds due to low avian toxicity.

The acute oral data for mammals is 669 mg/kg. Based upon a food consumption of 10% of the body weight the LD_{50} value is equivalent to a dietary toxicity value of 6690 ppm. Since the typical residues on vegetation immediately after application are less than 1/5 the calculated LC_{50} value metalaxyl is not expected to present an acute hazard to mammals.

A 90-day dietary no-effect level for mammals is 250 ppm. Kenaga's paper indicates that 6 weeks after application the upper limit of residues would range from 6 ppm on fruit to 120 ppm on short grasses. The typical limit would range from < 1 ppm on fruits to 20 ppm on short grasses. There can be a total of three applications per year which, according to the directions for non-bearing citrus, would be three months apart. There are no data regarding metalaxyl's half-life on vegetation, but it is two weeks in soil under field conditions. If it is assumed that the half-life on vegetation is also two weeks, then residues on short grass would degrade from a typical limit of 500 ppm to 0.067 ppm after 90 days. (Calculated with EEB's accumulated residues program). Therefore it is unlikely that there will be a chronic hazard to mammals exposed to metalaxyl.

Immediately following a direct application to 6 inches of water, metalaxyl residues would be 2.94 ppm. This is less than 1/10 the LC_{50} values for freshwater fish but not for Daphnia. There could be an acute hazard to freshwater invertebrates if they were directly exposed to metalaxyl.

Based upon the EEC scenario for citrus in the EEB file 5% runoff after an application of 4 lb A.I. per acre would yield 0.735 ppm residues in a 2 acre pond. This residue level is not significantly hazardous to aquatic organisms.

Metalaxyl is readily leached in sandy soils, which are characteristic of citrus areas. Metalaxyl could reach aquatic environments through ground water contamination. According to the Registration Standard EFB has requested a long-term monitoring study. Chronic effects can be better assessed after the results of this study are analyzed.

104.3 Endangered Species Considerations

The EUP review for bearing citrus stated that the Salt Marsh Harvest Mouse found in marshes around San Francisco Bay and the Morro Bay Kangaroo Rat found on the southside of Morro Bay in California may be affected by the use of metalaxyl. However, the data in the previous section indicate that metalaxyl does not present a mammalian hazard, either chronically or acutely. Therefore this use of metalaxyl is not expected to adversely affect these two endangered species.

107 Conclusions

107.1 Environmental Hazards Labeling

The label for Ridomil 2E should be amended to read:

"Do not apply directly to waters or wetlands. Do not contaminate water by cleaning of equipment or disposal of wastes."

107.2 Recommendations

The Ecological Effects Branch has completed an incremental risk assessment [3(c)(7) Finding] of the proposed conditional registration of Ridomil 2E for use on bearing citrus. Based upon the available data EEB concludes that the proposed use provides for no significant increase in exposure or risks to nontarget organisms.

Ann Stavola 1/20/83
Ann Stavola,
Aquatic Biologist
Ecological Effects Branch, HED

David Coppage 1/20/83
David Coppage
Section Head
Ecological Effects Branch, HED

Norman Cook for CB 1.24.83
Clayton Bushong
Branch Chief
Ecological Effects Branch, HED

7 ZH

108 Amendment to the EEB Review of Ridomil 2E

108.1 Reason for Amendment

Since a Registration Standard has been issued for metalaxyl and all the fish and wildlife data requirements have been fulfilled, this submission is for a full registration, not a conditional registration.

109 Conclusions

109.1 Environmental Hazards Labeling

The label for Ridomil 2E should be amended to read:

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

109.2 Recommendations

The Ecological Effects Branch has completed a full risk assessment [3(c)(5) finding] of the proposed registration of Ridomil 2E for use on bearing citrus. Based upon the available data and use information EEB concludes that the proposed use provides for minimal hazards to nontarget organisms.

Ann Stavola 1/27/83
Ann Stavola,
Aquatic Biologist
Ecological Effects Branch, HED

David Coppage 1/27/83
David Coppage
Section Head
Ecological Effects Branch, HED

1/27/83
Clayton Bushong
Branch Chief
Ecological Effects Branch, HED

8 ~~215~~