

US EPA ARCHIVE DOCUMENT

237513, 237514, 237515
Record No.

Review No.

113501
Shaughnessey No.

EEB REVIEW

10/12/89

DATE: IN 3.13.89 OUT _____

FILE OR REG. NO. 100-601, 607, 629

PETITION OR EXP. NO. 9F3698

DATE OF SUBMISSION 10.4.88

DATE RECEIVED BY EFED 3.9.89

RD REQUESTED COMPLETION DATA 5.5.89

EEB ESTIMATED COMPLETION DATE 5.5.89

RD ACTION CODE/TYPE OF REVIEW 230, 305

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

DATA ACCESSION NO(S). _____

PRODUCT MANAGER NO. ~~L. Rossi (21)~~ PM 21

PRODUCT NAME(S) Metalaxyl Products

COMPANY NAME CIBA-GEIGY

SUBMISSION PURPOSE Proposed registration of use on root and
tuber crops (Ridomil 2E) and Carrots (Ridomil MZ58)

SHAUGHNESSEY NO.	CHEMICAL AND FORMULATION	% A.I.
_____	<u>Metalaxyl</u>	_____
_____	<u>Metalaxyl/Mancozeb</u>	_____
_____	_____	_____

ECOLOGICAL EFFECTS BRANCH REVIEW

100.1 SUBMISSION PURPOSE AND PESTICIDE USE

CIBA-GEIGY Corporation has requested a Section 3 registration for the use of Ridomil 2E on root and tuber crops including, but not limited to, artichoke, beet (sugar and table), carrot, cassava, chicory, ginger, ginseng, horseradish, parsnip, potato, radish, rutabaga, salsify, sweet potato, turnip, and yams. In addition, a Section 3 registration is requested for the use of Ridomil MZ58 on carrots.

100.2 FORMULATION INFORMATION (excerpted from label)

Ridomil 2E

Active Ingredient

Metalaxyl	25.1%
Inerts	74.9%

Ridomil MZ58

Active Ingredients

Metalaxyl	10.0%
Ethylene bisdithiocarbamate	48.0%
Inerts	42.0%

100.3 APPLICATION METHODS, DIRECTIONS, RATES (excerpted from submission request)

Applications may be made preplant incorporated or as a surface or foliar spray after planting. For preplant incorporated application apply 1-2 lbs. ai of metalaxyl (Ridomil 2E) per treated acre as a broadcast soil application and incorporate in the top two inches of soil. Surface applications should be made at the rate of 1-2 lb. ai of metalaxyl per treated acre at planting. If natural rainfall is not expected before the seeds start germinating, metalaxyl should be incorporated mechanically before planting or moved into the seed zone after planting with 1/2-1 inch sprinkler irrigation.

For foliar application apply 0.87-1.16 lbs. ai of mancozeb/metalaxyl (Ridomil MZ58) per acre as a foliar spray. Begin applications when conditions are favorable for disease, but before infection, and continue at 14-day intervals until the threat of disease is over. Under heavy disease pressure, use the higher rate of mancozeb/metalaxyl. Do not make more than four foliar applications of mancozeb/metalaxyl per season. Do not exceed a total of 2.8 lbs. ai of metalaxyl.

100.4 TARGET ORGANISMS

Downy mildew, late blight and other diseases caused by Pythium and Phytophthora spp.

101.0 HAZARD ASSESSMENT

101.1 DISCUSSION

Mancozeb is currently registered for use on carrots. EEB is unable to assess the combined risks of mancozeb plus metalaxyl because there has been no study of the possible toxic properties of the formulated product. Therefore, this review will focus on the possible effects resulting from exposure to metalaxyl.

101.2 EFFECTS ON NON-TARGET SPECIES

Terrestrial Species

Acute toxicity studies have shown that metalaxyl is, at most, only slightly toxic to mammals (rat LD50 = 669 mg/kg) and birds (mallard duck LD50= 1,466 mg/kg). Avian subacute dietary studies have shown that the LD50 exceeds 10,000 mg/kg for both mallard ducks and bobwhite quail.

Ridomil 2E would be applied at the time of seeding and Ridomil MZ58 during growth of the crop. CIBA-GEIGY conducted 25 field residue trials in nine states. Representative members of root and tuber crops were treated with one application of Ridomil 2E at 2.0 lbs. ai/acre plus four foliar applications of Ridomil MZ58 at 1.16 lbs. ai/acre totaling 2.8 lbs. ai/acre of metalaxyl. The maximum metalaxyl residues found in the tops and roots or mature tubers were 13 and .035 ppm respectively. Unfortunately, the CIBA-GEIGY report does not specify application intervals or sampling periods. These reports have not been verified by EPA but, if valid, they suggest low levels of metalaxyl in root and tuber tissues.

The subacute dietary LC50s are much greater than the residues expected from the proposed application rate and no adverse effects to avian or mammalian species are expected. In addition, there is little concern for adverse chronic effects because the half-life of metalaxyl under field conditions is short (approximately two weeks.)

Aquatic Species

Available studies suggest that technical grade metalaxyl is practically non-toxic to freshwater fish. The 96 hour LC50 for rainbow trout and bluegill sunfish ranged from 130 to 150 ppm. The formulated product was slightly toxic with 96 hour EC50s of 18.4 and 27 ppm for rainbow trout and bluegill sunfish respectively.

Three studies of the acute toxicity of technical grade metalaxyl to Daphnia magna yielded LC50s of 28 to 121 ppm. One study using the formulated product reported an acute toxicity of 12.5 ppm. Thus, metalaxyl is only slightly toxic to this species.

To date there has only been one study of the chronic toxicity of technical grade metalaxyl to Daphnia magna. LeBlanc (1980) reported a minimum threshold concentration between 1.2 mg/l and 2.7 mg/l. These data indicate that metalaxyl may be chronically toxic to freshwater invertebrates at concentrations greater than 1.2 ppm.

Direct application of the pesticide to a pond or other water body exemplifies a "worst case" situation for exposure to aquatic species. Assuming an application rate of 2 lbs. ai/acre applied directly to a one acre pond, the resulting concentration would range from 244 ppb in a three-foot deep water body to 122 ppb in a six-foot deep pond. These concentrations are considerably less than the LC50 for aquatic organisms with either technical grade metalaxyl or formulated product and thus would not be expected to adversely affect those species.

Metalaxyl shows no evidence of significant bioaccumulation and would not be expected to present a long-term risk in the aquatic environment.

101.3 ENDANGERED SPECIES CONSIDERATION

The proposed use of Ridomil 2E on root and tuber crops and Ridomil MZ58 on carrots does not represent a hazard to endangered terrestrial or aquatic species. Estimated environmental concentrations are significantly below the LC50 of the most sensitive species tested. The threatened/endangered species triggers have not been exceeded.

101.4 ADEQUACY OF THE TOXICITY DATA

The available toxicity database was adequate to conduct a hazard assessment of this registration request.

101.5 ADEQUACY OF LABELING

EEB is providing the following statements for possible incorporation into supplementary labeling:

"Do not apply directly to water or wetlands (swamps, bogs, marshes and potholes). Do not contaminate water when disposing of equipment washwater or rinsate."

102 CONCLUSIONS

EEB has evaluated this proposed Section 3 registration for the use of Ridomil 2E on root and tuber vegetables and the use of Ridomil MZ58 on carrots. It is concluded that these use will not adversely affect non-target species.

Clyde R. Houseknecht, Biologist
Ecological Effects Branch
Environmental Fate and Effects Division

Clyde Houseknecht 10/11/89

Henry T. Craven, Head, Section 4
Ecological Effects Branch
Environmental Fate and Effects Division

Henry T. Craven
10/12/89

James W. Akerman, Chief
Ecological Effects Branch
Environmental Fate and Effects Division

James W. Akerman 10/12/89