Date Out: EFB: June 19, 1981

To: **Product Manager** 21 Jacoby
TS-767

From **Dr. Willa Garner**
Chief, Review Section No. 1
Environmental Fate Branch

Attached please find the environmental fate review of:

Reg./File No.: 100-607

Chemical: Metalaxyl

Type Product: Fungicide

Product Name: Ridomil

Company Name: Ciba-Geigy

Submission Purpose: Use on conifer nurseries for control of root rot

ZBB Code: 3(c)(7)

Date in: 4/9/81

Date Completed: June 19, 1981

Deferrals To:

____ **Ecological Effects Branch**

____ **Residue Chemistry Branch**

X **Toxicology Branch**

ACTION CODE: 315

EFB # 809

TAIS (level II)	**Days**
63	4.5

~~286~~
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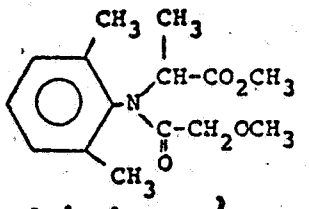
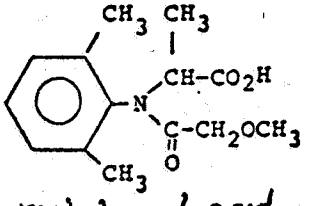
1. INTRODUCTION

1.1 Ridomil (Ciby-Geigy) funigicide has the active ingredient metalaxyl, or N-(2,6-dimethylphenyl)-N-methoxyacetyl) alanine methylester, or Ciba-Geigy's nomemenclature CGA 48988. The structure of metalaxyl and the acid metabolite of metalaxyl are as follows:



metalaxyl

CGA-48988



metalaxyl acid metabolite

CGA-62826

1.2 An adequate GC method of analysis exists for metalaxyl (reviewed in 2/26/79 memo. S. Creeger to Product Manager Wilson) and its acid metabolite (see pg 2 for structure).

1.3 The purpose of the present submission is for an admendment to the present approved label to include use on soils of conifer (frazer and douglas firs, junipers, umbrella and montery pines, white cedars, etc.) nursuries to control Phytophthora root rot. Ciby-Geigy claims that Ridomil (metalaxyl) soil treaments reduce the number of propagules in seedlings with consequent increases in tree height and trunk diameters.
Although tree nurseries are grown in many different soil types, modern nurseries are usually located in well-drained sandy or sandy-loam soils. These soils provide the best growth conditions with minimum salts accumulation and therfore minimum reworking of nursery soils (personal communication with B. Gillespie, Forest Management, USDA, 6/11/81)

1.4 Current registered uses of the fungicide Ridomil are for tobbaco, nonbearing citrus, ornamentals, and turf.

1.5 A recent review (memo, J.W. Holder, EFB, 6/15/81) by EFB has been completed on Ridomil treatments on wheat and soybean soils, cottonseed, and vegetable crop soils (broccoli, cabbage, cauliflower, cucumbers lettuce, onions, potatoes, spinach, tomatoes, and melons). Generally, it was concluded in that review that on-going soil and well water monitoring studies should be completed before Ridomil uses on these crops are considered for permanent registation. In the interim, Ridomil was recommended for conditional registration. Further, EFB defered to TOX as to necessity of monitoring for the acid metabolite of metalaxyl.

1.5 The environmental fate of Ridomil has been reviewed by S. Creeger 2/26/79. The environmental fate was summarized in that memo as follows:

Environmental Profile

Under conditions likely to be found in the environment, Ridomil will be stable to hydrolysis and soil surface photolysis. In soil, under aerobic conditions, Ridomil can be expected to degrade with a halflife of about 7 weeks with the acid product, CGA-62826, being the principle product, which in turn will break down to non-extractable material and CO_2. Under anaerobic soil conditions Ridomil also will break down, but with a halflife of about 9 weeks with CGA-62826 again being the major product but persisting longer than under aerobic conditions. Ridomil is stable in sterile soil, indicating soil microbes contribute to its breakdown under non-sterile conditions.

Ridomil and its aged soil residues are highly mobile via leaching in sandy soils low in organic matter but loss of Ridomil due to volatilization is not expected. Also, soil adsorption of Ridomil is minor, as supported by its high leachability.

Under field conditions, the fate of Ridomil in soil is similar to that under lab conditions as described above except for the shorter halflife of two weeks under field conditions.

1.6 A complete set of environmental fate data has been submitted by the registrant in accordance with 1978 guidelines. These data were reviewed by EFB (memo 2/26/79) and it was concluded that:

The following data requirements have been met and will support additional uses of Ridomil:

- hydrolysis
- photolysis (soil surface)
- aerobic soil metabolism
- anaerobic soil metabolism
- effects by microbes
- leaching and aged leaching
- adsorption/desorption
- field dissipation

Directions for Use

2.0 The proposed uses for the systemic fungicide Ridomil 2E on confer soils are:

1.) Apply 2 1/2 pints (0.625 lbs metalaxyl) per 50 gals. H_2O/acre of seedlings or plug plantings once in the Spring and once in the Fall. Total annual application = 1.25 lbs./acre/yr.

2.) Apply 5 pints (1.25 lbs. metalaxyl) per 50 gals. H_2O/acre of 2-0 transplants once in the Spring and once in the Fall. Total annual application = 2.50 lbs./acre/yr.

3.0 Discussion of Data

No new data was submitted with this submission from Ciby-Geigy.

4.0 Conclusions

4.1 From the review of Ridomil of 2/26/79, EFB finds the environmental fate data requirements have been adequately satisfied in accordance with the 1978 guidelines. EFB defers to TOX as to relavence of the neccesity of the same data on the principle acid metabolite of metalaxyl (CGB62826).

4.2 Ridomil is highly mobile in soils especially in sandy soils of low organic matter content (see EFB Ridomil File for numerous reviews on this topic).

4.3 Because of the soil mobility Ridomil has been monitored at Suwanee County, Florida, Indian River, Florida, and a tobacco site in Maryland. The Indian River and Maryland sites are still being monitored for soil and well water contamination of Ridomil. EFB has concluded that these studies should be continued (S. Malak, 5/26/81).

4.4 No metalaxyl, or the acid metabolite, were found in Suwanee County Florida in soil or well water. No metalaxyl (acid metabolite not determined) was found in Maryland soil or well water (memo., J. Reinert 1/12/81). The results from the worst case site at Indian River, Florida are forthcoming and have not been reviewed yet.

EFB continues to express reasonable concern of the mobility of Ridomil in soils especially in sandy, low organic content soils. Although the aforementioned studies have not shown Ridomil contamination of well water to date, it is concievable that (given enough time) Ridomil would finally contaminate well waters. This being a distinct possibility, the final decision as to the permanent registration of Ridomil will necessarily depend on the results, and review of those results, of the Indian River soil and water studies.

4.5 Considerable amounts of Ridomil could enter the cropland soils in the U.S. [see section 3.4 of EFB memo of 6/15/81, J.W. Holder]. If it is assumed that Ridomil will be used on only 10% of the crops for which registration is sought, then 16.6×10^6 lbs Ridomil could be applied to U.S. soils. Because of the number of crops, and especially large acreage field crops such as soybeans and wheat, the need for fully understanding the leaching of Ridomil and any possible contamination of ground water thereby, is clear.

Approximately 10,000 acres of seedlings and transplants are currently planted in in the U.S. (Gillespi, Forest Mgt.,USDA). If the amount applied of 1.25 lbs/acre/yr. is multiplied by 10,000 acres, then the amount of Ridomil is U.S. soils from this source is 1,250 lbs. of metalaxyl. This forest use is a potential source of ground water contamination of Ridomil because of the strong leaching properties of Ridomil. However, the amount 1,250 lbs. is inconsequential compared to the amounts possible from the cropland sources described in the 6/15/81 memo (J. Holder). EFB concludes that due to the comparitively small acerage involved in forest conifer nursery use, the incremental exposure does not seem to be a problem at this time especially in light of considerations made above in section 4.4.

4.6 A precautionary note should be added to section 4.5 conclusions. Although the incremental exposure from conifer uses is small in terms of lbs. of metalaxyl/acre, the type of soil most often used (see section 1.3) for conifer nurseries (sandy and sandy loam soils) is the types of soils in which Ridomil has shown the highest leaching characteristics. Thus, if the Indian River studies (sandy soil) show positive ground water samples then it may be expected the 1,250 lbs. applied to nursery soil will also contaminate forest ground waters.

5.0 Recommendations

5.1 EFB recomends for the permanent registration of Ridomil uses on the soils of of conifer nurseries in the U.S. be contigent on the results and consequent review of the Indian River, Florida soil and ground water studies.

5.2 Should the Indian River studies not show any ground water contamination then EFB recommends for permanent registration Ridomil in conifer nursery soils.

Should the Indian River studies show ground water contamination, EFB recommends against permanent registration for conifer nursery uses of Ridomil.

In the interim, EFB recommends for conditional registration of Ridomil in conifer nurseries until such time the Indian River studies are completed to the Agency's satisfaction.

5.3 EFB defers to TOX as to the importance of the acid metabolite of metalaxyl (CGA-62826) and the necessity of constructing on environmental fate profile for the acid metabolite CGA-62826.

EFB observes that the acid metabolite CGA-62826 should be more water soluble than the parent compound and therefore may be a stronger leacher than the parent compound unless the acid metabolite binds to soil constituents stronger than the parent compound.

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