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REVIEW NO.

EEB REVIEW

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SRRD/RD **ACTION** CODE/TYPE OF REVIEW 706 EUP EXT

MRID #(S)

DP TYPE 001 SUBMISSION RELATED DATA PACKAGE

PRODUCT MANAGER, NO. JOANNE MILLER 23 STEVEN ROBBINS

PRODUCT NAME(S) CIMECTACARB, CGA-163935, PRIMO

TYPE PRODUCT TURF GROWTH REGULATOR

COMPANY NAME CIBA GEIGY

SUBMISSION PURPOSE REVIEW PROPOSED EUP EXTENSION REQUREST

COMMON CHEMICAL NAME

REVIEWER: MIKE DAVY

Ecological Effects Branch Review

Chemical: Cimectacarb (CGA-163935), Product: Primo or Vision Turf Growth Regulator

100 **Submission and Purpose and Label Information**

100.1 **Submission Purpose and Pesticide Use**

The registrant (Ciba-Geigy) "is requesting a renewal for expanded acreage under EUP for 1992 totalling 2800 acres of turf and 4050 pounds of active ingredients for the two subject products." Under the EUP the registrant will "evaluate the efficacy of CGA-163935 and collect turfgrass tolerance to CGA-163935, susceptibility to environmental factors and pests, duration of growth retardation and capability of commercial application equipment." This EUP is submitted under D171357.

100.2 **Formulation Information**

Primo Product
Active Ingredient:
Cimectacarb.....12.0%
Inert Ingredients.....88.0%

Vision Product
Active Ingredient:
Cimectacarb.....22.8%
Inert Ingredients.....77.2%

Primo is an emulsifiable concentrate containing 1 lbs. active ingredient per gallon. Vision is an emulsifiable concentrate containing 2 lbs. active ingredient per gallon.

100.3 **Application Methods, Directions, Rates**

1. States, amounts, acreage

The EUP would allow application of cimectacarb to "turf sites such as roadside (including highways), cemeteries, parks, industrial parks, institutional grounds, airports" as Vision product and to "well maintained quality turfgrass areas such as residential and commercial lawns, golf courses, sod farms, and similar areas" as Primo product.

This testing will be conducted in 38 states. No information was provided as to what states and counties the EUP will be under. This EUP extension will total 2800 acres of turf and 4050 pounds of active ingredients.

2. Directions for application

Primo Product

Rate of application for warm-season and cool-season turfgrasses range from a 0.0875 lb ai/A to 0.6875 lb ai/A, to be applied with multiple applications at a minimum of every 2 weeks up to a maximum of 2.675 lb ai/A per year.

Vision Product

Rate of application for warm-season and cool-season turfgrasses range from a 0.0375 lb ai/A to 0.75 lb ai/A, to be applied with multiple applications at a minimum of every 8 weeks up to a maximum of 2.675 lb ai/A per year.

Label indicates that application would be by ground equipment (broadcast spray and hand applicator).

100.4 **Target Organisms**

Target organisms include warm-season turfgrasses of bahiagrass, bermudagrass, centipedegrass, St. Augustinegrass, and zoysia and the cool-season turfgrasses of bentgrass, Kentucky bluegrass, fescues and ryegrasses.

100.5 **Precautionary Labeling**

Environmental Hazards

"Do not apply directly to water or wetlands. Do not contaminate water when disposing of equipment washwaters. Do not apply when weather conditions favor drift or runoff from areas treated."

101 **Hazard Assessment**

101.1 **Discussion**

The fate data from Environmental Fate and Groundwater Branch (EFGWB) reveals hydrolysis at pH 5 and 7 is stable and at pH 8 t1/2= 8 to 14 hrs.; aerobic soil metabolism t1/2= 8 hrs.; anaerobic soil metabolism t1/2= 25 days; field dissipation t1/2= 1.4 days in top 6" sandy loam soil; photolysis t1/2= 8 hrs at pH 5 and 14-16 hrs at pH 7; leaching and adsorption studies show cimectacarb is relativity mobile in sandy, loam and sandy loam soils (Kd= 1.5,0.67 and 0.66 respectively)but immobile in clay soils (Kd=17.7). Cimectacarb seems to be persistence in anaerobic soil but degrades rapidly in aerobic soil, light and water and dissipates readily. This compound does not bioaccumulate in fish.

Terrestrial exposure of Primo

Below are the maximum expected residues (ppm) on vegetation immediately after one application of 0.69 lb. ai/A (based on Hoerger and Kenaga, 1972).

range grass	grass	leaves & leafy crop	forage crop & insect	pods with seeds	grain	fruits
166	76	86	40	8	7	5

Terrestrial exposure of Vision

Below are the maximum expected residues (ppm) on vegetation immediately after one application of 0.75 lb. ai/A (based on Hoerger and Kenaga, 1972).

range grass	grass	leaves & leafy crop	forage crop & insect	pods with seeds	grain	fruits
180	83	94	44	9	8	5

Aquatic exposure

Aquatic exposure will occur via runoff from ground application. Assuming a 5% runoff (solubility = 10.2 in pH 5.5 and 21.1 in pH 8.2) from a 10 acre drainage basin, the water concentration in an adjacent 1 acre field 6 feet deep could be **22.9 ppb (0.023 ppm)** (10A x 0.75 lb ai/A x 5% x 61 ppb). In 6 inches of water, the concentration could be **275 ppb (0.275 ppm)**.

Terrestrial Plants

Assuming that the product Vision was applied to 1 acre field by ground equipment and a 5% runoff occurs, the concentration in an adjacent 1 acre field could be **0.038** lb ai/A (1A x 0.75 lb ai/A x 5%).

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101.2 **Likelihood of Adverse Effects to Nontarget Organisms**

Avian Species

D. McLane indicates in 1/8/91 EEB Review that "the avian data indicates low toxicity. The bobwhite quail LD_{50} was >2000 mg/kg or practically non-toxic. The lowest dietary LC_{50} was for the bobwhite quail of >5200 ppm which indicates a practically nontoxic chemical. Therefore the potential for adverse effects is minimal."

Mammalian Species

No data available on mammalian species in Tox Branch one-liners.

Fish and Aquatic Invertebrates

Fish and aquatic invertebrate toxicity tests show LC_{50}= 65.7 ppm for trout, the most sensitive species. A direct application of 2.68 lb ai/A (maximum yearly rate) to water produces an EEC of 1.97 ppm in 6 inches of water. It appears that cimectacarb will have minimal adverse effects on fish and aquatic invertebrates.

Aquatic Plants

The Ecological Effects Branch (EEB) has reviewed the aquatic plant data that was submitted for section 3 registration under D164969. The most sensitive species is Anabaena flos-aqua with an EC_{50} of 0.35 ppm. The aquatic EEC described in section 101.1 of this review is 0.275 ppm in 6 inches of water and 0.023 ppm in 6 feet of water. It appears that aquatic plants may have minimal adverse effects from cimectacarb runoff.

Terrestrial Plants

EEB has reviewed the seed germination and seedling emergence studies that were submitted for section 3 registration under D164969. In the seedling emergence study, the most sensitive species was lettuce which had an EC_{50} value of 0.220 ppm for dry weight. The EEC scenario in section 101.1 of this review shows EEC=0.038 ppm. Although this study is supplemental, it appears that terrestrial plants may have minimal adverse effects from the use of cimectacarb.

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101.3 **Endangered Species Considerations**

The available data were sufficient to assess acute hazards to non-target organisms in the EUP.

The endangered species triggers are as follows:

Birds: ..... 520 ppm (LC_{50} >5200/10)
Mammals:..... no available information
Fish: ..... 3.29 ppm (LC_{50} 65.7 ppm/20)
Aquatic Invertebrates: 7.12 ppm (LC_{50} >142.5 ppm/20)
Aquatic Plants: .....0.35 ppm (EC_{50} 0.35 ppm)
Terrestrial Plants.....0.22 ppm (EC_{25} 0.220 ppm).

EEC Summary

Aquatic EEC= 0.275 ppm in 6 inches and 0.023 ppm in 6 feet.
Terrestrial EEC= 180 ppm range grass (Vision).
EEC runoff for terrestrial plants= 0.038 ppm.

Information for determination of hazard to mammals is currently not available. Therefore hazard to endangered mammals can not be determined at this moment.

The maximum estimated residues on terrestrial food items (180 ppm) do not exceed 1/10th the lowest avian LC_{50}'s. Therefore minimal adverse effects are anticipated for birds.

The aquatic EEC (0.275 ppm) in water adjacent to treated areas does not exceed the endangered aquatic invertebrates and fish triggers. Minimal adverse effects are anticipated for aquatic invertebrates and fish.

The aquatic EEC in water adjacent to treated areas does not exceed the EC_{50} for aquatic plants. Therefore, minimal adverse effects are anticipated for endangered aquatic plants.

The EEC (0.023 ppm) from runoff in treated areas to terrestrial plants do not exceed the triggers for endangered plants from studies that currently meet the guidelines. However, information is not complete for determining hazards to terrestrial plants. Since information on terrestrial plants are incomplete, EEB cannot at this time determine if cimectacarb may have adverse effects on terrestrial plants.

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101.4 **Adequacy of Data**

The available data were sufficient to assess acute hazards to nontarget organisms for this EUP, except that mammal data are lacking.

Eight studies were submitted by Ciba-Geigy for review under the current EPA guidelines for section 3 registration under D164969. The following table indicates the status of all submitted studies:

Study type		MRID#	Category
71-1	Oral Toxicity to Mallard	415639-01	Core
71-2	Dietary toxicity to Mallard	415639-03	Core
71-2	Dietary Toxicity to Bobwhite	415639-02	Core
72-1	Acute Toxicity to Rainbow Trout	415639-05	Core
72-1	Acute Toxicity to Bluegill Sunfish	415639-04	Core
72-2	Toxicity to Daphnia magna	415639-06	Core
123-1	Seed Germination	418695-30	core
123-1	Seedling Emergence	418695-29	supplemental
123-1	Vegetative Growth	418695-31	core
123-2	Growth & Reproduction of Aquatic Plant		
	(Selenastrum capricornutum)	418695-36	invalid
	(Anabaena flos-aqua)	418695-35	core
	(Skeletonema costatum)	418695-33	core
	(Lemna gibba)	418695-32	supplemental
	(Navicula pelliculosa)	418695-34	core

For registration under section 3, the following studies are currently outstanding:

71-4 Avian Reproduction Studies (2 species) because of multiple use of cimectacarb per season

72-3 Acute Toxicity to Estuarine/Marine Organisms (3 species) because of cimectacarb is for non-cropland use and multiple applications of cimectacarb.

123-1 Cabbage in seedling emergence studies because cimectacarb is a plant growth regulator.

123-2 Aquatic plant studies for Selenastrum capricornutum and Lemna gibba because cimectacarb is a plant growth regulator.

141-1 Acute Toxicity to Honey Bee because of exposure to bees is anticipated.

In addition to the above, further data for registration under section 3 may be required depending on the results of the above and their impact on non-target organism: e.g. aquatic and terrestrial field studies.

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101.5 **Adequacy of Labeling**

Labeling is not adequate. The Environmental Hazard Statement must read:

> "Do not apply directly to water, areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters."

Active ingredient should also be labeled as pounds per gallon.

103 **Conclusion**

EEB has completed a risk assessment of cimectacarb (CGA-163935) and has determined that birds, aquatic invertebrates, plants and fish will have minimal adverse effects from the use of this chemical under the conditions of the EUP. Effects to mammals could not be assessed.

EEB **can not** fully evaluate the potential risk to endangered species of plants because we do not have sufficient information on plants. Thus far it appears that there may be minimal adverse effects on plants.

See section 101.4 for status of data requirements.

Michael Davy, Agronomist Michael Davy 2/28/92
Ecological Effects Branch
Environmental Fate and Effects Division

Daniel Rieder, Head Section 3 Daniel Rieder 3-3-92
Ecological Effects Branch
Environmental Fate and Effects Division

Douglas J. Urban, Acting Branch Chief Douglas J. Urban 3/2/92
Ecological Effects Branch
Environmental Fate and Effects Division

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