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Date Out EFB: JAN 18 1985

Tim Gardner/Heyward  
Product Manager 17  
Registration Division  
TS-767



Samuel M. Creeger, Chief  
Review Section No. 1  
Exposure Assessment Branch  
Hazard Evaluation Division

Requested please find the environmental fate review of:

File No.: 100-EUO-IT

Chemical: Cyromazine

Product: Insecticide Growth Regulator

Product Name: Armor

Company Name: Ciba-Geigy

Registration Purpose: EUP for use on mushrooms

Date: 11/20/84

ACTION CODE: 710

Completed: 1/18/85

EFB # 5100

TAIS (level II) Days

Referred To: 52 1.5

Ecological Effects Branch

Residue Chemistry Branch

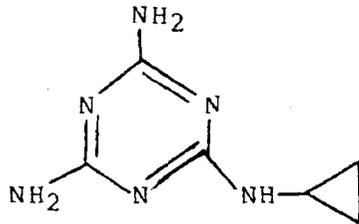
Toxicology Branch

0 CHEMICAL

Common name: Cyromazine (CGA-72662)

Chemical name: N-Cyclopropyl-1,3,5-triazine-2,4,6-triamine

Chemical structure:



Trade Name: Armor™ Insect Growth Regulator

Formulation: Armor™ contains 0.42 lb active ingredient per gallon.

0 TEST MATERIAL

Studies reviewed here were conducted with uniformly ring-labeled <sup>14</sup>C-cyromazine (when position of label is identified).

0 ACTION

Application for an experimental use permit (EUP).

0 STUDY IDENTIFICATION

The following studies will be considered in supporting this application:

1 Hydrolysis: Hydrolysis of CGA-72662 Under Laboratory Conditions. N. Burkhard, May 10, 1979, Ciba-Geigy Project Report 17/79, Acc. No. 070914, Reference 5.

2 Aerobic soil metabolism: Soil/Manure Metabolism of <sup>14</sup>C- CGA-72662. J. A. Caplan. October 13, 1981. BRL Project 22-201-224A. PP 2F2702, FAP 2H5355. Acc. No. 070914, Reference 10.

3 Leaching: Leaching Characteristics of Aged <sup>14</sup>C-CGA-72662 Residues in Two Standard Soils. N. Burkhard. April 11, 1980, Ciba-Geigy Project Report 14/80. Acc. No 070914. Reference 7.

Section B

Section A

Section B

Section C

Section D

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Leaching: Leaching Model Study with the Insecticide/Larvicide CGA-72662 in Four Different Soils. J. A. Guth. March 31, 1980. Ciba-Geigy Project Report 13/80. Acc. No. 070915. Reference 27.

Leaching: Adsorption and Desorption of CGA-72662 (Vetrazin) in Various Soil Types. N. Burkhard. October 13, 1981. Ciba-Geigy Project Report No. 32-81. Acc. No. 070914. Reference 9.

Fish Accumulation: Accumulation and Elimination of  $^{14}\text{C}$  Residues in Bluegill Sunfish (Lepomis macrochirus) Exposed to  $^{14}\text{C}$ -CGA-72662. December, 1980. EG + G Bionomics Report for Ciba-Geigy No. BW-80-12-805. Acc. No. 070914. Reference 2.

REVIEWED BY

Clinton Fletcher, Chemist  
Review Section 1  
Exposure Assessment Branch  
Hazard Evaluation Division

Signature:



Date:

1/18/85

APPROVED BY

Samuel Creeger, Section Head  
Review Section 1  
Exposure Assessment Branch  
Hazard Evaluation Division

Signature:



Date:

JAN 18 1985

CONCLUSIONS

1 Data considered in this review were evaluated in the EAB review dated 10/1/82 and are included in this review in summary.

2 Hydrolysis: Cyromazine does not hydrolyze in buffered solutions at pH 5, 7, or 9 maintained at 30-70°C for 28 days. Cyromazine is stable to hydrolysis.

This data requirement has been satisfied for the proposed use.

2 Aerobic soil metabolism: In a loam soil/chicken manure mixture (1:1) maintained under aerobic conditions, cyromazine had a half-life of 493 days (16 months). The only degradation product found was melamine (which did not further degrade). Binding of residues to soil particles increased with time.

In the soil/manure mixture, cyromazine and its degradation product, melamine, appear to be persistent in soil maintained under aerobic conditions (and also under anaerobic and aerobic/sterile conditions).

This data requirement has been satisfied for the proposed use.

Leaching: Aged and unaged residues were mobile in slightly alkaline sand [pH 7.8, 2.2% organic matter (OM)]. Residues of both cyromazine and its degradation product, melamine, were found in the leachate (33% of applied  $^{14}\text{C}$ ). Also, aged and unaged residues are moderately mobile in silt loam soil. Unaged residues are moderately mobile in Lakeland (Florida) sand and sandy clay loam. The leachability of cyromazine residues appeared to correlate to soil pH and not % OM.

Cyromazine showed slight to moderate adsorption to soils. Freundlich K values ranged from 0.52 (in a sand soil, 2.2% organic matter) to 17 (in an organic soil, 22.9% organic matter) for adsorption and from 1.35 to 26.9 for desorption, generally increasing with increasing soil organic matter.

The unaged soil column study, by itself, is considered ancillary in that the soil columns were eluted by adding only 8 inches of water within 2 days. However, the soil adsorption study satisfies this data requirement for the proposed use.

This data requirement for leaching of aged residues has been satisfied for the proposed use.

Bioaccumulation: Cyromazine has little potential for bioaccumulation in bluegill sunfish. The highest residue found was 2.1 ppm, corresponding to a bioaccumulation factor of 2.5X, in non-edible tissue on day 1 of exposure. Bioaccumulation for all other residues were <1X. The depuration half-life was 3-7 days.

This data requirement has been satisfied for the proposed use.

#### RECOMMENDATION

Adequate data are available to define the environmental fate of cyromazine residues resulting from use under the proposed experimental program.

Cyromazine and its major degradation product, melamine, may persist in the soil environment. As such, they have a potential for leaching in alkaline soils and soils low in organic matter. However, binding of residues to soil particles may mitigate this potential. Cyromazine residues do not appear to have a potential for bioaccumulating in fish tissues.

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BACKGROUND

Ciba-Geigy has submitted an application for an experimental use permit (EUP) for evaluating Armor<sup>™</sup> Insecticide Growth regulator (cyromazine, as a. i) in sciarid fly control in mushroom culture.

See attached label for complete label directions. Briefly, apply Armor<sup>™</sup> at spawning in sufficient water for uniform distribution to the compost to give a concentration of 5 parts per million. Thoroughly incorporate with a spawning machine or similar equipment.

DISCUSSION OF INDIVIDUAL TESTS OR STUDIES

No additional data were submitted with the application. Data considered in this review were evaluated in EAB review dated 10/1/82. For complete details of the supporting studies, see the previous EAB review.

COMPLETION OF ONE-LINER

No additional information was submitted to add to the one-liner.

CBI APPENDIX

No CBI data are included in this review.