121301

Date Out EFB: FEB 05 1985

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

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

Attached please find the environmental fate review of:

Reg./File No.: 100-ALU

Chemical: Cyromazine

Type Product: Insecticide

Product Name: TRIGARD 75W

Company Name: Ciba-Geigy

Submission Purpose: Registration of new chemical for use on celery and lettuce

Date in: 11/20/84

Date Completed: 2/4/85

ACTION CODE: 101

EFB # 5099

TAIS (level II)	Days
31	1.5

Deferrals To:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

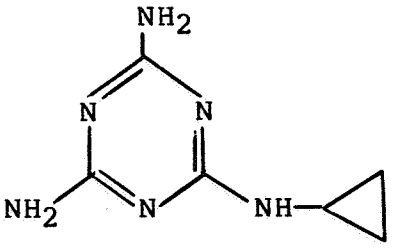
_____ Toxicology Branch

1.0 CHEMICAL

Common name: Cyromazine (CGA-72662)

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

Chemical structure:



Trade Name: Trigard™ 75W

Formulation: Trigard™ 75W is a wettable powder formulation. (Pound active ingredient per pound formulation is not listed.)

2.0 TEST MATERIAL

Studies reviewed here were conducted with uniformly ring-labeled ^{14}C-cyromazine (when position of label is identified).

3.0 ACTION

Application for registration of a new chemical for use on lettuce and celery.

4.0 STUDY IDENTIFICATION

The following studies will be considered in supporting this application:

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

4.2 Photolysis: Photolysis of CGA-72662 in Aqueous Solutions Under Artifical Sunlight Conditions. N. Burkhard, May 10, 1979, Ciba-Geigy Project Report 18/79, Acc. No. 070914, Reference 6.

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

4.4 Anaerobic soil metabolism: Included in reference in Section 4.3, above.

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

4.6 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.

4.7 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.

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

4.9 Metabolism of CGA-72662 in Celery and Subsequent Rotation Crops, B. Simoneaux and G. J. Marco, June 23, 1983, Ciba-Geigy Report No. ABR-83026, Acc. No. 073084

5.0 REVIEWED BY

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

Signature: Clinton Fletcher
Date: 2/4/85

6.0 APPROVED BY

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

Signature: Samuel M Creeger
Date: FEB 05 1985

7.0 CONCLUSIONS

7.1 Previously submitted data considered in this review were evaluated in the EAB reviews dated 10/1/82 and 8/11/83. The conclusions are included in this review in summary.

7.2 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.

7.3 Aqueous photolysis: Cyromazine does not photodegrade in aqueous solutions maintained at approximately pH 7 and 25°c for one week. However, cyromazine photodegrades with a half-life of 10 hours in aqueous solutions sensitized with 1% acetone. The degradate, melamine, was detected in the sensitized solution after 1 day of exposure.

This data requirement has been satisfied for the proposed use.

7.4 Soil photolysis: Cyromazine on soil surfaces does not photodegrade after being exposed to a xenon arc lamp for 24 hours. Since no significant differences occurred between exposed and covered soil, thermal decomposition and/or soil binding were the major routes of dissipation in this study.

This data requirement has been satisfied for the proposed use.

7.5 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

This data requirement has been partially satisfied for the proposed use. The submitted study used a loam soil/chicken manure mixture (1:1) which EAB does not consider a soil representative of the intended application site (muck soil). An additional aerobic soil metabolism study (in this case, using a muck soil representative) will be needed to support registration of cyromazine for the proposed use.

7.6 Anaerobic soil metabolism: (Continuation of study reported in Section 7.5, above) In a loam soil/chicken manure mixture (1:10 maintained under anaerobic conditions (after 30 days aerobic aging, cyromazine residues appear to degrade slowly. After 3 months incubation (2 months anaerobic), 84.2% of the residues were cyromazine, 2.5% melamine, 18.7% bound (uncharacterized) material and 11.9% uncharacterized (Total recovery: 119.9%).

This data requirement has been partially satisifed for the proposed use. The submitted study used a loam soil/chicken manure mixture, which EAB does not consider representative of

muck soil. An additional anaerobic soil metabolism study using a muck soil will be needed to satisfy the data requirement for the proposed use.

7.7 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}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 leaching data requirement for the proposed use.

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

7.8 Fish accumulation: 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.

7.9 Field dissipation: No data were submitted to satisfy this data requirement. In order to satisfy this data requirement, the registrant must submit a soil dissipation study wherein cyromazine is applied under typical use conditions and at the highest label rate following label directions.

7.10 Rotational crop Uptake: Radishes and sweet corn (the only crops commonly planted in rotation to lettuce and celery) will contain little or no detectable residues when planted 12 weeks after last application of cyromazine to muck soil.

This data requirement has been satisfied for the proposed use provided a restriction is added to the label prohibiting:

(1) the planting of rotational crops other than radishes and sweet corn and (2) the planting of radishes and sweet corn earlier than 12 weeks after last cyromazine application.

8.0 RECOMMENDATION

8.1 Adequate data are not available to define the environmental fate of cyromazine residues resulting from application to lettuce and celery. The following data requirements have not ben satisfied:

1. Aerobic soil metabolism study using a muck soil;

2. Anaerobic soil metabolism study using a muck soil;

3. Field dissipation study under actual field conditions (in this case, in a muck soil typical of where lettuce and celery are grown).

The registrant is directed to Subpart N of the Environmental Chemistry Guidelines for information on conducting these studies.

8.2 The label should bear a rotational crop restriction (1) against planting any rotational crop other than radishes and sweet corn in fields that have been treated with cyromazine from the proposed use. The label should also bear a restriction against planting radishes and sweet corn earlier than 12 weeks after last treatment of cyromazine.

If a shorter rotational crop interval for radishes and sweet corn is desired, an additional study must be submitted showing no residues are taken up within the shorter time period.

9.0 BACKGROUND

Ciba-Geigy has submitted an application for registration of TRIGARD™ 75W Insecticide (cyromazine, as a. i.) for use on lettuce and celery for leafminer control.

See attached label for complete label directions. Briefly, apply 0.125 lb ai/A as a foliar spray. Repeat applications at 7-day intervals or as necessary to maintain control. Do not make more than 12 applications to one crop of celery or 8 applications to one crop of lettuce.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES

No additional data were included in the current submission.

11.0 COMPLETION OF ONE-LINER

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

12.0 CBI APPENDIX

No CBI data are included in this review.