Shaughnessy No. 121301

		Date Out EAB:	JUL 26	
	Hutton/Mendelsohn Product Manager 17 Registration Division	11 0	1925	
	Patrick W. Holden, Ch Ground-Water Technolo Environmental Fate & Hank Jacoby, Acting C Environmental Fate &	gy Section Ground Water Bra hief	acolo	
Attac	ched please find the en	vironmental fate	review of:	
Reg./	File No.:			
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туре	Product: Herbicide	•		
Produ	ct Name: Trigard			
Compa	ny Name: <u>Ciba-Geigy</u> Co	ompany	<del></del>	
Pu rpo:	se: Response to meetir	ng with the regis	trant for cy	romazine on
ground	d-water monitoring stud	dy requirements.		
	ACTION CODE	4 00		
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Date (	Completed: <u>07-25-89</u>	Total	Review Time:	3.0 day
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Ionito	oring study voluntarily	conducted by re	gistrant: <u> </u>	_7
eferr	als To: Biolo	gical Effects Bra	anch	
	Scien	ce Integration a	nd Policy Sta	ff, EFED
	Non-D	ietary Exposure E	Branch, HED	

United States En

Ital Protection Agency

Office of side Programs
Wascis on, DC 20460

Data Review Record

Confidential Business Information - Does not contain

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Pack Number

Date Received

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United States Environment Protection Agency
Office of Perinade Programs
Washington, DC 20460

# **Data Review Record**

Confidential Business Information - Does not contain. National Security Information (E.O. 12065)

49522

Pack Number

Date Received

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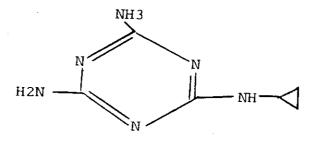
#### 1. Chemical:

Common name: Cyromazine, Armor

Chemical name: M-cyclopropy1-1,3,5 - Triazine-2,4,6 -

Triamine

Structure:



#### Test Material:

The test material was U-triazine-14C-CGA-72662 (NV-XIII-16; specific activity 16.6 uCi/mg). It was received from CIBA-GEIGY on February 22, 1984 and assigned Biospherics identification 84-E-016. Analytical standards of CGA-72662 (Code No. 65390; purity 96.5%) and melamine (Code No. 66285: purity 99%) were received from CIBA-GEIGY February 10, 1984, and given Biospherics identification 84-E-013 and -014. Standards of ammeline (GS-17791) and 2,4-diamino-6cyclopropylamino-1-methyl-1,3,5-triazinium chloride (GAN-II-48; methylcyromazine) were received from CIBA-GEIGY on March 6, 1985, and assigned Biospherics identifications 85-E-115 and -116, respectively. All standards were stored in a freezer at

<sup>14</sup>C-CGA-72662 (NV-XIII-16) was dissolved in pH 7.2 buffered water to provide a dosing stock at 1.07 mg/ml. The dosing solution was prepared and used on the date prepared. After use, all remaining dose stock was stored in a freezer at -

TLC standards were prepared at approximately 1 mg/ml in either water or methanol, depending on solubility.

#### 3. Study/Action:

This is a data submission on cyromazine. Included in this submission are data on the aerobic/anaerobic soil metabolism of cyromazine. These data were reviewed to determine if the studies are scientifically valid and satisfy the EFGWB requirements for aerobic/anaerobic soil metabolism.

### Study Identification:

SPONSOR:

CIBA-GEIGY Corporation

SPONSOR

REPRESENTATIVE: Dr. R. Honeycutt

STUDY DIRECTOR: William Spare April 3 - August 15, 1984

John Martinson August 15, 1984-December 20,

1985

Nancy Cargile December 20, 1985-present

PROTOCOL:

Soil Metabolism of CGA-72662, R.C.

Honeycutt, November 2, 1983 and Addendum

PROJECT NUMBER: 84-E-016

NOTEBOOK NUMBERS: 120, 136, 166, 223

DATE INITIATED: April 3, 1984

DATE COMPLETED: November 12, 1985

DATE ISSUED: March, 1986

5. Reviewed by:

Catherine Eiden, Acting Chief Environmental Chemistry Assessment Section Evironmental Fate and Ground Water Branch

6. Approved by:

> Anatrick Holden, Chief Ground-Water Technology Section Environmental Fate and Ground-Water Branch

7. Conclusions:

The aerobic/anaerobic soil metabolism studies partially fulfill the data requirements for environmental fate studies 162-1 and

The data submitted provide the EFGWB with the information noted as lacking previously. Specifically, for the aerobic study: the purity of the test substance (93%), and additional information on two degradates (ammeline and methyl cyromazine) other than melamine. There were up to three unknown (unidentified) compounds listed as degradates. the study period (365 days) one of these unknowns persisted at At the end of >10% of the application of cyromazine to sand muck soil incubated aerobically, and one of the unknowns persisted at 365 days >10% of the cyromazine application in the sand loam soil aerobically incubated. The registrant should explain why these compounds were not identified. Was the identification analysis not feasible?

Other than this the soil moisture content of the soils during

the experimental incubation was not reported. The registrant should report this.

Specifically, for the anaerobic study: the purity of the test substance (93%), poor materials balance, and no sampling at the 60-day interval. The material balance for the anaerobic studies are reasonable and acceptable, greater than 80% for all sampling intervals except the final sample (60-day) for the sand loam soil. Data for the 60-day interval were included.

#### 8. Recommendation:

- 1. The registrant must submit data on the soil moisture content of the soils during the study.
  - 2. The registrant must explain why the unidentified degradates in the aerobic portion of the study were not identified for the two compounds at > 10% of the cyromazine application of day 365.

These additional pieces of information should complete the study. Upon receipt of these data the study can be deemed fully acceptable.

#### 9. Background:

These data have been submitted to clarify and complete outstanding environmental fate data requirements for cyromazine, as well as ground-water monitoring requirements. Cyromazine is used as a larvacide in poultry, and an herbicide.

# 10. Duscussion of Individual Studies:

- A. Study Identification: (See No. 4.)
- B. Materials and methods (attached)
- C. Reported Results: (attached)

## D/E. Reviewer's Conclusions:

The metabolism of CGA-72 was investigated over twelve months under laboratory conditions in two soil types, sandy loam and sand (muck). The soils were treated with 10.7 ppm triazole 14C-CGA-72662 and incubated aerobically. After one month, a portion of the aged soil was made anaerobic by addition of water. A sterile soil control was incubated aerobically for three months. At intervals, water and emitted volatiles were analyzed for radioactive CGA-72662 and metabolites.

### Sterile Incubation:

The sterile incubations showed no significant degradation of CGA-72662 as analyzable compounds, but did show a significant increase in nonextractable residues. Most of the extractable radioactivity was characterized as parent compound.

## Aerobic Incubation:

- In sandy loam soil, CAG-72662 had a calculated half-life of 142 days with a rate constant of 0.0049. The major degradation product was characterized as melamine, based on TLC comparison to the standard. This product represented 3.1% of the theoretical dose as incubation and declined to 10.0% after 367 days of aerobic Nonextractable radioactivity increased from 7.8% to 43.3% at 367 days. Volatiles represented a maximum of 0.7% at 367 days, including apparently CO2, non polar materials.
- In sand (muck), CGA-72662 had a half life of 107 days with a rate constant of 0.0065. Apparent melamine residues increased from 0.7 to 4.1% at 92 days, declining to 2.0% at 12 months. Nonextractable radioactivity increased from 29.6 to 49.3% of theoretical dose. Volatiles represented a maximum of 3.4% of the applied dose at 92 days, primarily as CO<sub>2</sub>.

## Anaerobic Incubation:

During 61 days of anaerobic incubation, the radioactivity in the sandy loam soil characterized as CGA-72662 and melamine declined from 35.3 to 9.0% and from 31.1 to 2.3%, respectively, of the applied dose. Nonextractable soil residues increased from 23.2 to 52.5%. Radioactivity released into the supernatant water accounted for a maximum of 5.7% of the applied dose after 61 days. Volatile radioactivity was <0.1% of the dose.

During anaerobic incubation of the sand (muck) soil, CGA-72662 and melamine declined from 27.6 to 10.4% and from 1.8 to 0.5, respectively, of the theoretical dose. Nonextractable soil radioactivity increased from 62.6 to 78.6%. The water layer contained 1.5% of the dose. As in the sandy loam soil, volatiles represented <0.1% of the dose.

However, the registrant did not explain why degradates other than melamine were not identified, if they appeared at >10% of the original cyromazine application. This is clearly the case for two of the unknowns.

Degradation appears to be more rapid under anaerobic soil conditions than aerobic.

Cyromazine and melamine are persistent.

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