121301

Date Out EFB: 11 AUG 1983

TO: Gardner/Heyward
Product Manager 17
TS-767

FROM: Dr. Richard Moraski
Acting Chief
Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division

Attached please find the environmental fate review of:

Reg./File No.: 100-AGR

Chemical: Cyromazine

Type Product: Insecticide

Product Name: Trigard 75 WP

Company Name: CIBA-Geigy

Submission Purpose: Review rotational crop study relative to Section 18 issues

ZBB Code: other

ACTION CODE: 111

Date in: 8/3/83

EFB # 3473

Date Completed: 8/11/83

TAIS (level II) 64

Days 2

Deferrals To:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

1.0 INTRODUCTION

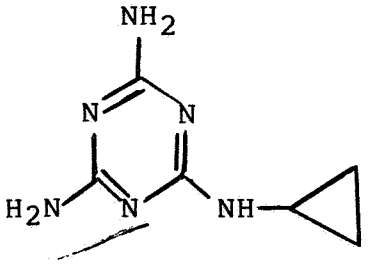
CIBA-Geigy Corp. has submitted a confined (greenhouse) rotational crop study in response to EAB recommendation to a Section 18 emergency exemption issued to the state of Florida allowing the use of Trigard 75 (cyromazine, as a. i.) for control of leafminers on celery. EAB, in review date January 18, 1983, recommended that a restriction be placed on the label prohibiting the planting of crops other than celery in cyromazine treated soil. Rotational crop data were not available at that time.

1.1 Chemical

Common name: Cyromazine

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

Chemical structure:



2.0 DISCUSSION OF DATA

A muck soil (74.4% sand, 14.4% silt, 11.2% clay, 60.3% organic matter, pH = 7.6, CEC = 146.3 meq/100 gm soil) was fortified with ^{14}C-UL-triazine-CGA-72662. Celery was transplanted and grown for 12 weeks (to maturity) and harvested. Radishes and sweet corn (crops which are usually rotated after celery in Florida)

Radishes and sweet corn were harvested at 7 and 11 weeks, respectively. Soil was sampled 6, 12, 23 (and one sample 31) weeks after treatment.

Total ^{14}C in soil and plants was determined by combustion and LSC of $^{14}CO_2$. Residues were extracted by referenced (but not submitted) analytical methods.

Results

Radishes grown for 7 weeks in soil aged 12 weeks contained 0.02 and 0.01 ppm CGA-72662 equivalents in radish tops and roots, respectively. Sweet corn, grown for 11 weeks in soil aged 12 weeks after treatment, contained 0.02 ppm CGA-72662 equivalents in stalk, cob and grain.

Lettuce, grown as target crop contained 0.75 ppm CGA 72662 equivalents after 6 weeks growth (immature) and 0.34 ppm equivalents after 12 weeks (maturity).

The authors report that the data for soil residues are questionable. Reported residues in the 0-3 inch level vaired form 1.93 to 3.80 ppm. Levels found in the 3-6 and 6-8 inch levels are varied. The variability was attributed to inappropriate sampling technique (not described) along with mixing of lower levels during sample taking. See Table I.

In a soil sample aged 31 weeks that was hand sectioned, residues found were:

Depth (in.)	PPM Found
0-3	1.24
3-6	0.07
6-8	0.11

Note: In a telephone conversation with C. Rock, of CIBA-Geigy, he reported that the "cold" analytical method for cyromazine levels is 0.05 ppm. The level for the "hot", ^{14}C LSC method is about 5X more sensitive than the "cold". ^{14}C residues < 0.05 ppm would be non-detectable by the cold method.

Conclusions

Cyromazine residues in radishes and sweet corn, as rotated crops to celery, would be less than detectable limits (< 0.5 ppm) when planted in soil treated with cyromazine.

Data on the soil metabolism of cyromazine indicate that degradation and/or adsorption remove residues for potential uptake by rotational crops. However, the study does not define the soil degradation adequately to satisfy the soil metabolism study required for registration. A laboratory giving a better

material balance and half-life estimate for degradation in muck soil will be needed when registration is applied for.

3.0 EXECUTIVE SUMMARY

3.1 This study satisfies the requirement for a rotational crop study for application of cyromazine to muck soil for control of leafminers on celery.

3.2 Radishes and sweet corn, planted in soil following treatment with cyromazine for control of leafminers on celery, should contain non-detectable cyromazine residues. Thus, no rotational crop label restriction will be necessary.

3.2 The registrant should be informed that additional soil metabolism data will be necessary to support registration of cyromazine of use on celery. This study does not adequately define the metabolism, half-life or material balance of cyromazine for this use.

Clinton Fletcher
Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division

TABLE I . CHARACTERIZATION OF RADIOACTIVITY IN SOIL TREATED WITH Δ^{14}C-CGA-72662 USED TO GROW CELERY AND ROTATION CROPS OBTAINED BY SOIL CORING

Interval (Weeks After Treatment)	6			12			23		
Soil Depth	0-3	3-6	6-8	0-3	3-6	6-8	0-3	3-6	6-8
Total ppm*	2.40	1.10	0.02	3.80	0.45	0.21	1.93	1.74	0.56
	Percent of Total Radioactivity								
Balance									
Organic Soluble	<2.0	<2.0		<0.4	<3.0	6.(	-	-	-
Aqueous Soluble	24.7	9.2		11.3	10.2	11.9	-	-	-
Nonextractable	187.2	97.5		125.4	132.5	132.6	-	-	-
Total	211.9	106.7		136.7	142.7	145.8			

*Equivalent to Δ^{14}C-CGA-72662.

Table taken from registrant's submission
EPA Acc. No. 250850

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