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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAY 30 1990

OPP OFFICIAL RECORD
HEALTH EFFECTS DIVISION
SCIENTIFIC DATA REVIEWS
EPA SERIES 361

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: PP#9E3752: Cyromazine in/on Chinese Cabbage. Amendment of 4/30/90 (DEB #6666)

FROM: W. T. Chin, Ph.D., Chemist
Tolerance Petition Section III
Dietary Exposure Branch
Health Effects Division (H7509C)

W. T. Chin

THRU: Philip V. Errico, Section Head
Tolerance Petition Section III
Dietary Exposure Branch
Health Effects Division (H7509C)

Philip V. Errico

TO: Hoyt Jamerson, PM #43
Minor Uses Officer
Registration Division (H7505C)

and

Toxicology Branch
Health Effects Division (H7509C)

BACKGROUND

In response to EPA's 12/12/89 letter, the petitioner, IR-4, submitted an amendment with revised Sections B and F requesting the establishment of a tolerance for the combined residues of the insecticide cyromazine, N-cyclopropyl-1,3,5-triazine-2,4,6-triamine, and its metabolite melamine, 1,3,5-triazine-2,4,6-triamine, calculated as cyromazine in or on the raw agricultural commodity Chinese cabbage at 3.0 ppm by ground application in Florida only. The deficiencies and the petitioner's response are restated below, followed by DEB's comments/conclusions.

SUMMARY OF DEFICIENCIES REMAINING TO BE RESOLVED

None.

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RECOMMENDATION

TOX considerations permitting, DEB recommends for the establishment of a tolerance for the combined residues of cyromazine and its metabolite melamine in or on the raw agricultural commodity Chinese cabbage at 3.0 ppm.

DETAILED CONSIDERATIONS

Deficiency "4a" (W. T. Chin's 12/4/89 memo)

"The residue data submitted reflect ground application only and are generally less than the proposed 5.0 ppm tolerance level. Therefore, for ground application only, it is more appropriate to revise Section F and reduce the proposed tolerance in/on Chinese cabbage from 5.0 to 3.0 ppm."

The Petitioner's Response

Section F has been revised to lower the proposed tolerance from 5.0 ppm to 3.0 ppm.

DEB's comment/conclusion

DEB concludes that this deficiency has been adequately resolved.

Deficiency "4b" (W. T. Chin's 12/4/89 memo)

"The petitioner is requested either to revise Section B restricting to ground application only, or to submit residue data generated from aerial applications."

The Petitioner's Response

Section B has been revised to restricting the use to ground application only.

DEB's comment/conclusion

DEB concludes that this deficiency has been adequately resolved.

Attachment: Codex sheet.

cc: Circu, RF, PP#9E3752, W.T.Chin, R.D.Schmitt, Furlow(PIB/FOD),
J.Kariya(DRES/SACB)
RDI: P.V.Errico(5/23/90), R.Loranger(5/23/90)
H709C: DEB: CM#2, RM812, 557-4352, W.T.Chin,wc(5/23/90)

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OPP OFFICIAL RECORD DEC 4 1989
HEALTH EFFECTS DIVISION
SCIENTIFIC DATA REVIEWS
EPA SERIES 361

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: PP#9E3752: Cyromazine in/on Chinese Cabbage. Evaluation of Analytical Methods and Residue Data (MRID #410492-0 and -1; DEB #5199)

FROM: W. T. Chin, Ph.D., Chemist *W. T. Chin*
Tolerance Petition Section III
Dietary Exposure Branch
Health Effects Division (H7509C)

THRU: Philip V. Errico, Section Head *J. Barber for P. Errico*
Tolerance Petition Section III
Dietary Exposure Branch
Health Effects Division (H7509C)

TO: Hoyt Jamerson, PM #43
Minor Uses Officer
Registration Division (H7505C)

and

Toxicology Branch
Health Effects Division (H7509C)

BACKGROUND

The petitioner, IR-4, and the Agricultural Experiment Station of Florida request the establishment of a tolerance, with a regional registration for Florida only, for the combined residues of the insecticide cyromazine, N-cyclopropyl-1,3,5-triazine-2,4,6-tri-amine, and its metabolite melamine, 1,3,5-triazine-2,4,6-tri-amine, calculated as cyromazine in or on the raw agricultural commodity Chinese cabbage at 5.0 ppm. A letter of authorization (3/14/89) written by Kim Dawson of Ciba-Geigy Corp. is submitted.

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Tolerances of cyromazine and melamine have been established under 40 CFR 180.414 in/on celery (10.0 ppm), lettuce (10.0 ppm), eggs (0.25 ppm), and poultry meat, fat, manure, and feed (layer hens and breeders only, 0.05 ppm). Feed additive tolerances are established under 40 CFR 186.1400 for cyromazine only in poultry feed (layer hens and breeders only, 5.0 ppm).

Several tolerance requests are pending in connection with PP# 6F3332 and 8F3633.

CONCLUSIONS

1. The nature of cyromazine in plants is adequately understood. The residues of concern in Chinese cabbage is expected to be the parent compound and its metabolite melamine.
2. There are no feed items associated with the proposed use on Chinese cabbage. Therefore, there should be no problems with secondary residues in meat, poultry, milk and eggs.
3. Adequate enforcement methods are available in PAM II. As indicated by 40 CFR 158.125, cyromazine, melamine and 1-methylcyromazine must be checked using the FDA Multiresidue methods.
- 4a. The residue data submitted reflect ground application only and are generally less than the proposed 5.0 ppm tolerance level. Therefore, for ground application only, it is more appropriate to revise Section F and reduce the proposed tolerance in/on Chinese cabbage from 5.0 to 3.0 ppm.
- 4b. The petitioner is requested either to revise Section B restricting to ground application only, or to submit residue data generated from aerial applications.
5. There are no Canadian, Mexican and Codex tolerances for cyromazine and melamine established in/on Chinese cabbage. Therefore, there are no compatibility problems involved in this petition.

RECOMMENDATION

Pending adequate resolution of the deficiencies identified in Conclusions "4a and "4b" and TOX considerations permitting, DEB will recommend for the establishment of a tolerance for the combined residues of cyromazine and its metabolite melamine in or on the raw agricultural commodity Chinese cabbage at 3.0 ppm.

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DETAILED CONSIDERATIONS

Manufacture and Formulation

The manufacturing process and composition of technical cyromazine (TGAI is 95% pure) have been previously reviewed in detail in connection with PP#9G2230 (see A. Rathman's 11/14/79 memo). The proposed formulation is Trigard 75W Insecticide (EPA Reg. No. 100-654) a wettable powder containing 75% active ingredient (w/w).

Proposed Use

For leafminer control, apply 1/6 lb Trigard 75W/A (=0.125 lb ai/A) as a foliar spray with ground equipment in a minimum of 50 gallons of water; or by air in a minimum of 5 gallons of water to obtain uniform coverage. Apply when leafminers first appear and repeat at 7-day intervals or as necessary to maintain control. Do not make more than 7 applications per crop and do not apply within 7 days of harvest. For use in Florida only.

Nature of Residue

No new metabolism studies on plants are submitted in this petition. Based on data submitted in support of other petitions for raw agricultural commodities celery, lettuce and tomatoes in connection with PP#5FG3176 and PP#5F3180, it is concluded that the residues of concern in Chinese cabbage are expected to be the same as in other crops tested, e.g., the parent compound and its metabolite melamine.

There are no feed items associated with the proposed use on Chinese cabbage. Therefore, there should be no problems with secondary residues in meat, milk, poultry and eggs.

Analytical Methodology

The residue data submitted were generated with a method entitled GC Determination of Cyromazine and Its Degradation Product, Melamine, in Chinese Cabbage (J. Assoc. Off. Anal. Chem., Vol. 70, No. 3, 1987).

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Briefly: Samples were extracted with a mixture of methanol and water (95:5) under reflex conditions followed by removal of methanol by rotary evaporation. The aqueous phase is made acidic with HCl and washed successively with dichloromethane and hexane. The acidic aqueous phase is further cleaned up by selective sorption of cyromazine and melamine on a disposable solid phase extraction column, desorption with ammoniacal methanol, and reconstitution in methanol. The determinative steps consist of GC analysis in methanol on a mixed column of Carbowax 20 M + KOH on Gas-Chrom Q. The limit of detection is 0.1 ppm. Recovery of cyromazine and melamine ranged from 80% to 105 % for fortification levels of 0.1 to 1.0 ppm. Adequate examples of calculation and chromatograms are submitted.

An enforcement method (AG-408, HPLC-UV) entitled "Determination of Cyromazine and Melamine Residues in Crops" is included in PAM II.

Residue Data

Field trials were conducted in Florida by applying Trigard 75W Insecticide with ground equipments on two varieties of Chinese cabbage: Bok Choy and Napa. Plants were treated 7 times by foliar spray at the rates of 1X (0.125 lb ai/A) and 2X with an interval of 7 days. Samples were taken at PHI's of 7 and 14 days and kept at -30° C until analyzed. Results of storage stability study indicated that cyromazine residues are stable during the storage period. Residue data submitted are summarized in Table 1 on the next page.

Residue data shown in Table 1 indicate that the total residues of cyromazine and melamine are generally less than the proposed 5.0 ppm tolerance level. Therefore, DEB concludes that it will be more appropriate to revise Section F and reduce the proposed tolerance in/on Chinese cabbage from 5.0 ppm to 3.0 ppm.

In addition, Since no residue data generated from aerial applications are submitted, the petitioner is requested either to revise Section B restricting to ground application use only, or submit adequate residue data generated from aerial applications.

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Table 1. Residues of Cyromazine in/on Chinese Cabbage
(7 applications)

Chinese Cabbage	Dosage lb ai/A	PHI (day)	Residues Determined (ppm)		
			Cyromazine	Melamine	Total
Bok Choy	0.250 (2X)	7	2.683	0.821	3.504
Bok Choy	0.250	7	2.687	0.707	3.394
Bok Choy	0.250	7	1.794	0.494	2.288
Bok Choy	0.250	7	3.567	1.051	4.618
Bok Choy	0.250	14	1.404	0.647	2.051
Bok Choy	0.250	14	1.577	0.797	2.374
Bok Choy	0.250	14	1.374	0.460	1.834
Bok Choy	0.250	14	1.522	0.601	2.123
Napa	0.125 (1X)	7	0.692	0.209	0.901
Napa	0.125	7	0.679	0.198	0.877
Napa	0.125	7	0.660	0.290	0.950
Napa	0.125	7	0.620	0.290	0.910
Napa	0.250	7	1.730	0.458	2.188
Napa	0.250	7	1.140	0.317	1.457
Napa	0.250	7	1.199	0.347	1.546
Napa	0.250	7	1.345	0.401	1.746

Meat, Milk, Poultry and Eggs

There are no feed items associated with proposed Chinese cabbage. Therefore, there should be no problem with secondary residues in meat, milk, poultry and eggs.

Other Consideration

There are no Canadian, Mexican and Codex tolerances for cyromazine and melamine established in/on Chinese cabbage. Therefore, there are no compatibility problems involved in this petition.

Attachment: Codex sheet.

cc: Circu, RF, PP#9E3752, W.T.Chin, R.D.Schmitt, PMSD-ISB
RDI: P.V.Errico(11/30/89), R.Loranger(11/30/89)
H709C: DEB: CM#2, RM812, 557-4352, W.T.Chin,wc(11/30/89)

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INTERNATIONAL RESIDUE LIMIT STATUS

1 done
10/3/89

CHEMICAL Cyromazine

CODEX NO. _____

CODEX STATUS:

No Codex Proposal
Step 6 or above

PROPOSED U.S. TOLERANCES:

Petition No. 9E3752

RCB Reviewer W. T. Chin

Residue(if Step 8): _____

Residue: Cyromazine + its metabolites
melamine (1,3,5-triazine-2,4,6-Triazine)

Crop(s) Limit
 (mg/kg)

Crop(s) Limit
 (mg/kg)

Chinese cabbage
(Bok Choy + Napa) 5.0 ppm

CANADIAN LIMITS:

No Canadian limit

Residue: _____

MEXICAN LIMITS:

No Mexican limit

Residue: _____

Crop(s) Limit
 (mg/kg)

Crop(s) Limit
 (mg/kg)

NOTES:

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J. Shue
5/27/90

Attachment:

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INTERNATIONAL RESIDUE LIMIT STATUS

CHEMICAL Cyromazine

CODEX NO. _____

CODEX STATUS:

No Codex Proposal
Step 6 or Above

Residue (if Step 8): _____

PROPOSED U.S. TOLERANCES:

Petition No. 9E3752

DEB Reviewer W. T. Chin

Residue: Cyromazine + its metabolites
melamine (1,3,5-triazine-2,4,6-triamine)

Crop(s) Limit
 (mg/kg)

Crop(s) Limit
 (mg/kg)

Chinese Cabbage 3.0 ppm
(Cook Choy + Napa)

CANADIAN LIMITS:

No Canadian Limit

Residue: _____

Crop(s) Limit
 (mg/kg)

MEXICAN LIMITS:

No Mexican Limit

Residue: _____

Crop(s) Limit
 (mg/kg)

NOTES

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