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

JUN 13 1985

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: PP#5F3177 Cyromazine on Mushrooms
Review and Evaluation of Supplemental Section D Submission
Dated March 18, 1985.
(Accession No. 073406)[RCB No. 785]

FROM: E. T. Haeberer, Chemist
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THRU: Charles L. Trichilo, Ph.D., Chief
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TO: Adam Heyward, Team #7
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and

Toxicology Branch
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The subject submission is in reply to our memo of February 13, 1985, (PP#5F3177, E. T. Haeberer) and contains the petitioner's responses to the data deficiencies cited in that review. Following the numbering of RCB's 2/13/85 review of PP#5F3177, each deficiency will be restated followed by the petitioner's response and RCB's comments and conclusions.

1. Questions have been raised recently concerning the nature of the residue in plants (review of PP# 5F3180, C. Deyrup). We can draw no conclusions concerning the nature of the residue until these questions have been resolved.

Petitioner's Response

The petitioner has submitted copies of the following reports in conjunction with the review of PP#5F3180 and the subject petition:

1. "Biological Report for the Metabolism of Δ-^{14}C-CGA-72662 Applied as a Multiple Foliar Treatment on Greenhouse Grown Celery and Lettuce", Report No. Biol-82017.

2. "Biological Report for the Metabolism of ^{14}C-CGA-72662 Applied as a Multiple Foliar Treatment on Greenhouse Grown Celery and Lettuce," Report No. Biol-82025.

3. Procedures for Balance and Characterization of Radioactive Components in Plants and Soil Consisting of AG-214, AG-223, AG-252, AG-254 and AG-276.

RCB's Comments and Conclusions

RCB has concluded that this deficiency is now resolved (see memo March 20, 1985, PP#5F3180, C. Deyrup). Based on metabolism data for other crops, the nature of the residue is adequately understood for purposes of the proposed use on mushrooms.

2a. A successful analytical method-try-out was conducted for cyromazine and melamine in poultry tissue and eggs (PP# 2F2707/FAB #2H5355, memo P. Errico, June 13, 1984) using Ciba Geigy's Method AG-417A.

2b. A successful method-try-out was conducted for cyromazine, per se, in poultry feed (PP# 2F2707/FAB #2H5355 memo P. Errico, 6/29/83, Ciba Geigy method AG-376).

2c. A method-try-out has not been conducted for cyromazine and melamine in crops. In our review of copending PP# 5F3180 (by C. Deyrup) we have requested the petitioner to validate method AG-376 for the determination of cyromazine and melamine on crops. Otherwise, we stated that a method tryout of either method AG-408 or AG-402 may be needed. We reiterate that conclusion here.

Petitioner's Response

Analytical Method AG-408, as amended by AG-417A, is proposed as the regulatory method. A method tryout of AG-408, as amended by AG-417A, has been requested in response to RCB's review of Pesticide Petition No. 5F3180. AG-417A describes the substitution of Dowex 1-X8, 50-100 mesh for the BioRex 9 anion exchange resin used in AG-408. Representative chromatograms for mushroom samples analyzed using analytical Method AG-408, as amended by AG-417A, are also included in Reference 2.

RCB's Comments and Conclusions

Method AG-408 has undergone a successful method-try-out on lettuce (memo May 8, 1985, Mark Law, Analytical Chemistry Section, re: PP#5F3180). Recoveries of cyromazine and melomine calculated as cyromazine equivalents ranged from 67.4% to 105.9% with sample fortification at 4.0 ppm and 8.0 ppm levels for cyromazine and 1.0 ppm and 2.0 ppm levels for melamine.

RCB concludes that this deficiency is resolved.

3b. The petitioner should submit representative chromatograms of standards, recoveries, controls, treated compost, casing and mushrooms for all of the analytical methods described and utilized in this petition.

Petitioner's Response

The petitioner has submitted representative chromatograms for mushrooms and compost. Since compost is often used as casing, the casing was not analyzed separately. The limit of detection is 0.05 ppm for cyromazine and 0.04 ppm for melamine (equivalent to 0.05 ppm calculated as cyromazine).

This deficiency ia now resolved.

3c. The petitioner should submit storage stability data reflective of sample storage time.

Petitioner's Response

No specific storage stability studies have been conducted for cyromazine and melamine in mushrooms and compost. Several studies are cited which address the stability of cyromazine and melamine in a variety of matricies under frozen conditions.

1. Mushroom samples harvested 7/16/83 and analyzed 4/9/84 were reanalyzed 3/6/85. The first analysis showed cyromazine levels of <0.05 ppm. This was unchanged for the second analysis. The first analysis of 2 samples indicated melamine residues of 3.6 ppm and 9.3 ppm which reanalyzed as 3.5 ppm and 7.9 ppm respectively.

2. Field soil samples treated with cyromazine and melamine were kept in freezer storage for 5 months at - 15°C. Initial levels of cyromazine were 2.4 ppm and 1.0 ppm, final levels 3.0 ppm and 1.2 ppm respectively. Initial levels of melamine were 0.96 ppm and 0.67 ppm final levels 1.1 ppm and 0.80 ppm.

3. Tomato samples were reanalyzed after 9 1/2 months of freezer storage. Initial levels of cyromazine were 0.07 ppm and 0.49 ppm, final levels 0.10 ppm and 0.59 ppm. Inital levels of melamine were 0.06 ppm and 0.41 ppm, final levels 0.10 ppm and 0.44 ppm.

4. Blended egg samples were fortified with cyromazine and stored at - 5°C for 23 months. Samples were analyzed at 0 day; 6,15 and 24 weeks; and 23 months. The percent recovery remained unchanged throughout the study; i.e., 68% $\pm$ 17%.

5. Storage stability data were also submitted for lettuce and celery. The following table compares total cyromazine and melamine residues in celery to storage duration:

Storage Time (Months)	Average Residue Levels	Residue Range
3	0.67	<0.10 - 0.83
4	7.78	6.50 - 9.00
6	0.62	0.34 - 0.90
7	0.28	0.27 - 0.28
9	0.33	0.32 - 0.34
10	0.32	0.28 - 0.36
11	1.14	0.48 - 2.22
14	1.55	1.39 - 1.71
17	0.44	0.41 0.46

RCB's Comments and Conclusions

There appears to be no relationship between storage time and fluctuations in residue levels. Cyromazine and melamine appear to be stable under freezer storage conditions in a variety of matricies for up to 2 years. We consider this deficiency to be resolved.

3d. We can draw no conclusions concerning the adequacy of the proposed tolerance until the deficiencies cited in Conclusions 1, 3b, and 3c are resolved.

RCB Comments and Conclusions

The deficiencies in Conclusions, 1, 3b and 3c have been resolved. We conclude that the proposed tolerance of 10.0 ppm for the combined residues of cyromazine and its metabolite melamine in or on mushrooms is adequate.

Since the residue levels of melamine are calculated as cyromazine equivalents, the petitioner should revise Section F to read... "tolerances for the combined residues of cyromazine (N-cyclopropyl-1,3,5-triazine-2,4,6-triamine) and its principle metabolite, melamine (1,3,5-triazine-2,4,6-triamine), calculated as cyromazine..."

Recommendation

TOX and EAB considerations permitting, upon receipt of the revised Section F discussed above, RCB can recommend for establishment of the proposed tolerance.

TS-769:RCB:E.Haeberer:vg:CM#2:Rm810:557-7484:6/11/84:edit:fdg:6/13/85
cc: Reading File, Circu., TOX, EEB, EAB, FDA, Thompson(RPT), PMSD/ISB
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