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

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Memorandum

OFFICE OF  
PESTICIDES AND TOXIC SUBSTANCES

Subject: 87-WA-14. Proposed Section 18 for the Use of  
Permethrin (Pounce® 3.2EC, EPA Reg. No. 279-  
3014; Ambush®, EPA Reg. No. 10182-18) on  
Raspberries.  
No Accession Number / No MRID Number  
RCB #2272

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Thru: Edward Zager, Section Head, SRS 2 *E. Zager*  
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To: Emergency Use and Minor Use Section  
Registration Division (TS-767C)

and

Toxicology Branch  
Hazard Evaluation Division (TS-769C)

The Washington Department of Agriculture requests a Section 18 Specific Exemption authorizing application of the insecticide permethrin (Pounce® 3.2EC, 3.2 lbs.a.i./gallon emulsifiable concentrate; or Ambush®) to raspberries to control weevils. Applications would be made to approximately 3000 acres in counties west of the crest of the Cascade Mountains.

Numerous tolerances have been established for permethrin and its metabolites. A tolerance of 0.5 ppm has been established for residues of permethrin per se on cottonseed. Tolerances for residues of permethrin, 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropane carboxylic acid (DCVA) and 3-(phenoxybenzyl) alcohol (3-PBA) are established on a variety of plant commodities and range from 0.05 ppm (apples, potatoes) to 60 ppm (corn forage and fodder). Tolerances for residues of permethrin, DCVA, 3-PBA and 3-phenoxybenzoic acid are

established for animal commodities and range from 0.05 ppm (eggs) to 3.75 ppm (milk fat). Numerous tolerances are pending. A Registration Standard has not been completed for Permethrin.

The proposed use calls for one application to raspberries at a rate of 0.2 lbs.a.i./A. Applications would be made in a minimum of 100 gallons of water using ground equipment only. A 3-day PHI would be imposed.

The major metabolic pathway in plants includes hydrolysis of the ester bond. The residue of concern in plants includes parent permethrin plus the hydrolysis products DCVA and 3-PBA. In animal tissue, oxidation of 3-PBA to form 3-phenoxybenzoic acid can occur. The residue of concern in animals includes permethrin per se, DCVA, 3-PBA and 3-phenoxybenzoic acid.

The method used to determine residues of permethrin, 3-PBA and DCVA in raspberries is similar to the method submitted for turnips with PP#6E3360. A non-CBI copy of this method was submitted with this Section 18. The raw agricultural commodity is blended with methylene chloride/HCl, filtered, and the filtrate is extracted with sodium hydroxide. Permethrin and 3-PBA are extracted into methylene chloride (fraction A) and washed with water, and the wash water and sodium hydroxide solution (containing the DCVA) are combined (fraction B), acidified and washed with methylene chloride. Permethrin and 3-PBA are separated by chromatography using Bakers aluminum oxide, and the 3-PBA is derivatized using trichloroacetyl chloride. Fraction B (DCVA) is derivatized with trichloroethanol. Analysis is accomplished by GLC using an electron capture detector. The limits of detection for this method are 0.01 ppm for permethrin and 0.05 ppm for 3-PBA and DCVA. Recovery data were submitted showing recoveries of 62.0 - 73.7% (average = 69.6%) for permethrin, 62.0 - 120.0% (average = 95.0%) for 3-PBA and 62.0 - 97.5% (average = 82.6%) for DCVA, all at fortification levels of 0.1 - 1.0 ppm. Control values were below the limits of detection for permethrin and 3-PBA and ranged to 0.09 ppm for DCVA.

Storage stability studies were also submitted with this Section 18. Samples stored frozen for 30 days showed recoveries of 77 - 91% (average = 82.6%) for permethrin, 108 - 117% (average = 113%) for 3-PBA and 69.5 - 110% (average = 92.6%) for DCVA.

The residue data submitted utilized 2 applications of permethrin with an 11-day interval between applications to raspberries at either 0.2 lbs.a.i./A or 0.4 lbs.a.i./A (1X application rate = 0.2 lbs.a.i./A for 1 application). Raspberry samples were immediately frozen and shipped frozen to the laboratory where they were stored less than two months prior to analysis. Residues are summarized in the Table on the next page. Some

of the samples were reanalyzed because the residues of the metabolites 3-PBA and DCVA were considered to be higher than they should be (by the IR-4 personel generating the data). Reanalyzed samples showed decreased residues. The submitter states that the high residues in the initial analyses were due to contamination of the metabolite solutions with parent, which was converted to the metabolites during the analytical procedure. The values for the initial analyses are included in parentheses in the table.

<u>Application Rate</u> (lbs.a.i.; 2 apps.)	<u>PHI</u> (days)	<u>Residue Range</u> (Combined residues, ppm)
0.2	1	0.33 - 0.75 (0.5 - 1.02)
	3	0.21 - 0.43 (0.12 - 2.32)
	5	0.29 - 0.38 (0.28 - 0.38)
	7	0.12 - 0.28 (0.18 - 0.34)
0.4	1	0.58 - 0.87 (1.86 - 2.91)
	3	0.48 - 1.09 (1.22 - 1.90)
	5	0.22 - 0.57 (0.22 - 0.57)
	7	0.21 - 0.34 (0.21 - 0.34)

Based on these data, and for the purposes of this Section 18 only, we conclude that combined residues of permethrin, 3-PBA and DCVA are not likely to exceed 1.0 ppm in or on raspberries as a result of the proposed use.

#### Meat, Milk, Poultry and Eggs

Raspberries are not animal feed items. Therefore, secondary residues are not likely to be found in eggs, milk or in the meat, fat and meat by-products of cattle, goats, hogs, horses, poultry and sheep as a result of the proposed use.

#### Conclusions

- (1) The metabolism of permethrin in plants is adequately understood. The residue of concern includes parent and its two metabolites, 3-PBA and DCVA.
- (2) For the purposes of this Section 18 only, we conclude that combined residues of permethrin and its metabolites 3-PBA and DCVA are not likely to exceed 1.0 ppm in raspberries as a result of the proposed use.
- (3) Raspberries are not major animal feed items. Therefore, secondary residues are not expected in milk, eggs, or in the meat, fat and meat by-products of cattle, goats, hogs, horses, poultry and sheep as a result of the proposed use.

- (4) Adequate analytical methodology is available for enforcement (PAM II, Method I for permethrin per se in all crops; PAM II, Method III for 3-PBA in all crops; PAM II, Method IIIa for DCVA in all crops).
- (5) Analytical reference standards are available from the Pesticides and Industrial Chemicals Repository.

Recommendations

RCB has no objections to this Section 18. An agreement should be made with the FDA regarding the legal status of the treated commodities in commerce.

cc: Permethrin (Matadan) S.F., R.F., Section 18 S.F., Circu,  
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