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

MAY 13 1991

MEMORANDUM:

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

SUBJECT: 91-TN-0001. Section 18 Specific Exemption.
Chlorothalonil (Bravo 500, EPA Reg. No. 50534-8) on Mushrooms.
No MRID No. DEB No. 7934. DP Barcode No. D163997.

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and

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The Tennessee Department of Agriculture has requested a Section 18 specific exemption for the use of the fungicide Bravo® 500 (chlorothalonil) to control verticillium fungicola on mushrooms. The active ingredient is tetrachloroisophthalonitrile. The request is to use Fermenta ASC Corporation product Bravo 500, EPA Registration Number 50534-8-AA. Up to 4.3 million square feet may be treated. The assignment instructions are to provide an estimate of residues likely to occur as a result of the proposed use.

CB (then RCB) had no objections to a Section 18 exemption request for chlorothalonil on mushrooms made by California in 1987 (87-CA-03, M. Metzger, 12/22/86). RCB concluded that as a result of the proposed use, residues of chlorothalonil and its metabolite SDS-3701 were not likely to exceed 8 ppm in or on mushrooms, and impurities found in technical chlorothalonil, PCBN and HCB, were not likely to exceed 0.1 ppm and 0.005 ppm, respectively, in or on mushrooms.

Tolerances for chlorothalonil and its metabolite 4-hydroxy-2,5,6-trichloroisophthalonitrile (common name SDS-3701) have been established on a variety of commodities at levels ranging from 0.05 ppm to 15 ppm (40 CFR 180.275).

Petition PP6E3410 requested a tolerance for chlorothalonil and its metabolite 4-hydroxy-2,5,6-trichloroisophthalonitrile of 8 ppm in or on mushrooms. The first review was completed 11/12/86 (N. Dodd), and RCB recommended against establishment of the proposed tolerance due to several deficiencies. Deficiencies included the following:
--Further information was required on the metabolism of chlorothalonil in plants.
--Data were required on whether impurities in technical chlorothalonil, hexachlorobenzene (HCB) and pentachlorobenzonitrile (PCBN), need to be included in the tolerance definition.
--RCB could not conclude that adequate analytical methodology was available for enforcement until the nature of the residue in plants was resolved.
As of June 1989, these deficiencies were still not resolved (PP6E3410, S.H. Willett, 6/22/89)

A Registration Standard was issued for chlorothalonil in September 1984, and a Second Round Review was issued October 1988.

Proposed use would allow an initial application of 0.26 lb ai per 1000 sq ft immediately following casing and up to four applications made between breaks at the rate of 0.13 lb ai per 1000 sq ft. Total allowable application would be 0.78 lb ai per 1000 sq ft. Applications would be by irrigation equipment. Bravo 500 contains 4.17 lb ai per gallon. PHI is 48 hours and no treatment would be allowed on mature mushrooms. No residue estimates from the proposed use are provided with the Section 18 request.

Residues of concern under 40 CFR 180.275 consist of chlorothalonil and its metabolite 4-hydroxy-2,5,6-trichloroisophthalonitrile. As indicated above, the petition for a tolerance on mushrooms is in reject status pending further information on the metabolism of chlorothalonil in plants and data on whether impurities in technical chlorothalonil need to be included in the tolerance definition. For the purposes of this Section 18 request only, residues of concern in plants consist of the parent chlorothalonil, the metabolite SDS-3701, and the impurities in technical chlorothalonil, HCB and PCBN.

Analytical method. Residue data were submitted with PP6E3410. Two analytical methods were used to generate these data Methods 702-3CR-84-0074-000 and 632-3CR-83-0043-000. Both methods quantify residues of chlorothalonil, SDS-3701, HCB and PCBN.

The first method involves extraction with acetone acidified by sulfuric acid, followed by partitioning with petroleum ether, which separates SDS-3701 from the other 3 compounds. Following additional cleanup steps and derivatization of SDS-3701 to the methyl ether, analysis is accomplished by gas chromatography using an electron capture detector. Recoveries of the four components ranged from 70-130 percent at fortification levels of 0.01-10.0 ppm. Reported sensitivities were 0.01 ppm for chlorothalonil and SDS-3701, 0.003 ppm for HCB, and 0.005 ppm for PCBN.

The second method utilizes various extraction solvents and cleanup procedures. Analysis is accomplished by gas chromatography using an electron capture detector. Details for both procedures can be found in PP6E3410 (Acc. No. 262766). Recoveries for the four components with the second method ranged from 60-112 percent at fortification levels of 0.01-10.0 ppm. Reported sensitivities were 0.03 ppm for chlorothalonil and SDS-3701, 0.004 ppm for HCB, and 0.008 ppm for PCBN.

As indicated above, RCB could not recommend a tolerance in or on mushrooms, and could not conclude that adequate analytical methodology was available for enforcement until the nature of the residue in plants was resolved (PP6E3410, S.H. Willett, 6/22/89). For the purposes of this Section 18 request only, Method 702-3CR-84-0074-000 is considered adequate for enforcement purposes.

Residue data. No residue data were submitted with this Section 18 request. Residue data were previously submitted with PP6E3410. Field trials were conducted in Pennsylvania, Connecticut, and Oregon. The highest residue values were generally observed with the Oregon tests. For these tests, Bravo W75 was applied at 0.23 lb ai per 1000 sq ft followed by 1-5 applications at 0.12 lb ai per 1000 square feet. Values for these tests are indicated below in ppm, with PHI and the number of applications for each test indicated.

Compound	PHI=38 hr, 2 app.	48 hr, 2 app.	36 hr, 3 app.	38 hr, 2 app.
Chloro-thalonil	5.88-6.68	3.64-6.20	6.74-7.38	2.04-6.00
SDS-3701	ND	ND	ND	ND
HCB	ND-0.005	ND-0.004	0.005	ND-0.004
PCBN	0.069-0.092	0.046-0.079	0.086-0.105	0.046-0.066

Compound	PHI=48 hr, 4 app.	38 hr, 5 app.	48 hr, 3 app.	48 hr, 5 app.
Chloro-thalonil	4.16-5.52	1.62-3.10	2.98-3.22	2.80
SDS-3701	ND	ND	ND	ND
HCB	0.004	ND	ND	ND
PCBN	0.041-0.061	0.017-0.041	0.032-0.039	0.025-0.030

Concentrations of SDS-3701 were highest in one of the Pennsylvania tests, reaching 0.11 ppm during a test in which Bravo 500 was applied at 0.26 lb ai per 1000 sq ft at casing, and 0.13 lb ai per 1000 sq ft at pinning and after breaks, for a total of 5 applications with a PHI of 72 hours.

Based on these data, and for the purposes of this Section 18 request only, residues are not likely to exceed the following values in or on mushrooms as a result of the proposed use:

Chlorothalonil + SDS-3701	8 ppm
PCBN	0.1 ppm
HCB	0.005 ppm

Processing data and Meat, milk, poultry, and eggs. Mushrooms, the crop for which the exemption is requested, are not processed and are not used as animal feed (EPA, Pesticide Assessment Guidelines, Subdivision O, Residue Chemistry).

Conclusions

1. For the purposes of this Section 18 request only, the residues of concern consist of the parent compound chlorothalonil, its metabolite SDS-3701, and the impurities in technical chlorothalonil, HCB and PCBN.

2. For the purposes of this Section 18 request only, residues in or on mushrooms resulting from the proposed use are not expected to exceed the following values:

Chlorothalonil + SDS-3701	8 ppm
PCBN	0.1 ppm
HCB	0.005 ppm

3. No processed food items, nor any animal feed items are involved in this proposed use. Therefore, secondary residues are not expected in processed foods, nor in meat, milk, poultry, nor eggs as a result of the proposed use.

4. For the purposes of this Section 18 request only, Method 702-3CR-84-0074-000 (PP6E3410) is considered adequate for enforcement purposes.

5. Analytical reference standards are available from the Pesticides and Industrial Chemicals Repository at RTP, NC.

Recommendation

Toxicological considerations permitting, CBII-RS has no objections to the issuance of this Section 18 exemption. Arrangements should be made with FDA regarding the legal status of the treated mushrooms in commerce.

cc:Circ, Abbotts, SACB (E.Saito), Section 18, Chlorothalonil SF, RF, PIB/FOD (C. Furlow)
RDI:FBS:5/10/91:EZ:5/10/91
H7509C:CBII-RS:JAbbotts:CM-2:Rm810: