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

NOV 12 1986

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: PP#6E3410 (RCB No. 950). Chlorothalonil on Mushrooms. Evaluation of Analytical Method and Residue Data (Accession No. 262766).

FROM: Nancy Dodd, Chemist
Residue Chemistry Branch
Hazard Evaluation Division (TS-769C)

THRU: Charles L. Trichilo, Ph.D., Chief
Residue Chemistry Branch
Hazard Evaluation Division (TS-769C)

TO: Hoyt Jamerson, PM 43
Registration Support and
Emergency Response Branch
Registration Division (TS-767C)

and

Toxicology Branch
Hazard Evaluation Division (TS-769C)

The petitioner, J.J. Baron, Assistant Coordinator, and Dr. R.H. Kupelian, National Director, Interregional Research Project No. 4 (IR-4), State Agricultural Experiment Station, Rutgers University, New Brunswick, New Jersey, on behalf of the IR-4 Technical Committee and the Agricultural Experiment Stations of California, Pennsylvania, and South Carolina request the establishment of a tolerance for the combined residues of the fungicide chlorothalonil and its metabolite (4-hydroxy-2,5,6-trichloroisonitrile) in or on the raw agricultural commodity mushrooms at 8 ppm.

Tolerances are established for chlorothalonil and its metabolite 4-hydroxy-2,5,6-trichloroisonitrile on a variety of raw agricultural commodities at levels ranging from 0.05 to 15 ppm (40 CFR 180.275).

A letter of authorization dated March 19, 1986 has been sent by Ralph Burton of SDS Biotech Corporation to Hoyt Jamerson, RD, OPP to authorize use of SDS Biotech Corporation's data on chlorothalonil in support of this IR-4 petition on mushrooms.

The Chlorothalonil Registration Standard was issued on September 28, 1984.

Conclusions

1. Based on residue data provided, RCB concludes that the Section B/label should be revised to limit the number of applications to six.

2a. To establish such a high tolerance as 8 ppm chlorothalonil on the mushroom crop which does not appear on the minor crop list published in the FEDERAL REGISTER/Volume 51, No. 63/Wednesday, April 2, 1986 requires that the nature of the residue in mushrooms be adequately understood. Over 2 years ago, RCB requested (PP#4F3025, M. Kovacs, May 30, 1984) a new plant metabolism study to support a foliar application use; at the time of this review, the registrant has not responded to that request. The following additional data which were requested in the Residue Chemistry Chapter (November 4, 1983) of the Registration Standard are required:

(1) Studies in which the unidentified water-soluble compounds, which constitute the major portion of the [^{14}C]chlorothalonil residues taken up from treated soil by plants, are characterized along with other possible metabolites of chlorothalonil.

(2) Translocation studies involving the application of ring-labeled [^{14}C]chlorothalonil to foliar plant surfaces (one such study was submitted but involved immature plants).

(3) Data on whether the impurities in technical chlorothalonil need to be included in the tolerance definition. [Note: In RCB's review of the December 28, 1985 submission in response to the Chlorothalonil Registration Standard (M. Firestone, September 10, 1985), RCB indicated that the impurities of concern include hexachlorobenzene (HCB) and pentachlorobenzonitrile (PCBN).]

2b. The following related metabolism data, which were discussed in an RCB review dated September 10, 1985 of a submission made in response to the Registration Standard, were also required:

(1) To what extent can lettuce plants take up the five identified soil metabolites* (i.e., should these metabolites be included in the chlorothalonil tolerance expression)?

(2) To what extent is chlorothalonil translocated across foliar surfaces in mature lettuce plants?

(3) What is the nature of the residue at very long PHI's?

The registrant must consider the above questions with respect to the pending root crop and fruit crop metabolism studies.

3. RCB cannot conclude at this time that adequate analytical methodology is available to enforce the proposed 8 ppm chlorothalonil tolerance on mushrooms until the nature of the residue in plants has been adequately resolved (see previous discussion in Nature of the Residue section of this review).

4. Adequate storage stability data are available.

5. Until satisfactory characterization of the nature of the residue in plants and resolution of whether some impurities in technical chlorothalonil (i.e., HCB and PCBN) need to be included in the tolerance definition, RCB will reserve its conclusion as to whether the proposed tolerance of 8 ppm is adequate to cover residues resulting from the proposed use on mushrooms. If other residues resulting from the requested plant metabolism study are of toxicological concern, more residue data may be needed.

*The five known soil metabolites of chlorothalonil:

1. 4-Hydroxy-2,5,6-trichloroisophthalonitrile (SDS-3701)
2. 3-Cyano-2,4,5,6-tetrachlorobenzamide (SDS-19221)
3. 3-Cyano-2,5,6-trichlorobenzamide (SDS-47524)
4. 2-Hydroxy-5-cyano-3,4,6-trichlorobenzamide (SDS-47525)
5. 3-Carboxy-2,5,6-trichlorobenzamide (SDS-46851)

6. No feed items are involved in this use on mushrooms. Therefore, RCB concludes that this use falls in category 3 of Section 180.6(a) with respect to residues in meat, milk, poultry, and eggs.

7. An International Residue Limit (IRL) Status sheet is attached. There are no Codex, Canadian, or Mexican tolerances for chlorothalonil on mushrooms. Therefore, no compatibility questions exist with respect to Codex.

Recommendation

At this time, RCB recommends against the establishment of the proposed 8 ppm tolerance for residues of chlorothalonil and its metabolite 4-hydroxy-2,5,6-trichloroisonitrile on mushrooms for reasons given in Conclusions 1, 2a, 2b, 3, and 5 above.

Detailed Considerations

Manufacture

The manufacturing process has been described in the Product Chemistry Chapter of the Chlorothalonil Registration Standard. (The Chlorothalonil Registration Standard was issued on September 28, 1984.) RCB has determined that the impurities hexachlorobenzene (HCB) and pentachlorobenzonitrile (PCBN) are of concern.

Formulation

The formulations to be used are Bravo 500, Bravo W-75, and Bravo 720.

Bravo 500 is a dispersible suspension which contains 4.17 lb active ingredient per gallon, or 40.4 percent active ingredient. All inerts in Bravo 500 are cleared under 40 CFR 180.1001.

Bravo W-75 is a wettable powder which contains 75 percent active ingredient. All inerts in Bravo W-75 are cleared under 40 CFR 180.1001.

Bravo 720 is a dispersible suspension which contains 6 lb active ingredient per gallon or 54.0 percent active ingredient. All inerts in Bravo 720 are cleared under 40 CFR 180.1001.

Note: The formulations used in testing on mushrooms for this IR-4 petition were Bravo 500 and Bravo W-75.

Proposed Use

Mushrooms

Apply Bravo 500, Bravo W-75, or Bravo 720 to control verticillium spot and dry bubble on mushrooms. Drench the soil surface of culture beds using at least 20 gallons water per 1000 square feet. Make applications as soon as possible after casing, at pinning, and between each break. Apply at the rates specified below:

Product	Time of Application	Application Rate per 1000 square feet
Bravo 500	*	8 fl oz (0.26 lb ai)
	**	4 fl oz (0.13 lb ai)
	***	4 fl oz (0.13 lb ai)
Bravo W-75	*	5.5 oz (0.26 lb ai)
	**	2.75 oz (0.13 lb ai)
	***	2.75 oz (0.13 lb ai)
Bravo 720	*	5.5 fl oz (0.26 lb ai)
	**	2.75 fl oz (0.13 lb ai)
	***	2.75 fl oz (0.13 lb ai)

* As soon as possible after casing
** At pinning
*** Between breaks

Do not apply to mature mushrooms or to beds within 48 hours of the next mushroom harvest.

Based on residue data provided, RCB concludes that the Section B/label should be revised to limit the number of applications to six. (Refer to "Residue Data" section.)

Nature of the Residue

Plants

No new metabolism studies were submitted with this petition. The Residue Chemistry Chapter of the Chlorothalonil Registration Standard (dated November 4, 1983) summarized available plant metabolism studies as follows:

"We believe that the available data demonstrate that residues of chlorothalonil are translocated in plants following root uptake and that residues increase in concentration as exposure time increases. Data from studies in which translocation did not occur involved the use of immature plants.

Although the available data demonstrate translocation to occur, we feel additional translocation data are needed involving application of chlorothalonil to foliar plant surfaces (one such study was submitted but involved immature plants). In addition, only two metabolites of chlorothalonil (4-hydroxy-2,5,6-trichloroisophthalonitrile and 3-cyano-2,4,5,6-tetrabenzamide) were identified in the data submitted. In one of the translocation studies submitted (by M.B. Szalkowski and D.E. Stallard; Accession No. 099248), the majority of the total ^{14}C residues found in plant tissues were reported as unidentified water-soluble compounds; chlorothalonil and its 4-hydroxy-2,5,6-trichloroisophthalonitrile and 3-cyano-2,4,5,6-tetrabenzamide metabolites were also detected but in lower concentrations. In a soil metabolism study submitted by Diamond Shamrock Corporation (by M.B. Szalkowski and J.J. Mannion; Accession No. 099248), three additional metabolites (trichloro-3-carboxybenzamide, 3-cyanotrichlorohydroxybenzamide, and 3-cyanotrichlorobenzamide) were found along with chlorothalonil and its 4-hydroxy-2,5,6-trichloroisophthalonitrile and 3-cyano-2,4,5,6-tetrabenzamide metabolites. Although these three metabolites were found in low percentages (3.2 to 4.3% of the applied chlorothalonil) in the soil metabolism study, we believe that plant metabolism data are needed involving uptake and translocation of these compounds as well as major residues."

The Residue Chemistry Chapter of the Chlorothalonil Registration Standard required the following additional data on plant metabolism:

a. Studies in which the unidentified water-soluble compounds, which constitute the major portion of the [^{14}C]chlorothalonil residues taken up from treated soil by plants, are characterized along with other possible metabolites of chlorothalonil.

b. Translocation studies involving the application of ring-labeled [^{14}C]chlorothalonil to foliar plant surfaces (one such study was submitted but involved immature plants).

c. Data on whether the impurities in technical chlorothalonil need to be included in the tolerance definition. [Note: In RCB's review of the December 28, 1985 submission in response to the Chlorothalonil Registration Standard (M. Firestone, September 10, 1985), RCB indicated that the impurities of concern include HCB and PCBN.]

In a review of a lettuce metabolism study submitted on March 28, 1985 in response to the Chlorothalonil Registration Standard (M. Firestone, September 10, 1985), RCB concluded the following:

"While the lettuce metabolism study reflecting foliar application shows that the parent compound comprises a majority (> 87%) of the terminal residues up to 21 days post-application, the following questions remain with respect to the metabolism of chlorothalonil in lettuce:

(i) To what extent can lettuce plants take up the five identified soil metabolites* (i.e., should these metabolites be included in the chlorothalonil tolerance expression)?

(ii) To what extent is chlorothalonil translocated across foliar surfaces in mature lettuce plants?

(iii) What is the nature of the residue at very long PHI's?

The registrant must consider the above questions with respect to the pending root crop and fruit crop metabolites studies."

Over 2 years ago, RCB requested (PP#4F3025, M. Kovacs, May 30, 1984) a ring-labeled ^{14}C-chlorothalonil foliar-applied apple metabolism study to support a foliar application use. The registrant has not responded to this request.

To establish such a high tolerance as 8 ppm chlorothalonil on mushrooms, RCB must conclude that the nature of the residue in mushrooms is not adequately understood. Additional data requested in the Residue Chemistry Chapter of the Registration Standard (a, b, and c above) and related items (i), (ii), and (iii) above are required.

*The five known soil metabolites of chlorothalonil:

1. 4-Hydroxy-2,5,6-trichloroisophthalonitrile (SDS-3701)
2. 3-Cyano-2,4,5,6-tetrachlorobenzamide (SDS-19221)
3. 3-Cyano-2,5,6-trichlorobenzamide (SDS-47524)
4. 2-Hydroxy-5-cyano-3,4,6-trichlorobenzamide (SDS-47525)
5. 3-Carboxy-2,5,6-trichlorobenzamide (SDS-46851)

Analytical Method

In Report #702-3CR-84-0074-001, the analytical method for analysis of chlorothalonil (SDS-2787), 4-hydroxy-2,5,6-trichloroisophthalonitrile (SDS-3701), hexachlorobenzene (HCB), and pentachlorobenzonitrile (PCBN) was SDS Biotech protocol #702-3CR-84-0074-000 and protocol amendment #702-3CR-84-0074-000-001. Mushrooms are extracted with acetone acidified with H_2SO_4. Chlorothalonil, HCB, and PCBN are selectively partitioned from the aqueous phase into petroleum ether, leaving SDS-3701 in the aqueous phase. The aqueous phase containing SDS-3701 is acidified with H_2SO_4 to pH < 2. The SDS-3701 is then extracted into 1:1 petroleum ether: diethyl ether. SDS-3701 is derivatized to the methyl ether with a methylating reagent, 3-methyl-1-p-tolyltriazene (MTT), and cleaned up by column chromatography. Chlorothalonil, HCB, and PCBN are separated by column chromatography. All residues are quantitated by electron capture gas chromatography. Recoveries of chlorothalonil from mushrooms fortified at levels ranging from 0.03 to 10.0 ppm ranged from 70 to 130 percent. Recoveries of SDS-3701 from mushrooms fortified at levels ranging from 0.03 to 0.50 ppm ranged from 70 to 125 percent. Recoveries of HCB from mushroms fortified at levels ranging from 0.01 to 0.05 ppm ranged from 70 to 105 percent. Recoveries of PCBN from mushrooms fortified at levels ranging from 0.01 to 0.10 ppm ranged from 70 to 110 percent. Control values were reported as 0.01 to 0.06 ppm chlorothalonil, ND (none detected) SDS-3701, ND HCB, and ND PCBN. The reported sensitivity of the method is 0.01 ppm SDS-2787, 0.01 ppm SDS-3701, 0.003 ppm HCB, and 0.005 ppm PCBN.

In Report #632-3CR-83-0043-001, the analytical method for analysis of chlorothalonil (SDS-2787), 4-hydroxy-2,5,6-trichloro-isophthalonitrile (SDS-3701), hexachlorobenzene (HCB), and pentachlorobenzonitrile (PCBN) in mushrooms was SDS Biotech protocol #632-3CR-83-0043-000. Chlorothalonil, HCB, and PCBN are extracted from mushrooms with methylene chloride. To determine chlorothalonil, the methylene chloride is evaporated and the residue is redissolved in toluene. To determine HCB and PCBN, a separate portion of the methylene chloride extract is evaporated to dryness and the residue is redissolved in 20 percent methylene chloride:80% hexane. To determine SDS-3701, a mushroom sample is extracted with acetone acidified with 1:1 sulfuric acid:water. After evaporation of acetone, $NaHCO_3$ is added. The pH is adjusted to 4.5 using $NaHCO_3$ or H_2SO_4. The aqueous solution is shaken with petroleum ether. The pH of the aqueous phase containing SDS-3701 is adjusted to < 2 using H_2SO_4. SDS-3701 is then extracted into 1:1 petroleum ether:diethyl ether. SDS-3701 is converted to the methyl

ether with 3-methyl-1-p-tolyltriazene. The methyl ether of SDS-3701 can be cleaned up with column chromatography. Chlorothalonil, HCB, and PCBN are cleaned up by Florisil. HCB and PCBN are separated on the Florisil. Chlorothalonil, the methyl ether of SDS-3701, HCB, and PCBN are quantitated by electron capture gas chromatography. Recoveries of chlorothalonil from mushrooms fortified at levels ranging from 0.10 to 10.0 ppm were 62 to 93 percent. Recoveries of SDS-3701 from mushrooms fortified at 0.05 to 0.50 ppm were 60 to 78 percent. Recoveries of HCB from mushrooms fortified at 0.01 to 0.05 ppm were 68 to 97 percent. Recoveries of PCBN from mushrooms fortified at 0.02 to 0.10 ppm were 80 to 112 percent. The reported sensitivity of the method is 0.03 ppm SDS-2787, 0.03 ppm SDS-3701, 0.004 ppm HCB, and 0.008 ppm PCBN.

An enforcement method for determination of residues of chlorothalonil and its 4-hydroxy metabolites has been published in PAM II as Method I. The PAM II method involves extraction with acidified acetone. The residues are passed through a Florisil chromatographic column to separate chlorothalonil and its metabolite SDS-3701. The metabolite is reacted with diazomethane to form the methyl ether. Residues are determined by gas chromatography. FDA conducted a satisfactory method trial on potatoes.

RCB cannot conclude at this time that adequate analytical methodology is available to enforce the proposed tolerance on mushrooms until the nature of the residue in plants has been adequately resolved (see previous discussion in Nature of the Residue section of this review).

Residue Data

Storage Stability

Storage stability data from the Residue Chemistry Chapter of the Chlorothalonil Registration Standard (dated November 4, 1983) indicate that chlorothalonil residues are relatively stable in plant samples when stored at sub-freezing temperatures for 6 to 14 months:

"Diamond Shamrock Corporation (PP#5E1569) submitted a storage stability study indicating that 85 and 71 percent of the chlorothalonil remained in the peel and pulp, respectively, of passion fruit fortified with 0.1 ppm of chlorothalonil following 6 months of storage at -15 °C. Similar recoveries were obtained for the metabolite DAC-3701: 78 and 83 percent from peel and pulp of passion fruit, respectively. Recoveries of chlorothalonil from mint hay stored for 14 months at -20 °C were 89 and 84 percent for fortifications of 1.0 mg and 5.0 mg,

respectively. Chlorothalonil residues are considerably more labile at ambient temperature since a 50 percent decrease in residue was calculated to occur within 10 to 15 days following spiking of grapes (Northover and Ripley, 1980)."

RCB concludes that adequate storage stability data are available for the proposed use.

Mushrooms

Five studies were conducted on mushrooms: three in PA (Document #702-3CR-84-0074-001) and one each in CT and OR (Document #632-3CR83-0043-001).

In the three studies in PA, Bravo 500 was applied at casing, at pinning, and after harvest of each break. The spray solution was applied with a hand sprayer. In West Winfield, PA, Bravo 500 was applied to beds at the rate of 4 pts/8000 sq ft (0.26 lb ai/1000 sq ft) at casing, followed by one to four applications of 2 pt/8000 sq ft (0.13 lb ai/1000 sq ft) at pinning and after harvest of the first, second, or third breaks. Applications were made in 150, 200, or 250 gal of water per 8000 sq ft (19, 25, or 31 gal water/1000 sq ft) of bed surface area. In Avondale, PA, Bravo 500 was applied at 4 pts/8000 sq ft (0.26 lb ai/1000 sq ft) at casing followed by one to four applications of 2 pt/8000 sq ft (0.13 lb ai/1000 sq ft) in 200 gal water/8000 sq ft (25 gal water/1000 sq ft). In State College, PA, Bravo 500 was applied at casing at the rate of 24 oz/100 gal or 4 pt/8000 sq ft (0.26 lb ai/1000 sq ft) followed by one to five applications of 12 oz/100 gal or 2 pt/8000 sq ft (0.13 lb ai/1000 sq ft) in 150, 200, or 250 gal water/8000 sq ft (19, 25, or 31 gal water/1000 sq ft). [In State College, PA, where rates are expressed in oz/100 gal, either 150, 200, or 250 gal were applied per 8000 sq ft so that rates of Bravo 500 applied at casing were 36, 48, or 60 oz per 8000 sq ft (0.15, 0.20, or 0.24 lb ai/1000 sq ft) and subsequent rates were 18, 24 or 30 oz per 8000 sq ft (0.07, 0.01, or 0.12 lb ai/1000 sq ft), respectively.] In PA, samples were taken on March 29, 1984 to April 29, 1984. Samples from PA were shipped and stored frozen until analysis. Assays were conducted on June 14, 1984 to July 5, 1984 and September 25, 1984 to January 11, 1985.

Mushrooms from West Winfield, PA were harvested at first break (120 hours after 2 applications), at second break (72 hours and 96 hours after 3 applications), at third

break (48 hours after 4 applications), and at fourth break (72 hours after 5 applications). Residues in mushrooms from West Winfield were as follows:

Residues (ppm)

	1st Break (120 hrs)	2nd Break (72 hrs)	2nd Break (96 hrs)	3rd Break (48 hrs)	4th Break (72 hours)
Chlorothalonil	0.05-0.17	0.14-0.58	0.16-0.24	1.57-1.91	0.64-1.15
SDS-3701	ND-0.03	0.01-0.06	0.02-0.03	0.03-0.04	0.06-0.11
HCB	ND	ND	ND	ND	ND
PCBN	ND-0.006	ND-0.016	ND-0.005	0.014-0.017	0.006-0.015

Mushrooms from Avondale, PA were harvested at first through fourth breaks (48 hours following 2 to 5 applications, respectively). Residues in mushrooms from Avondale, PA were as follows:

Residues (ppm)

	1st Break (2 applications)	2nd Break (3 applications)	3rd Break (4 applications)	4th Break (5 applications)
Chlorothalonil	1.31-1.94	1.86-2.55	2.66-3.07	3.05-3.28
SDS-3701	0.06-0.07	0.02	0.02	0.03-0.04
HCB	ND	ND	ND	ND
PCBN	0.013-0.015	0.019-0.021	0.026-0.030	0.019-0.022

Mushrooms from State College, PA were harvested at the first through fifth breaks at 48 hours after the second through sixth applications, respectively. (Harvest times were the same for the two types of applications, i.e., one set of data is for applications in oz/100 gal, with 150 to 250 gal/ 8000 sq ft, and the other set is for pt/8000 sq ft.) Residues for mushrooms treated initially at 36 to 60 oz/8000 sq ft (0.15 to 0.24 lb ai/1000 sq ft) and subsequently at 1/2 of the initial rate (0.07 to 0.12 lb ai/1000 sq ft) are reported below:

Residues (ppm)

	1st Break (2 applications)	2nd Break (3 applications)	3rd Break (4 applications)	4th Break (5 applications)	5th Break (6 application
Chlorothalonil	0.40-0.54	0.51-0.85	0.56-1.00	0.47-1.03	0.70-1.73
SDS-3701	ND-0.01	ND-0.02	0.02	0.01-0.02	0.03-0.05
HCB	ND	ND	ND	ND	ND-0.003
PCBN	0.005-0.007	0.007-0.013	ND-0.006	0.006-0.011	0.011-0.029

Residues in mushrooms from State College, PA treated at the initial rate of 4 pt/8000 sq ft (0.26 lb ai/A) and subsequent rate of 2 pt/8000 sq ft (0.13 lb ai/A) are reported below:

	Residues (ppm)				
	1st Break (2 applications)	2nd Break (3 applications)	3rd Break (4 applications)	4th Break (5 applications)	5th Break (6 applications)
Chlorothalonil	0.21-0.44	0.26-0.71	0.31-0.75	0.35-0.50	0.70-1.79
SDS-3701	ND	0.02	0.01-0.02	0.01-0.02	0.04
HCB	ND	ND	ND-0.003	ND	ND
PCBN	ND-0.007	ND-0.012	0.006-0.012	ND-0.008	0.008-0.015

In CT in 1982, Bravo 500 was applied at the rate of 32 or 64 oz Bravo 500 per 7500 sq ft (0.14 lb ai/1000 sq ft or 0.28 lb ai/1000 sq ft). In CT, four scenarios were followed: one application of Bravo 500 at 32 oz and a PHI of 5 days (1st break); two applications at 32 oz and a PHI of 6 days (2nd break); two applications at 32 oz and one at 64 oz and a PHI of 4 days (3rd break); two applications at 32 oz and two at 64 oz and a PHI of 3 days (4th break). Applications were made at pinning and prior to formation of caps. (Samples from CT were taken on July 20, 1982 and kept in dry storage until analysis between June 1, 1983 and July 25, 1983.) For one or two applications in CT at 32 oz Bravo 500 per 7500 sq ft, ND residues were found (< 0.03 ppm SDS-2787, < 0.03 pm SDS-3701, < 0.004 ppm HCB, and < 0.008 ppm PCBN). For two applications at 32 oz and one or two at 64 oz per 7500 sq ft, residues were ND except for < 0.03 to 0.08 ppm SDS-2787.

In OR in 1983, Bravo W-75 was applied at an initial rate of 40 oz/8000 sq ft (0.23 lb ai/1000 sq ft) followed by one to five subsequent applications at 20 oz/8000 sq ft (0.12 lb ai/1000 sq ft) in 150 or 250 gal water per 8000 sq ft (19 or 31 gal water/1000 sq ft). Samples in OR were taken between April 11, 1983 and May 16, 1983 and stored frozen. Assays were conducted between June 1, 1983 and July 25, 1983. Residues resulting from two applications in 150 or 250 gal water and a 7- or 8-day PHI were 0.30 to 1.42 ppm chlorothalonil, ND SDS-3701,

ND HCB, and 0.015 to 0.027 ppm PCBN. The following table gives residues for two to five applications in 150 or 250 gallons water and PHI's of 36 to 48 hours:

Residues (ppm)

	2 Applications (38 hrs PHI)	2 Applications (48 hrs PHI)	3 Applications** (36 hrs PHI)	4 Applications (38-hrs PHI)	4 Applications** (48-hours PHI)
Chlorothalonil	5.88-6.68	3.64-6.20	6.74-7.38	2.04-6.00	4.16-5.52
SDS-3701	ND	ND	ND	ND	ND
HCB	ND-0.005	ND-0.04	0.005	ND-0.004	0.004
PCBN	0.069-0.092	0.046-0.079	0.086-0.105	0.046-0.066	0.041-0.061

	5 Applications (38 hrs PHI)	3 Applications* (48 hrs PHI)	5 Applications* (48 hrs PHI)
Chlorothalonil	1.62-3.10	2.98-3.22	2.80
SDS-3701	ND	ND	ND
HCB	ND	ND	ND
PCBN	0.017-0.041	0.032-0.039	0.025-0.030

* Data for 250 gallons water only
** Data for 150 gallons water only

Until satisfactory characterization of the nature of the residues in plants and resolution of whether some impurities in technical chlorothalonil (i.e., HCB and PCBN) need to be included in the tolerance expression, RCB wil reserve its conclusion as to whether the proposed tolerance of 8 ppm is adequate to cover residues resulting from the proposed use on mushrooms.

Meat, Milk, Poultry, and Eggs

No food or feed items are involved in this use on mushrooms. Therefore, RCB concludes that this use falls in category 3 of Section 180.6(a) with respect to residues in meat, milk, poultry, and eggs.

Other Considerations

An International Residue Limit (IRL) Status sheet is attached. There are no Codex, Canadian, or Mexican tolerances for chlorothalonil on mushrooms. Therefore, no compatibility questions exist with respect to Codex.

Attachment 1: International Residue Limits Status sheet

cc: Circu, Reviewer-N.Dodd, TOX,RF, PM#43, EAB, EEB, FDA, PP#6E3410, PMSD/ISB-Eldredge
RDI: J.H. Onley:10/28/86:R.D.Schmitt:10/28/86
TS-769:RCB:CM#2:RM810:557-1681:N.Dodd:Kendrick & Co.:11/3/86

Michael D. Meggs 10/6/06

ATTACHMENT 1

N. Dodd

INTERNATIONAL RESIDUE LIMIT STATUS

CHEMICAL chlorothalonil PETITION NO. 6E 3410

CCPR NO. 081

Codex Status

☒ No Codex Proposal Step 6 or above

Residue (if Step 9): _____

Proposed U.S. Tolerances

Residue: chlorothalonil and its metabolite 4-hydroxy-2,5,6-trichloroisonitrile

Crop(s)	Limit (mg/kg)
None on mushrooms	

Crop(s)	Tol. (ppm)
mushrooms	8

CANADIAN LIMIT

Residue: _____

Crop(s)	Limit (ppm)
None	

MEXICAN TOLERANCIA

Residue: _____

Crop(s)	Tolerancia (ppm)
None	

Notes:

(15)