RF

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

3 NOV 1988

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: PP# 5F3183. Chlorothalonil on Cherries. Evaluation of Amendment dated June 22, 1988. MRID Nos. 406848-00 thru 02. DEB No. 4193.

FROM: Stephanie H. Willett, Chemist
Tolerance Petition Section 2
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TO: Lois Rossi, PM 21
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and
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Health Effects Division (TS-769C)

THRU: Charles L. Trichilo, Ph.D., Chief
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Health Effects Division (TS-769C)

Background

Fermenta Plant Protection Company, formerly SDS Biotech Corporation and Diamond Shamrock Corporation, proposed to increase the 0.5 ppm tolerance for the fungicide chlorothalonil (2,4,5,6-tetrachloroisophthalonitrile) and its metabolite 4-hydroxychlorothalonil (4-hydroxy-2,5,6-trichloroisophthalonitrile) in or on cherries (sweet and tart) to 3.0 ppm in the subject petition. The petition was placed in reject status pending resolution of several deficiencies cited in the initial review by DEB (see memo of M.P. Firestone dated March 7, 1985).

Chlorothalonil tolerances are established on several RACs in 40 CFR 180.275 at levels ranging from 0.05 to 15 ppm.

The Residue Chemistry Chapter of the Chlorothalonil FRSTR was issued on March 11, 1988.

Summary of Deficiencies That Still Need Resolution

1. A permanent tolerance established on only washed tart cherries is not acceptable to DEB. A tolerance must be high enough to cover residues found in both washed and dry tart cherries. This needs to be reflected in a revised Section F.

2. The proposed use and label directions are not clear. A revised Section B needs to be submitted.

3. A ^{14}C-Chlorothalonil foliar metabolism study is needed on cherries or some other related tree fruit.

4. Residue data are needed on unwashed tart cherries (see DEB's Comments/Conclusions, re: Deficiencies 5a-d that follow in this review).

5. Sample storage information and stability data must be submitted.

Recommendations

DEB recommends against the establishment of a 3.0 ppm tolerance on tart cherries for reasons cited in conclusions 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10. Additional metabolism and residue data are needed, as well as revisions to Section B, and possibly Section F.

Conclusions Resulting from the Review of the Present Submission

1. The revised Section F proposing separate permanent tolerances on sweet and sour cherries is acceptable. However, the proposed tolerance level on tart cherries may have to be changed, depending upon the indications of the additional residue data requested.

2. Residue data should be obtained from unwashed cherries so that an established permanent tolerance would cover a worst case situation. Some data from washed cherries may be appropriate for comparison purposes.

3. The proposed use and label directions are not clear. The total number of post shuck split applications that will be allowed should be specified, and a seasonal maximum application rate expressed in lb ai/A/yr should appear on the label. Residue data are needed from trials where the pesticide is applied by both ground and aerial equipment in order to support the proposed use.

4. The petitioner will need to revise Section B/label to include a restriction against grazing treated orchards/groves and cutting cover crops for feed.

5. The petitioner should conduct a metabolism study where ^{14}C-Chlorothalonil is foliar applied to cherries, or some related tree crop. The rate and frequency of application should be sufficiently high to permit adequate identification of residues.

6. Additional analytical methodology may be needed if sufficient levels of other metabolites are found to form in cherries.

7. The petitioner will need to submit additional residue data from unwashed cherries treated at the maximum application rate with at least the maximum number of post shuck split applications specified in the Section B/label.

8. Residue data are typically required for cherries grown in the major cherry growing regions in the US. These are California, Oregon or Washington, Michigan, Utah or Montana or Idaho, and New York or Philadelphia, according to Agricultural Statistics. The petitioner will need to submit additional residue data from field trials conducted in these areas.

9. Storage conditions and intervals should be submitted for all samples. Presently storage data support stability of chlorothalonil and its 4-hydroxy metabolite for 6 months. Additional storage stability data depicting the percent decline in residues of chlorothalonil and its 4-hydroxy metabolite, HCB and PCBN under the storage conditions used and for the same storage period as the field trial samples must be submitted.

10. All questions concerning the nature of the residue in plants have not been adequately addressed. Additional residue data, including storage stability data, on other components may be needed depending on the final outcome of the requested foliar metabolism studies.

11. The proposed US tolerance level and expression are incompatible with Codex.

Present Considerations

This submission is a response to the dietary exposure deficiencies previously cited. The submission consists of revisions to Sections B and F, a plant metabolism study and additional residue data.

The deficiencies will be restated below, followed by the petitioner's response and DEB's comments and conclusions.

Deficiency 1a

The petitioner will need to submit a revised Section F in which a permanent tolerance is proposed.

Petitioner's Response to Deficiency 1a

The petitioner now proposes to retain the tolerance for sweet cherries at 0.5 ppm as presently established in 40 CFR 180.275, and raise the tolerance for tart (sour) cherries to 3.0 ppm in order to support the proposed amended use pattern.

DEB's Comments/Conclusions, re: Deficiency 1a

A tolerance was previously established for chlorothalonil and its primary metabolite on sweet and sour cherries at 0.5 ppm (see PP# 2F2602). This tolerance was based on residues remaining on the fruit after early season applications of chlorothalonil, where the seasonal maximum application was 8.4 lb ai/A and the PHI is about 55 days.

The revised Section F proposing separate permanent tolerances on sweet and sour cherries is acceptable.

The adequacy of the proposed tolerance level on sour cherries is discussed under deficiencies 3a and 5.

Deficiency 1b

The petitioner should be informed that RCB considers the RAC to be unwashed cherries as they are picked from the tree since cherries can be harvested dry.

Petitioner's Response to Deficiency 1b

The petitioner contends that cherry agricultural practices and processing companies consider the harvesting of tart cherries (e.g. Montmorency) into cold water vats as essential, and only those cherries harvested in this manner are acceptable for removal from the farm. Therefore the petitioner wishes to define tart cherries as washed, which is how they leave the farm gate following normal agricultural harvesting practices (see also notes from meeting with Fermenta, 8/30/88, D. Edwards). The amended use is not intended for sweet cherries.

DEB's Comments/Conclusions, re: Deficiency 1b

DEB reiterates the previous conclusion concerning the present definition of cherries. DEB has no information wherein all (100%) tart cherries will leave the various farms in water vats. For example, if a grower's cherry crop has been damaged by windstorm or some other act of nature, would the grower risk the income from his crop by placing these cherries into water vats where there could be a loss of natural juices, etc.? Chlorothalonil is a systemic fungicide, and washing may have little effect on the residue levels, depending on the length of the treatment period, application intervals, amount of pesticide applied, the PHI and other factors.

Residue data should be obtained from unwashed cherries. Some data from washed cherries may be appropriate for comparison purposes. Some safety evaluations could be based on the lower residue levels. The tolerance, however, will still be set based on residues in/on unwashed cherries (see Section 171-4(c)(2)(iv)(b) of Assessment Guidelines, Subdivision O for guidance). This will cover residues resulting from a worst case situation.

Deficiency 2a

The petitioner will need to submit a revised Section B/label in which a restriction is included which will limit the number of post-shuck-split applications allowed. The petitioner should be informed that the proposed use must be supported by the submitted residue data.

Petitioner's Response to Deficiency 2a

The established use on cherries allows for application of BRAVO 500 at popcorn stage (pink, red or early white bud), a second application at full bloom and a third application at petal fall, all at a rate of 4 1/2 to 8 pints/A (2.3 to 4.2 lb ai/A) to control blossom blight and brown rot. To control cherry leaf spot, a fourth application is allowed at shuck split and post-harvest applications are allowed within 7 days after fruit is removed and also at 10 to 14 days later, all at reduced rates of 4 1/2 to 6 pints/A. Pre-bloom applications for control of leaf curl are also allowed.

The petitioner proposes to amend the present product label to allow additional applications of Bravo 500 (4.17 lb ai/gal), Bravo 720 (6 lb ai/gal) and Bravo 90DG (90% water dispersable granules) only to tart cherries mechanically harvested into water. In addition to the bloom and shuck split applications already specified, applications are to be made after shuck split at 10 to 14 day intervals until 7 days prior to harvest. The spray volume specified for tart cherries is 20 to 300 gallons.

Both ground and aerial applications are permitted. There is a restriction against allowing livestock to graze in treated areas.

DEB's Comments/Conclusions, re: Deficiency 2a

The proposed use and label directions are not clear. The total number of post-shuck-split applications that will be allowed should be specified, and a seasonal maximum application rate expressed in lb ai/A/yr should appear on the label. Residue data are needed from trials where the pesticide is applied by both ground and aerial equipment in order to support the proposed use.

This deficiency is not resolved. The petitioner will need to modify the Section B/label.

Deficiency 2b

RCB does not consider split PHI's (i.e., 7 days for cherries harvested into water and 30 days for cherries not harvested into water) acceptable (see also Conclusion 1b above). Furthermore, water can not remove any systemic residues. The petitioner will need to propose only a single PHI in a revised Section B/label.

Petitioner's Response to Deficiency 2b

The minimum PHI specified on the label is 7 days. The treatment period and application rates will differ for sweet and tart cherries.

DEB's Comments/Conclusions, re:Deficiency 2b

This deficiency is resolved. However, other revisions to Section B/label will be needed (see also deficiencies 2a and 2c).

Deficiency 2c

The revised Section B/label should contain a restriction against grazing treated orchards/groves and cutting cover crops for feed.

Petitioner's Response to Deficiency 2c

None

DEB's Comments/Conclusions, re: Deficiency 2c

The petitioner will need to revise Section B/label to include a restriction against grazing treated orchards/groves and cutting cover crops for feed.

This deficiency has not been resolved.

Deficiency 3a

In RCB's review of PP# 4F3025, the petitioner was advised of the need for a ring-labeled ^{14}C-chlorothalonil foliar-applied apple metabolism study (see M. Kovacs memo of 5/30/84). RCB reiterates the need for such a plant metabolism study in support of the proposed post-shuck split chlorothalonil use on cherries. Thus, the nature of the residue in plants is not adequately understood.

Note: Earlier plant metabolism studies primarily reflect soil applications.

Petitioner's Response to Deficiency 3a

The petitioner has submitted a study on the metabolism of ^{14}C-chlorothalonil on tomatoes (MRID# 406848-01).

In this study, four tomato plants received three weekly applications of ^{14}C-chlorothalonil of approximately 7.35 mg chlorothalonil/plant/application, equivalent to 4.0 pints of Bravo 500 per acre. The radiochemical purity was approximately 98.1%. Tomato fruit and vines were harvested after the third and final application. Vine samples were chopped and ground and stored frozen. Tomato fruit samples were immediately subjected to dichloromethane surface strip and macerated or frozen whole. Tomato fruit was blended with acidified acetone. The radioactive content of the post extraction solids (PES) was determined by combustion. Tomato foliage (vine) samples were analyzed similarly. Radioactivity remaining in the extracted solids was also determined by combustion. After removal of the acetone the aqueous sample was extracted with diethyl ether. The radioactive content of the combined organic phase and the aqueous phase was determined by LSC. A summary of the analyses follows in Table I.

TABLE I. TOTAL ^{14}C-RESIDUES FOUND ON TOMATO FRUIT AND TOMATO VINE SAMPLES AFTER THREE WEEKLY APPLICATIONS OF ^{14}C-CHLOROTHALONIL

Sample Type	Days After Last Application		Total ^{14}C-Residue[1] ppm
Fruit	1	Rep 1	2.3
Fruit		Rep 2	2.9
Fruit	7	Rep 1	0.8
Fruit		Rep 2	0.5
Fruit	14	Rep 1	0.8
Fruit		Rep 2	0.4

Sample Type	Days After Last Application	Total ^{14}C-Residue[1] ppm
Vine	1 Rep 1	20.6
Vine	Rep 2	20.5
Vine	7 Rep 1	12.6
Vine	Rep 2	12.8
Vine	14 Rep 1	13.9
Vine	Rep 2	14.1

[1]Chlorothalonil equivalents
(Fruit had been surface rinsed with dichloromethane)

The distribution through the extraction procedure of the terminal residues in tomato fruit and vine samples is presented in Table II.

TABLE II. PERCENT DISTRIBUTION OF ^{14}C-RESIDUE IN TOMATO FRUIT AND VINE SAMPLES THROUGH THE EXTRACTION PROCEDURE[1]

Sample Type	Days After Last App.	Organic Rinse	Organic Extract	PNE	PES
Fruit	1 Rep 1	71.4	4.0	22.2	2.5
	Rep 2	78.6	4.4	15.5	1.5
	Avg	75.0	4.2	18.9	2.0
	7 Rep 1	52.5	5.0	39.6	2.8
	Rep 2	58.7	1.9	24.1	15.3
	Avg	55.6	3.5	31.9	9.1
	14 Rep 1	59.9	2.6	32.3	5.2
	Rep 2	62.4	3.9	30.6	3.1
	Avg	61.2	3.3	31.5	4.2
Vines	1 Rep 1		80.7	13.7	5.6
	Rep 2		79.2	12.8	8.0
	Avg		80.0	13.3	6.8
	7 Rep 1		67.1	19.0	13.9
	Rep 2		66.4	19.2	14.5
	Avg		66.8	19.1	13.6
	14 Rep 1		56.8	29.7	13.6
	Rep 2		54.2	29.6	16.1
	Avg		55.5	29.7	14.9

1 - % of total ^{14}C-activity recovered
PNE-Polar Non Extractable (water soluble)
PES-Post Extraction Solids

According to the petitioner, the data indicate that the percentage of water soluble ^{14}C PNE in tomato fruit increased as the amount of ^{14}C extractable material (dichloromethane and diethyl ether) decreased with time between days 1 and 7, and changed little after day 7. However, in terms of ppm, the amount of residue in the PNE declined, on average, from 0.481 to 0.219 to 0.190 ppm during this interval, in parallel with total residues. In tomato vines, the percentage and amount of radiolabel in the water soluble non-extracted fraction (PNE) increased with time, and in vines this continued throughout the entire 14 days (from 2.723 ppm at day 1 to 4.151 ppm at day 14). Additional testing indicated that the majority of the tomato fruit PNE residue is contained in the pulp of the tomato fruit, while the majority of the tomato fruit PES residue is contained in the tomato fruit skin. Also, it appears that the PNE is most likely translocated into the fruit from foliage and vine or root uptake of ^{14}C-Chlorothalonil related metabolite residues, and /or results from direct penetration of the fruit surface by chlorothalonil. <u>While the skin may play a role in preventing or facilitating transport of chlorothalonil into the body of the tomato fruit, it does not appear to be essential to the process of PNE generation</u>.

Most of the residue extracted in the organic phases (59-79% in tomato fruit, 56-80% in vines) was identified by HPLC as the parent (91 to 95% in fruit, 74 to 93% in vines) and 4-hydroxychlorothalonil (2 to 6% in fruit, 3 to 14% in vines). The total amount of unidentified residues in these fruit samples ranged from 3.4 to 4.8%. The amount present as parent declined from 1.96 ppm at day 1 to 0.35 ppm at day 7 after the last application, and remained virtually unchanged after day 7. A similar pattern was displayed for 4-hydroxychlorothalonil (SDS-3701), which decline from about 0.04 to 0.02 ppm through the same time interval. The amount of parent present in vines also declined over the post harvest interval. The maximum level of SDS-3701 found in tomato vines was 13.8% of the level of chlorothalonil residue, or about 1.07 ppm at 14 days post application.

The amount of ^{14}C-residues contained in the polar nonextractable (PNE) fraction of the tomato fruit approached 32%, or about 0.2 ppm equivalent, of the total residue at both 7 and 14 days. Various analytical methods were used in an effort to identify the components. GPC showed that the PNE fraction contained at least three component accounting for 15.8, 35.1 and 9.0% (total about 60%) of the PNE residue, equivalent to 0.03, 0.067 and 0.017 ppm chlorothalonil equivalents. GPC behavior of the first

two fractions suggested that they were conjugated species (disaccharide and monosaccharide respectively), and that all three likely contained at least one phenolic -OH group, or similar acidic moiety. Enzyme catalyzed hydrolysis suggested that one-fourth of the tomato fruit PNE may be conjugated with glucose or a closely related sugar. Base catalyzed solvolysis indicated that at least one-half of the PNE component contained two intact cyano groups, and that this portion is capable of base reaction leading to the conjugate free species, 5-chloro-2,4,6-trimethoxyisophthalonitrile (SDS-3316), after methylation. Acid catalyzed n-butanol solvolysis indicated that nearly all of the tomato fruit PNE could be butylated, leading to an uncertain number of products, probably more than 3. The extract of acid butanol solvolysis of the PNE could not be cleaned up enough to provide adequate GC/MS data for further analytical evaluation.

The amount of ^{14}C-residues contained in the post extraction solids (PES) fraction of the tomato fruit was less than 5% (<0.025 ppm) of the total residue at 14 days after the last application and identification was not pursued.

DEB's Comments/Conclusions, re:Deficiency 3a

The metabolism data on tomatoes suggest that the residues are mostly comprised of chlorothalonil and the 4-hydroxy metabolite. The residues appear to be mostly surface in nature. Some translocation from foliage (vine), root uptake and possibly skin of ^{14}C-Chlorothalonil related metabolite residues does appear to occur, although no other metabolites were specifically identified.

The metabolism study data on tomatoes are insufficient to support the proposed use on cherries. To date DEB files show that ^{14}C-Chlorothalonil has been foliar applied only to lettuce. Those data and these data on tomatoes are not readily translatable to cherries, which is a tree crop. Additionally, the treatment levels, application rates and use patterns used in the tomato metabolism study are quite different from those to be used on cherries.

The petitioner should conduct a metabolism study where ^{14}C-Chlorothalonil is foliar applied to cherries, or some related crop (stone fruit or apples would be acceptable). The petitioner was informed about the need for a ^{14}C-Chlorothalonil metabolism study on a tree crop in DEB's 5/30/84 review of PP# 4F 3025 (see also Chlorothalonil Registration Standard, 11/4/83, Residue Chemistry Chapter; Nature of the Residue in Plants, p. 2 under Conclusions). The rate and frequency of application should be sufficiently high to permit adequate identification of residues.

This deficiency has not been resolved. Additional metabolism data are needed.

Deficiency 4

RCB can not conclude at this time that adequate analytical methodology is available to enforce the proposed tolerance on cherries until the nature of the residue in plants has been adequately resolved (see Conclusion 3a).

Petitioner's Response to Deficiency 4

None

DEB's Comments/Conclusions, re:Deficiency 4

DEB reiterates the previous conclusion. Additional analytical methodology may be needed if sufficient levels of other metabolites are found to form in cherries. Additional plant metabolism data are needed.

This deficiency remains unresolved.

Deficiencies 5a-d

RCB considers the residue data inadequate to support the proposed 3 ppm chlorothalonil tolerance on cherries.

Since RCB considers the RAC to include dry harvested cherries (see Conclusion 1b), residue data generated on washed tart cherries are not considered adequate to support any proposed tolerance. Therefore, the petitioner will need to submit additional residue data generated on cherries harvested dry (sweet and tart) and reflective of the proposed use (i.e., maximum number of post-shuck-split treatments, maximum application rate, etc.). These residue data must be geographically representative of the major cherry growing regions of the country. Thus the petitioner will need to generate additional residue data on field-treated cherries grown in the states of CA, OR or WA, MI, and NY or PA (note: if these treated samples are stored more than 6 months prior to analysis, additional storage stability data will be required).

Pending RCB's final conclusion concerning the nature of the residue in plants (see Conclusion 3a), the petitioner may need to submit residue data on components of the terminal residue other than chlorothalonil, 4-hydroxychlorothalonil, HCB and PCBN.

Petitioner's Response to Deficiencies 5a-d

The petitioner has submitted a study entitled "Residues of Tetrachloroisophthalonitrile, SDS-3701, SDS-46851, HCB and PCBN on Mechanically Harvested Tart Cherries" (MRID# 406848-02). HCB and PCBN are impurities in the technical grade active ingredient.

Field trials were conducted in New York and Michigan. The petitioner claims that 90% of tart cherries are grown in Michigan. A spray solution of Bravo 500 was applied at a rate of 6 pts/A using commercial air carrier sprayers. The number of applications ranged from 4 to 10, with PHI's ranging from 7 to 50 days. The number of applications after shuck split ranged from 0 for samples with a PHI of 50 days, to 6 for samples with a 7 day PHI. The treated cherries as well as the control samples were mechanically harvested, which involved shaking the trees and allowing the cherries to fall into a large container of cool water according to normal commercial practices for harvesting this crop.

Residues of chlorothalonil, SDS-3701, SDS-46851, HCB and PCBN were extracted from the cherry samples and selectively partitioned into an organic solvent. The residues of chlorothalonil, HCB and PCBN were separated by column chromatography prior to subsequent quantitation by electron capture gas chromatography. The residue of SDS-3701 was derivatized to its methyl ether prior to quantitation. The residue of SDS-46851 was derivatized to its methyl ester for quantitation. The residues of derivatized SDS-3701 and SDS-46851 were cleaned up by column chromatography prior to quantitation. When untreated tart cherries were fortified with chlorothalonil, the following recovery results were obtained:

TABLE III. RECOVERIES OF CHLOROTHALONIL AND RELATED COMPONENTS FROM SPIKED CHERRY SAMPLES

Component Added	Fortification Range (ppm)	Recovery Range (%)
Chlorothalonil	0.03-4.91	80-90
SDS-3701	0.03-0.491	68-90
SDS-46851	0.03-0.495	82-117
HCB	0.01-0.049	67-90
PCBN	0.015-0.098	73-87

The limits of determination are approximately 0.01 ppm for parent, 0.01 ppm for SDS-3701, 0.03 ppm for SDS-46851, 0.003 ppm for HCB and 0.005 ppm for PCBN.

Maximum chlorothalonil residues were found to be 1.55 ppm after 8 applications (4 after shuck split) and a 7 day PHI, 0.63 ppm after 10 applications (6 after shuck split) and a 7 day PHI, and 0.08 ppm after 4 applications (0 after shuck split) and a 50 day PHI. PCBN levels did not exceed 0.015 ppm and occurred in the same ratio to chlorothalonil as found in the technical material

used to manufacture the Bravo 500 applied in the studies. Levels of HCB did not exceed 0.006 ppm. A mean residue of 0.02 ppm SDS-3701 was observed in the cherries treated with 8 applications. No detectable residues of SDS-3701 where found in cherries treated with 10 applications. No SDS-46851 residues were detected in any samples.

DEB's Comments/Conclusions, re:Deficiencies 5a-d

DEB considers the residue data inadequate to support the proposed 3 ppm chlorothalonil tolerance on tart cherries.

Since the RAC is considered to include dry harvested cherries as well as wet harvested cherries, some residue data are needed on unwashed cherries. The petitioner will need to submit additional residue data from unwashed cherries treated at the maximum application rate with the maximum number of post shuck split applications specified in the Section B/label. In this case, the effects of washing are not considered in the establishment of tolerances.

Residue data are typically required for cherries grown in the major cherry growing regions in the US. These are California, Oregon or Washington, Michigan, Utah or Montana or Idaho, and New York or Philadelphia, according to Agricultural Statistics. (Note: Residue data on cherries submitted in support of PP# 2F2602 were from field trials conducted in Oregon and New York). The petitioner will need to submit additional residue data from field trials conducted in these areas. Application should be made with both ground and aerial equipment if both application techniques are to be used.

Storage conditions and intervals should be submitted for all samples. Presently storage data support stability of chlorothalonil and its 4-hydroxy metabolite in frozen storage for 6 months. The residue data submitted here indicate that the field trials were conducted in 1984 which further questions the usefulness of these data. Additional storage stability data depicting the percent decline in residues of chlorothalonil, 4-hydroxychlorothalonil, HCB and PCBN under the storage conditions used and for the same storage period must be submitted. The analytical methodology used to assess residue levels appears to be adequate.

All questions concerning the nature of the residue in plants have not been adequately addressed. Additional residue data including storage stability data on other components may be needed depending on the final outcome of the requested metabolism studies.

Deficiencies 5 a through d have not been resolved.

Other Considerations

An updated International Residue Limit Status sheet is attached to this review. There are no Canadian or Mexican tolerances established for chlorothalonil on cherries. Codex has established a 10 ppm limit (parent compound only) for chlorothalonil on cherries. Thus, there is incompatibility in the tolerance levels and the tolerance expression.

Attachment: International Residue Limit Status Sheet

cc: SHWillett, PP# 5F3183, E. Eldredge (ISB/PMSD), Circ., RF
TS769C: DEB:CM#2:RM810:X1669:SHWillett:shw-10/27/88
RDI: JHOnley, 11/1/88; RDSchmitt, 11/1/88

INTERNATIONAL RESIDUE LIMIT STATUS

10/27/95

CHEMICAL Chlorothalonil

CODEX NO. 081

CODEX STATUS:

☒ No Codex Proposal Step 6 or above

Residue(if Step 8): Chlorothalonil

Crop(s)	Limit (mg/kg)
Cherries	10

PROPOSED U.S. TOLERANCES:

Petition No. 5F3183

RCB Reviewer S.H. Willett 10/27/95

Residue: 2,4,5,6-tetrachloroisophthalonitrile and its metabolite*

Crop(s)	Limit (mg/kg)
cherries (tart)	.3
cherries (sweet)	0.5

CANADIAN LIMITS:

☒ No Canadian limit (on cherries)

Residue:

Crop(s)	Limit (mg/kg)
-	

MEXICAN LIMITS:

☒ No Mexican limit (on cherries)

Residue:

Crop(s)	Limit (mg/kg)

NOTES:

* 4-hydroxy-2,5,6-trichloroisophthalonitrile

Form revised 1986