



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

J. Loranger  
SRRD

MAY 30 1996

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OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

**MEMORANDUM**

**SUBJECT:** Addendum to Captan RED: Registrant Rebuttal and Response to Previous Reviews; Chemical No.: 81301; Branch Nos.: 15460 and 17247; DP Barcode Nos.: D214345 and D222419; MRID Nos.: 43584601 and 438756-03

**FROM:** Christine L. Olinger, Chemist  
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**THRU:** Edward Zager, Chief  
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Health Effects Division (7509C) *Edward Zager*

**TO:** Paula Deschamp/John Redden  
Risk Characterization and Analysis Branch  
Health Effects Division (7509C)

The Captan Task Force has submitted a rebuttal to the Captan RED chapters and a response to a previous review (C. Olinger, 5/20/94). An Agency RED has not been prepared, but is scheduled to be completed by June 30, 1996. Each of the registrant's responses to the product and residue chemistry RED chapters will be described below, followed by the CBRS comment.

**63-14, 63-16, 63-17, and 63-20**

**Registrant Response**

Zeneca will be sending a report addressing these requirements for the three technical products (10182-197, -262, and -293). They don't believe that 63-20 is applicable to their technical products because they contain an inorganic carbonate as an acid scavenger and is packaged in appropriate non-corroding packaging.

**CBRS Comment**

CBRS will review this study when it is submitted and will then address whether we consider

these requirements have been fulfilled. A more thorough argument on why they believe 63-20 is not applicable should be included in the report.

### **Product Chemistry 10182-298**

#### Registrant Response

The registrant provided a copy of a letter requesting voluntary cancellation of this product, so they do not intend to develop any additional product chemistry data.

#### CBRS Comment

According to a REFS Search conducted 3/4/96, this product was cancelled on 7/19/95. Therefore no additional product chemistry data are required for this product. The Agency RED should reflect this cancellation.

10182 298 cancelled ✓

### **Product Chemistry 10182-198**

#### Registrant Response

The registrant does not believe it is necessary to develop data for this formulation intermediate because it consists of the technical material with a small amount of inert ingredients added. They will submit information regarding the manufacturing process and formulation.

#### CBRS Comment

The registrant is referred to 40 CFR 158.190, table of data requirements for physical and chemical characteristics. The registrant does not need to submit new studies for those requirements which require only the TGAI and/or PAI as the test substance. Any requirement which specifies the MP as the test substance will require submission of a new study.

### **Product Label Amendments**

#### Registrant Response

The registrant intends to amend product labels through the RED process to include maximum annual use rates, pre-harvest intervals, etc. as requested in the Residue Chemistry Chapter.

#### CBRS Comment

None required.

### **171-4(k) Crop Field Trials - Caneberries**

#### Registrant Response

The registrant has committed to submit the confirmatory residue data for caneberries by December 31, 1996. A minimum of two trials will be conducted with raspberries.

CBRS Comment

None required.

**171-4(k) Crop Field Trials - Strawberries**Registrant Response

The registrant does not believe the confirmatory crop field trials requested in the RED will be necessary to reassess the tolerances for strawberries.

CBRS Comment

No additional field trials are required to support the reregistration of strawberries (C. Olinger, 6/15/95, CBRS No. 14715, Barcode No. D209448). The tolerance for strawberries can be reassessed at 25 ppm.

**Dietary Risk Assessment - Seed Treatment Commodities**Registrant Response

CTF observed inclusion of seed treatment commodities in the dietary risk assessment. IR-4 has asked the CTF to propose seed treatments for all crop groups.

CBRS Comment

The RED includes only those uses which are currently registered. The Agency will address the risk assessment for additional seed treatment uses when a formal request is submitted.

**171-4 (k) Crop Field Trials and 171-4(l) Processing Studies - Grapes**Registrant Response

The registrant has recommended for a reassessed tolerance of 25 ppm instead of 10 ppm as recommended in the CBRS chapter of the RED. The registrant has requested reconsideration of the proposed addition of a raisin waste tolerance and modification of the current raisin tolerance. The most recent version of Table II (September 1995) does not include raisin waste as a feed item and a recent CBRS review (C. Olinger) recommended for revocation of the raisin tolerance.

The registrant has also submitted additional data (MRID 43548601) to validate the analytical method used to analyze grape processed products (MRID 42296004). Raw data used for analysis of captan and its metabolite THPI were submitted for consideration.

CBRS Comment

CBRS has examined the raw data and has found the quantification method for captan and THPI to be satisfactory. CBRS recommends similar data be included in any future magnitude of residue reports for captan.

CBRS agrees that the reassessed tolerance for captan be changed from 10 ppm to 25 ppm. Since CBRS has completed the RED chapter, RD has approved modification of the pre-harvest interval grapes from 14 or 45 days to 0 days. The maximum residue value at the

PHI for grapes → 0 days

maximum application rate and a 0-day PHI is 22.5 ppm; accordingly CBRS recommends for a reassessed tolerance for grapes of 25 ppm.

Raisin waste is no longer considered a significant animal feed item, so there is no need to establish a raisin waste tolerance. CBRS has previously recommended for revocation of the raisin tolerance in 40 CFR 185.500 (C. Olinger; 11/14/95; CBRS No. 16181; DP Barcode No.: D219159).

### **Dietary Risk Assessment - Grapes and Grape Products**

#### **Registrant Response**

The CTF observed that 1.5 ppm was used as the anticipated residue for wine in the cancer risk assessment; they believe that the value for grape juice (0.24 ppm) should have been used.

#### **CBRS Comment**

The chronic non-cancer anticipated residue (1.5 ppm) was used for the cancer risk assessment for wine. The cancer anticipated residue for grape juice (0.24 ppm) should be used for wine.

Since the reassessed tolerance for grapes has changed, CBRS has reconsidered the anticipated residues for grape processed products. The data on which the revised ARs are based are included in the original CBRS anticipated residue memo (S. Funk, 9/22/94, Barcodes D207075 and D207149, CBRS Nos. 14284 and 14301). The chronic non-cancer and cancer anticipated residues for grapes and grape juice will remain the same, since these values are based on monitoring data. Concentration has not been observed for washed raisins for either captan or residues of captan plus THPI; therefore the same value will be used for grapes and washed raisins. Anticipated residues for grapes and grape products are summarized in the Table 1 below. The acute anticipated residue for wine and grape juice is the same as a chronic non-cancer risk since these are highly blended commodities.

Table 1. Anticipated Residues for Grape and Grape Products

Food Item	DRES Code	Residue Data Source		% Crop Treated	Non-cancer Chronic Anticipated Residue (ppm)	Cancer Chronic Anticipated Residue (ppm)	Acute Anticipated Residue (ppm)
		Chronic	Acute				
Grapes - fresh	01014AA	Survey	Field Trial	35	1.5	0.24	23
Grapes-raisins	01014DA	Survey/processing	Field Trial/processing	35	1.5	0.24	23
Grapes-juice	01014JA	Survey/processing	Survey/processing	35	1.5	0.24	1.5
Grapes - wine	43058AA	Survey/processing	Survey/processing	35	1.5	0.24	1.5

### Anticipated Residues - Use of Concentration Factors for Stone and Pome Fruits.

#### Registrant Response

The CTF noted that default concentration factors were not removed for some processed commodities of stone and pome fruits. According to their calculations, this would decrease the estimated cancer risk from  $1.19 \times 10^{-6}$  to  $1.17 \times 10^{-6}$ .

#### CBRS Comment

CBRS has examined the DRES run dated 11/02/94. The registrant is correct in their observation. When a new DRES run is conducted for chronic non-cancer risk, the DRES staff should remove the default concentration factors for the following commodities: prunes (DRES code 05005DA) and apple juice (DRES Code 04001JA). No errors were found in the concentration factors used for stone and pome fruits in the cancer risk assessment.

### Anticipated Residues - Acute Dietary Risk Assessment - Strawberries

#### Registrant Response

CBRS recommended for an anticipated residue of 73 ppm for strawberries, which is higher than the reassessed tolerance of 25 ppm, because of several incidents of over-tolerance residues in FL during the 93-94 growing season. Preliminary investigation of these incidents did not seem to indicate use inconsistent with the label, but the available field trial data supported a tolerance of 25 ppm. Therefore CBRS recommended for an acute anticipated residue for the highest value found during routine monitoring.

The CTF argues that grower education programs and clearer directions for use has reduced the incidence of over-tolerance residues. The FL monitoring data for the 94-95 growing season showed no incidents of over-tolerance residues. Accordingly, the CTF believes that the maximum value found in field trials should be used in the acute dietary risk assessment.

#### CBRS Comment

CBRS generally does not base anticipated residue estimates on only one year of monitoring

data. The growing season with the high incidence of over-tolerance violations must be taken into consideration. The acute anticipated residue may be reduced once there are more monitoring data available indicating reduced residues in strawberries. The acute anticipated residue for strawberries should remain at 73 ppm.

#### **Anticipated Residues - Acute Dietary Risk Assessment - Caneberries**

##### **Registrant Response**

CBRS recommended for an acute AR of 28 ppm for caneberries, based on the highest residue value from a raspberry crop field trial (MRID 43086601). CTF has submitted a response to review of this study, citing potential data problems within the final report, with the possibility of transposition of sample identification either in the field or laboratory. Transposition of 0-day and 3-day data points appears to provide more consistent values. The CTF believes the acute AR for raspberries should be 25 ppm.

##### **CBRS Comment**

The maximum residue found was 38 ppm at a single application rate of 2.5 lb ai/A for a total of 7 applications for an annual rate of 17.5 lb ai/A and a 3-day PHI. The current 24(c) labels permit a maximum single application rate of 2 lb ai/A, for an annual total of 10 lb ai/A and a minimum 3 day PHI. Extrapolation of the residue data to the current 1x rate yields a value which is close to the established tolerance of 25 ppm. The revised acute anticipated residue for blackberries, dewberries, and raspberries is 25 ppm.

#### **Anticipated Residues - Acute Dietary Risk Assessment**

##### **Registrant Response**

The CTF has objected to the use of data extrapolated from a blueberry residue trial using the flowable formulation for the acute dietary risk assessment. Extrapolation of a data point for this trial yields a value which exceeds the current tolerance; this value was used for the acute anticipated residue. The CTF believes this value could be ignored since data generated using WP formulations have been used to support flowable formulations.

##### **CBRS Comment**

Flowable formulations are currently registered for use on blueberries. Therefore CBRS must consider the flowable data along with the WP data. Upon reconsideration the reassessed blueberry tolerance will be 40 ppm and the blueberry anticipated residue will remain at 36 ppm.

#### **Magnitude of Residue in Meat and Milk**

##### **Registrant Response**

The registrant has proposed a modified livestock diet, based on the removal of grape pomace and raisin waste as feed items. The registrant believes that 10 ppm should be used for wet apple pomace in the diet and has therefore recommended the following reassessed and/or new

tolerances: meat and meat by-products, 0.15 ppm; fat, 0.10 ppm; and milk, 0.05 ppm.

#### CBRS Comment

CBRS agrees that grape pomace and raisin waste no longer need be considered in livestock diets. However, CBRS believes that 16 ppm should be used for wet apple pomace, though the tolerance for apples has been reassessed at 25 ppm. The tolerance is based on potential combined foliar and post-harvest dip treatments. It is unlikely that significant numbers of apples which have been dipped will be used for preparing apple juice, so the contribution of dip treatments to the residues need not be considered. The maximum residue found at a 1x rate in field trials for apples was 15.9 ppm captan + THPI (MRID 00128355); the maximum potential residues in wet apple pomace is 20.8 ppm (16 x 1.3, avg. conc. factor for combined residues of captan and THPI in wet apple pomace).

The estimate for chronic ARs for wet apple pomace and almond hulls remain the same; the maximum value for almond hulls found was 60 ppm. The estimated chronic dietary burden (non-cancer) and maximum dietary burden (acute analysis) have been recalculated and are summarized in tables 2 and 3.

Table 2. Estimated Dietary Burden for Determining Chronic (non-Cancer) Risk

Commodity	Captan + THPI (ppm)	% in Diet		% Dry Matter	Average Dietary Burden, ppm	
		Dairy	Beef		Dairy	Beef
Almond Hulls	3.5 <sup>1</sup>	15	25	90	0.58	0.97
Apple Pomace, wet	0.65 <sup>2</sup>	20	30 <sup>4</sup>	40	0.33	0.49
RAC's from seed treatment (grass, corn, cottonseed, small grain etc.)	0.1 <sup>3</sup>	65	45	20 <sup>5</sup>	0.33	0.23
<b>TOTAL</b>		100	100		1.23	1.68

<sup>1</sup> Average field trial almond hull residue X % crop treated, 35 ppm X 10%.  
<sup>2</sup> 95th percentile apple survey concentration for captan (0.41) plus 10% for THPI (0.05) X average concentration factor for captan plus THPI, 0.5 ppm X 1.3.  
<sup>3</sup> Limit of detection for THPI plus limit of detection for captan, 0.05 ppm + 0.05 ppm.  
<sup>4</sup> Maximum is 40%.  
<sup>5</sup> Maximizes residue. 20% is the percent dry matter for potato culls. Other rac's typically have higher percents dry matter.

Table 3. Estimated Dietary Burden for Determining Acute Risk

Commodity	Captan + THPI (ppm)	% in Diet		% Dry Matter	Average Dietary Burden, ppm	
		Dairy	Beef		Dairy	Beef
Almond Hulls	60	15	25	90	10.00	16.67
Apple Pomace, wet	20.8	20	40	40	10.40	20.80
RAC's from seed treatment (grass, corn, cottonseed, small grain etc.)	0.1 <sup>1</sup>	65	35	20 <sup>2</sup>	0.33	0.18
<b>TOTAL</b>		100	100		20.73	37.65

<sup>1</sup> Limit of detection for THPI plus limit of detection for captan, 0.05 ppm + 0.05 ppm.  
<sup>2</sup> Maximizes residue. 20% is the percent dry matter for potato culls. Other rac's typically have higher percents dry matter.

Cattle feeding studies are summarized in a previous CBRS review (C. Olinger, 5/20/94, CBRS No. 11105, DP Barcode D183051). Using the results of these feeding studies, the anticipated residues and reassessed tolerances can be estimated, and are summarized in the following table.

Table 4. Summary of Anticipated Residues and Reassessed Tolerances for Meat and Milk<sup>1</sup>

Commodity	Chronic (non-Cancer) Anticipated Residue, ppm <sup>1</sup>	Acute Anticipated Residue, ppm <sup>1</sup>	Reassessed Tolerance, ppm <sup>1,2</sup>
Meat	0.01	0.20	0.20
Meat By-products	0.01	0.30	0.30
Fat	0.01	0.15	0.15
Milk	0.01	0.10	0.10 <sup>3</sup>

<sup>1</sup> Residue values are on a captan equivalent basis.  
<sup>2</sup> The tolerances for meat, meat-byproducts, and fat apply to cattle, sheep, swine, goats, and horses.  
<sup>3</sup> This is a new tolerance; a tolerance for milk has not been previously established.

### 171-4(e) Storage Stability

#### Registrant Response

The registrant has submitted one volume of data describing the storage stability of captan metabolites in animal tissues and milk (MRID 438756-03).

#### CBRS Comment

This study consists of two parts: a captan *per se* stability study in milk (which was not requested by CBRS), and a tissue and milk stability study for THPI and the hydroxy-THPI metabolites, which was requested in the C. Olinger 5/20/94 review.

Frozen milk was fortified with sufficient captan to yield a concentration of 0.4 ppm, and analyzed at various time intervals thereafter. This was done to demonstrate the instability of captan in milk.



The method used has been previously reviewed by CBRS. Briefly, samples were first acidified with phosphoric acid and then extracted with benzene. The benzene extract was separated, from the aqueous phase, filtered, and evaporated to dryness. Residues were reconstituted with hexane and partitioned into acetonitrile. The solvent was exchanged to dichloromethane and then cleaned up on a nuchar:silica gel column. Captan and THPI were eluted into separate fractions. The extracts were analyzed using gas chromatography with an electrolytic conductivity detector. Results are presented in the following table.

Table 5. Stability of Milk Fortified with 0.4 ppm Captan and Stored Frozen

Nominal Interval	Captan, ppm	THPI, ppm	Total Captan Equivalents, ppm
0-day	0.43	0.016	0.46
2-week	0.31	0.056	0.42
1-month	0.21	0.067	0.34
3-month	0.17	0.109	0.39
6-month	0.10	0.131	0.36
12-month	0.06	0.146	0.35

CBRS agrees with the registrant's conclusion that captan is unstable in milk matrices for storage intervals greater than one month.

In the tissue/milk stability study, control samples were fortified at a level of 0.4 ppm with THPI and hydroxy-THPI and stored for over three years. Currently THPI is the only metabolite regulated and used for risk assessment (C. Olinger and P. Chin, 4/1/94). Samples from the magnitude of residue study were stored up to 10.5 months prior to analysis.

Samples were analyzed using method similar to that described in the C. Olinger 5/20/94 review. Salt was added to thawed milk samples which were then extracted with ethyl acetate. An aliquot of the extract was filtered, dried with  $\text{Na}_2\text{SO}_4$ , and evaporated to dryness. The sample was dissolved in hexane and the solvent was exchanged to acetonitrile. The acetonitrile was evaporated to dryness and the sample was reconstituted with a toluene ethyl acetate mixture. The sample was cleaned up using a silica gel column and then derivatized with BSTFA containing 10% TMCS to form the trimethylsilyl derivatives. Analysis for the derivatives was by GC with MSD detection. Tissues samples were treated in a similar manner, with the substitution of acetone as the initial solvent.

Only the results of the THPI stability study are presented in this review, since it is the only metabolite regulated. Residues of *cis*-3-hydroxy-THPI, *trans*-3-hydroxy-THPI, *cis*-5-hydroxy-THPI, and *trans*-5-hydroxy-THPI are stable for 3 years, once results are corrected for concurrent method recoveries. Results are presented in Table 6.

Table 6. Frozen Storage Stability of THPI in Animal Matrices

Matrix	Nominal Interval	Percent Recovery of THPI
Fat	0-day	82
	2-week	78
	4-month	80
	8-month	94
	1-year	81
	2-year	87
	3.8 year	90
Kidney	0-day	77
	2-week	86
	4-month	74
	8-month	67
	1-year	74
	2.6-year	71
	3.4 year	88
Liver	0-day	65
	2-week	78
	4-month	78
	8-month	73
	1-year	76
	2.6-year	68
	3.3 year	74
Muscle	0-day	87
	2-week	87
	4-month	86
	8-month	78
	1-year	86
	2.5-year	80
	3.7 year	80
Milk	0-day	88
	2-week	86
	2.5-month	89
	6-month	89
	1-year	82
	2-year	85
	3.3 year	89

Some deficiencies were noted with the report. Representative chromatograms of fortified kidney and liver samples were not provided for comparison to potential interferences of the matrix at the retention time of THPI. The chromatograms on page 52 (figure 6) were identified as beef fat and as milk. Minimal discussion on the quantitation method of metabolites was provided. These deficiencies are not sufficient to warrant submission of an amended study, but the registrant is advised to address these types of deficiencies in future studies.

Residues of THPI are stable in animal tissues and milk for at least three years. No additional storage stability data are required for animal commodities.

**Revised Anticipated Residue Estimates and Tolerance Reassessment**

CBRS has revised the anticipated residue, tolerance reassessment, and codex compatibility tables which have appeared in prior memoranda and CBRS RED chapters. The anticipated residues for various blended commodities have been modified in the same manner as for grape juice. All revisions in the tolerance reassessment table are highlighted. The revised tables are included in Attachments 1, 2, and 3.

Attachment 1: Revised Anticipated Residue Table

Attachment 2: Revised Tolerance Reassessment Summary Table

Attachment 3: Revised Codex Compatibility Table

cc: CLOlinger (CBRS), Circulate, Reg Std File, RF, SF, J. Miller (RD), J. Loranger (SRRD), E. Doyle (SAB)  
7509C:CBRS:CLOlinger:clo:CM#2:Rm 816G:305-5406: 5/22/96  
RDI: Pilot Team: 4/25/96 RPerfetti: 5/23/96 EZager: 5/30/96

## Attachment 1

Table A: Anticipated Residues of Captan in Plant Commodities and of Captan Plus TPHI in Animal Commodities for Dietary Risk Assessment

Food Item	Food Code	Residue Data Source		% Crop Treated <sup>1</sup>	Noncancer Chronic Anticipated Residue (ppm)	Cancer Chronic Anticipated Residue (ppm)	Acute Anticipated Residue (ppm) <sup>9</sup>
		Chronic	Acute				
Alfalfa Sprouts	15021AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Almonds	03001AA	Field Trial	Field Trial	10	0.07	0.07	0.10
Apples	04001AA	Survey	Field Trial	55	0.41	0.060	25
Apples-dried	04001DA	Survey <sup>2</sup>	Field Trial <sup>2</sup>	55	3.3	0.50	200
Apples-juice	04001JA	Survey/ Processing	Survey/ Processing	55	0.13	0.019	0.13
Apricots	05001AA	Survey	Field Trial	5	0.54	0.23	7
Apricots-dried	05001DA	Survey <sup>3</sup>	Field Trial <sup>3</sup>	5	3.3	1.4	42
Barley	24001AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Beans-dry-Great Northern	15001AA	Field Trial	Tolerance	90	0.01	0.01	0.05
Beans-dry-Kidney	15001AB	Field Trial	Tolerance	90	0.01	0.01	0.05
Beans-dry-Lima	15001AC	Field Trial	Tolerance	90	0.01	0.01	0.05
Beans-dry-Navy	15001AD	Field Trial	Tolerance	90	0.01	0.01	0.05
Beans-dry-other	15001AE	Field Trial	Tolerance	90	0.01	0.01	0.05
Beans-dry-Pinto	15001AF	Field Trial	Tolerance	90	0.01	0.01	0.05
Beans, Mung, sprouts	15013AA	Field Trial	Tolerance	90	0.01	0.01	0.05
Beans-dry-Broadbeans (mature seed)	15022AA	Field Trial	Tolerance	90	0.01	0.01	0.05
Beans-dry-Pigeon Beans	15023AA	Field Trial	Tolerance	90	0.01	0.01	0.05
Beans, unspecified	15027AA	Field Trial	Tolerance	90	0.01	0.01	0.05
Beans, dry-Hyacinth (mature seed)	15030AA	Field Trial	Tolerance	90	0.01	0.01	0.05

Table A (continued)

Food Item	Food Code	Residue Data Source		% Crop Treated <sup>1</sup>	Noncancer Chronic Anticipated Residue (ppm)	Cancer Chronic Anticipated Residue (ppm)	Acute Anticipated Residue (ppm) <sup>9</sup>
		Chronic	Acute				
Peas, Black-eyed	15031AA	Field Trial	Tolerance	90	0.01	0.01	0.05
Beans-dry-Garbanzo (Chick Pea)	15032AA	Field Trial	Tolerance	90	0.01	0.01	0.05
Beans, Lima, succulent	15002AA	Field Trial	Tolerance	90	0.01	0.01	0.05
Beans-dry-Lima	15001AC	Field Trial	Tolerance	90	0.01	0.01	0.05
Beans, Snap (succulent-green)	15003AA	Field Trial	Tolerance	90	0.01	0.01	0.05
Beets, garden, tops (greens)	13001AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Beets, roots	14001AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Blackberries	01002AA	Survey	Field Trial	17	0.44	0.24	25
Blueberries	01009AA	Survey	Field Trial	50	0.17	0.11	36
Broccoli	13005AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Brussels Sprouts	13006AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Cabbage-Green and Red	13007AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Cabbage, Chinese/Celer y including Bok Choy	13010AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Cantaloupes-pulp	10002AB	Field Trial	Tolerance	5	0.01	0.01	0.05
Carrots	14003AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Cattle, fat	53001FA	Field Trial/ Survey Animal Diet/Feedi ng Study	Tolerance	N/A	0.01	0.001	0.15
Cattle, MBPY	53001BA	Field Trial/ Survey Animal Diet/Feedi ng Study	Tolerance	N/A	0.01	0.001	0.30

Table A (continued)

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Food Item	Food Code	Residue Data Source		% Crop Treated <sup>1</sup>	Noncancer Chronic Anticipated Residue (ppm)	Cancer Chronic Anticipated Residue (ppm)	Acute Anticipated Residue (ppm) <sup>9</sup>
		Chronic	Acute				
Cattle, meat	53001MA	Field Trial/ Survey Animal Diet/Feedi ng Study	Tolerance	N/A	0.01	0.001	0.20
Cauliflower	13008AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Cherries	05002AA	Survey	Field Trial	45	0.070	0.056	36
Cherries-dried	05002DA	Survey <sup>4</sup>	Field Trial <sup>4</sup>	45	0.28	0.22	144
Cherries-juice	05002JA	Survey <sup>5</sup>	Survey <sup>5</sup>	45	0.11	0.084	0.11
Collards	13009AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Corn, pop	15004AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Corn, sweet	15005AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Corn, Grain- oil	270020A	Field Trial	Tolerance	100	0.01	0.01	0.05
Corn, Grain- Endosperm	24002EA	Field Trial	Tolerance	100	0.01	0.01	0.05
Corn, Grain- Bran	24002HA	Field Trial	Tolerance	100	0.01	0.01	0.05
Corn Sugar	24002SA	Field Trial	Tolerance	100	0.01	0.01	0.05
Cotton, Seed, oil	270030A	Field Trial	Tolerance	50	0.01	0.01	0.05
Cotton, Seed, meal	27003WA	Field Trial	Tolerance	50	0.01	0.01	0.05
Cucumbers	10010AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Dewberries	01004AA	Survey	Field Trial	100 (U)	3.0	0.55	25
Eggplant	11001AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Flax Seed	27004AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Goats, fat	53002FA	Field Trial/ Survey Animal Diet/Feedi ng Study	Tolerance	N/A	0.01	0.001	0.15
Goats, MBYP	53002BA	Field Trial/ Survey Animal Diet/Feedi ng Study	Tolerance	N/A	0.01	0.001	0.30

Table A (continued)

Food Item	Food Code	Residue Data Source		% Crop Treated <sup>1</sup>	Noncancer Chronic Anticipated Residue (ppm)	Cancer Chronic Anticipated Residue (ppm)	Acute Anticipated Residue (ppm) <sup>9</sup>
		Chronic	Acute				
Goats, meat (boneless, lean)	53002HA	Field Trial/ Survey Animal Diet/Feeding Study	Tolerance	N/A	0.01	0.001	0.20
Grapes-fresh	01014AA	Survey	Field Trial	35	1.5	0.24	23
Grapes-raisins	01014DA	Survey/ Processing	Field Trial/ Processing	35	1.5	0.24	23
Grapes-juice	01014JA	Survey/ Processing	Survey/ Processing	35	1.5	0.24	1.5
Grapes-wine	43058AA	Survey/ processsing	Survey/ Processing	35	1.5	0.24	1.5
Hogs, MBYP	53006BA	Field Trial/ Survey Animal Diet/Feeding Study	Tolerance	N/A	0.01	0.001	0.30
Hogs, fat	53006FA	Field Trial/ Survey Animal Diet/Feeding Study	Tolerance	N/A	0.01	0.001	0.15
Hogs, meat	53006MA	Field Trial/ Survey Animal Diet/Feeding Study	Tolerance	N/A	0.01	0.001	0.20
Honeydew Melons	10005AA	Field Trial	Tolerance	█	0.01	0.01	0.05
Horses, fat	53003AA	Field Trial/ Survey Animal Diet/Feeding Study	Tolerance	N/A	0.01	0.001	0.25
Horses, MBYP	53003AA	Field Trial/ Survey Animal Diet/Feeding Study	Tolerance	N/A	0.01	0.001	0.30

Table A (continued)

Food Item	Food Code	Residue Data Source		% Crop Treated <sup>1</sup>	Noncancer Chronic Anticipated Residue (ppm)	Cancer Chronic Anticipated Residue (ppm)	Acute Anticipated Residue (ppm) <sup>9</sup>
		Chronic	Acute				
Horses, meat	53003AA	Field Trial/ Survey Animal Diet/Feedi ng Study	Tolerance	N/A	0.01	0.001	0.20
Kale	13011AA	Field Trial	Tolerance	5	0.01	0.01	0.15
Lettuce	13020AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Milk	50000--	Field Trial/ Survey Animal Diet/Feedi ng Study	Tolerance	N/A	0.01	0.001	0.10
Muskmelons	16003AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Mustard Greens	13021AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Nectarines	05003AA	Survey	Field Trial	100 (U)	0.016	0.016	10
Oats	24003AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Okra	15015AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Onions, green	16004AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Onions (Dry Bulb)	14011AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Onions (Dehydrated or Dried)	14011DA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Peaches	05004AA	Survey	Field Trial	65	0.53	0.15	14
Peaches-dried	05004DA	Survey <sup>6</sup>	Field Trial <sup>6</sup>	65	3.8	1.1	98
Peanuts	15006AA	Field Trial	Tolerance	70	0.01	0.01	0.05
Peanuts, Oil	270070A	Field Trial	Tolerance	70	0.01	0.01	0.05
Pears	04003AA	Survey	Field Trial	15	0.11	0.062	15
Pears-dried	04003DA	Survey <sup>7</sup>	Field Trial <sup>7</sup>	15	0.49	0.28	66
Peas, dried type (mature seeds)	15007AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Peas, succulent (green, immature)	15009AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05



Table A (continued)

Food Item	Food Code	Residue Data Source		% Crop Treated <sup>1</sup>	Noncancer Chronic Anticipated Residue (ppm)	Cancer Chronic Anticipated Residue (ppm)	Acute Anticipated Residue (ppm) <sup>9</sup>
		Chronic	Acute				
Peppers, bell (sweet, garden)	11003AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Pimentos	11004AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Plums (including fresh prunes)	05005AA	Survey	Field Trial	15	0.063	0.044	8
Prunes-dried	05005DA	Survey/ Processing	Field Trial/ Processing	15	0.020	0.010	2
Plums, Prune-juice	05005JA	Survey <sup>a</sup>	Survey <sup>a</sup>	15	0.10	0.062	0.10
Potatoes-whole	14013AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Potatoes-dry	14013DA	Field Trial	Tolerance	5	0.01	0.01	0.05
Pumpkins	10011AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Radishes	14014AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Rape, seed	27017AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Raspberries	01006AA	Survey	Field Trial	50	3.0	0.55	25
Rutabagas	14015AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Rye	24005AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Rye-germ	24005GA	Field Trial	Tolerance	5	0.01	0.01	0.05
Rye, flour	24005WA	Field Trial	Tolerance	5	0.01	0.01	0.05
Safflower	27008AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Safflower-oil	270080A	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Sesame	15026AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Sesame-oil	270090A	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Sheep, MBYP	53005BA	Field Trial/ Survey Animal Diet/Feeding Study	Tolerance	N/A	0.01	0.001	0.30
Sheep, fat	53005FA	Field Trial/ Survey Animal Diet/Feeding Study	Tolerance	N/A	0.01	0.001	0.15

Table A (continued)

Food Item	Food Code	Residue Data Source		% Crop Treated <sup>1</sup>	Noncancer Chronic Anticipated Residue (ppm)	Cancer Chronic Anticipated Residue (ppm)	Acute Anticipated Residue (ppm) <sup>9</sup>
		Chronic	Acute				
Sheep, meat	53005MA	Field Trial/ Survey Animal Diet/Feedi ng Study	Tolerance	N/A	0.01	0.001	0.20
Sorghum, grain (Milo)	24006AA	Field Trial	Tolerance	100	0.01	0.01	0.05
Soybeans	28023AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Soybeans-oil	270100A	Field Trial	Tolerance	5	0.01	0.01	0.05
Soybean flour	28023WA	Field Trial	Tolerance	5	0.01	0.01	0.05
Soybeans- mature, seeds dry	28023AB	Field Trial	Tolerance	5	0.01	0.01	0.05
Soybeans, sprouted seeds	15029AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Spinach	13024AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Squash, summer	10013AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Squash, winter	10014AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Strawberries	01016AA	Survey	Survey	95	1.5	0.70	75
Sugar Beet, sugar	25002SA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Sunflower Seeds	15018AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Sunflower-Oil	270110A	Field Trial	Tolerance	5	0.01	0.01	0.05
Swiss Chard	13025AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Turnips, roots	14019AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Turnips, greens	13026AA	Field Trial	Tolerance	100 (U)	0.01	0.01	0.05
Watermelons	10008AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Wheat	24007AA	Field Trial	Tolerance	5	0.01	0.01	0.05
Wheat, germ	24007GA	Field Trial	Tolerance	5	0.01	0.01	0.05
Wheat, bran	24007HA	Field Trial	Tolerance	5	0.01	0.01	0.05
Wheat, flour	24007WA	Field Trial	Tolerance	5	0.01	0.01	0.05

Table A (continued)

Food Item	Food Code	Residue Data Source		% Crop Treated <sup>1</sup>	Noncancer Chronic Anticipated Residue (ppm)	Cancer Chronic Anticipated Residue (ppm)	Acute Anticipated Residue (ppm) <sup>9</sup>
		Chronic	Acute				
<sup>1</sup> Per cent crop treated should be used in the DRES analysis of chronic anticipated residues <b>only</b> where the entry is redlined. U = unknown. <sup>2</sup> Apple rac values multiplied by the DRES concentration factor (8). <sup>3</sup> Apricot rac values multiplied by the DRES concentration factor (6). <sup>4</sup> Cherry rac values multiplied by the DRES concentration factor (4). <sup>5</sup> Cherry rac values multiplied by the DRES concentration factor (1.5). <sup>6</sup> Peach rac values multiplied by the DRES concentration factor (7). <sup>7</sup> Pear rac values multiplied by the DRES concentration factor (4.4). <sup>8</sup> Plum rac values multiplied by the DRES concentration factor (1.40). <sup>9</sup> <b>Bolded</b> values indicate modifications since the 9/22/95 S. Funk memo.							

## Attachment 2.

Table C. Tolerance Reassessment Summary for Captan

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/Correct Commodity Definition
<b>Tolerances listed under 40 CFR §180.103 (a)</b>			
Apples	25	25	
Apricots	50	10	
Avocados	25	Revoke	No registered uses exist
Beet, greens	100	0.05	Seed treatment only
Beet (roots)	2	0.05	Seed treatment only
Blackberries	25	Cannot Be Reassessed	Additional residue data are required/ <i>Caneberries</i>
Blueberries (huckleberries)	25	<del>40</del>	
Broccoli	2	0.05	Seed treatment only
Brussels sprouts	2	0.05	Seed treatment only
Cabbage	2	0.05	Seed treatment only
Cantaloupes	25	0.05	Seed treatment only
Carrots	2	0.05	Seed treatment only
Cattle, fat	0.05	0.25	Move to 40 CFR §180.103(b)
Cattle meat	0.05	0.3	
Cattle, mbpy	0.05	0.4	
Cauliflower	2	0.05	Seed treatment only
Celery	50	Revoke	No registered uses exist
Cherries	100	50	
Collards	2	0.05	Seed treatment only
Corn, sweet (K + CWHR)	2	0.05	Seed treatment only
Cottonseed	2	0.05	Seed treatment only/ <i>Cotton, seed</i>
Cucumbers	25	0.05	Seed treatment only
Dewberries	25	Cannot Be Reassessed	Additional residue data are required/ <i>Caneberries</i>
Eggplants	25	0.05	Seed treatment only
Garlic	25	Revoke	No registered uses exist

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/Correct Commodity Definition
<b>Tolerances listed under 40 CFR §180.103 (a) -- (Continued).</b>			
Grapes	50	<del>25</del>	
Hogs, fat	0.05	0.25	Move to 40 CFR §180.103(b)
Hogs, meat	0.05	0.3	
Hogs, mbyp	0.05	0.4	
Honeydew melons	25	0.05	Seed treatment only
Kale	2	0.05	Seed treatment only
Leeks	50	Revoke	No registered uses exist
Lettuce	100	0.05	Seed treatment only
Mangoes	50	Revoke	No registered uses exist
Muskmelons	25	0.05	Seed treatment only
Mustard greens	2	0.05	Seed treatment only
Nectarines	50	25	
Onions, dry bulb	25	0.05	Seed treatment only
Onions, green	50	0.05	Seed treatment only
Peaches	50	15	
Pears	25	25	
Peas, dry	2	0.05	Seed treatment only
Peas, succulent	2	0.05	Seed treatment only
Plums (fresh prunes)	100	10	
Peppers	25	0.05	Seed treatment only/Peppers
Pimentos	25		
Pumpkins	25	0.05	Seed treatment only
Raspberries	25	Cannot Be Reassessed	Additional residue data are required/Caneberries
Rutabagas (roots)	2	0.05	Seed treatment only
Shallots	50	Revoke	No registered uses exist
Soybeans, dry	2	0.05	Seed treatment only
Soybeans, succulent	2	0.05	Seed treatment only
Spinach	100	0.05	Seed treatment only
Squash, summer	25	0.05	Seed treatment only

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/Correct Commodity Definition
<b>Tolerances listed under 40 CFR §180.103 (a) -- (Continued).</b>			
Squash, winter	25	0.05	Seed treatment only
Strawberries	25	<del>25</del>	
Taro (corn)	0.25	Revoke	No registered uses exist
Tomatoes	25	Revoke	No registered uses exist
Turnip, greens	2	0.05	Seed treatment only/ <i>Turnip, tops</i>
Turnips, roots	2	0.05	Seed treatment only
Watermelons	25	0.05	Seed treatment only
<b>Tolerances listed under 40 CFR §180.103 (b)</b>			
Almonds	2	0.25	Move to 40 CFR §180.103 (a)
Almond hulls	100	75	Move to 40 CFR §180.103 (a)
Beans, dry	25	0.05	Move to 40 CFR §180.103 (a)
Beans, succulent	25	0.05	Move to 40 CFR §180.103 (a)
Potatoes	25	0.05	Move to 40 CFR §180.103 (a)
<b>Tolerances required under 40 CFR §180.103 (a)</b>			
Alfalfa forage	--	0.05	Seed treatment only
Alfalfa hay	--	0.05	Seed treatment only
Barley, grain	--	0.05	Seed treatment only
Barley, forage	--	0.05	Seed treatment only
Barley, straw	--	0.05	Seed treatment only
Clover forage	--	0.05	Seed treatment only
Clover hay	--	0.05	Seed treatment only
Corn, field, grain	--	0.05	Seed treatment only
Corn, pop, grain	--	0.05	Seed treatment only
Corn, forage	--	0.05	Seed treatment only
Corn, fodder	--	0.05	Seed treatment only
Cotton, forage	--	0.05	Seed treatment only

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/Correct Commodity Definition
<b>Tolerances required under 40 CFR §180.103 (a) -- (Continued).</b>			
Flax, seed	--	0.05	Seed treatment only
Flax, straw	--	0.05	Seed treatment only
Grass, forage	--	0.05	Seed treatment only
Grass, hay	--	0.05	Seed treatment only
Lespedeza forage	--	0.05	Seed treatment only
Lespedeza hay	--	0.05	Seed treatment only
Oats, grain	--	0.05	Seed treatment only
Oats, forage	--	0.05	Seed treatment only
Oats, straw	--	0.05	Seed treatment only
Okra	--	0.05	Seed treatment only
Peanuts	--	0.05	Seed treatment only
Peanut hay	--	0.05	Seed treatment only
Radish, roots	--	0.05	Seed treatment only
Radish, tops	--	0.05	Seed treatment only
Rape, seed	--	0.05	Seed treatment only
Rape, forage	--	0.05	Seed treatment only
Rape, greens	--	0.05	Seed treatment only
Rye, grain	--	0.05	Seed treatment only
Rye, forage	--	0.05	Seed treatment only
Rye, straw	--	0.05	Seed treatment only
Safflower seed	--	0.05	Seed treatment only
Sesame seed	--	0.05	Seed treatment only
Sorghum, grain	--	0.05	Seed treatment only
Sorghum, fodder	--	0.05	Seed treatment only
Sorghum, forage	--	0.05	Seed treatment only
Sunflower, seeds	--	0.05	Seed treatment only
Sunflower, forage	--	0.05	Seed treatment only
Sugar beets, roots	--	0.05	Seed treatment only
Sugar beets, tops	--	0.05	Seed treatment only
Swiss chard	--	0.05	Seed treatment only
Trefoil forage	--	0.05	Seed treatment only
Trefoil hay	--	0.05	Seed treatment only

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/Correct Commodity Definition
<b>Tolerances required under 40 CFR §180.103 (a) -- (Continued).</b>			
Wheat, grain	--	0.05	Seed treatment only
Wheat, forage	--	0.05	Seed treatment only
Wheat, straw	--	0.05	Seed treatment only
<b>Tolerances required under 40 CFR §180.103 (b) [Redefined]</b>			
Cattle, fat	0.05	<del>0.05</del>	
Cattle, mby	0.05	<del>0.15</del>	
Cattle, meat	0.05	0.1	
Goats, fat	--	<del>0.05</del>	
Goats, mby	--	<del>0.15</del>	
Goats, meat	--	0.1	
Hogs, fat	0.05	<del>0.05</del>	
Hogs, mby	0.05	<del>0.15</del>	
Hogs, meat	0.05	0.1	
Horses, fat	--	<del>0.05</del>	
Horses, mby	--	<del>0.15</del>	
Horses, meat	--	0.1	
Milk	--	<del>0.05</del>	
Sheep, fat	--	<del>0.05</del>	
Sheep, mby	--	<del>0.15</del>	
Sheep, meat	--	0.1	
<b>Food Additive Tolerances Listed Under 40 CFR §185.500</b>			
Washed raisins	50	<del>Revoke</del>	No concentration in washed raisins.
<b>Feed Additive Tolerances Needed (40 CFR §186.500)</b>			
Raisin waste	--	<del>Revoke</del>	Not a significant animal feed item.



Attachment 3

Table D. Codex MRLs and applicable U.S. tolerances. Recommendations for compatibility are based on conclusions following reassessments of U.S. tolerances (see Table C).

Commodity	MRL (mg/kg) <sup>1</sup>	U.S. Tolerance (ppm)	Recommendation
Apple	25	25	
Blueberries	20	25	
Citrus fruits	15 <sup>2</sup>	N/A	
Dried grapes	5 <sup>2</sup>	<b>Revoke</b>	<b>No concentration is observed in washed raisins.</b>
Peach	15	50	Decrease U.S. tolerance
Pear	25	25	
Strawberry	20	25	
Tomato	15	25	U.S. tolerance to be revoked; no registered use

<sup>1</sup>All captan MRLs are final (CXL).

<sup>2</sup>JMPR 1990 had proposed to withdraw the CXL in view of no expected uses.

The following conclusions can be made regarding efforts to harmonize the U.S. tolerances with the Codex MRLs:

- Compatibility between U.S. tolerances and Codex MRLs exists for apples and pears.
- The level of the U.S. tolerances should be decreased to achieve compatibility with the Codex MRLs for peaches (from 25 ppm to 15 ppm). The available residue data support the decreased tolerance levels.
- **The tolerance for raisins will be revoked since residues do not concentrate in washed raisins. The tolerance for grapes cannot be lowered to 5 ppm to achieve compatibility with the Codex MRL for dried grapes.**
- The U.S. tolerance of 25 ppm for strawberries is based on registered use patterns in the U.S. and cannot be lowered to 20 ppm to achieve compatibility with the Codex MRL of 20 ppm.

- The U.S. tolerance of 40 ppm for blueberries is based on registered use patterns in the U.S. and cannot be lowered to 20 ppm to achieve compatibility with the Codex MRL of 20 ppm.
- No questions of compatibility exist with respect to commodities where: (i) no Codex MRLs have been established but U.S. tolerances exist; or (ii) Codex MRLs have been established but U.S. tolerances do not exist.



13544

# R165714

**Chemical Name:** Captan

**PC Code:** 081301

**HED File Code:** 61700 SRRD REDs

**Memo Date:** 5/30/1996

**File ID:** DPD214345

DPD222419

**Accession #:** 000-00-8016

**HED Records Reference Center**  
3/18/2009