



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

OFFICE OF  
PREVENTION, PESTICIDES,  
AND TOXIC SUBSTANCES

**MEMORANDUM**

Date: February 28, 2006

Subject: TCMTB. Acute and Chronic Dietary Exposure Assessments for the Reregistration Eligibility Decision (RED) Document.

DP Barcode: D324018  
40 CFR §: 180.288

PC Code: 127201  
Chemical Class: Benzothiazole

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## Executive Summary

Acute and chronic dietary (food and water) exposure assessments were conducted using the Dietary Exposure Evaluation Model software with the Food Commodity Intake Database (DEEM-FCID™, Version 2.03), which uses food consumption data from the USDA's Continuing Surveys of Food Intakes by Individuals (CSFII) from 1994-1996 and 1998. The acute and chronic dietary risk assessments were conducted for all supported TCMTB food uses and were performed to support the reregistration eligibility decision (RED) document.

As an antimicrobial pesticide, TCMTB [(2-benzothiazolylthio)methyl thiocyanate] is used largely as a wood preservative. It is also used as a microbiocide/microbiostat and bactericide/bacteriostat in industrial processes and water system, as well as in industrial materials, as a preservative. As an agricultural pesticide, TCMTB is a fungicide used as a seed treatment on barley, corn, cottonseed, oats, rice, safflower, sorghum, sugar beets, and wheat.

The reregistration of TCMTB is being supported by Bayer CropScience (Bayer) and Wilbur-Ellis Company (Wilbur-Ellis). TCMTB food/feed end-use products are marketed in the United States under the trade names Busan®, Cotguard®, Nusan®, and Nu-Flow®. The Bayer and Wilbur-Ellis TCMTB formulations registered for food/feed uses include emulsifiable concentrate (EC) and soluble concentrate (SC). For food/feed uses, Bayer is supporting TCMTB use on cotton only, while Wilbur-Ellis is supporting uses on barley, oats, rice, wheat, safflower, cotton, and sugar beets. The technical registrant of TCMTB, Buckman Laboratories, Inc. (Buckman), has requested cancellation of all food/feed uses. Bayer and Wilbur-Ellis will be responsible for providing the Agency with the appropriate data needed to maintain their supported uses on their product labels.

Tolerances are established for residues of the fungicide 2-(thiocyanomethylthio)benzothiazole in/on barley (grain and straw), sugar beets (roots and tops), corn (forage, grain, and stover), cotton (forage and undelinted seed), oats (forage, grain, hay, and straw), rice (grain and straw), safflower (seed), sorghum grain (forage, grain, and stover), and wheat (forage, grain, hay, and straw) at 40 CFR §180.288. The permanent tolerances for residues in plant commodities are established at the limit of detection (LOD) of 0.10 ppm.

### Acute Dietary Exposure Results and Characterization of Input Data

A conservative acute dietary exposure assessment was conducted to estimate the dietary risks associated with the reregistration of TCMTB. The acute dietary exposure assessment incorporated maximum theoretical concentration factors for all commodities, existing tolerance level residues, 100% crop treated, and the FQPA Index Reservoir Screening Tool (FIRST) estimated peak drinking water concentration. Acute dietary risk estimates are provided for the general U.S. population and various population subgroups, with the major emphasis placed on the exposure estimates for infants and children. However, an endpoint for females 13-49 years old was not identified in the available toxicity database for TCMTB; therefore, a separate dietary risk estimate for females 13-49 years old is not provided in this assessment. This assessment concludes that for all supported commodities, the acute dietary risk estimates do not exceed HED's level of concern (less than 100% of the aPAD) at the 95<sup>th</sup> exposure percentile for the U.S. population (less than 1% of the aPAD) and all population subgroups, with the highest exposed population subgroup being children 3-5 years old at 2% of the aPAD.

## Chronic Dietary Exposure Results and Characterization of Input Data

A conservative chronic dietary exposure assessment was conducted to estimate the dietary risks associated with the reregistration of TCMTB. The chronic dietary exposure assessment incorporated maximum theoretical concentration factors for all commodities, existing tolerance level residues, 100% crop treated, and the FIRST estimated mean drinking water concentration. Chronic dietary risk estimates are provided for the general U.S. population and various population subgroups, with the major emphasis placed on the exposure estimates for infants and children. However, an endpoint for females 13-49 years old was not identified in the available toxicity database for TCMTB; therefore, a separate dietary risk estimate for females 13-49 years old is not provided in this assessment. This assessment concludes that for all supported commodities, the chronic dietary risk estimates do not exceed HED's level of concern (less than 100% of the cPAD) for the U.S. population (7% of the cPAD) and all population subgroups, with the highest exposed population subgroup being children 3-5 years old at 17% of the cPAD.

### **I. Introduction**

Dietary risk assessment incorporates both exposure and toxicity of a given pesticide. For acute and chronic assessments, the risk is expressed as a percentage of a maximum acceptable dose (i.e., the dose which the Health Effects Division has concluded will result in no unreasonable adverse health effects). This dose is referred to as the population adjusted dose (PAD). The PAD is equivalent to the Reference Dose (RfD) divided by the special FQPA Safety Factor.

For acute and non-cancer chronic exposures, HED is concerned when estimated dietary risk exceeds 100% of the PAD. References which discuss the acute and chronic dietary risk assessments in more detail are available on the EPA pesticides web site: "Available Information on Assessing Exposure from Pesticides, A User's Guide," 6/21/2000, web link: <http://www.epa.gov/fedrgstr/EPA-PEST/2000/July/Day-12/6061.pdf>; or see SOP 99.6 (8/20/1999).

### **II. Residue Information**

The Risk Assessment Review Committee (RARC) met and determined that the interim residue of concern for tolerance expression and risk assessment is TCMTB in/on plants (P. Deschamp, Report of the RARC, 1/11/2006). This is a preliminary decision dependent on the results from the requested confirmatory metabolism data. Metabolism data depicting the nature of residues in wheat, cotton, and sugar beets are requested. For drinking water, the RARC decided that the residues of concern for risk assessment are TCMTB and 2-MBT. Summary of the decisions concerning the residues of concern in plants and drinking water are presented below in Table 1.

Matrix		Residues Included in Risk Assessment	Residues Included in Tolerance Expression
Plants	Primary crop - barley, cotton, oat, rice, safflower, sugar beet, and wheat	TCMTB	TCMTB
	Rotational crop	NA = not applicable	NA

**Table 1. Summary of TCMTB Residues to be Included in the Risk Assessment and Tolerance Expression.**

Matrix		Residues Included in Risk Assessment	Residues Included in Tolerance Expression
Livestock	Ruminant	NA	NA
	Poultry	NA	NA
Drinking water		TCMTB and 2-MBT	NA

### Residue Data used for Acute and Chronic Dietary Assessments

Tolerance level residues of 0.10 ppm were incorporated into the acute and chronic assessments for all commodities.

### Processing Factors

No processing studies are available for TCMTB; therefore, maximum theoretical concentration factors were used for all commodities (OPPTS Guideline 860.1520). For a complete list of all processing factors incorporated into the acute and chronic assessments please see attachment 1.

### Usage Information

No usage data are available for TCMTB, so 100% crop treated was assumed for all commodities.

## **III. Drinking Water Data**

The drinking water values used in the dietary risk assessment were provided by the Environmental Fate and Effects Division (EFED) in the following memorandum: “Drinking Water Assessment for the Use of the Fungicide of TCMTB as a Seed Treatment on Cotton, Wheat, Barley, Oats, Rice, Sugar Beets, and Safflower” (J. Lin, D324010, 1/31/06).

The estimated drinking water concentrations are calculated using the FIRST (version 1.0; Aug. 1, 2001) screening model to assess estimated concentrations of the sum of TCMTB and all potential degradates in surface water. The highest rate of 0.041 lb ai/A (safflower scenario) is used for calculating the drinking water concentrations. The model and its description are available at the EPA internet site: <http://www.epa.gov/oppefed1/models/water/>.

Results from FIRST indicate that the peak (acute) concentration of TCMTB and degradates is not likely to exceed 0.94 µg/L (ppb), and that the average annual (chronic) concentration is not likely to exceed 0.67 µg/L (ppb).

## **IV. DEEM-FCID™ Program and Consumption Information**

TCMTB acute and chronic dietary exposure assessments were conducted using the Dietary Exposure Evaluation Model software with the Food Commodity Intake Database (DEEM-FCID™, Version 2.03), which incorporates consumption data from USDA’s Continuing Surveys of Food Intakes by Individuals (CSFII), 1994-1996 and 1998. The 1994-96, 98 data are based on the reported consumption of more than 20,000 individuals over two non-consecutive survey

days. Foods “as consumed” (e.g., apple pie) are linked to EPA-defined food commodities (e.g. apples, peeled fruit - cooked; fresh or N/S; baked; or wheat flour - cooked; fresh or N/S, baked) using publicly available recipe translation files developed jointly by USDA/ARS and EPA. For chronic exposure assessment, consumption data are averaged for the entire U.S. population and within population subgroups, but for acute exposure assessment are retained as individual consumption events. Based on analysis of the 1994-96, 98 CSFII consumption data, which took into account dietary patterns and survey respondents, HED concluded that it is most appropriate to report risk for the following population subgroups: the general U.S. population, all infants (less than 1 year old), children 1-2, children 3-5, children 6-12, youth 13-19, adults 20-49, females 13-49, and adults 50+ years old.

For chronic dietary exposure assessment, an estimate of the residue level in each food or food-form (e.g., orange or orange juice) on the food commodity residue list is multiplied by the average daily consumption estimate for that food/food form to produce a residue intake estimate. The resulting residue intake estimate for each food/food form is summed with the residue intake estimates for all other food/food forms on the commodity residue list to arrive at the total average estimated exposure. Exposure is expressed in mg/kg body weight/day and as a percent of the cPAD. This procedure is performed for each population subgroup.

For acute exposure assessments, individual one-day food consumption data are used on an individual-by-individual basis. The reported consumption amounts of each food item can be multiplied by a residue point estimate and summed to obtain a total daily pesticide exposure for a deterministic exposure assessment, or “matched” in multiple random pairings with residue values and then summed in a probabilistic assessment. The resulting distribution of exposures is expressed as a percentage of the aPAD on both a user (i.e., only those who reported eating relevant commodities/food forms) and a per-capita (i.e., those who reported eating the relevant commodities as well as those who did not) basis. In accordance with HED policy, per capita exposure and risk are reported for all tiers of analysis. However, for tiers 1 and 2, any significant differences in user vs. per capita exposure and risk are specifically identified and noted in the risk assessment.

## V. Toxicological Information

A summary of the toxicological doses and endpoints selected for the dietary exposure assessments are provided in Table 2.

<b>Exposure Scenario</b>	<b>Dose Used in Risk Assessment (mg/kg/day)</b>	<b>Target MOEs/UFs FQPA safety factor for Risk Assessment</b>	<b>Study and Toxicological Effects</b>
Acute Dietary (general population including infants and children)	NOAEL= 25.1 mg/kg/day  (21 mg ai/kg/day)  83.55% ai purity	UF = 100 (10x inter- and intra-species extrapolation)  FQPA SF = 1x  <b>Acute PAD = 0.25 mg TCMTB/kg/day</b>	Developmental toxicity study in rats (MRID 00154295, 92179009 (1985))  Maternal LOAEL = 76.5 mg TCMTB/kg/day (64 mg ai/kg/day), based on clinical signs of toxicity (ventral alopecia, rough coat, dyspnea/wheezing, oral discharge, diarrhea/loose stool, urine staining, piloerection, and hunched gait).

<b>Exposure Scenario</b>	<b>Dose Used in Risk Assessment (mg/kg/day)</b>	<b>Target MOEs/UFs FQPA safety factor for Risk Assessment</b>	<b>Study and Toxicological Effects</b>
Acute Dietary (females 13-49)	An endpoint for females 13-49 was not identified in the available database for TCMTB.		
Chronic Dietary (all populations)	LOAEL = 3.8 mg/kg/day  81.6% ai purity	UF = 300 (10x inter- and intra-species extrapolation, 3x for use of a LOAEL)  FQPA SF = 1x  <b>Chronic PAD = 0.01 mg ai/kg/day</b>	Chronic toxicity study in dogs (MRID 41342201, 92179008 (1989))  LOAEL = 3.8 mg/kg/day (males), based on decreased body weight gain, decreased white cells, monocytes, and plasma ALT; decreased uterine weight in females.
Carcinogenicity	The CPRC concluded that TCMTB should be classified as Group C - possible human carcinogen - and recommended that for the purpose of risk characterization, the Reference Dose (RfD) approach should be used for quantitation of human risk. This was based on statistically significant increases in tumors in both sexes of the Sprague-Dawley rat: testicular interstitial cell adenomas in males and thyroid c-cell adenomas in females.		

1. 2-(Thiocyanomethylthio) benzothiazole (TCMTB) - Report of the Antimicrobials Division Toxicity Endpoint Selection Committee (ADTC). From: T. McMahon and M. Centra of the Antimicrobials Division (7510C), PC Code: 035603, January 12, 2005.

2. UF = uncertainty factor, FQPA SF = Special FQPA safety factor, NOAEL = no observed adverse effect level, LOAEL = lowest observed adverse effect level, PAD = population adjusted dose (a = acute, c = chronic) RfD = reference dose, MOE = margin of exposure, LOC = level of concern, NA = Not Applicable.

**NOTE:** The Special FQPA Safety Factor recommended by the ADTC **assumes** that the exposure databases (dietary food, drinking water, and residential) are complete and that the risk assessment for each potential exposure scenario includes all metabolites and/or degradates of concern and does not underestimate the potential risk for infants and children.

## VI. Results/Discussion

As stated above, for acute and chronic assessments, HED is concerned when dietary risk exceeds 100% of the PAD. The DEEM-FCID™ analyses estimate the dietary exposure of the U.S. population and various population subgroups. The acute dietary exposure analysis results reported in Table 3 are for the general U.S. population, all infants (less than 1 year old), children 1-2, children 3-5, children 6-12, youth 13-19, adults 20-49, adults 50+ years, and females 13-49. The chronic dietary exposure analysis results reported in Table 4 are for the general U.S. population, all infants (less than 1 year old), children 1-2, children 3-5, children 6-12, youth 13-19, adults 20-49, adults 50+ years, and females 13-49.

### Results of Acute Dietary Exposure Analysis

This assessment concludes that for all supported commodities, the acute dietary risk estimates do not exceed HED's level of concern (less than 100% of the aPAD) at the 95<sup>th</sup> exposure percentile for the U.S. population (less than 1% of the aPAD) and all population subgroups, with the highest exposed population subgroup being all infants less than one years old at 7% of the aPAD. The results of the acute dietary exposure analysis at the 95<sup>th</sup>, 99<sup>th</sup>, and 99.9<sup>th</sup> percentiles of exposure are reported in Table 3. The results of the acute dietary exposure analysis at the 95<sup>th</sup>

percentile are reported in Table 4 along with chronic dietary exposure analyses for easy comparison.

**Table 3. Results of Acute (Food and Water) Dietary Exposure Analysis for TCMTB Using DEEM-FCID.<sup>1,2</sup>**

Population Subgroup	aPAD (mg/kg/day)	95 <sup>th</sup> Percentile		99 <sup>th</sup> Percentile		99.9 <sup>th</sup> Percentile	
		Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg.day)	% aPAD	Exposure (mg/kg/day)	% aPAD
General U.S. Population	0.25	0.002430	0.97	0.003992	1.6	0.006732	2.7
All Infants (< 1 year old)	0.25	0.003256	1.3	0.005395	2.2	<b>0.017325</b>	<b>6.9</b>
Children 1-2 years old	0.25	0.004467	1.8	<b>0.006779</b>	<b>2.7</b>	0.010134	4.1
Children 3-5 years old	0.25	<b>0.004581</b>	<b>1.8</b>	0.006450	2.6	0.010247	4.1
Children 6-12 years old	0.25	0.003370	1.4	0.005086	2.0	0.007745	3.1
Youth 13-19 years old	0.25	0.002109	0.84	0.003324	1.3	0.004994	2.0
Adults 20-49 years old	0.25	0.001547	0.62	0.002258	0.90	0.003428	1.4
Adults 50+ years old	0.25	0.001192	0.48	0.001810	0.72	0.003464	1.4
Females 13-49 years old	0.25	0.001529	0.61	0.002345	0.94	0.003411	1.4

1. The **bolded** values represent the highest exposed populations for each percentile.

2. NA = Not applicable.

### Results of Chronic Dietary Exposure Analysis

This assessment concludes that for all supported commodities, the chronic dietary risk estimates do not exceed HED's level of concern (less than 100% of the cPAD) for the U.S. population (7% of the cPAD) and all population subgroups, with the highest exposed population subgroup being children 3-5 years old at 17% of the cPAD. The results of the chronic dietary exposure analysis are reported below in Table 4.

**Table 4. Results of Acute and Chronic (Food and Water) Dietary Exposure Analyses for TCMTB Using DEEM-FCID.<sup>1,2</sup>**

Population Subgroup	aPAD (mg/kg/day)	Acute Dietary (95 <sup>th</sup> Percentile)		cPAD (mg/kg/day)	Chronic Dietary	
		Exposure (mg/kg/day)	% aPAD		Exposure (mg/kg.day)	% cPAD
General U.S. Population	0.25	0.002430	0.97	0.013	0.000888	6.8
All Infants (< 1 year old)	0.25	0.003256	1.3	0.013	0.000994	7.6
Children 1-2 years old	0.25	0.004467	1.8	0.013	0.002054	16
Children 3-5 years old	0.25	<b>0.004581</b>	<b>1.8</b>	0.013	<b>0.002226</b>	<b>17</b>
Children 6-12 years old	0.25	0.003370	1.4	0.013	0.001625	13
Youth 13-19 years old	0.25	0.002109	0.84	0.013	0.000936	7.2

**Table 4. Results of Acute and Chronic (Food and Water) Dietary Exposure Analyses for TCMTB Using DEEM-FCID.<sup>1,2</sup>**

Population Subgroup	aPAD (mg/kg/day)	Acute Dietary (95 <sup>th</sup> Percentile)		cPAD (mg/kg/day)	Chronic Dietary	
		Exposure (mg/kg/day)	% aPAD		Exposure (mg/kg.day)	% cPAD
Adults 20-49 years old	0.25	0.001547	0.62	0.013	0.000680	5.2
Adults 50+ years old	0.25	0.001192	0.48	0.013	0.000542	4.2
Females 13-49 years old	0.25	0.001529	0.61	0.013	0.000671	5.2

1. The **bolded** values represent the highest exposed populations for each percentile.

2. NA = Not applicable.

## VII. Characterization of Inputs/Outputs

The acute and chronic dietary exposure assessments are refined through the use of theoretically determined processing factors. Tolerance values were used for all commodities in the acute and chronic dietary exposure assessments and 100% crop treated was assumed for all commodities. HED concludes that the exposure estimates provided in this document likely overestimate actual exposure.

## VIII. Conclusions

The acute and chronic dietary risk assessments were conducted for all supported TCMTB food uses and were performed to support the RED document. The acute and chronic assessments show that dietary (including drinking water) exposure and risk are not of concern for the supported uses.

## IX. List of Attachments

Attachment 1. Data and Residue Estimates Used in Dietary Analyses.

Attachment 2. Acute Food and Water Residue Input File.

Attachment 3. Acute Food and Water Results File.

Attachment 4. Chronic Food and Water Residue Input File.

Attachment 5. Chronic Food and Water Results File.



**Attachment 1. Data and Residue Estimates Used in Dietary Analyses.**

RAC <sup>1</sup>	Classification <sup>2</sup>	Data Source	% CT Avg. <sup>3</sup>	% CT Max. <sup>3</sup>	Processing Factors	Anticipated Residue Estimates/Tolerance	
						Acute (Tol, AR, RDF)	Chronic (Tol, AR)
Barley, grain	B	Tolerance	100	100	Bran 7.7x Pearled 1.2x	Tol (0.10 ppm)	Tol (0.1 ppm)
Beet, sugar, root	B	Tolerance	100	100	Sugar 12.5x	Tol (0.10 ppm)	Tol (0.10 ppm)
Corn, field, grain	B	Tolerance	100	100	Oil 25x	Tol (0.10 ppm)	Tol (0.10 ppm)
Cotton, undelinted seed	B	Tolerance	100	100	Oil 6.3x	Tol (0.10 ppm)	Tol (0.10 ppm)
Oat, grain	B	Tolerance	100	100	Rolled 1.4x	Tol (0.10 ppm)	Tol (0.10 ppm)
Rice, grain	B	Tolerance	100	100	Bran 7.7x	Tol (0.10 ppm)	Tol (0.10 ppm)
Safflower, seed	B	Tolerance	100	100	Oil 3.3x	Tol (0.10 ppm)	Tol (0.10 ppm)
Water	NA	EDWCs <sup>4</sup>	NA	NA	NA	AR (0.94 ppb)	AR (0.67 ppb)
Wheat, grain	B	Tolerance	100	100	Bran 7.7x Flour 1.4x	Tol (0.10 ppm)	Tol (0.10 ppm)

1. RAC = Raw agricultural commodity.

2. Classification of blended (B), partially blended (PB), not blended (NB).

3. No data were available for percent crop treated, so 100%CT was used in the dietary assessment.

4. EDWCs = Estimated Drinking Water Concentrations.

5. NA = Not applicable.

**Attachment 2. Acute Food and Water Residue Input File.**

U.S. Environmental Protection Agency

Ver. 2.02

DEEM-FCID Acute analysis for TCMTB

Residue file name: C:\Pesticides\TCMTB\Dietary\TCMTB acute.R98

Analysis Date 02-05-2006

Residue file dated: 02-05-2006/22:02:47/8

Reference dose (aRfD) = 0.25 mg/kg bw/day

Comment: Food and Water

EPA Code	Crop Grp	Food Name	Def Res (ppm)	Adj. Factors #1	Adj. Factors #2	Comment
15000250	15	Barley, pearled barley	0.100000	1.200	1.000	
15000251	15	Barley, pearled barley-babyfood	0.100000	1.200	1.000	
15000260	15	Barley, flour	0.100000	1.000	1.000	
15000261	15	Barley, flour-babyfood	0.100000	1.000	1.000	
15000270	15	Barley, bran	0.100000	7.700	1.000	
01010520	1A	Beet, sugar	0.100000	12.500	1.000	
01010521	1A	Beet, sugar-babyfood	0.100000	12.500	1.000	
01010530	1A	Beet, sugar, molasses	0.100000	1.000	1.000	
01010531	1A	Beet, sugar, molasses-babyfood	0.100000	1.000	1.000	
15001200	15	Corn, field, flour	0.100000	1.000	1.000	
15001201	15	Corn, field, flour-babyfood	0.100000	1.000	1.000	
15001210	15	Corn, field, meal	0.100000	1.000	1.000	
15001211	15	Corn, field, meal-babyfood	0.100000	1.000	1.000	
15001220	15	Corn, field, bran	0.100000	1.000	1.000	
15001230	15	Corn, field, starch	0.100000	1.000	1.000	
15001231	15	Corn, field, starch-babyfood	0.100000	1.000	1.000	
15001240	15	Corn, field, syrup	0.100000	1.000	1.000	
15001241	15	Corn, field, syrup-babyfood	0.100000	1.000	1.000	
15001250	15	Corn, field, oil	0.100000	25.000	1.000	
15001251	15	Corn, field, oil-babyfood	0.100000	25.000	1.000	
95001280	0	Cottonseed, oil	0.100000	6.300	1.000	
95001281	0	Cottonseed, oil-babyfood	0.100000	6.300	1.000	
15002310	15	Oat, bran	0.100000	1.000	1.000	
15002320	15	Oat, flour	0.100000	1.000	1.000	
15002321	15	Oat, flour-babyfood	0.100000	1.000	1.000	
15002330	15	Oat, groats/rolled oats	0.100000	1.400	1.000	
15002331	15	Oat, groats/rolled oats-babyfood	0.100000	1.400	1.000	
15003230	15	Rice, white	0.100000	1.000	1.000	
15003231	15	Rice, white-babyfood	0.100000	1.000	1.000	
15003240	15	Rice, brown	0.100000	1.000	1.000	
15003241	15	Rice, brown-babyfood	0.100000	1.000	1.000	
15003250	15	Rice, flour	0.100000	1.000	1.000	
15003251	15	Rice, flour-babyfood	0.100000	1.000	1.000	
15003260	15	Rice, bran	0.100000	7.700	1.000	
15003261	15	Rice, bran-babyfood	0.100000	7.700	1.000	
20003300	20	Safflower, oil	0.100000	3.300	1.000	
20003301	20	Safflower, oil-babyfood	0.100000	3.300	1.000	
86010000	0	Water, direct, all sources	0.000940	1.000	1.000	
86020000	0	Water, indirect, all sources	0.000940	1.000	1.000	
15004010	15	Wheat, grain	0.100000	1.000	1.000	
15004011	15	Wheat, grain-babyfood	0.100000	1.000	1.000	
15004020	15	Wheat, flour	0.100000	1.400	1.000	
15004021	15	Wheat, flour-babyfood	0.100000	1.400	1.000	
15004030	15	Wheat, germ	0.100000	1.000	1.000	
15004040	15	Wheat, bran	0.100000	7.700	1.000	
15004050	15	Wild rice	0.100000	1.000	1.000	

**Attachment 3. Acute Food and Water Results File.**

U.S. Environmental Protection Agency Ver. 2.02  
 DEEM-FCID ACUTE Analysis for TCMTB (1994-98 data)  
 Residue file: TCMTB acute.R98 Adjustment factor #2 used.  
 Analysis Date: 02-05-2006/22:04:09 Residue file dated: 02-05-2006/22:02:47/8  
 Daily totals for food and foodform consumption used.  
 Run Comment: "Food and Water"

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Summary calculations (per capita):

	95th Percentile		99th Percentile		99.9th Percentile	
	Exposure	% aRfD	Exposure	% aRfD	Exposure	% aRfD
U.S. Population:	0.002430	0.97	0.003992	1.60	0.006732	2.69
All infants:	0.003256	1.30	0.005395	2.16	0.017325	6.93
Children 1-2 yrs:	0.004467	1.79	0.006779	2.71	0.010134	4.05
Children 3-5 yrs:	0.004581	1.83	0.006450	2.58	0.010247	4.10
Children 6-12 yrs:	0.003370	1.35	0.005086	2.03	0.007745	3.10
Youth 13-19 yrs:	0.002109	0.84	0.003324	1.33	0.004994	2.00
Adults 20-49 yrs:	0.001547	0.62	0.002258	0.90	0.003428	1.37
Adults 50+ yrs:	0.001192	0.48	0.001810	0.72	0.003464	1.39
Females 13-49 yrs:	0.001529	0.61	0.002345	0.94	0.003411	1.36

**Attachment 5. Chronic Food and Water Residue Input File.**

U.S. Environmental Protection Agency Ver. 2.00  
 DEEM-FCID Chronic analysis for TCMTB 1994-98 data  
 Residue file: C:\Pesticides\TCMTB\Diary\TCMTB chronic.R98 Adjust. #2 used  
 Analysis Date 02-05-2006 Residue file dated: 02-05-2006/22:03:22/8  
 Reference dose (RfD) = 0.013 mg/kg bw/day  
 Comment: Food and Water

Food Crop EPA Code	Grp	Food Name	Residue (ppm)	Adj. Factors		Comment
				#1	#2	
15000250	15	Barley, pearled barley	0.100000	1.200	1.000	
15000251	15	Barley, pearled barley-babyfood	0.100000	1.200	1.000	
15000260	15	Barley, flour	0.100000	1.000	1.000	
15000261	15	Barley, flour-babyfood	0.100000	1.000	1.000	
15000270	15	Barley, bran	0.100000	7.700	1.000	
01010520	1A	Beet, sugar	0.100000	12.500	1.000	
01010521	1A	Beet, sugar-babyfood	0.100000	12.500	1.000	
01010530	1A	Beet, sugar, molasses	0.100000	1.000	1.000	
01010531	1A	Beet, sugar, molasses-babyfood	0.100000	1.000	1.000	
15001200	15	Corn, field, flour	0.100000	1.000	1.000	
15001201	15	Corn, field, flour-babyfood	0.100000	1.000	1.000	
15001210	15	Corn, field, meal	0.100000	1.000	1.000	
15001211	15	Corn, field, meal-babyfood	0.100000	1.000	1.000	
15001220	15	Corn, field, bran	0.100000	1.000	1.000	
15001230	15	Corn, field, starch	0.100000	1.000	1.000	
15001231	15	Corn, field, starch-babyfood	0.100000	1.000	1.000	
15001240	15	Corn, field, syrup	0.100000	1.000	1.000	
15001241	15	Corn, field, syrup-babyfood	0.100000	1.000	1.000	
15001250	15	Corn, field, oil	0.100000	25.000	1.000	
15001251	15	Corn, field, oil-babyfood	0.100000	25.000	1.000	
95001280	0	Cottonseed, oil	0.100000	6.300	1.000	
95001281	0	Cottonseed, oil-babyfood	0.100000	6.300	1.000	
15002310	15	Oat, bran	0.100000	1.000	1.000	
15002320	15	Oat, flour	0.100000	1.000	1.000	
15002321	15	Oat, flour-babyfood	0.100000	1.000	1.000	
15002330	15	Oat, groats/rolled oats	0.100000	1.400	1.000	
15002331	15	Oat, groats/rolled oats-babyfood	0.100000	1.400	1.000	
15003230	15	Rice, white	0.100000	1.000	1.000	
15003231	15	Rice, white-babyfood	0.100000	1.000	1.000	
15003240	15	Rice, brown	0.100000	1.000	1.000	
15003241	15	Rice, brown-babyfood	0.100000	1.000	1.000	
15003250	15	Rice, flour	0.100000	1.000	1.000	
15003251	15	Rice, flour-babyfood	0.100000	1.000	1.000	
15003260	15	Rice, bran	0.100000	7.700	1.000	
15003261	15	Rice, bran-babyfood	0.100000	7.700	1.000	
20003300	20	Safflower, oil	0.100000	3.300	1.000	
20003301	20	Safflower, oil-babyfood	0.100000	3.300	1.000	
86010000	0	Water, direct, all sources	0.000670	1.000	1.000	
86020000	0	Water, indirect, all sources	0.000670	1.000	1.000	
15004010	15	Wheat, grain	0.100000	1.000	1.000	
15004011	15	Wheat, grain-babyfood	0.100000	1.000	1.000	
15004020	15	Wheat, flour	0.100000	1.400	1.000	
15004021	15	Wheat, flour-babyfood	0.100000	1.400	1.000	
15004030	15	Wheat, germ	0.100000	1.000	1.000	
15004040	15	Wheat, bran	0.100000	7.700	1.000	
15004050	15	Wild rice	0.100000	1.000	1.000	

**Attachment 6. Chronic Food and Surface Water Results File.**

U.S. Environmental Protection Agency Ver. 2.00  
 DEEM-FCID Chronic analysis for TCMTB (1994-98 data)  
 Residue file name: C:\Pesticides\TCMTB\Dietary\TCMTB chronic.R98  
 Adjustment factor #2 used.  
 Analysis Date 02-05-2006/22:12:18 Residue file dated: 02-05-2006/22:03:22/8  
 Reference dose (RfD, Chronic) = 0.013 mg/kg bw/day  
 COMMENT 1: Food and Water

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                          Total exposure by population subgroup
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Population Subgroup	Total Exposure	
	mg/kg body wt/day	Percent of Rfd
U.S. Population (total)	0.000888	6.8%
U.S. Population (spring season)	0.000913	7.0%
U.S. Population (summer season)	0.000879	6.8%
U.S. Population (autumn season)	0.000879	6.8%
U.S. Population (winter season)	0.000884	6.8%
Northeast region	0.000874	6.7%
Midwest region	0.000952	7.3%
Southern region	0.000855	6.6%
Western region	0.000886	6.8%
Hispanics	0.000942	7.2%
Non-hispanic whites	0.000876	6.7%
Non-hispanic blacks	0.000906	7.0%
Non-hisp/non-white/non-black	0.000907	7.0%
All infants (< 1 year)	0.000994	7.6%
Nursing infants	0.000421	3.2%
Non-nursing infants	0.001212	9.3%
Children 1-6 yrs	0.002140	16.5%
Children 7-12 yrs	0.001548	11.9%
Females 13-19 (not preg or nursing)	0.000840	6.5%
Females 20+ (not preg or nursing)	0.000582	4.5%
Females 13-50 yrs	0.000714	5.5%
Females 13+ (preg/not nursing)	0.000810	6.2%
Females 13+ (nursing)	0.000823	6.3%
Males 13-19 yrs	0.001028	7.9%
Males 20+ yrs	0.000674	5.2%
Seniors 55+	0.000536	4.1%
Children 1-2 yrs	0.002054	15.8%
Children 3-5 yrs	0.002226	17.1%
Children 6-12 yrs	0.001625	12.5%
Youth 13-19 yrs	0.000936	7.2%
Adults 20-49 yrs	0.000680	5.2%
Adults 50+ yrs	0.000542	4.2%
Females 13-49 yrs	0.000671	5.2%