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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

**OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES**

MEMORANDUM

DATE: 11/3/2005

SUBJECT: Boscalid: Chronic Dietary Exposure Assessment for the Section 3 Registration Action on Celery, Spinach, and Bananas

PC Code: 128008
DP Barcode: D321557

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TO: Douglas Dotson, Chemist
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Executive Summary

A chronic dietary risk assessment was conducted using the Dietary Exposure Evaluation Model (DEEM-FCID, Version 1.30), which uses food consumption data from the USDA's Continuing Surveys of Food Intakes by Individuals (CSFII) from 1994-1996 and 1998. The analysis was performed to support Section 3 requests for tolerances for residues of boscalid on celery, spinach, and bananas. In addition, modifications are being made to the tolerances for strawberries, the tree nuts crop group (Group 14), and the rotational crop tolerances for garden beet roots, radish

1

roots, turnip roots, sugar beet roots and Crop Group 2 (the tops of root and tuber vegetables).

Chronic Dietary Exposure Results and Characterization

The chronic dietary exposure analysis was based on tolerance level residues and 100% crop treated assumptions. DEEM (Version 7.81) default processing factors were used for some commodities. As the general U.S. population and all population subgroups had risk estimates that were below HED's level of concern (i.e., 100% of the chronic population adjusted dose (cPAD)) it was not necessary to make further refinements to the analysis. As such, this analysis is a very conservative one. The cPAD for the most highly exposed population subgroup (Children 1-2 years) is 31% and the cPAD for the general U.S. population is 9.3%.

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 HED 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. HED is generally concerned when estimated cancer risk exceeds one in one million (i.e., the risk exceeds 1×10^{-6}). References which discuss the acute and chronic 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 (8/20/99).

The most recent dietary risk assessment for boscalid was conducted by D. Dotson (D316141, 5/5/2005).

II. Residue Information

The first tolerances for boscalid were established in 40CFR §180.589 on July 30, 2003. These tolerances include those for primary crops, rotational crops, and livestock commodities. Additional tolerances were subsequently granted for pome fruit (PP#2F6434), hops (PP#2F6434), and soybeans (PP#3F6580). The tolerances for these commodities are: pome fruit (3.0 ppm), soybean seed (0.10 ppm), and hops (35 ppm). Finally, a temporary tolerance of 2.0 ppm has been established in conjunction with a Section 18 emergency exemption request for the use of boscalid on tangerines in California. For the current action, tolerances are being recommended for celery at 45 ppm, spinach at 60 ppm, and bananas at 0.20 ppm. In addition, the 1.2 ppm tolerance for strawberries currently in effect is being increased to 4.5 ppm. The rotational crop tolerance for garden beet roots, radish roots, turnip roots, sugar beet roots and Crop Group 2 (the tops of root and tuber vegetables) is also being reduced. The current tolerance

for these commodities is 1.0 ppm. The tolerance is being reduced to 0.10. Residues in drinking water are being included directly in the analysis. The estimated drinking water concentration was provided by EFED. It was derived from a Tier 1 FIRST assessment for use on turf. The chronic surface water concentration for use in the chronic dietary exposure analysis is 0.02577 ppm.

In target and rotational crops, the residue of concern for both the tolerance expression and risk assessment is parent boscalid. In livestock, the residues of concern for both the tolerance expression and risk assessment are the combined residues of boscalid as well as the free and conjugated hydroxy metabolites (M510F01 and M510F02). Tolerance level residues were used for all commodities. DEEM (Version 7.81) default processing factors (adjustment factor #1) were used for some commodities. Processing factors were used to modify the tolerances in four separate ways. For some commodities processing studies demonstrated that residues of boscalid do not concentrate. For these commodities the raw agricultural commodity (RAC) tolerance was used and adjustment factor #1 (the processing factor) was set to 1.000. For some commodities the processing studies demonstrated that there was a slight concentration of residues upon processing. In these cases, the tolerance for the RAC was adequate to cover residues in processed commodities. Adjustment factor #1 was set to 1.000. For some commodities, residues concentrated enough in the processing studies that separate tolerances were established for the processed commodities. These tolerances were used in the assessment and, again, adjustment factor #1 was set to 1.000. For the other processed commodities, for which data are not available, DEEM (Version 7.81) default processing factors were used. Table 1 below lists the processing factors used for the various processed commodities. One hundred percent crop treated was assumed for all commodities in this assessment.

Table 1. Processing Factors Used in Analysis							
Residues Do Not Concentrate in Processed Commodity	Adj. #1*	Tolerance Level Adequate to Cover Slight Concentration (processing factor)	Adj. #1*	Separate Tolerance Established	Adj. #1*	DEEM (Version 7.81) Default Processing Factor	Adj. #1*
Apple Juice	1.0	Wheat Germ (1.2x)	1.0	Grape - Raisin	1.0	Potatoes - Dry (including flour)	6.5
Plum - Prune	1.0	Wheat Bran (1.2x)	1.0	Peanut Oil	1.0	Onions - Dry	9.0
Rice Bran	1.0	Tomato Paste (1.1x)	1.0			Tomatoes - Dried	14.3
Wheat Flour	1.0					Apple - Dried	8.0
Sunflower Oil	1.0					Pear - Dried	6.25
Mint Oil	1.0					Apricot - Dried	6.0
Tomato Puree	1.0					Peach - Dried	7.0

Table 1. Processing Factors Used in Analysis							
Residues Do Not Concentrate in Processed Commodity	Adj. #1*	Tolerance Level Adequate to Cover Slight Concentration (processing factor)	Adj. #1*	Separate Tolerance Established	Adj. #1*	DEEM (Version 7.81) Default Processing Factor	Adj. #1*
Tomato Juice	1.0					Beef Meat - Dried	1.92
Soybean Oil	1.0					Peanut - Butter	1.89
						Tangerines - Juice	2.3
						Field Corn Syrup	1.5
						Bananas, Dried	3.9
						Plantains, Dried	3.9

* Adj. #1: Adjustment Factor # 1. The actual processing factor used in the processing factor column in the commodity contribution list (Attachment 1).

A review of the processing studies for the registered commodities (except apples and soybeans) can be found in the residue chemistry summary document that included the first established tolerances for boscalid (Memo, D278385, M. Nelson, 8/15/03). A review of the processing studies for apples and soybeans can be found in the residue chemistry summary document that included those commodities (Memo, D290185, D. Dotson, 2/10/04).

III. DEEM-FCID™ Program and Consumption Information

A boscalid chronic dietary exposure assessment was conducted using the Dietary Exposure Evaluation Model software with the Food Commodity Intake Database (DEEM-FCID™, Version 1.30), 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 (<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. The resulting residue consumption estimate for each food/food form is summed with the residue consumption 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.

IV. Toxicological Information

The Health Effects Division’s Hazard Identification Assessment Review Committee (HIARC) met on September 5, 2002 and January 23, 2003 to evaluate the toxicology database for boscalid (Report dated 3/7/03, TXR No. 0051613). The findings of the HIARC relative to dietary exposure are summarized in Table 2. No appropriate endpoint was identified for assessing acute exposures, and boscalid was given a carcinogen classification of “Suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential.” As such, only a chronic dietary analysis is required.

Table 2. Summary of Toxicological Doses and Endpoints for Use in Human Health Dietary Risk Assessment for boscalid (HIARC, 3/7/03, TXR No. 0051613)			
Exposure Scenario	Dose Used in Risk Assessment, UF	Special FQPA SF* and Level of Concern for Risk Assessment	Study and Toxicological Effects
Acute Dietary	No appropriate endpoint identified	NA	NA
Chronic Dietary (All populations)	NOAEL = 21.8 mg/kg/day UF = 100 Chronic RfD = 0.218 mg/kg/day	FQPA SF = 1X cPAD = <u>chronic RfD</u> FQPA SF = 0.218 mg/kg/day	Chronic rat, carcinogenicity rat and 1-year dog studies LOAEL = 57-58 mg/kg/day based on liver and thyroid effects
Cancer	Classification: “Suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential.”		

V. Results/Discussion

As stated above, for chronic assessments, HED is concerned when dietary risk exceeds 100% of the cPAD. The DEEM-FCID™ analyses estimate the dietary exposure of the U.S. population and various population subgroups. The results reported in Table 3 are for the general U.S.

Population, all infants (<1 year old), children 1-2, children 3-5, children 6-12, youth 13-19, females 13-49, adults 20-49, and adults 50+ years.

The analyses summarized in Table 3 are based on tolerance-level residues (in some cases modified by DEEM (Version 7.81) default processing factors), and assume 100% crop treated. Even with these highly conservative assumptions, the risk estimates are below HED's level of concern. The most highly exposed population subgroup is children 1-2 years, which utilizes 31% of the cPAD. The general U.S. population utilizes 9.3% of the cPAD.

Table 3. Summary of Dietary Exposure and Risk for Boscalid				
Population Subgroup	Acute Analysis	DEEM: Chronic Analysis		Cancer Analysis
		Dietary Exposure (mg/kg/day)	% cPAD	
General U.S. Population	Not Applicable: No Acute Dietary Endpoint	0.020202	9.3	Not Applicable: No cancer risk assessment is required
All Infants (< 1 year old)		0.047013	22	
Children 1-2 years old		0.067046	31	
Children 3-5 years old		0.046987	22	
Children 6-12 years old		0.024451	11	
Youth 13-19 years old		0.013912	6.4	
Adults 20-49 years old		0.015423	7.1	
Adults 50+ years old		0.017092	7.8	
Females 13-49 years old		0.015606	7.2	

VI. Characterization of Inputs/Outputs

The assumptions made in this assessment are conservative ones and HED is confident that this analysis does not underestimate risk to the general U.S. population or any population subgroup.

VII. Conclusions

Based on highly conservative assumptions, dietary risk estimates to boscalid do not exceed HED's level of concern for the general U.S. population or any population subgroups, including those comprised of infants and children.

VIII. List of Attachments

Attachment 1: Residue Input File for Chronic Analysis
Attachment 2: Results of Chronic Dietary Exposure Analysis

cc: D. Dotson

Attachment 1: Residue Input File for Boscalid

Filename: C:\DEEMFCID\Boscalid\Boscalid.R98
DEEM-FCID Program Version 2.03
NOAEL (Chronic): 21.8 mg/kg bw/day
PAD (Chronic): 0.218 mg/kg bw/day

Date created/last modified: 11-02-2005/09:27:05/8

Comment: The FQPA Safety Factor is 1; therefore, the RfD = the PAD

EPA Code	Crop Grp	Def Res Commodity Name	Adj.Factors (ppm)	Comment #1	Comment #2
01010500	1AB	Beet, garden, roots	0.100000	1.000	1.000
01010501	1AB	Beet, garden, roots-babyfood	0.100000	1.000	1.000
01010520	1A	Beet, sugar	0.100000	1.000	1.000
01010521	1A	Beet, sugar-babyfood	0.100000	1.000	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
01010670	1AB	Burdock	0.700000	1.000	1.000
01010780	1AB	Carrot	0.700000	1.000	1.000
01010781	1AB	Carrot-babyfood	0.700000	1.000	1.000
01010790	1AB	Carrot, juice	0.700000	1.000	1.000
01010840	1AB	Celeriac	0.700000	1.000	1.000
01011000	1AB	Chicory, roots	0.700000	1.000	1.000
01011680	1AB	Ginseng, dried	0.700000	1.000	1.000
01011900	1AB	Horseradish	0.700000	1.000	1.000
01012500	1AB	Parsley, turnip rooted	0.700000	1.000	1.000
01012510	1AB	Parsnip	0.700000	1.000	1.000
01012511	1AB	Parsnip-babyfood	0.700000	1.000	1.000
01013140	1AB	Radish, roots	0.100000	1.000	1.000
01013160	1AB	Radish, Oriental, roots	0.700000	1.000	1.000
01013270	1AB	Rutabaga	0.700000	1.000	1.000
01013310	1AB	Salsify, roots	0.700000	1.000	1.000
01013880	1AB	Turnip, roots	0.100000	1.000	1.000
01030150	1CD	Arrowroot, flour	0.050000	1.000	1.000
01030151	1CD	Arrowroot, flour-babyfood	0.050000	1.000	1.000
01030170	1CD	Artichoke, Jerusalem	0.050000	1.000	1.000
01030820	1CD	Cassava	0.050000	1.000	1.000
01030821	1CD	Cassava-babyfood	0.050000	1.000	1.000
01031390	1CD	Dasheen, corm	0.050000	1.000	1.000
01031660	1CD	Ginger	0.050000	1.000	1.000
01031661	1CD	Ginger-babyfood	0.050000	1.000	1.000
01031670	1CD	Ginger, dried	0.050000	1.000	1.000
01032960	1C	Potato, chips	0.050000	1.000	1.000
01032970	1C	Potato, dry (granules/ flakes)	0.050000	6.500	1.000
01032971	1C	Potato, dry (granules/ flakes)-b	0.050000	6.500	1.000
01032980	1C	Potato, flour	0.050000	6.500	1.000
01032981	1C	Potato, flour-babyfood	0.050000	6.500	1.000
01032990	1C	Potato, tuber, w/peel	0.050000	1.000	1.000
01032991	1C	Potato, tuber, w/peel-babyfood	0.050000	1.000	1.000
01033000	1C	Potato, tuber, w/o peel	0.050000	1.000	1.000
01033001	1C	Potato, tuber, w/o peel-babyfood	0.050000	1.000	1.000
01033660	1CD	Sweet potato	0.050000	1.000	1.000
01033661	1CD	Sweet potato-babyfood	0.050000	1.000	1.000
01033710	1CD	Tanier, corm	0.050000	1.000	1.000

01033870	1CD	Turmeric	0.050000	1.000	1.000
01034060	1CD	Yam, true	0.050000	1.000	1.000
01034070	1CD	Yam bean	0.050000	1.000	1.000
02000510	2	Beet, garden, tops	0.100000	1.000	1.000
02001010	2	Chicory, tops	0.100000	1.000	1.000
02001400	2	Dasheen, leaves	0.100000	1.000	1.000
02003150	2	Radish, tops	0.100000	1.000	1.000
02003170	2	Radish, Oriental, tops	0.100000	1.000	1.000
02003320	2	Salsify, tops	0.100000	1.000	1.000
03001640	3	Garlic	3.000000	1.000	1.000
03001650	3	Garlic, dried	3.000000	1.000	1.000
03001651	3	Garlic, dried-babyfood	3.000000	1.000	1.000
03001980	3	Leek	3.000000	1.000	1.000
03002370	3	Onion, dry bulb	3.000000	1.000	1.000
03002371	3	Onion, dry bulb-babyfood	3.000000	1.000	1.000
03002380	3	Onion, dry bulb, dried	3.000000	9.000	1.000
03002381	3	Onion, dry bulb, dried-babyfood	3.000000	9.000	1.000
03002390	3	Onion, green	3.000000	1.000	1.000
03003380	3	Shallot	3.000000	1.000	1.000
04010050	4A	Amaranth, leafy	1.000000	1.000	1.000
04010180	4A	Arugula	1.000000	1.000	1.000
04011040	4A	Chrysanthemum, garland	1.000000	1.000	1.000
04011330	4A	Cress, garden	1.000000	1.000	1.000
04011340	4A	Cress, upland	1.000000	1.000	1.000
04011380	4A	Dandelion, leaves	1.000000	1.000	1.000
04011500	4A	Endive	1.000000	1.000	1.000
04012040	4A	Lettuce, head	6.500000	1.000	1.000
04012050	4A	Lettuce, leaf	11.000000	1.000	1.000
04012480	4A	Parsley, leaves	1.000000	1.000	1.000
04013130	4A	Radicchio	1.000000	1.000	1.000
04013550	4A	Spinach	60.000000	1.000	1.000
04013551	4A	Spinach-babyfood	60.000000	1.000	1.000
04020760	4B	Cardoon	1.000000	1.000	1.000
04020850	4B	Celery	45.000000	1.000	1.000
04020851	4B	Celery-babyfood	45.000000	1.000	1.000
04020860	4B	Celery, juice	45.000000	1.000	1.000
04020870	4B	Celtuce	1.000000	1.000	1.000
04021520	4B	Fennel, Florence	1.000000	1.000	1.000
04023220	4B	Rhubarb	1.000000	1.000	1.000
04023670	4B	Swiss chard	1.000000	1.000	1.000
05010610	5A	Broccoli	3.000000	1.000	1.000
05010611	5A	Broccoli-babyfood	3.000000	1.000	1.000
05010620	5A	Broccoli, Chinese	3.000000	1.000	1.000
05010640	5A	Brussels sprouts	3.000000	1.000	1.000
05010690	5A	Cabbage	3.000000	1.000	1.000
05010710	5A	Cabbage, Chinese, napa	3.000000	1.000	1.000
05010720	5A	Cabbage, Chinese, mustard	3.000000	1.000	1.000
05010830	5A	Cauliflower	3.000000	1.000	1.000
05011960	5A	Kohlrabi	3.000000	1.000	1.000
05020630	5B	Broccoli raab	18.000000	1.000	1.000
05020700	5B	Cabbage, Chinese, bok choy	18.000000	1.000	1.000
05021170	5B	Collards	18.000000	1.000	1.000
05021940	5B	Kale	18.000000	1.000	1.000
05022290	5B	Mustard greens	18.000000	1.000	1.000
05023180	5B	Rape greens	18.000000	1.000	1.000
05023890	5B	Turnip, greens	18.000000	1.000	1.000
06003470	6	Soybean, seed	0.100000	1.000	1.000
06003480	6	Soybean, flour	0.100000	1.000	1.000
06003481	6	Soybean, flour-babyfood	0.100000	1.000	1.000
06003490	6	Soybean, soy milk	0.100000	1.000	1.000
06003491	6	Soybean, soy milk-babyfood or in	0.100000	1.000	1.000

06003500 6	Soybean, oil	0.100000	1.000	1.000
06003501 6	Soybean, oil-babyfood	0.100000	1.000	1.000
06010430 6A	Bean, snap, succulent	1.600000	1.000	1.000
06010431 6A	Bean, snap, succulent-babyfood	1.600000	1.000	1.000
06012570 6A	Pea, edible podded, succulent	1.600000	1.000	1.000
06020310 6B	Bean, broad, succulent	0.600000	1.000	1.000
06020330 6B	Bean, cowpea, succulent	0.600000	1.000	1.000
06020370 6B	Bean, lima, succulent	0.600000	1.000	1.000
06022550 6B	Pea, succulent	0.600000	1.000	1.000
06022551 6B	Pea, succulent-babyfood	0.600000	1.000	1.000
06022590 6B	Pea, pigeon, succulent	0.600000	1.000	1.000
06030300 6C	Bean, black, seed	2.500000	1.000	1.000
06030320 6C	Bean, broad, seed	2.500000	1.000	1.000
06030340 6C	Bean, cowpea, seed	0.100000	1.000	1.000
06030350 6C	Bean, great northern, seed	2.500000	1.000	1.000
06030360 6C	Bean, kidney, seed	2.500000	1.000	1.000
06030380 6C	Bean, lima, seed	2.500000	1.000	1.000
06030390 6C	Bean, mung, seed	2.500000	1.000	1.000
06030400 6C	Bean, navy, seed	2.500000	1.000	1.000
06030410 6C	Bean, pink, seed	2.500000	1.000	1.000
06030420 6C	Bean, pinto, seed	2.500000	1.000	1.000
06030980 6C	Chickpea, seed	2.500000	1.000	1.000
06030981 6C	Chickpea, seed-babyfood	2.500000	1.000	1.000
06030990 6C	Chickpea, flour	2.500000	1.000	1.000
06031820 6C	Guar, seed	2.500000	1.000	1.000
06031821 6C	Guar, seed-babyfood	2.500000	1.000	1.000
06032030 6C	Lentil, seed	2.500000	1.000	1.000
06032560 6C	Pea, dry	2.500000	1.000	1.000
06032561 6C	Pea, dry-babyfood	2.500000	1.000	1.000
06032580 6C	Pea, pigeon, seed	2.500000	1.000	1.000
08001480 8	Eggplant	1.200000	1.000	1.000
08002340 8	Okra	1.200000	1.000	1.000
08002700 8	Pepper, bell	1.200000	1.000	1.000
08002701 8	Pepper, bell-babyfood	1.200000	1.000	1.000
08002710 8	Pepper, bell, dried	1.200000	1.000	1.000
08002711 8	Pepper, bell, dried-babyfood	1.200000	1.000	1.000
08002720 8	Pepper, nonbell	1.200000	1.000	1.000
08002721 8	Pepper, nonbell-babyfood	1.200000	1.000	1.000
08002730 8	Pepper, nonbell, dried	1.200000	1.000	1.000
08003740 8	Tomatillo	1.200000	1.000	1.000
08003750 8	Tomato	1.200000	1.000	1.000
08003751 8	Tomato-babyfood	1.200000	1.000	1.000
08003760 8	Tomato, paste	1.200000	1.000	1.000
08003761 8	Tomato, paste-babyfood	1.200000	1.000	1.000
08003770 8	Tomato, puree	1.200000	1.000	1.000
08003771 8	Tomato, puree-babyfood	1.200000	1.000	1.000
08003780 8	Tomato, dried	1.200000	14.300	1.000
08003781 8	Tomato, dried-babyfood	1.200000	14.300	1.000
08003790 8	Tomato, juice	1.200000	1.000	1.000
09010750 9A	Cantaloupe	1.600000	1.000	1.000
09010800 9A	Casaba	1.600000	1.000	1.000
09011870 9A	Honeydew melon	1.600000	1.000	1.000
09013990 9A	Watermelon	1.600000	1.000	1.000
09014000 9A	Watermelon, juice	1.600000	1.000	1.000
09020210 9B	Balsam pear	1.600000	1.000	1.000
09020880 9B	Chayote, fruit	1.600000	1.000	1.000
09021020 9B	Chinese waxgourd	1.600000	1.000	1.000
09021350 9B	Cucumber	0.200000	1.000	1.000
09023080 9B	Pumpkin	1.600000	1.000	1.000
09023090 9B	Pumpkin, seed	1.600000	1.000	1.000
09023560 9B	Squash, summer	1.600000	1.000	1.000

09023561 9B	Squash, summer-babyfood	1.600000	1.000	1.000
09023570 9B	Squash, winter	1.600000	1.000	1.000
09023571 9B	Squash, winter-babyfood	1.600000	1.000	1.000
10003690 10	Tangerine	2.000000	1.000	1.000 04CA21
10003700 10	Tangerine, juice	2.000000	2.300	1.000 04CA21
11000070 11	Apple, fruit with peel	3.000000	1.000	1.000 2F6434
11000080 11	Apple, peeled fruit	3.000000	1.000	1.000 2F6434
11000081 11	Apple, peeled fruit-babyfood	3.000000	1.000	1.000 2F6434
11000090 11	Apple, dried	3.000000	8.000	1.000 2F6434
11000091 11	Apple, dried-babyfood	3.000000	8.000	1.000 2F6434
11000100 11	Apple, juice	3.000000	1.000	1.000 2F6434
11000101 11	Apple, juice-babyfood	3.000000	1.000	1.000 2F6434
11000110 11	Apple, sauce	3.000000	1.000	1.000 2F6434
11000111 11	Apple, sauce-babyfood	3.000000	1.000	1.000 2F6434
11001290 11	Crabapple	3.000000	1.000	1.000 2F6434
11002100 11	Loquat	3.000000	1.000	1.000 2F6434
11002660 11	Pear	3.000000	1.000	1.000 2F6434
11002661 11	Pear-babyfood	3.000000	1.000	1.000 2F6434
11002670 11	Pear, dried	3.000000	6.250	1.000 2F6434
11002680 11	Pear, juice	3.000000	1.000	1.000 2F6434
11002681 11	Pear, juice-babyfood	3.000000	1.000	1.000 2F6434
11003100 11	Quince	3.000000	1.000	1.000 2F6434
12000120 12	Apricot	1.700000	1.000	1.000
12000121 12	Apricot-babyfood	1.700000	1.000	1.000
12000130 12	Apricot, dried	1.700000	6.000	1.000
12000140 12	Apricot, juice	1.700000	1.000	1.000
12000141 12	Apricot, juice-babyfood	1.700000	1.000	1.000
12000900 12	Cherry	1.700000	1.000	1.000
12000901 12	Cherry-babyfood	1.700000	1.000	1.000
12000910 12	Cherry, juice	1.700000	1.000	1.000
12000911 12	Cherry, juice-babyfood	1.700000	1.000	1.000
12002300 12	Nectarine	1.700000	1.000	1.000
12002600 12	Peach	1.700000	1.000	1.000
12002601 12	Peach-babyfood	1.700000	1.000	1.000
12002610 12	Peach, dried	1.700000	7.000	1.000
12002611 12	Peach, dried-babyfood	1.700000	7.000	1.000
12002620 12	Peach, juice	1.700000	1.000	1.000
12002621 12	Peach, juice-babyfood	1.700000	1.000	1.000
12002850 12	Plum	1.700000	1.000	1.000
12002851 12	Plum-babyfood	1.700000	1.000	1.000
12002860 12	Plum, prune, fresh	1.700000	1.000	1.000
12002861 12	Plum, prune, fresh-babyfood	1.700000	1.000	1.000
12002870 12	Plum, prune, dried	1.700000	1.000	1.000
12002871 12	Plum, prune, dried-babyfood	1.700000	1.000	1.000
12002880 12	Plum, prune, juice	1.700000	1.000	1.000
12002881 12	Plum, prune, juice-babyfood	1.700000	1.000	1.000
13010550 13A	Blackberry	3.500000	1.000	1.000
13010560 13A	Blackberry, juice	3.500000	1.000	1.000
13010561 13A	Blackberry, juice-babyfood	3.500000	1.000	1.000
13010580 13A	Boysenberry	3.500000	1.000	1.000
13011420 13A	Dewberry	3.500000	1.000	1.000
13012080 13A	Loganberry	3.500000	1.000	1.000
13013200 13A	Raspberry	3.500000	1.000	1.000
13013201 13A	Raspberry-babyfood	3.500000	1.000	1.000
13013210 13A	Raspberry, juice	3.500000	1.000	1.000
13013211 13A	Raspberry, juice-babyfood	3.500000	1.000	1.000
13020570 13B	Blueberry	3.500000	1.000	1.000
13020571 13B	Blueberry-babyfood	3.500000	1.000	1.000
13021360 13B	Currant	3.500000	1.000	1.000
13021370 13B	Currant, dried	3.500000	1.000	1.000
13021490 13B	Elderberry	3.500000	1.000	1.000

13021740	13B	Gooseberry	3.500000	1.000	1.000
13021910	13B	Huckleberry	3.500000	1.000	1.000
14000030	14	Almond	0.700000	1.000	1.000
14000031	14	Almond-babyfood	0.700000	1.000	1.000
14000040	14	Almond, oil	0.700000	1.000	1.000
14000041	14	Almond, oil-babyfood	0.700000	1.000	1.000
14000590	14	Brazil nut	0.700000	1.000	1.000
14000680	14	Butternut	0.700000	1.000	1.000
14000810	14	Cashew	0.700000	1.000	1.000
14000920	14	Chestnut	0.700000	1.000	1.000
14001550	14	Filbert	0.700000	1.000	1.000
14001560	14	Filbert, oil	0.700000	1.000	1.000
14001850	14	Hickory nut	0.700000	1.000	1.000
14002130	14	Macadamia nut	0.700000	1.000	1.000
14002690	14	Pecan	0.700000	1.000	1.000
14002820	14	Pistachio	0.700000	1.000	1.000
14003910	14	Walnut	0.700000	1.000	1.000
15000250	15	Barley, pearled barley	0.200000	1.000	1.000
15000251	15	Barley, pearled barley-babyfood	0.200000	1.000	1.000
15000260	15	Barley, flour	0.200000	1.000	1.000
15000261	15	Barley, flour-babyfood	0.200000	1.000	1.000
15000270	15	Barley, bran	0.200000	1.000	1.000
15000650	15	Buckwheat	0.200000	1.000	1.000
15000660	15	Buckwheat, flour	0.200000	1.000	1.000
15001200	15	Corn, field, flour	0.200000	1.000	1.000
15001201	15	Corn, field, flour-babyfood	0.200000	1.000	1.000
15001210	15	Corn, field, meal	0.200000	1.000	1.000
15001211	15	Corn, field, meal-babyfood	0.200000	1.000	1.000
15001220	15	Corn, field, bran	0.200000	1.000	1.000
15001230	15	Corn, field, starch	0.200000	1.000	1.000
15001231	15	Corn, field, starch-babyfood	0.200000	1.000	1.000
15001240	15	Corn, field, syrup	0.200000	1.500	1.000
15001241	15	Corn, field, syrup-babyfood	0.200000	1.500	1.000
15001250	15	Corn, field, oil	0.200000	1.000	1.000
15001251	15	Corn, field, oil-babyfood	0.200000	1.000	1.000
15001260	15	Corn, pop	0.200000	1.000	1.000
15001270	15	Corn, sweet	0.200000	1.000	1.000
15001271	15	Corn, sweet-babyfood	0.200000	1.000	1.000
15002260	15	Millet, grain	0.200000	1.000	1.000
15002310	15	Oat, bran	0.200000	1.000	1.000
15002320	15	Oat, flour	0.200000	1.000	1.000
15002321	15	Oat, flour-babyfood	0.200000	1.000	1.000
15002330	15	Oat, groats/rolled oats	0.200000	1.000	1.000
15002331	15	Oat, groats/rolled oats-babyfood	0.200000	1.000	1.000
15003230	15	Rice, white	0.200000	1.000	1.000
15003231	15	Rice, white-babyfood	0.200000	1.000	1.000
15003240	15	Rice, brown	0.200000	1.000	1.000
15003241	15	Rice, brown-babyfood	0.200000	1.000	1.000
15003250	15	Rice, flour	0.200000	1.000	1.000
15003251	15	Rice, flour-babyfood	0.200000	1.000	1.000
15003260	15	Rice, bran	0.200000	1.000	1.000
15003261	15	Rice, bran-babyfood	0.200000	1.000	1.000
15003280	15	Rye, grain	0.200000	1.000	1.000
15003290	15	Rye, flour	0.200000	1.000	1.000
15003440	15	Sorghum, grain	0.200000	1.000	1.000
15003450	15	Sorghum, syrup	0.200000	1.000	1.000
15003810	15	Triticale, flour	0.200000	1.000	1.000
15003811	15	Triticale, flour-babyfood	0.200000	1.000	1.000
15004010	15	Wheat, grain	0.200000	1.000	1.000
15004011	15	Wheat, grain-babyfood	0.200000	1.000	1.000
15004020	15	Wheat, flour	0.200000	1.000	1.000

15004021	15	Wheat, flour-babyfood	0.200000	1.000	1.000
15004030	15	Wheat, germ	0.200000	1.000	1.000
15004040	15	Wheat, bran	0.200000	1.000	1.000
15004050	15	Wild rice	0.200000	1.000	1.000
20001630	20	Flaxseed, oil	3.500000	1.000	1.000
20003190	20	Rapeseed, oil	5.000000	1.000	1.000
20003191	20	Rapeseed, oil-babyfood	5.000000	1.000	1.000
20003640	20	Sunflower, seed	0.600000	1.000	1.000
20003650	20	Sunflower, oil	0.600000	1.000	1.000
20003651	20	Sunflower, oil-babyfood	0.600000	1.000	1.000
21000440	M	Beef, meat	0.100000	1.000	1.000
21000441	M	Beef, meat-babyfood	0.100000	1.000	1.000
21000450	M	Beef, meat, dried	0.100000	1.920	1.000
21000460	M	Beef, meat byproducts	0.350000	1.000	1.000
21000461	M	Beef, meat byproducts-babyfood	0.350000	1.000	1.000
21000470	M	Beef, fat	0.300000	1.000	1.000
21000471	M	Beef, fat-babyfood	0.300000	1.000	1.000
21000480	M	Beef, kidney	0.350000	1.000	1.000
21000490	M	Beef, liver	0.350000	1.000	1.000
21000491	M	Beef, liver-babyfood	0.350000	1.000	1.000
23001690	M	Goat, meat	0.100000	1.000	1.000
23001700	M	Goat, meat byproducts	0.350000	1.000	1.000
23001710	M	Goat, fat	0.300000	1.000	1.000
23001720	M	Goat, kidney	0.350000	1.000	1.000
23001730	M	Goat, liver	0.350000	1.000	1.000
24001890	M	Horse, meat	0.100000	1.000	1.000
25002900	M	Pork, meat	0.050000	1.000	1.000
25002901	M	Pork, meat-babyfood	0.050000	1.000	1.000
25002910	M	Pork, skin	0.100000	1.000	1.000
25002920	M	Pork, meat byproducts	0.100000	1.000	1.000
25002921	M	Pork, meat byproducts-babyfood	0.100000	1.000	1.000
25002930	M	Pork, fat	0.100000	1.000	1.000
25002931	M	Pork, fat-babyfood	0.100000	1.000	1.000
25002940	M	Pork, kidney	0.100000	1.000	1.000
25002950	M	Pork, liver	0.100000	1.000	1.000
26003390	M	Sheep, meat	0.100000	1.000	1.000
26003391	M	Sheep, meat-babyfood	0.100000	1.000	1.000
26003400	M	Sheep, meat byproducts	0.350000	1.000	1.000
26003410	M	Sheep, fat	0.300000	1.000	1.000
26003411	M	Sheep, fat-babyfood	0.300000	1.000	1.000
26003420	M	Sheep, kidney	0.350000	1.000	1.000
26003430	M	Sheep, liver	0.350000	1.000	1.000
27002220	D	Milk, fat	0.100000	1.000	1.000
27002221	D	Milk, fat - baby food/infant for	0.100000	1.000	1.000
27012230	D	Milk, nonfat solids	0.100000	1.000	1.000
27012231	D	Milk, nonfat solids-baby food/in	0.100000	1.000	1.000
27022240	D	Milk, water	0.100000	1.000	1.000
27022241	D	Milk, water-babyfood/infant form	0.100000	1.000	1.000
27032251	D	Milk, sugar (lactose)-baby food/	0.100000	1.000	1.000
28002210	M	Meat, game	0.100000	1.000	1.000
29003120	M	Rabbit, meat	0.100000	1.000	1.000
40000930	P	Chicken, meat	0.050000	1.000	1.000
40000931	P	Chicken, meat-babyfood	0.050000	1.000	1.000
40000940	P	Chicken, liver	0.100000	1.000	1.000
40000950	P	Chicken, meat byproducts	0.100000	1.000	1.000
40000951	P	Chicken, meat byproducts-babyfo	0.100000	1.000	1.000
40000960	P	Chicken, fat	0.050000	1.000	1.000
40000961	P	Chicken, fat-babyfood	0.050000	1.000	1.000
40000970	P	Chicken, skin	0.050000	1.000	1.000
40000971	P	Chicken, skin-babyfood	0.050000	1.000	1.000
50003820	P	Turkey, meat	0.050000	1.000	1.000

50003821 P	Turkey, meat-babyfood	0.050000	1.000	1.000
50003830 P	Turkey, liver	0.100000	1.000	1.000
50003831 P	Turkey, liver-babyfood	0.100000	1.000	1.000
50003840 P	Turkey, meat byproducts	0.100000	1.000	1.000
50003841 P	Turkey, meat byproducts-babyfood	0.100000	1.000	1.000
50003850 P	Turkey, fat	0.050000	1.000	1.000
50003851 P	Turkey, fat-babyfood	0.050000	1.000	1.000
50003860 P	Turkey, skin	0.050000	1.000	1.000
50003861 P	Turkey, skin-babyfood	0.050000	1.000	1.000
60003010 P	Poultry, other, meat	0.050000	1.000	1.000
60003020 P	Poultry, other, liver	0.100000	1.000	1.000
60003030 P	Poultry, other, meat byproducts	0.100000	1.000	1.000
60003040 P	Poultry, other, fat	0.050000	1.000	1.000
60003050 P	Poultry, other, skin	0.050000	1.000	1.000
70001450 P	Egg, whole	0.020000	1.000	1.000
70001451 P	Egg, whole-babyfood	0.020000	1.000	1.000
70001460 P	Egg, white	0.020000	1.000	1.000
70001461 P	Egg, white (solids)-babyfood	0.020000	1.000	1.000
70001470 P	Egg, yolk	0.020000	1.000	1.000
70001471 P	Egg, yolk-babyfood	0.020000	1.000	1.000
86010000 O	Water, direct, all sources	0.025770	1.000	1.000
86020000 O	Water, indirect, all sources	0.025770	1.000	1.000
95000230 O	Banana	0.200000	1.000	1.000
95000231 O	Banana-babyfood	0.200000	1.000	1.000
95000240 O	Banana, dried	0.200000	3.900	1.000
95000241 O	Banana, dried-babyfood	0.200000	3.900	1.000
95001280 O	Cottonseed, oil	0.050000	1.000	1.000
95001281 O	Cottonseed, oil-babyfood	0.050000	1.000	1.000
95001750 O	Grape	3.500000	1.000	1.000
95001760 O	Grape, juice	3.500000	1.000	1.000
95001761 O	Grape, juice-babyfood	3.500000	1.000	1.000
95001770 O	Grape, leaves	3.500000	1.000	1.000
95001780 O	Grape, raisin	8.500000	1.000	1.000
95001790 O	Grape, wine and sherry	3.500000	1.000	1.000
95001880 O	Hop	35.000000	1.000	1.000 2F6434
95002630 O	Peanut	0.050000	1.000	1.000
95002640 O	Peanut, butter	0.050000	1.890	1.000
95002650 O	Peanut, oil	0.150000	1.000	1.000
95002750 O	Peppermint	30.000000	1.000	1.000
95002760 O	Peppermint, oil	30.000000	1.000	1.000
95002830 O	Plantain	0.200000	1.000	1.000
95002840 O	Plantain, dried	0.200000	3.900	1.000
95003520 O	Spearmint	30.000000	1.000	1.000
95003530 O	Spearmint, oil	30.000000	1.000	1.000
95003590 O	Strawberry	4.500000	1.000	1.000
95003591 O	Strawberry-babyfood	4.500000	1.000	1.000
95003600 O	Strawberry, juice	4.500000	1.000	1.000
95003601 O	Strawberry, juice-babyfood	4.500000	1.000	1.000

Attachment 2: Results of Chronic Dietary Exposure Analysis

U.S. Environmental Protection Agency
DEEM-FCID Version 2.03; 1994-96 data with 1998 Supplemental Children's Survey

Chronic NOAEL: 2.18 mg/kg bw/day
Population Adjusted Dose (PAD, Chronic): 0.218 mg/kg bw/day
Residue file name: C:\DEEMFCID\Boscalid\Boscalid.R98
Adjustment factor #2 NOT used.
Analysis Date 11-02-2005/09:29:21 Residue file dated: 11-02-2005/09:27:05/8
COMMENT 1: The FQPA Safety Factor is 1; therefore, the RfD = the PAD

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Total exposure by population subgroup

Population Subgroup	Total Exposure	
	mg/kg body wt/day	Percent of PAD
U.S. Population (total)	0.020202	9.3%
U.S. Population (spring season)	0.020235	9.3%
U.S. Population (summer season)	0.019746	9.1%
U.S. Population (autumn season)	0.020325	9.3%
U.S. Population (winter season)	0.020517	9.4%
Northeast region	0.022019	10.1%
Midwest region	0.019439	8.9%
Southern region	0.018085	8.3%
Western region	0.022746	10.4%
Hispanics	0.021053	9.7%
Non-hispanic whites	0.019632	9.0%
Non-hispanic blacks	0.019903	9.1%
Non-hisp/non-white/non-black	0.028356	13.0%
All infants (< 1 year)	0.047013	21.6%
Nursing infants	0.024058	11.0%
Non-nursing infants	0.055727	25.6%
Children 1-6 yrs	0.051368	23.6%
Children 7-12 yrs	0.022880	10.5%
Females 13-19 (not preg or nursing)	0.013476	6.2%
Females 20+ (not preg or nursing)	0.016635	7.6%
Females 13-50 yrs	0.016478	7.6%
Females 13+ (preg/not nursing)	0.015000	6.9%
Females 13+ (nursing)	0.020189	9.3%
Males 13-19 yrs	0.014312	6.6%
Males 20+ yrs	0.015350	7.0%
Seniors 55+	0.017096	7.8%
Children 1-2 yrs	0.067046	30.8%
Children 3-5 yrs	0.046987	21.6%

Children 6-12 yrs	0.024451	11.2%
Youth 13-19 yrs	0.013912	6.4%
Adults 20-49 yrs	0.015423	7.1%
Adults 50+ yrs	0.017092	7.8%
Females 13-49 yrs	0.015606	7.2%
