



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

This document supercedes the document dated 6/25/2003, F. Fort, DP Barcode D290980 of the same subject. The document was changed to correct application rates reported in Table 3. No other changes were made to the document.

MEMORANDUM

DATE: 6/30/2003

SUBJECT: Carbaryl Acute Dietary Assessment Including Drinking Water
PC Code: 056801
DP Barcode: DXXXXXX

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Reregistration Branch I/Health Effects Division (7509C)

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The purpose of this memorandum is to report the results of acute probabilistic assessments which include both food and water. The assessments incorporate water as a distribution of concentrations into the dietary exposure analysis for various water scenarios. In these analyses the acute dietary exposure and risk estimates resulting from food and water intake were determined for the general U.S. population and various population subgroups.

The water residues provided by the Environmental Fate and Effects Division (R. David Jones) are from PRZM-EXAMS analyses. Estimated drinking water values for surface water were estimated using five crop scenarios: Pennsylvania Apples, Florida and California Citrus, Georgia Peaches, and Georgia Pecans. These scenarios were selected to represent the range of crops and use rates likely to result in higher drinking water residues. These scenarios were modeled at different application rates using either aerial or spray blast application types. (Tables 1 and 2) These results have been characterized as conservative, though not unreasonable estimates of possible concentrations in drinking water. Approximately 11000 values were generated based on maximum carbaryl use patterns. These values represent the complete daily 36 year PRZM-EXAMS output distribution and were adjusted for Percent Crop Area (PCA) in all assessments. The default PCA used was 0.87; however, for risk characterization purposes, a regional PCA of 0.38 was also used in some assessments. A residue distribution file was created using these ~11000 values for the two commodities "Water, direct, all sources" and "Water, indirect, all

sources" in the residue file editor in the DEEM-FCID model. A water monitoring study has been completed by the registrant but was not used quantitatively due to site selection and sample frequency concerns. Detailed information about the residue data used in conducting the "food only" assessment can be found in the document entitled "Carbaryl. (Chemical ID No. 056801/List A Reregistration Case No. 0080). Revised Dietary Exposure Analysis Including Acute Probabilistic Water Analysis for the HED Revised Human Health Risk Assessment. DP Barcode D288479." (F. Fort, 3/18/2003).

This document revises the acute food and drinking water assessment; the chronic and acute dietary assessment (food only) has not revised and will be used in making risk management decisions. A summary of the results is shown in Tables 3 to 6 in this document and indicate that when carbaryl is applied aerially, risks for all scenarios are of concern. The most highly exposed population subgroup is all infants with %aPADs ranging from 107 - 620%. Risk are significantly reduced when carbaryl is applied by spray blast. Risk estimates were also reduced by the use of a regional percent crop area (PCA), larger intervals between applications and fewer applications. However, risks are of concern for all Florida citrus scenarios regardless of the PCA, application rate or timing (Table 3).

Table 1. Maximum use patterns for carbaryl application on selected crops based on the EPA label.

Crop	Single app. Rate (lb acre ⁻¹)	Number of Applications	Application Interval	Application Method	PCA ²	Date of First Application	Range of water values Average value (ppm)
Apple: PA	3	5	3 days	aerial	0.87	June 1	Range: 0 - 0.1583 Avg: 0.0025
Citrus: CA	7.5, 5 ¹	3	3 days	aerial	0.87	April 1	Range: 0 - 0.1183 Avg: 0.0049
Citrus: CA	16	1	NS	aerial	0.87	April 1	Range: 0 - 0.0914 Avg: 0.0035
Citrus: FL	7.5, 5	3	3 days	aerial	0.87	April 1	Range: ND - 2.09 Avg: 0.0096
Citrus: FL	10	2	14	aerial	0.87	April 1	Range: ND - 0.8543 Avg: 0.01007
Peach: GA	4.945	3	7 days	aerial	0.87	April 1	Range: 0 - 0.250 Avg: 0.0020
Pecan: GA	5	4	7 days	aerial	0.87	April 15	Range: 0 - 0.202 Avg: 0.0051

1) Maximum single application of 7.5 lb acre⁻¹, 20 lb acre⁻¹ per season, modeled as 3 applications of 7.5 lb acre⁻¹

2) PCA = Percent Crop Area

Table 3. Selected use patterns for carbaryl application for evaluating mitigation practice effects on carbaryl in drinking water.

Crop	Single app. Rate (lb acre ⁻¹)	Number of Applications	Application Interval	Application Method	PCA	Date of First Application	ppm
Apple: PA	3	5	14 days	spray blast	0.87	June 1	Range: 0 - 0.156 Avg: 0.0017
Apple: PA	3	3	14 days	spray blast	0.87	June 1	Range: 0 - 0.142 Avg: 0.0009
Citrus: CA	16	1	--	spray blast	0.87	April 1	Range: 0 - 0.036 Avg: 0.0014
Citrus: CA	7.5, 5 ¹	3	14 days	spray blast	0.87	April 1	Range: 0 - 0.024 Avg: 0.0017
Citrus: FL	7.5, 5 ¹	3	14 days	spray blast	0.38	April 30	Range: 0 - 0.321 Avg: 0.0029
Citrus: FL	7.5, 4 ²	3	14 days	spray blast	0.38	April 30	Range: ND - 0.263 Avg: 0.0027
Citrus: FL	4	2	14 days	spray blast	0.38	April 30	Range: 0 - 0.141 Avg: 0.0012
Citrus: FL	10	2	14	aerial	0.38	April 30	Range: ND - 0.3732 Avg: 0.0044
Pecan: GA	5	3	7 days	spray blast	0.87	April 15	Range: 0 - 0.194 Avg: 0.0034
Pecan: GA	5	3	7 days	spray blast	0.38	April 15	Range: 0 - 0.085 Avg: 0.0015
Pecan: GA	2.5	2	10 days	spray blast	0.87	April 15	Range: 0 - 0.109 Avg: 0.0014

1 Two applications at 7.5 and 1 application a 5 lb acre⁻¹.2 Two applications at 7.5 and 1 application a 4 lb acre⁻¹.

Table 3. Summary of the Acute Dietary Assessments Including Food and Water (FL Citrus Scenarios)

Acute - All Commodities at the 99.9th percentile of exposure														
Pop. Subgroup	Food only		Food + Water using FL Citrus - 3 applications (two at 7.5 and 1 at 5 lb/A)3 day interval, aerially, Default PCA = 0.87				Food + Water using FL Citrus - 3 applications (two at 7.5 and 1 at 4 lb/A) 14 day interval, spray blast Regional PCA = 0.38		Food + Water using FL Citrus (10 lb/A, 2 times a year at 14 day intervals), aerially				Food + Water using FL Citrus - 4 lb/A, 2 times @ 14 day intervals, spray blast, Regional PCA = 0.38	
	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD			Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD		
General U.S. Population	0.004298	43	0.018840	188	0.007106	71	0.006352	64	0.01+501	165	0.008175	82	0.004884	49
All Infants (<1 year old)	0.006765	68	0.062031	620	0.022244	222	0.018558	186	0.058862	589	0.026666	267	0.011368	114
Children (1-2 years old)	0.009256	93	0.030281	303	0.013375	134	0.011947	119	0.027048	270	0.014819	148	0.009894	99
Children (3-5 years old)	0.008057	81	0.027425	274	0.011538	115	0.010373	104	0.024247	242	0.012962	130	0.008536	85
Children (6-12 years old)	0.005505	55	0.019208	192	0.008143	81	0.007285	73	0.016874	169	0.009141	91	0.005934	59
Youth (13-19 years old)	0.003236	32	0.013522	135	0.005527	55	0.004987	50	0.012392	124	0.006356	64	0.003688	37
Adults (20-49 years old)	0.002940	29	0.016859	169	0.006200	62	0.005350	54	0.015016	150	0.007150	72	0.003770	38
Females (13-49 years old)	0.003256	33	0.017021	170	0.006445	64	0.005607	56	0.015261	153	0.007050	71	0.004032	40
Adults (50+ years old)	0.003032	30	0.017566	176	0.006080	61	0.005270	53	0.014766	148	0.007362	74	0.003723	37
ATTACHMENT #	ONE		TWO		THREE		FOUR		FIVE		SIX		SEVEN	

Table 4. Summary of the Acute Dietary Assessments Including Food and Water (CA Citrus Scenarios)

Pop. Subgroup	Acute - All Commodities at the 99.9th percentile of exposure									
	Food only		Food + Water using CA Citrus: 3 applications (7.5 lb/acre, 2 times; 5 lbs/A, 1 times a year); Default PCA = 0.87				Food + Water using CA Citrus (1 application @ 16 lb/A); Default PCA = 0.87			
	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD
General U.S. Population	0.004298	43	0.006728	67	0.004397	44	0.005919	59	0.004488	45
All Infants (< 1 year old)	0.006765	68	0.018782	188	0.007231	72	0.015824	158	0.008124	81
Children (1-2 years old)	0.009256	93	0.011642	116	0.009339	93	0.010763	108	0.009309	93
Children (3-5 years old)	0.008057	81	0.010049	100	0.008131	81	0.009307	93	0.008139	81
Children (6-12 years old)	0.005505	55	0.007045	70	0.005559	56	0.006475	65	0.005546	55
Youth (13-19 years old)	0.003236	32	0.005174	52	0.003296	33	0.004544	45	0.003338	33
Adults (20-49 years old)	0.002940	29	0.005482	55	0.003035	30	0.004773	48	0.003180	21
Females (13-49 years old)	0.003256	33	0.005594	56	0.003330	33	0.004282	43	0.003413	34
Adults (50+ years old)	0.003032	30	0.004803	48	0.003086	31	0.004896	49	0.003128	31
ATTACHMENT #	ONE		EIGHT		NINE		TEN		ELEVEN	

Table 5. Summary of the Acute Dietary Assessments Including Food and Water (PA Apple Scenarios)

Acute - All Commodities at the 99.9th percentile of exposure								
Pop. Subgroup	Food only		Food + Water using PA Apples (3 lb/acre applied 5 times) ; Default PCA = 0.87				Food + Water using PA apples (3 lb/A, 3 applications, 14 day intervals, spray blast); Default PCA = 0.87	
	Exposure (mg/kg/day)	% aPAD	3 day intervals, aerial		14 day intervals, spray blast			
General U.S. Population	0.004298	43	0.005187	52	0.004776	48	0.004558	46
All Infants (<1 year old)	0.006765	68	0.012304	123	0.010287	103	0.008983	90
Children (1-2 years old)	0.009256	93	0.009977	100	0.009756	98	0.009536	95
Children (3-5 years old)	0.008057	81	0.008672	87	0.008481	85	0.008268	83
Children (6-12 years old)	0.005505	55	0.005960	60	0.005826	58	0.005676	57
Youth (13-19 years old)	0.003236	32	0.003974	40	0.003612	36	0.003428	34
Adults (20-49 years old)	0.002940	29	0.004064	41	0.003647	36	0.003357	34
Females (13-49 years old)	0.003256	33	0.004245	42	0.003903	39	0.003605	36
Adults (50+ years old)	0.003032	30	0.003793	38	0.003608	36	0.003359	34
ATTACHMENT #	ONE		TWELVE		THIRTEEN		FOURTEEN	

Table 6. Summary of the Acute Dietary Assessments Including Food and Water (GA Pecan Scenarios)

Acute - All Commodities at the 99.9th percentile of exposure										
Pop. Subgroup	Food only		Food + Water using GA Pecan (5 lbs/A, 4 times at 7 day intervals; aerially; Default PCA = 0.87		Food + Water using GA Pecan (5 lb/A applied 3 times at 7 day intervals by spray blast)			Food + Water using GA Pecan (2.5 lb/A applied 2 times at 10 day intervals by spray blast) Default PCA = 0.87		
	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	
General U.S. Population	0.004298	43	0.006958	70	0.006224	62	0.004621	46	0.004743	47
All Infants (< 1 year old)	0.006765	68	0.020487	205	0.017839	178	0.009468	95	0.010432	104
Children (1-2 years old)	0.009256	93	0.012314	123	0.011497	115	0.009456	95	0.009613	96
Children (3-5 years old)	0.008057	81	0.010707	107	0.009945	99	0.008218	82	0.008323	83
Children (6-12 years old)	0.005505	55	0.007480	75	0.006923	69	0.005638	56	0.005745	57
Youth (13-19 years old)	0.003236	32	0.005430	54	0.004830	48	0.003470	35	0.003608	36
Adults (20-49 years old)	0.002940	29	0.005864	59	0.005171	52	0.003395	34	0.003566	36
Females (13-49 years old)	0.003256	33	0.6025	60	0.005377	53	0.003627	36	0.003826	38
Adults (50+ years old)	0.003032	30	0.005364	54	0.004902	49	0.003297	33	0.003464	35
ATTACHMENT #	ONE		FIFTEEN		SIXTEEN		SEVENTEEN		EIGHTEEN	

Table 7. Summary of the Acute Dietary Assessments Including Food and Water (GA Peach Scenarios)

Acute - All Commodities at the 99.9th percentile of exposure				
Pop. Subgroup	Food only		Food + Water using GA Peach scenario (5 lbs/A, 3 times at 7 day intervals); aerially; Default PCA = 0.87	
	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD
General U.S. Population	0.004298	43	0.005042	50
All Infants (< 1 year old)	0.006765	68	0.010699	107
Children (1-2 years old)	0.009256	93	0.010085	101
Children (3-5 years old)	0.008057	81	0.008764	88
Children (6-12 years old)	0.005505	55	0.006016	60
Youth (13-19 years old)	0.003236	32	0.003817	38
Adults (20-49 years old)	0.002940	29	0.003872	39
Females (13-49 years old)	0.003256	33	0.004112	41
Adults (50+ years old)	0.003032	30	0.003848	38
ATTACHMENT #	ONE		NINETEEN	

Conclusions

The results of the acute assessments indicate that inclusion of water in the analysis had no impact on the dietary assessment. The analyses show that the highest exposed population subgroup was children (1-2 years old) of which 93% of the aPAD is occupied. The acute dietary exposure estimate for the general U.S. population was 43% of the aPAD. Although it appears that inclusion of water into the acute assessment lowers the risk, this is an artifact of the DEEM-FCID model that can occur due to binning a very large number of exposure records and rounding small numbers. These small decreases are interpreted as insignificant.

Attachments: DEEM-FCID Analyses

ATTACHMENT ONE: Food only

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal_waterzero.R98 Ver. 1.33
Analysis Date: 05-20-2003/11:20:56 Residue file dated: 03-13-2003/14:31:42/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000470	4.70	0.001296	12.96	0.004298	42.98
All infants:	0.000763	7.63	0.002779	27.79	0.006765	67.65
Children 1-2 yrs:	0.001887	18.87	0.003510	35.10	0.009256	92.56
Children 3-5 yrs:	0.001227	12.27	0.002423	24.23	0.008057	80.57
Children 6-12 yrs:	0.000741	7.41	0.001448	14.48	0.005505	55.05
Youth 13-19 yrs:	0.000368	3.68	0.000831	8.31	0.003236	32.36
Adults 20-49 yrs:	0.000300	3.00	0.000755	7.55	0.002940	29.40
Adults 50+ yrs:	0.000286	2.86	0.000789	7.89	0.003032	30.32
Females 13-49 yrs:	0.000284	2.84	0.000753	7.53	0.003256	32.56

ATTACHMENT TWO: FL Citrus 3 applications (two at 7.5 and 1 at 5 kg ha) at 3 day intervals)/Aerial/Default PCA = 0.87

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water FL citrus new max.R98
Adjustment factor #2 NOT used.
Analysis Date: 06-05-2003/10:21:26 Residue file dated: 06-05-2003/10:05:28/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.001261	12.61	0.003795	37.95	0.018840	188.40
All infants:	0.003723	37.23	0.012111	121.11	0.062031	620.31
Children 1-2 yrs:	0.002731	27.31	0.006463	64.63	0.030281	302.81
Children 3-5 yrs:	0.002107	21.07	0.005758	57.58	0.027425	274.25
Children 6-12 yrs:	0.001350	13.50	0.003907	39.07	0.019208	192.08
Youth 13-19 yrs:	0.000881	8.81	0.002818	28.18	0.013522	135.22
Adults 20-49 yrs:	0.001053	10.53	0.003350	33.50	0.016859	168.59
Adults 50+ yrs:	0.001147	11.47	0.003340	33.40	0.017566	175.66
Females 13-49 yrs:	0.001048	10.48	0.003374	33.74	0.017021	170.21

ATTACHMENT THREE: FL Citrus 3 applications (two at 7.5 and 1 at 5 kg ha) at 3 day intervals)/spray blast/Regional PCA = 0.38

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water FL citrus 9.R98 Adjustment factor #2 NOT used.
Analysis Date: 06-04-2003/14:31:32 Residue file dated: 06-04-2003/14:08:20/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000678	6.78	0.002015	20.15	0.007106	71.06
All infants:	0.001536	15.36	0.005011	50.11	0.022244	222.44
Children 1-2 yrs:	0.002106	21.06	0.004204	42.04	0.013375	133.75
Children 3-5 yrs:	0.001432	14.32	0.003411	34.11	0.011538	115.38
Children 6-12 yrs:	0.000887	8.87	0.002125	21.25	0.008143	81.43
Youth 13-19 yrs:	0.000487	4.87	0.001345	13.45	0.005527	55.27
Adults 20-49 yrs:	0.000478	4.78	0.001513	15.13	0.006200	62.00
Adults 50+ yrs:	0.000477	4.77	0.001614	16.14	0.006080	60.80
Females 13-49 yrs:	0.000457	4.57	0.001539	15.39	0.006445	64.45

ATTACHMENT FOUR: FL Citrus - 3 applications (two at 7.5 and 1 at 4 kg ha) at 14 day intervals)/spray blast/Default PCA = 0.38

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water FL citrus new pca.R98
Adjustment factor #2 NOT used.
Analysis Date: 06-18-2003/11:03:36 Residue file dated: 06-18-2003/10:47:29/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
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Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000682	6.82	0.001931	19.31	0.006352	63.52
All infants:	0.001558	15.58	0.004955	49.55	0.018558	185.58
Children 1-2 yrs:	0.002101	21.01	0.004103	41.03	0.011947	119.47
Children 3-5 yrs:	0.001432	14.32	0.003269	32.69	0.010373	103.73
Children 6-12 yrs:	0.000888	8.88	0.002054	20.54	0.007285	72.85
Youth 13-19 yrs:	0.000490	4.90	0.001300	13.00	0.004987	49.87
Adults 20-49 yrs:	0.000482	4.82	0.001446	14.46	0.005350	53.50
Adults 50+ yrs:	0.000483	4.83	0.001520	15.20	0.005270	52.70
Females 13-49 yrs:	0.000461	4.61	0.001467	14.67	0.005607	56.07

ATTACHMENT FIVE: FL Citrus: (10 lb/A, 2 times a year at 14 day intervals/aerially/Default PCA = 0.87)

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water FL citrus 10 lb default pca.R98
Adjustment factor #2 NOT used.
Analysis Date: 06-20-2003/11:47:03 Residue file dated: 06-20-2003/11:13:02/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.001334	13.34	0.004175	41.75	0.016501	165.01
All infants:	0.004062	40.62	0.012975	129.75	0.058862	588.62
Children 1-2 yrs:	0.002812	28.12	0.006956	69.56	0.027048	270.48
Children 3-5 yrs:	0.002205	22.05	0.006245	62.45	0.024247	242.47
Children 6-12 yrs:	0.001420	14.20	0.004246	42.46	0.016874	168.74
Youth 13-19 yrs:	0.000940	9.40	0.003062	30.62	0.012392	123.92
Adults 20-49 yrs:	0.001135	11.35	0.003686	36.86	0.015016	150.16
Adults 50+ yrs:	0.001213	12.13	0.003732	37.32	0.014766	147.66
Females 13-49 yrs:	0.001133	11.33	0.003704	37.04	0.015261	152.61

ATTACHMENT SIX: FL Citrus: (10 lb/A, 2 times a year at 14 day intervals/aerially/Default PCA = 0.38)

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water FL citrus 10 lb regional pca.R98
Adjustment factor #2 NOT used.
Analysis Date: 06-20-2003/11:29:55 Residue file dated: 06-20-2003/11:13:32/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000831	8.31	0.002345	23.45	0.008175	81.75
All infants:	0.002270	22.70	0.006270	62.70	0.026666	266.66
Children 1-2 yrs:	0.002242	22.42	0.004536	45.36	0.014819	148.19
Children 3-5 yrs:	0.001588	15.88	0.003817	38.17	0.012962	129.62
Children 6-12 yrs:	0.000995	9.95	0.002433	24.33	0.009141	91.41
Youth 13-19 yrs:	0.000596	5.96	0.001632	16.32	0.006356	63.56
Adults 20-49 yrs:	0.000641	6.41	0.001865	18.65	0.007150	71.50
Adults 50+ yrs:	0.000663	6.63	0.001918	19.18	0.007050	70.50
Females 13-49 yrs:	0.000628	6.28	0.001883	18.83	0.007362	73.62

ATTACHMENT SEVEN: FL citrus (4 lbs ai/A and 2 applications/ spray blast/Regional PCA = 0.38)

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water FL citrus 10.R98 Adjustment factor #2 NOT used.
Analysis Date: 06-09-2003/09:17:21 Residue file dated: 06-09-2003/08:59:32/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000567	5.67	0.001548	15.48	0.004884	48.84
All infants:	0.001130	11.30	0.003810	38.10	0.011368	113.68
Children 1-2 yrs:	0.001978	19.78	0.003717	37.17	0.009894	98.94
Children 3-5 yrs:	0.001316	13.16	0.002740	27.40	0.008536	85.36
Children 6-12 yrs:	0.000808	8.08	0.001672	16.72	0.005934	59.34
Youth 13-19 yrs:	0.000420	4.20	0.001005	10.05	0.003688	36.88
Adults 20-49 yrs:	0.000382	3.82	0.001044	10.44	0.003770	37.70
Adults 50+ yrs:	0.000372	3.72	0.001107	11.07	0.003723	37.23
Females 13-49 yrs:	0.000362	3.62	0.001060	10.60	0.004032	40.32

ATTACHMENT EIGHT: CA Citrus 3 applications (7.5 lb/acre, 2 times; 5 lbs/A, 1 times a year) at 3 day intervals; aerially; Default PCA = 0.87

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water CA citrus NEW MAX 1.R98
Adjustment factor #2 NOT used.
Analysis Date: 05-19-2003/14:21:31 Residue file dated: 05-19-2003/14:05:28/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.001016	10.16	0.002589	25.89	0.006728	67.28
All infants:	0.002799	27.99	0.008468	84.68	0.018782	187.82
Children 1-2 yrs:	0.002440	24.40	0.004795	47.95	0.011642	116.42
Children 3-5 yrs:	0.001795	17.95	0.004138	41.38	0.010049	100.49
Children 6-12 yrs:	0.001132	11.32	0.002718	27.18	0.007045	70.45
Youth 13-19 yrs:	0.000709	7.09	0.001919	19.19	0.005174	51.74
Adults 20-49 yrs:	0.000803	8.03	0.002235	22.35	0.005482	54.82
Adults 50+ yrs:	0.000886	8.86	0.002236	22.36	0.004803	48.03
Females 13-49 yrs:	0.000795	7.95	0.002274	22.74	0.005594	55.94

ATTACHMENT NINE: CA Citrus 3 applications (7.5 lb/acre, 2 times; 5 lbs/A, 1 times a year) at 14 day intervals; spray blast; Default PCA = 0.87

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL Ver. 1.33
(1994-98 data)
Residue file: Acutefinal water FL citrus 7.R98 Adjustment factor #2 NOT used.
Analysis Date: 06-04-2003/16:03:53 Residue file dated: 06-04-2003/14:24:23/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
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Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000602	6.02	0.001441	14.41	0.004397	43.97
All infants:	0.001515	15.15	0.003466	34.66	0.007231	72.31
Children 1-2 yrs:	0.001973	19.73	0.003581	35.81	0.009339	93.39
Children 3-5 yrs:	0.001329	13.29	0.002546	25.46	0.008131	81.31
Children 6-12 yrs:	0.000821	8.21	0.001557	15.57	0.005559	55.59
Youth 13-19 yrs:	0.000451	4.51	0.000946	9.46	0.003296	32.96
Adults 20-49 yrs:	0.000440	4.40	0.000944	9.44	0.003035	30.35
Adults 50+ yrs:	0.000436	4.36	0.000932	9.32	0.003086	30.86
Females 13-49 yrs:	0.000425	4.25	0.000951	9.51	0.003330	33.30

ATTACHMENT TEN: CA Citrus 1 application @ 16 lb/A/Default PCA = 0.87/Aerial

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water CA citrus NEW MAX 2.R98
Adjustment factor #2 NOT used.
Analysis Date: 05-19-2003/13:40:51 Residue file dated: 05-19-2003/13:17:48/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000842	8.42	0.002197	21.97	0.005919	59.19
All infants:	0.002151	21.51	0.006703	67.03	0.015824	158.24
Children 1-2 yrs:	0.002253	22.53	0.004323	43.23	0.010763	107.63
Children 3-5 yrs:	0.001600	16.00	0.003598	35.98	0.009307	93.07
Children 6-12 yrs:	0.000998	9.98	0.002311	23.11	0.006475	64.75
Youth 13-19 yrs:	0.000592	5.92	0.001582	15.82	0.004544	45.44
Adults 20-49 yrs:	0.000636	6.36	0.001822	18.22	0.004773	47.73
Adults 50+ yrs:	0.000680	6.80	0.001848	18.48	0.004282	42.82
Females 13-49 yrs:	0.000617	6.17	0.001850	18.50	0.004896	48.96

ATTACHMENT ELEVEN:**CA Citrus (1 application @ 16 lb/A/Default PCA = 0.87/Spray Blast)**

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water CA citrus 4.R98 Adjustment factor #2 NOT used.
Analysis Date: 06-04-2003/14:13:24 Residue file dated: 06-04-2003/13:56:36/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000606	6.06	0.001483	14.83	0.004488	44.88
All infants:	0.001391	13.91	0.003828	38.28	0.008124	81.24
Children 1-2 yrs:	0.001982	19.82	0.003619	36.19	0.009309	93.09
Children 3-5 yrs:	0.001336	13.36	0.002617	26.17	0.008139	81.39
Children 6-12 yrs:	0.000825	8.25	0.001607	16.07	0.005546	55.46
Youth 13-19 yrs:	0.000447	4.47	0.000988	9.88	0.003338	33.38
Adults 20-49 yrs:	0.000429	4.29	0.001019	10.19	0.003180	31.80
Adults 50+ yrs:	0.000431	4.31	0.001031	10.31	0.003128	31.28
Females 13-49 yrs:	0.000409	4.09	0.001034	10.34	0.003413	34.13

ATTACHMENT TWELVE: PA apple (3 lb/acre applied 5 times at 3 day intervals, aerially/default PCA = 0.87)

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water **PA apple new max.R98**
Adjustment factor #2 NOT used.
Analysis Date: 05-19-2003/14:45:24 Residue file dated: 05-19-2003/14:28:24/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000744	7.44	0.001822	18.22	0.005187	51.87
All infants:	0.001901	19.01	0.005107	51.07	0.012304	123.04
Children 1-2 yrs:	0.002126	21.26	0.003910	39.10	0.009977	99.77
Children 3-5 yrs:	0.001480	14.80	0.003077	30.77	0.008672	86.72
Children 6-12 yrs:	0.000922	9.22	0.001939	19.39	0.005960	59.60
Youth 13-19 yrs:	0.000531	5.31	0.001271	12.71	0.003974	39.74
Adults 20-49 yrs:	0.000555	5.55	0.001408	14.08	0.004064	40.64
Adults 50+ yrs:	0.000584	5.84	0.001408	14.08	0.003793	37.93
Females 13-49 yrs:	0.000535	5.35	0.001433	14.33	0.004245	42.45

ATTACHMENT THIRTEEN: PA apple (3 lb/acre applied 5 times at 14 day intervals, spray blast/default PCA = 0.87)

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water PA apple 2.R98 Adjustment factor #2 NOT used.
Analysis Date: 06-04-2003/16:39:11 Residue file dated: 06-04-2003/16:21:48/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000588	5.88	0.001523	15.23	0.004776	47.76
All infants:	0.001312	13.12	0.003680	36.80	0.010287	102.87
Children 1-2 yrs:	0.001983	19.83	0.003681	36.81	0.009756	97.56
Children 3-5 yrs:	0.001328	13.28	0.002684	26.84	0.008481	84.81
Children 6-12 yrs:	0.000818	8.18	0.001643	16.43	0.005826	58.26
Youth 13-19 yrs:	0.000436	4.36	0.000986	9.86	0.003612	36.12
Adults 20-49 yrs:	0.000410	4.10	0.001016	10.16	0.003647	36.47
Adults 50+ yrs:	0.000402	4.02	0.001051	10.51	0.003608	36.08
Females 13-49 yrs:	0.000393	3.93	0.001025	10.25	0.003903	39.03

**ATTACHMENT FOURTEEN: PA apple (3 lb/acre applied 3 times at 14 day intervals,
spray blast/default PCA = 0.87)**

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL Ver. 1.33
(1994-98 data)
Residue file: Acutefinal water PA apple 3.R98 Adjustment factor #2 NOT used.
Analysis Date: 06-04-2003/17:14:00 Residue file dated: 06-04-2003/16:22:47/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000536	5.36	0.001426	14.26	0.004558	45.58
All infants:	0.001080	10.80	0.003322	33.22	0.008983	89.83
Children 1-2 yrs:	0.001942	19.42	0.003599	35.99	0.009536	95.36
Children 3-5 yrs:	0.001284	12.84	0.002571	25.71	0.008268	82.68
Children 6-12 yrs:	0.000783	7.83	0.001558	15.58	0.005676	56.76
Youth 13-19 yrs:	0.000405	4.05	0.000925	9.25	0.003428	34.28
Adults 20-49 yrs:	0.000360	3.60	0.000900	9.00	0.003357	33.57
Adults 50+ yrs:	0.000350	3.50	0.000950	9.50	0.003359	33.59
Females 13-49 yrs:	0.000343	3.43	0.000916	9.16	0.003605	36.05

ATTACHMENT FIFTEEN:**GA Pecans (5 lbs/A, 3 times at 7 day intervals; aerially;
default PCA = 0.87)**

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water GA pecan max.R98 Adjustment factor #2 NOT used.
Analysis Date: 05-29-2003/16:24:42 Residue file dated: 05-29-2003/16:08:45/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000985	9.85	0.002545	25.45	0.006958	69.58
All infants:	0.002841	28.41	0.007873	78.73	0.020487	204.87
Children 1-2 yrs:	0.002401	24.01	0.004737	47.37	0.012314	123.14
Children 3-5 yrs:	0.001758	17.58	0.004057	40.57	0.010707	107.07
Children 6-12 yrs:	0.001112	11.12	0.002659	26.59	0.007480	74.80
Youth 13-19 yrs:	0.000702	7.02	0.001855	18.55	0.005430	54.30
Adults 20-49 yrs:	0.000785	7.85	0.002150	21.50	0.005864	58.64
Adults 50+ yrs:	0.000842	8.42	0.002153	21.53	0.005364	53.64
Females 13-49 yrs:	0.000781	7.81	0.002179	21.79	0.006025	60.25

ATTACHMENT SIXTEEN:**GA Pecan (5 lb/A applied 3 times at 7 day intervals by spray blast/default PCA = 0.87)**

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water GA pecan 2.R98 Adjustment factor #2 NOT used.
Analysis Date: 06-09-2003/09:35:24 Residue file dated: 06-09-2003/09:00:07/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000771	7.71	0.002130	21.30	0.006224	62.24
All infants:	0.001938	19.38	0.005985	59.85	0.017839	178.39
Children 1-2 yrs:	0.002188	21.88	0.004284	42.84	0.011497	114.97
Children 3-5 yrs:	0.001523	15.23	0.003509	35.09	0.009945	99.45
Children 6-12 yrs:	0.000952	9.52	0.002239	22.39	0.006923	69.23
Youth 13-19 yrs:	0.000549	5.49	0.001488	14.88	0.004830	48.30
Adults 20-49 yrs:	0.000571	5.71	0.001702	17.02	0.005171	51.71
Adults 50+ yrs:	0.000586	5.86	0.001766	17.66	0.004902	49.02
Females 13-49 yrs:	0.000552	5.52	0.001734	17.34	0.005377	53.77

ATTACHMENT SEVENTEEN: GA Pecan (5 lb/A applied 3 times at 7 day intervals by spray blast/default PCA = 0.38)

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water GA pecan 3.R98 Ver. 1.33
(1994-98 data)
Analysis Date: 06-09-2003/09:51:37 Adjustment factor #2 NOT used.
Residue file dated: 06-09-2003/09:00:46/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000600	6.00	0.001532	15.32	0.004621	46.21
All infants:	0.001304	13.04	0.003930	39.30	0.009468	94.68
Children 1-2 yrs:	0.001991	19.91	0.003679	36.79	0.009456	94.56
Children 3-5 yrs:	0.001338	13.38	0.002687	26.87	0.008218	82.18
Children 6-12 yrs:	0.000825	8.25	0.001658	16.58	0.005638	56.38
Youth 13-19 yrs:	0.000442	4.42	0.001011	10.11	0.003470	34.70
Adults 20-49 yrs:	0.000415	4.15	0.001063	10.63	0.003395	33.95
Adults 50+ yrs:	0.000412	4.12	0.001098	10.98	0.003297	32.97
Females 13-49 yrs:	0.000396	3.96	0.001080	10.80	0.003627	36.27

ATTACHMENT EIGHTEEN: GA Pecan (2.5 lb/A applied 2 times at 10 day intervals by spray blast/default PCA = 0.87)

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water GA pecan 4.R98 Adjustment factor #2 NOT used.
Analysis Date: 06-09-2003/10:07:58 Residue file dated: 06-09-2003/09:01:18/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000592	5.92	0.001556	15.56	0.004743	47.43
All infants:	0.001256	12.56	0.003954	39.54	0.010432	104.32
Children 1-2 yrs:	0.001992	19.92	0.003714	37.14	0.009613	96.13
Children 3-5 yrs:	0.001333	13.33	0.002729	27.29	0.008323	83.23
Children 6-12 yrs:	0.000821	8.21	0.001684	16.84	0.005745	57.45
Youth 13-19 yrs:	0.000436	4.36	0.001019	10.19	0.003608	36.08
Adults 20-49 yrs:	0.000405	4.05	0.001078	10.78	0.003566	35.66
Adults 50+ yrs:	0.000400	4.00	0.001126	11.26	0.003464	34.64
Females 13-49 yrs:	0.000386	3.86	0.001095	10.95	0.003826	38.26

ATTACHMENT NINETEEN: GA Peach (5 lbs/A, 3 times at 7 day intervals/ aerially/ default PCA = 0.87)

U.S. Environmental Protection Agency
DEEM-FCID ACUTE Analysis for CARBARYL
Residue file: Acutefinal water ga peach MAX.R98 Adjustment factor #2 NOT used.
Analysis Date: 05-29-2003/16:43:49 Residue file dated: 05-19-2003/14:26:58/8
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: ""
=====

Summary calculations (per capita):

	95th Percentile Exposure	% aRfD	99th Percentile Exposure	% aRfD	99.9th Percentile Exposure	% aRfD
U.S. Population:	0.000681	6.81	0.001654	16.54	0.005042	50.42
All infants:	0.001718	17.18	0.004408	44.08	0.010699	106.99
Children 1-2 yrs:	0.002049	20.49	0.003769	37.69	0.010085	100.85
Children 3-5 yrs:	0.001410	14.10	0.002834	28.34	0.008764	87.64
Children 6-12 yrs:	0.000877	8.77	0.001774	17.74	0.006016	60.16
Youth 13-19 yrs:	0.000495	4.95	0.001121	11.21	0.003817	38.17
Adults 20-49 yrs:	0.000502	5.02	0.001214	12.14	0.003872	38.72
Adults 50+ yrs:	0.000519	5.19	0.001199	11.99	0.003848	38.48
Females 13-49 yrs:	0.000483	4.83	0.001229	12.29	0.004112	41.12