

United States Environmental Protection Agency Office of Pesticide Programs

Dietary Exposure Evaluation Model User's Guide

September 30, 2014

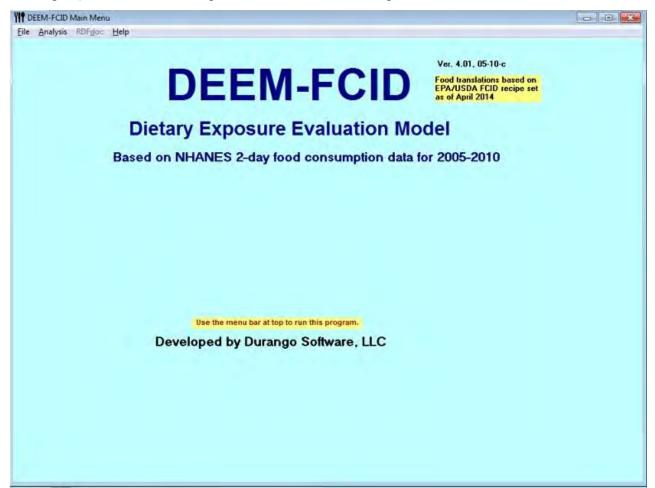
Note: Though the current version of DEEM is 4.02, the screenshots used in this DEEM Quick Guide are based on "working" Beta Versions 4.00 and 4.01. Users should not find a significant visual difference in v. 4.02.

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General Overview of DEEM-FCID

DEEM-FCID is a dietary exposure model that is used to **estimate** exposure to pesticides in foods in the diets of the U.S. population. The software was developed by Durango Software, LLC and is based on food consumption data from the National Health and Nutrition Examination Survey (NHANES), What We Eat in America (WWEIA). DEEM-FCID Version 4.02 is based on more recent food consumption data (2005-2010) than Version 3.18 (2003-2008). Version 4.02 also uses commodity codes for two groups (Tropical Fruits with edible peel, and Tropical Fruits without edible peel) that have not been published in the Federal Register as of this release date.



The main DEEM-FCID module is used to launch the residue file editor to create and edit residue files for specific chemical or cumulative applications, and to launch the DEEM-FCID Acute and Chronic/Cancer analysis modules. The DEEM-FCID software itself is also integrated with Calendex, an aggregate exposure assessment software application used when combining dietary and residential (non-dietary) exposures. To conduct either acute, chronic, and/or cancer risk analyses using DEEM-FCID software, the user must provide three types of information: (1) the pesticide's toxicological data that are directly relevant to both the length of time or duration of interest and the evaluation of the significance of estimates of exposure by the oral route. These data should include a toxicology endpoint based on chronic (long-term) exposure such as the

cancer potency factor (Q₁*), the No Observed Effect Level (NOEL) or No Observed Adverse Effect Level (NOAEL), Reference Dose (RfD), Population Adjusted Dose (PAD), or Margin of Exposure (MOE) {*This guide uses the acronym 'NOEL' rather than 'NOAEL' following the label used by the DEEM-FCID software.*}; (2) the residue concentrations in the foods and/or food forms which can be a theoretical level (such as the tolerance or MRL (maximum residue limit)) or a level of residue anticipated to be present in the food of interest; and (3) any adjustment factors directly relevant to potential constituent levels in the diet to more accurately reflect likely exposures (e.g., processing factors or estimates of percent of the crop treated).

The acute and chronic analysis of DEEM-FCID can be used to estimate total exposure for both the U.S. population as a whole and subgroups of the population. Subgroups are divided by age, gender, or ethnicity. The Commodity Contribution Analysis can be used to identify the contribution of residues in individual foods (and food forms) to the overall estimate of dietary exposure.

The purpose of this User's Guide is to familiarize users with the DEEM-FCID interface. The first part depicts how to create a DEEM-FCID Residue file for a hypothetical Chemical "X". The case study shows how to input toxicological parameters for Chemical X, and single value residue inputs for apples, almonds and drinking water. The DEEM-FCID model is then used to calculate estimates of chronic and acute dietary exposures for select populations. The second part shows how to construct and assign empirical residue distributions and to perform acute probabilistic or Monte Carlo Analysis (MCA) using DEEM-FCID.

Getting Started: Creating a Chemical Residue File (R10)

DEEM-FCID	Ver. 4.01. 05-10-c Food translations based on EPA/USDA FCID recipe set as of April 2014
Dietary Exposure Evaluation M	odel
Based on NHANES 2-day food consumption data	a for 2005-2010
- Setup variables:	
Residue file path: Change E:\DEEM Beta Ver 4.00c\Chemical X\	
Food Consumption File path: Change E:\DEEM Beta Ver 4.00c\ Company Name for Report Headers: US EPA	
Include pg numbers and pg breaks in reports (Y/N)? Y Lines per page for reports (50-70): 66	
Print comments in residue listing (Y/N)? Y Acute Percentiles: Ascending or Descending (A/D)? A	Cancel

1) Go to "File" and select "Set Up" from the main menu screen. If the DEEM-FCID defaults are correct, click the "OK" button. For the case study, the DEEM-FCID software and residue inputs for Chemical X are stored on a thumb drive (E).

[If you want to save the software and inputs on your PC, then enter the name of the directory where you would like the residue files that you will be creating to be saved; next, enter the name of the directory where the food consumption files are located. Also, indicate the number of lines per page that will accommodate your printer, page breaks in reports that are generated by DEEM-FCID, identification of printer port, displaying the acute exposure percentiles in ascending or descending order.]

2) Go to "File" and select "Residue File Editor" from the main menu screen. Next, click on "File" and select "New" to create a new file. You then will be prompted to enter the name of the file. This is your R10 file. For this example, save the file as "Training." Once you have saved the data, click on "Save" to close the screen.

[Note: When naming a file try not include symbols, spaces, or special characters, such as commas, parenthesis, etc. as this may prevent DEEM-FCID from recognizing your R10 file. When using RDF files, save the R10 and RDF files in the same directory in order to facilitate the use of DEEM inputs on other computers.]

le Add/Edit Header Add/Edit Commodities/	Foodforms C	rop Group Actions	Help	
New				
Open				
Save				
Save As				
Print File with all commodities	•			
Print File with included commodities only	- E			
Close				
Exit to Main Menu				

3) Click on "Add/Edit Header" from the main screen then "Open Header." Add the chemical name, NOEL, Reference Dose (RfD) or the Population Adjusted Dose, and Q₁* if applicable. You may also add comments, which will appear on all subsequent DEEM- FCID analyses. Once you have completed entering the data, click on "Finished" to close the screen. [*You may move from field to field with either the* <Tab> key or the mouse. In addition to presenting acute dietary exposures at various per capita percentiles in the summary results report, DEEM will also present those exposures as a percent of the acute Reference Dose (Acute), based on the value in the "Reference Dose (Acute)" blank. If the user inputs a value in the "Noel (Acute)" box, then DEEM will also present those estimated exposures as a Margin of Exposure (=Exposure/Value).]

sidue File Header	Data				
Chemical Na	me: Chemical X		You must enter name to be eva		
				<u>F</u> inished (Exit)	
Noel (Chron Noel (Acute	1	ng/kg body-wt/day ng/kg body-wt/day		<u>C</u> ancel (Exit)	
Q*: 0000	1				

Inputting Anticipated Residues

4) Click on "Add/Edit Commodities/Foodforms" option from the menu bar. You may sort foods by food code or alphabetic order. Select "View/Select All" and by Alphabetic order.

ile	Add/Edit <u>H</u> eader	Add/Edit Commodities/Foodforms	Crop Group Actions Help	
		View/Select All	Food Code order	
		View Included Only +	Alphabetic order	
			for selected Crop Groups only	

5) In the "Default Residue" column, enter the residue value in ppm for each commodity in your assessment. For this example, use 5 ppm for all apple commodities. [*DEEM-FCID permits entry of values of 0.000001 ppm to 1000 ppm. Note that data entry is restricted to 6 decimals.*]

PA Code	Crop Grp	Commodity Name	NFE	Default Residue (ppm)	Adjust Factor #1			Comment (de	ocumentation) <u>^</u>
2303000500	23C	Acai berry	0	APPend	1	1				-
2301001000	23A	Acerola	0		1	1				
201001500	22A	Agave	0		1	1	1			
800002000	18	Alfalfa, seed	1		1	1	1			
400003000	14	Almond	9		1	1	1			
400004000	14	Almond, oil	1		1	1	1			_
400004001	14	Almond, oil-babyfood	0		1	1				_
400003001	14	Almond-babyfood	Ō		1	1	1			_
500006000	0	Amaranth, grain	2		1	1	1			_
401005000	4A	Amaranth, leafy	1		1	1	1			_
100009000	11	Apple, dried	4	5	1	1	1			_
100009001	11	Apple, dried-babyfood	1	5	1	1				
100007000	11	Apple, fruit with peel	4	5	1	1				_
100010000	11	Apple, juice	10	5	1	1				_
100010001	11	Apple, juice-babyfood	2	5	1	1	1			_
100008000	11	Apple, peeled fruit	8	5	1	1	1			_
100008001	11	Apple, peeled fruit-babyfood	3	5	1	1				_
100011000	11	Apple, sauce	5	5	1	1				_
100011001	11	Apple, sauce-babyfood	1	5	1	1	1			
202012000	12B	Apricot	7		1	1				_
202013000	12B	Apricot, dried	2		1	1				
202014000	12B	Apricot, juice	4		1	1				_
202014001	12B	Apricot, juice-babyfood	1		1	1				
202012001	12B	Apricot-babyfood	1		1	1				
103015000	1CD	Arrowroot, flour	1		1	1				+1
dax RDL Poin			ollowing otal com ies inclu	mod- 8		s are on otal w/o		d when the g Total	rid is updated w/ ff 0	.≯ i.

6) *Adjustment Factors*: Typically, the first adjustment factor in the DEEM-FCID software is used for reduction or increase of concentrations from processing a commodity, and the second adjustment factor may be used to incorporate pesticide usage estimates for chronic/cancer risk assessments. DEEM always multiplies residues by Adjustment Factor #1. As shown later, users also have the option to have the program multiply anticipated residues by Adjustment Factor #2 when specifying a particular simulation. In this example, the agency's default processing factors are entered for dried apples (8) and apple juice (1.3) under Adjustment Factor #1.

commodity c	< Qui ode fir	ck Quick Save Help Sumed in NHANES 2			Res	ort to <u>C</u> or Order	de T	um CropGrps On	Show BDL	<u>C</u> lose (Exit
EPA Code	Crop Grp	Commodity Name	NFF	Default Residue (ppm)	Adjust Factor	Adjust Factor #2	RDL Pntr #1	Comment (d	ocumentation	-
2303000500	23C	Acai berry	0		1	1				-
2301001000	23A	Acerola	0		1	1	1			
2201001500	22A	Agave	0		1	1				
1800002000	18	Alfalfa, seed	1		1	1				
1400003000	14	Almond	9		1	1				
1400004000	14	Almond, oil	1		1	1				
1400004001	14	Almond, oil-babyfood	0		1	1	-			
1400003001	14	Almond-babyfood	0		1	1		1		
9500006000	0	Amaranth, grain	2	1	1	1		1		
0401005000	4A	Amaranth, leafy	1		1	T				
1100009000	11	Apple, dried	4	5	8	1	-	1		
1100009001	11	Apple, dried-babyfood	1	5	8	1		1		
1100007000	11	Apple, fruit with peel	4	5	1	1				
1100010000	11	Apple, juice	10	5	1.3	1		1		
1100010001	11	Apple, juice-babyfood	2	5	1.3	1				
1100008000	11	Apple, peeled fruit	8	5	1	1				
1100008001	11	Apple, peeled fruit-babyfood	3	5	1	1				
1100011000	11	Apple, sauce	5	5	1	1				
1100011001	11	Apple, sauce-babyfood	1	5	1	1				
1202012000	12B	Apricot	7		1	1	-	0		
1202013000	12B	Apricot, dried	2		1	1		C		
1202014000	12B	Apricot, juice	4		1	1				
1202014001	12B	Apricot, juice-babyfood	1		1	1				
1202012001	128	Apricot-babyfood	1		1	1				
0103015000	1CD	Arrowroot, flour	1	-	1	1		1		-
•										•
Max RDL Poi			following Total com ities inclu	mod- 8		s are on otal w/o			rid is updated w/ If 0	

The percent crop treated for apples is 50% and the value 0.50 is entered in the adjustment factor #2 column. The DEEM Residue Editor allows users to copy values for Default Residues or Adjustment Factors to other commodities. To copy the 0.50 value from the first apple commodity to the other commodities, select the cell, left click the mouse, and hold the button down while dragging the highlighted area down to the last cell that you would like to replace. Select "Yes" when the following the screen appears, "Do you want to set the values for the entire highlighted area with the same value?" DEEM will copy that value to the other cells.

 Residue Assig 1100011001 < commodity commodity 	< Quid	Grid: Residue file = E:\DEEM Beta Ver 4.00\Chemical X\Tr k Quick Save Help Commodities with NFF=0 sumed in NHANES 2005-1	are no	ot con-		Res	ort to <u>C</u> o Order	de 1	Furn CropGrps S <u>O</u> n	how <u>R</u> DL	⊡ ⊠ <u>C</u> lose (Exit)
EPA Code	Crop Grp	Commodity Name	NFF	Default Residue (ppm)	A Fa	djust actor #1	Adjust Factor #2	RDL Pntr #1	Comment (docu	umentation]	_
2303000500		Acai berry	0			1	1				
2301001000	23A	Acerola	0			1	1				
2201001500	22A	Agave	0			1	1				
1800002000	18	Alfalfa, seed	1			1	1				
1400003000	14	Almond	9			1	1				
1400004000	14	Almond, oil	1			1	1				
1400004001	14	Almond, oil-babyfood	0			1	1				
1400003001	14	Almond-babyfood	0			1	1				
9500006000	0	Amaranth, grain	2			1	1				
0401005000	4A	Amaranth, leafy	1			1	1				
1100009000	11	Apple, dried	4	5		8	0.5				
1100009001	11	Apple, dried-babyfood	1	5		8	1				
1100007000	11	Apple, fruit with peel	4	5		1	1				
1100010000	11	Apple, juice	10	.05		1.3	1				
1100010001	11	Apple, juice-babyfood	2	.05		1.3	1				
1100008000	11	Apple, peeled fruit	8	5		1	1				
1100008001	11	Apple, peeled fruit-babyfood	3	5		1	1				
1100011000	11	Apple, sauce	5	5		1	1				
1100011001	11	Apple, sauce-babyfood	1	5		1	1				
1202012000		Apricot	7			1	1				
1202013000	12B	Apricot, dried	firmat	ionl							23
1202014000	12B	Apricot, juice	iiimat	ion:							23
1202014001	12B	Apricot, juice-babyfood									
1202012001	12B	Apricot-babyfood		Do you w	ant	t to se	t the val	ues fo	or the entire highli	inhted area	with the
0103015000	1CD	Arrowroot, flour	?)	same valu						9	
4			\sim								
Max RDL Poir	nters	1 ▼ Quick RDL pointer find The							Ye		No
G	luick (commodity name find									140

7) *Foodforms (FF):* The FCID recipe database assigned a cooking status (cooked or not cooked), food form (fresh, frozen, canned, dried, etc.) and cooking method (baked, boiled, fried, etc.) to each ingredient in every food item reportedly consumed by WWEIA respondents. We often use the term 'Food Form' (FF) to denote the combination of those 3 characteristics. The number of distinct FFs for each commodity is indicated in the column "NFF". In order to view those FFs, first enter a value in the Default Residue column, then highlight the default residue value (10 ppm) and right click the mouse. In the figure below, 10 ppm is entered for almonds (EPA FCID code=14000003000). Select "Yes" when the following the screen appears, "Include foodforms for Almond?". DEEM will show the expanded list of that commodities' food forms.

commodity c	1		2010	Default	Adjust	Order Adjust	RDL	Qn Show Bor	Close (E
EPA Code	Crop Grp	Commodity Name	NFF	Residue (ppm)	Factor #1		Pntr #1	Comment (documentation)	
303000500	230	Acai berry	0		1	1			
2301001000	23A	Acerola	0		1	1			
2201001500	22A	Agave	0		1	1			
800002000	18	Alfalfa, seed	1		-1	1			
400003000	14	Almond	9	10	1	1			
400004000	14	Almond, oil	1	10	1	1			
400004001	14	Almond, oil-babyfood	0	10	1	1			
400003001	14	Almond-babyfood	0	10	1	1			
1500006000	0	Amaranth, grain	2		1	1	-		
401005000	4A	Amaranth, leafy	1		1	1			
1100009000	11	Apple, dried	4	5	8	.5			
100009001	11	Apple, dried-babyfood	1	5	8	.5			
1100007000	11	Apple, fruit with peel	4	5	1	.5			
1100010000	11	Apple, juice	10	5	1.3	.5			
100010001	11	Apple, juice-babyfood	2	5	1.3	.5			
1100008000	11	Apple, peeled fruit	8	5	1	.5			
1100008001	11	Apple, peeled fruit-babyfood	3	5	1	.5			
100011000	11	Apple, sauce	5	5	1	.5			
1100011001	11	Apple, sauce-babyfood	1	5	1	.5	-		
1202012000	128	Apricot	7		1	1	_		
202013000	12B	Apricot, dried	2	Confirm	ation				
202014000	128	Apricot, juice	4					1000	
1202014001	128	Apricot, juice-babytood	1						
1202012001	128	Apricot-babyfood	1					· · · · · · · · · · · · · · · · · · ·	
0103015000	1CD	Arrowroot, flour	1		Inclu	de tood	forms	for Almond?	-1
Max RDL Poi		1 v Quick BDL pointer find The foll	owing al com	1 1	Ve	5		No Cancel	

This expanded view enables users to specify different residue data, or appropriate adjustment factors for particular food forms.

commodity c	< Qui ode fir	ck Quick Save Help Sumed in NHANES 200			Res	ort to <u>Co</u> o Order	de 1	um CropGrps On	Show BDL	<u>C</u> lose (Exi
EPA Code	Crop Grp	Commodity Name	NFF	Default Residue (ppm)				Comment (da	cumentation)	1
1800002000	18	Alfalfa, seed	1		1	1				
1400003000	14	Almond	9	10	1	1				
	· · · · ·	110-Uncooked; Fresh or N/S; Cook Meth N/S		10	1	1				
		120-Uncooked; Frozen; Cook Meth N/S		10	1	1				
		210-Cooked; Fresh or N/S; Cook Meth N/S		10	1	1				
		211-Cooked; Fresh or N/S; Baked	1	10	1	1				
	1.00	212-Cooked; Fresh or N/S; Boiled		10	1	1	-			
		213-Cooked: Fresh or N/S: Fried		10	1	1				
		220-Cooked; Frozen; Cook Meth N/S		10	1	1				
	-	221-Cooked; Frozen; Baked		10	1	1				
	1000	230-Cooked; Dried; Cook Meth N/S		10	1	1				
1400004000	14	Almond, oil	1	10	1	1				
1400004001	14	Almond, oil-babyfood	0	10	1	1				

Note: If NFF=0, then no one in the WWEIA-FCID 2005-10 database reportedly consumed that commodity in any food form; therefore, assigning residue inputs will not affect dietary exposure. Since there was no reported consumption for "Almond, oil-babyfood" and "Almond-babyfood", those residue inputs will not affect dietary exposures to Chemical X.

8) *Drinking Water* DEEM-FCID treats Drinking Water (DW) in a similar manner as dietary exposures from food commodities. Similar to food commodities, DEEM-FCID can accommodate either a deterministic point estimate or an empirical distribution of DW concentrations in acute risk assessments. The Calendex-FCID model also allows users to enter a time series of DW concentrations, including Calendar dates, in order to take into account temporal patterns (autocorrelation) in DW concentrations.

In WWEIA-FCID, Total Drinking Water (DW) consumption consists of Direct Water, "plain water from tap or bottled water", and Indirect Water "water added by respondent for coffee, tea, soups, etc". Attachment 2 provides further description of each component. The user can add DW concentrations to the Chemical X residue file by scrolling down the food list and entering a point value (0.07 ppm) to *Water, direct, all sources* and *Water, indirect, all sources* as depicted below.

02000000 commodity c	c< Qui ode fir	ck Quick Save Help Commodities with NFF sumed in NHANES 20			Res	ort to <u>C</u> oo Order	de 1	furn CropGrps Show <u>B</u> DL	Close (Exit
PA Code	Crop Grp	Commodity Name	NFF	Default Residue (ppm)	Adjust Factor #1	Adjust Factor #2	RDL Pntr #1	Comment (documentation)	-
5000386001	50	Turkey, skin-babyfood	2		1	1			- C
0103387000	1CD	Turmeric	13		1	1			
0402389000	48	Turnip, greens	3		1	1			
0101388000	1AB	Turnip, roots	4		1	1			
9500390000	0	Vinegar	19		1	1			
400391000	14	Walnut	7		1	1			
3500397000	0	Water chestnut	7		1	1			
3601000000	86A	Water, direct, all sources	1	.07	1	1		Direct - All Sources	
3601200000	86A	Water, direct, bottled	1		1	1			
3601300000	86A	Water, direct, other	0		1	1			
3601400000	86A	Water, direct, source-NS	0	~	1	1			
3601100000	86A	Water, direct, tap	1		1	1			
3602000000	86B	Water, indirect, all sources	22	.07	1	1		Indirect - All Sources	
3602200000	86B	Water, indirect, bottled	0		1	1			
3602300000	86B	Water, indirect, other	0		1		-		
3602400000	86B	Water, indirect, source-NS	0	-	1	1	~	No Commention F	
3602100000	86B	Water, indirect, tap			1	-		No Consumption for	or
402398000	48	Watercress	3		1	1		these FCID codes	
0901399000	9A	Watermelon	1		1	1			
0901400000	9A	Watermelon, juice	1		1	1			
500404000	15	Wheat, bran	7		1	1			
500402000	15	Wheat, flour	31		1	1			
500402001	15	Wheat, flour-babyfood	5		1	1			1
500403000	15	Wheat, germ	4		1	1			_
1500401000	15	Wheat, grain	13		1	1			+
Max RDL Poi	nters		following Total com			are on otal w/o	1.1	d when the grid is updated.	1

Note: The WWEIA-FCID 2005-2010 database no longer contains DW consumption for the 6 RACs highlighted in red_(NFF=0), since WWEIA-FCID 2005-2010 has now collapsed the previous categories into the remaining three; therefore, inputting residues in those rows will not affect dietary (food+DW) exposures. As in previous versions of DEEM-FCID, users can specify different residue inputs for the different forms of water: 1) Direct-Bottled; 2) Direct-Tap; and 3) Indirect-All Sources. That option is not depicted in this user guide since the Agency typically assumes that only a single concentration is selected and applied to all three water forms in a DW assessment.

02080080 commodity c	< Qui ode fir	ck Quick Save Help Sumed in NHANES 200			Res	ort to Cor Order	de 1	Tum CropGrps Dn	Show BDL	Close (Exit
EPA Code	Crop Grp	Commodity Name	NEE	Default Residue [ppm]	Adjust Factor		RDL Pntr #1	Comment (da	cumentation	1
5000386001	50	Turkey, skin-babyfood	2	-	1	1		-		-
0103387000	1CD	Turmeric	13		1	1	1			
402389000	48	Turnip, greens	3		1	1				
0101388000	1AB	Turnip, roots	4		1	1				
3500390000	0	Vinegar	19		1	1				
1400391000	14	Walnut	7		1	1				
3500397000	0	Water chestnut	7		1	1				
3601000000	86A	Water, direct, all sources	1	.07	1	1		Direct - All S	ources	
3601200000	86A	Water, direct, bottled	1		1	1		loone appar		
8601300000	86A	Water, direct, other	0		1	1				
8601400000	86A	Water, direct, source-NS	0		1	1				
3601100000	86A	Water, direct, tap	1	- T -	1	1				
8602000000	86B	Water, indirect, all sources	22	.07	1	1		Indirect All	Sources	
3602200000	86B	Water, indirect, bottled	0		1	1				
3602300000	86B	Water, indirect, other	0		1	1				
3602400000	86B	Water, indirect, source-NS	0		1	1				
8602100000	868	Water, indirect, tap	0		1	1				
402398000	4B	Watercress	3		1	1				
901399000	9A	Watermelon	1		1	1				
901400000	9A	Watermelon, juice	1		1	1				
500404000	15	Wheat, bran	7		1	1				
500402000	15	Wheat, flour	31		1	1				
500402001	15	Wheat, flour-babyfood	5		1	1				1
500403000	15	Wheat, germ	4		1	1				-
1500401000	15	Wheat, grain	13	1	1	1	-			1
Max RDL Poi				commodit mod- 15		are on otal w/o		d when the gr	id is update w/ ff 1	d.

9) The user can return to the main Residue Editor screen by clicking the "Close (Exit)" button.

From the main Residue Editor screen, the user can view only those commodities that have assigned residues by selecting "Add/Edit Commodities/Foodforms" and "View Included Only…" option.

Editin	g existing file: E:\DEE!	M Beta Ver 4.00c\Chemical X\Trainin	g.R10	
Eile	Add/Edit <u>H</u> eader	Add/Edit Commodities/Foodforms	Crop Group Actions Help	
		View/Select All >	Food Code order	
		View Included Only +	Alphabetic order	
			for selected Crop Groups only	

<pre>commodity c</pre>	< Qui ode fir				Res	ort to <u>C</u> oc Order	ie 1	urn CropGrps <u>O</u> n	Show <u>R</u> DL	<u>C</u> lose
EPA Code	Crop Grp	Commodity Name	NFF	Default Residue (ppm)		Adjust Factor #2		Comment (d	ocumentation)
400003000	14	Almond	9	10	1	1				
		110-Uncooked; Fresh or N/S; Cook Meth N/S		10	1	1				
		120-Uncooked; Frozen; Cook Meth N/S		10	1	1				
		210-Cooked; Fresh or N/S; Cook Meth N/S		10	1	1				
		211-Cooked; Fresh or N/S; Baked		10	1	1				
		212-Cooked; Fresh or N/S; Boiled		10	1	1				
		213-Cooked; Fresh or N/S; Fried		10	1	1				
		220-Cooked; Frozen; Cook Meth N/S		10	1	1				
		221-Cooked; Frozen; Baked		10	1	1				
		230-Cooked; Dried; Cook Meth N/S		10	1	1				
1400004000	14	Almond, oil	1	10	1	1				
1400004001	14	Almond, oil-babyfood	0	10	1	1				
1400003001	14	Almond-babyfood	0	10	1	1				
1100009000	11	Apple, dried	4	5	8	.5				
1100009001	11	Apple, dried-babyfood	1	5	8	.5				
1100007000	11	Apple, fruit with peel	4	5	1	.5				
1100010000	11	Apple, juice	10	5	1.3	.5				
1100010001	11	Apple, juice-babyfood	2	5	1.3	.5				
1100008000	11	Apple, peeled fruit	8	5	1	.5				
1100008001	11	Apple, peeled fruit-babyfood	3	5	1	.5				
1100011000	11	Apple, sauce	5	5	1	.5				
1100011001	11	Apple, sauce-babyfood	1	5	1	.5				
8601000000	86A	Water, direct, all sources	1	.07	1	1		Direct - All 9		
8602000000	86B	Water, indirect, all sources	22	.07	1	1		Indirect - Al	Sources	
∢ Max RDL Poi	nters	🛛 🔻 Quick RDL pointer find 🗌 The f	ollowing	commodity	y count:	are onl	y vali	d when the g	rid is updated	▶ d.

10) Additional Features: Crop Groups

DEEM allows users to assign a single residue value to all commodities in a particular crop group. From main Residue Editor Screen, select "Crop Group Actions", then "Add Crop Group". DEEM will display a table of all Crop Groups and subgroups.

File	ile Add/Edit <u>H</u> eader	Add/Edit Commodities/Foodforms	Crop Group Actions	<u>H</u> elp
			Add Crop Group	p
			Drop Crop Grou	ıp

If the user wanted to assign a residue value of 5 ppm to all Pome Fruits, then enter 5 in the "Default Residue" cell, as shown below), and click "OK"; a warning box will appear asking if you want to replace any existing residue values with that default value.

Editing existing file: E:\DEEM Beta Ver 4.00c\Chemical X\Trainin	ng.R10
Add all commodities for selected Crop	(Click box to activate/deactivate)
L. L	Default residue Default residue
1 Root and Tuber Vegetables	14 🔽 Tree Nuts
1A C Root Vegetables	15 Cereal Grains
1B Root Vegetables (except sugar beet)	18 Non-grass animal feeds
1C Tuberous and Corm Vegetables 2 Leaves of Root and Tuber Vegetables	19 THerbs and Spices
3 Bulb Vegetables	
3A Garlic/Onion	20 Oilseeds
3B Other Bulb Vegetables	20A Rapesed
4 🗌 Leafy Vegetables	20B Sunflower
🗛 🔲 Leafy Greens	20C Cottonseed
4B 🔲 Brassica Leafy Greens	21 🔲 Mushroom
5 Brassica Head and Stem Vegetables	22 Stalk, Stem, and Leafy Petiole Vegetables
6 Legume Vegetables (Succulent or Dried)	22A Stalk and Stem Vegetables
6A Edible-pod Legume Vegetables 6B Succulent shelled peas and beans	228 Leafy Petiole Vegetables 23 Tropical + Subtropical Fruit, Edible Peel
6C Dried Shelled Pea/Bean (except soybean)	23A Trop + Subtrop, Small Fruit, Edible Peel
8 Fruiting Vegetables	
8A Tomato	2 Your choice!
8B 🔽 Bell Pepper	2
8C 🔲 Other Fruiting Vegetables	2 Do you want to replace existing (non-zero) residue values for
9 Cucurbit Vegetables	2 commodities/foodforms with default value? If you answer 'No' then
9A Melons	only commodities/foodforms with no residue values will be changed.
9B Squash/Cucumbers 10 Citrus Fruits	
10A Orange	
10B Lemon/Lime	Yes No Cancel
10C Grapefruit	
	5 34 Pork
12 Stone Fruits	35 Sheep
12A Cherry	36 🗖 Milk
12B Apricot/Peach	38 Game
12C Plum	39 Rabbit
13 Berries 13A Berries: Caneberry	40 Chicken
13B Berries: Bushberry	60 Poultry (other)
13C Berries: Large Shrub/tree berry	70 Egg
13D Berries: Small fruit vine climbing	80 T Fish
13E 🗖 Berries: Small fruit vine climbing (except grape)	86 🔽 Water
13F 🔲 Berries: Small fruit vine climbing (except kiwi)	86A Direct Water
13G Berries: Low growing berry	86B Indirect Water
13H Berries: Low growing berry (except strawberry)	95 🔲 Other
Click on alphanumeric code to show	OK Cancel
foods assigned to crop group.	

11) The Residue Editor also provides two search fields at the bottom of the window, "Quick Commodity Code Find" and "Quick Commodity Name Find" to move to a specific raw agricultural commodity (RAC) code or food.

03296000 <	< Qui ode fi	nd Quick Save Help Commodities with N sumed in NHANES		2-Day		sort to <u>C</u> oo Order		um CropGrps Show <u>B</u> DL 1	Close (Ex
EPA Code	np	Commodity Name	NFF	Default Residue (ppm)		Adjust Factor #2	RDL Pntr #1	Comment (documentation)	1
3400291000	34	Pork, skin	7		1	1			
0103296000	10	Potato, chips	2	C	1	1			
0103297000	10	Potato, dry (granules/ flakes)	6		1	1			
0103297001	10	Potato, dry (granules/ flakes)-babyfood	2		1	1			
0103298000	10	Potato, flour	24		1	1			
0103298001	10	Potato, flour-babyfood	4		1	1		1	
0103300000	10	Potato, tuber, w/o peel	12		1	1			
0103300001	10	Potato, tuber, w/o peel-babylood	1		1	1			
0103299000	10	Potato, tuber, w/peel	5		1	1			
0103299001	10	Potato, tuber, w/peel-babylood	0		1	1			
6000304000	60	Poultry, other, fat	3		T	1			
6000302000	60	Poultry, other, liver	1		1	1			
6000301000	60	Poultry, other, meat	3		1	1			
6000303000	60	Poultry, other, meat byproducts	2		1	1			
6000305000	60	Poultry, other, skin	2	1	1	1			
2404062904	24D	Prickly pear fruit	0		1	1			
9500306000	0	Psyllium, seed	1		1	1			
1003307000	10C	Pummelo	0	1	1	1			
0902308000	9B	Pumpkin	8	1	1	1			
0902309000	98	Pumpkin, seed	3		1	1			
1100310000	11	Quince	0		1	1			
9500311000	0	Quinoa, grain	0		1	1			
3900312000	39	Rabbit, meat	2		1	1			
0401313000	4A	Badicchio	1		1	1			
0101316000	1AB	Radish, Oriental, roots	2		1	1			-
BDL Poi		1 + Quick RDL pointer find Th					-	d when the grid is updated.	

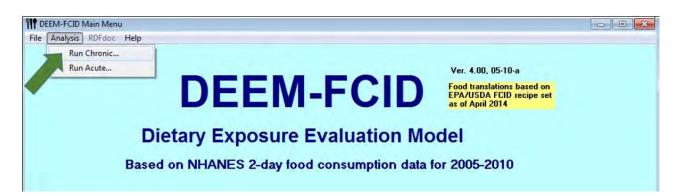
<	< Qui ode fir		dities with NFF=0 in NHANES 2005			Res	ort to <u>Alp</u> Order	ha 1	fum CropGrps On	Show <u>R</u> DL	<u>C</u> lose (Exil
EPA Code	Crop Grp	Commodity Name		NEE	Default Residue (ppm)		Adjust Factor #2		Comment (de	ocumentation	n).
1100007000	11	Apple, fruit with pe		4	5	1	.5		-		_
1100008000	11	Apple, peeled fruit		8	5	1	.5				
1100008001	11	Apple, peeled fruit-papyfood		3	5	1	.5				
1100009000	11	Apole dried	-	4	5	8	.5				
1100009001	1 19	Residue Data Entr 📼 🔲 🌌		1	5	8	.5				
1100010000		elect help topic, then press 'Show'		10	5	1.3	.5				
1100010001		Command buttons		2	5	1.3	.5				
1100011000		Contrained buttons Show		5	5	1	.5				
1100011001		Cell Entries		1	5	1	.5				
1400003000		Ceil Entries Navigating through grid		9	10	1	1				
		Column headings	Meth N/S		10	1	1				
		Food counts	1/5		10	1	1				
		C Misc. Info	th N/S		10	1	1				
)	Misc. mio			10	1	1				
					10	1	1				
		213-Cooked; Fresh or N/S; Fried			10	1	1				
		220-Cooked; Frozen; Cook Meth N	/S		10	1	1				
		221-Cooked; Frozen; Baked			10	1	1				
the second second		230-Cooked; Dried; Cook Meth N/	S		10	1	1				
1400003001	14	Almond-babyfood		0	10	1	1				
1400004000	14	Almond, oil		1	10	1	1				
1400004001	14	Almond, oil-babyfood		0	10	1	1				
8601000000	86A	Water, direct, all sources		1	.07	1	1		Direct - All 9		
8602000000	86B	Water, indirect, all sources		22	.07	1	1	-	Indirect - All	Sources	
۱ Max RDL Poir		1 → Quick RDL pointer find							id when the g		±.

12) The "Help" button provides additional information on the DEEM-FCID Residue Editor.

Select the "Close (Exit)" button when you are finished. To save your file for use in the chronic or acute analysis, click "File" and "Save." For this example, save the file as "Training_Food+DW." Click "file" and "Exit to Main Menu."

DEEM-FCID Chronic Dietary Analysis

1) To run a DEEM-FCID chronic dietary assessment, go to the DEEM-FCID main menu screen, click on "Analysis" then "Run Chronic."



2) Select the file to be analyzed by clicking on "File" from the main menu then "Open Residue File." *Note:* All future run analyses (results files, commodity contribution files) will be saved in the same location as your selected R10 file.

Open Residue File		
Close Residue File	Commodity Analysis Complete Commodity Contribution Analysis	
Exit	Critical Commodity Contribution Analysis	
Analysis Parameters:		
Use second adjustment factor		
Toxicology endpoints (chronic):		
Toxicology endpoints (chronic): Use: Value:		
Use: Value:		

3) Double click the file you want to run. For this example, open "Training.R10." The toxicology endpoints should automatically appear (if you added them in the Edit Header option shown in section 3 of Getting Started). At this point, you will have the option of changing any of the toxicological endpoints identified in the file. You also will be given the option of comparing the exposure results (expressed as mg chemical/kg bw/day) to the chronic RfD, NOEL, both, or to the Q*. Exposure estimates will be expressed as a percent of the RfD; selecting the NOEL will produce Margins of Exposure (MOEs). The chronic exposure value for the general U.S. population will be multiplied by the Q* to yield the lifetime cancer risk estimate. Click on the toxicology endpoints (e.g., NOEL, RfD).

: Run <u>A</u> nalysis <u>H</u> elp	
Residue File: Residue file: Training.R10	Commodity Analys
Date last saved: 9/2/2014 9:34:54 AM	
Chemical Name: Chemical X	Critical Commod
Working Folder: E:\DEEM Beta Ver 4.00\Chemical X\	
Chronic Analysis Parameters	
Use second adjustment factor	
Toxicology endpoints (chronic):	
Use: Value:	
NOEL - 4 mg/kg bw/day	
RID T 0.04 mg/kg bw/day	
Q* 0	
PAD	

4) Click on the "Use second adjustment factor" (if you added a percent crop treated value in the current analysis). As indicated, DEEM will always multiply the Residue by Adjustment Factor #1 in chronic and acute dietary exposure assessments.

Residue File: Residue lie: Training R10 Date last saved: 9/2/2014 9:34;54 AM Chemical Name: Chemical X	Commodity Analysis Complete Commodity Contribution Analysis Critical Commodity Contribution Analysis
Working Folder: E-NDEEM Beta Ver 4.00\Chemical X\ Chronic Analysis Parameters IV Use second adjustment factor	
Taxicology endpoints (chronic): Use: Value:	
NOEL 4 mg/kg bwi/day	
R/D []0.04 mg/kg bw/day 0* []0	

- 5) If you want to save the chronic analysis report to a file, select "Save Reports to File" option and name the file.
- 6) Before you perform a chronic (or acute) run, you may view or obtain a hard copy of the residue data used in your analysis by clicking the "Show Res File" button. You will then be prompted to display the report to screen, save to disk, or send directly to printer. DEEM allows you to sort these residue data by alphabetical or crop group order.

Run Analysis Help	1	-					
esidue File:			ic analysis for CHEMICAL X			.00, 05-10-a	
esidue file: Training R10			NDEEM Beta Ver 4.00\Chemical X\ 9-02-2014 Residue fi				
ate last saved: 9/2/2014 9:34:54			(RfD) = 0.04 mg/kg bw/day	Te dated: 05-	02-2014/03	.04.04	
nemical Name: Chemical X	Comment:Tr.						
orking Folder: E:\DEEM Beta Ve	Food						
		Crop	Food Name	Residue (ppm)	#1	#2	
hronic Analysis Parameters	areas out	Grp	Lood Name	(PDm)			
	1400003000	14	Almond				
Use second adjustment factor	100000000		110-Uncocked; Fresh or N/S; C				
 use second adjustment factor 				10.000000	1.000	1.000	
			120-Uncooked; Frozen; Cook Me				
Taxicology endpoints (chronic):				10.000000	1.000	1.000	
			210-Cooked; Fresh or N/S; Coo	k Meth N/S 10.000000	* 000	1.000	
Use: Value:			211-Cooked; Fresh or N/S; Bak			1.000	
NOEL 4 mg/kg by			212-Cooked; Fresh or N/S; Boi		1.000	1.000	
1			ere oboxed, fresh or w/o, bor	10.000000	1.000	1.000	
RfD 🔽 0.04 mg/kg by			213-Cooked; Fresh or N/S; Fri			1.000	
Q* [0			220-Cooked; Frozen; Cook Meth	N/S			
				10.000000		1.000	
PADI			221-Cooked; Frozen; Baked	10.000000	1.000	1.000	
			230-Cooked; Dried; Cook Meth		10.00	Endal .	
			11	10.000000	1.000	1.000	
	1400003001	14	Almond-babyfood Almond, oil	10.000000	1.000	1.000	
Save Reports	1400004000	14	Almond, oil-babyfood	10.000000	1.000	1.000	
O FIR	1100007000	11	Almond, oil-babyfood Apple, fruit with peel	5.000000	1.000	0.500	
Run Comment:	1100008000	11	Annle neeled fruit	5 000000	1.000	0.500	
	1100008001	11	Apple, peeled fruit-babyfood	5.000000	1.000	0.500	
Training	1100009000	11	Apple, dried	5.000000		0.500	
	1100009001	11	Apple, dried-babyfood	5.000000	B.000	0.500	
	1100010000					0.500	
	1100010001	11	Apple, juice-babyfood	0_050000	1.300	0.500	
and the second	1100011000	11	Apple, juice Apple, juice-babyfood Apple, sauce Apple, sauce-babyfood	5.000000	1.000	0.500	
Clear Form Show Res File	1100011001	11	Appie, sauce-babyrood	5.000000	1.000	0.500	

7) To run a DEEM-FCID chronic dietary assessment, click on "Run Analysis," from the main menu, then select "Chronic Analysis." The chronic analysis will run automatically.

ile Run Analysis Help		
Chronic Analysis R Commodity Analysis Date tast saved: 9/2/2014 3: 34:04 AM Chemical Name: Chemical X Working Folder: E:\DEEM Beta Ver 4.00\Chemical X\ Chronic Analysis Parameters	Commodity Analysis Complete Commodity Contribution Analysis Critical Commodity Contribution Analysis	
✓ Use second adjustment factor	Standard Subpopulations for Commodity Analysis	
IV Use second adjustment factor	Standard Subpopulations for Commodity Analysis Total US Population Female 13-50	

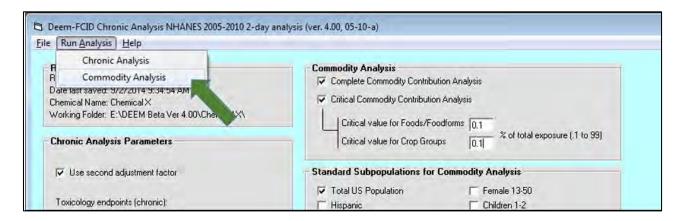
8) The "Show Last Chronic Rpt" button permits the user to display, save, or print the analysis report. If you select to save a report to disk, you will be prompted to enter a file name.

8 1 2 2 11 1	C Last Chronic Report						
Run Analysis Help Residue File: Residue file: Training.R10 Date last saved: 9/2/2014 9:34:54 Chemical Name: Chemical X Working Folder: E:\DEEM Beta Ve	US EPA DEEM-FCID Chronic analysis for Residue file name: E:\DEEM Beta Analysis Date 09-02-2014/10:34: Reference dose (RED, Chronic) = COMMENT 1: Training	s Ver 4.00\Chemical X\Traini Adjus :19 Residue file dated: = .04 mg/kg bw/day	ng.R10 tment factor #2 used.				
Chronic Analysis Parameters	Total exposure by population subgroup						
☑ Use second adjustment factor		Total	Exposure				
Toxicology endpoints (chronic):	Population Subgroup	mg/kg body wt/day	Percent of Rfd				
Use: Value:	Total US Population	0.001424	3.6%				
NOEL 7 14 mg/kg bw	Hispanic	0,001800	4.55				
MOCCI 14 mg/kg om	Non-Hisp-White	0.001387	3.5%				
RID V 0.04 mg/kg bw	Non-Hisp-Black	0.001129	2.85				
	Non-Hisp-Other	0.001535	3.85				
Q* [0	Nursing Infants	0.004189	10.55				
PAD	Non-Nursing Infants	0.006459	16.19				
(AD)	Female 13+ PREG	0.001250	3.18				
	Children 1-6	0.004833	12.18				
	Children 7-12	0.002000	5.05				
- Save Reports	Male 13-19	0.001027	2.69				
to File	Female 13-19/NP	0,000989	2.5%				
LOFIE	Male 20+	0.000848	2.19				
a second	Female 20+/NP	0.001011	2.54				
Run Comment:	Seniors 55+	0.001023	2.6%				
Training	All Infants	0,005745	14.45				
	Female 13-50	0.000936	2.3%				
	Children 1-2	0.006273	15.78				
	Children 3-5	0.004347	10.9%				
	Children 6-12	0.002177	5.4%				
G. C	Youth 13-19	0.001006	2.5%				
Clear Form Show Res File	Adults 20-49	0.000852	2.18				

9) Critical Commodity Analysis. To perform a Critical Commodity Analysis, select the "Complete Commodity Contribution Analysis" option and under the Standard Subpopulations for Commodity Analysis select the subpopulations of interest. *[Note: If you click "Total US Population," the results will automatically show the results for all the subpopulations]*

Run <u>A</u> nalysis <u>H</u> elp	
Residue File: Training.R10 Date last saved: 9/2/2014 9:34;54 AM Chemical Name: Chemical X Vorking Folder: E:\DEEM Beta Ver 4,00\Chemical X\	Commodity Analysis Complete Commodity Contribution Analysis Critical Commodity Contribution Analysis Logaritical value for Foods/Foodforms
Chronic Analysis Parameters	Cn value for Crop Groups [0.1 % of total exposure (.1 to 99)
I⊽ Use second adjustment factor	Standard Subpopulations for Commodity Analysis
Toxicology endpoints (chronic):	✓ Total US Population □ Female 13:50 □ Hispanic □ Children 1:2

10) To run the Critical Commodity Contribution Analysis, click on "Run Analysis," then click "Commodity Analysis." The commodity analysis will run automatically and you will then be prompted to display the report to screen, save to disk, or send directly to printer.



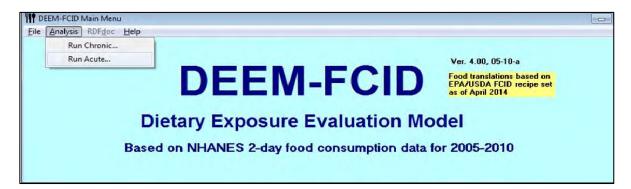
11) The "Show Last Commodity Rpt" button permits the user to display, save or print the analysis report. The user may save the report to file by selecting Save Reports to disk file.

Run Analysis He Us	EPA		-	_	Uer	4.00, 05-10-a	_
	EM-FCID Chronic analysis fo	r CHEMICAL X					
	sidue file name: E:\DEEM Be						
idue file: Training B					justment fact		
An ACCIP Anustan	alysis Date 09-02-2014/10:2			e dates	1: 09-02-2014	/09:34:52	
	ference dose (RfD, Chronic) MMENT 1: Treining	= .04 mg/kg	bw/day				
king Folder: E:\DE	resent 1. Iferning						
	Complete com	modity contri	bution	analysi	is for		
onic Analysis Pa		Total US Pop	ulation	1			
11	op Group = (11) Pome Fruits						
Use second adjust	op eroup - (ii) rome fiults				Exposure A	nalysis	
xicology endpoints		Residue	Adjus	tment	mg/kg	Percent of	
-	Food Name	(ppm)		ors	body wt/day	RED	
Use: Value:							
DELIT 4 Ap	ple, fruit with peel (11000		0.000	0.001	200000		
	FoodForm N/S ple, peeled fruit (11000080		1.000	0.500	0.0008895	2.28	
RID 🔽 0.04 Ap	FoodForm N/S		1.000	0.500	0.0000246	0.15	
Q* [0 Ap	ple, peeled fruit-babyfood						
	FoodForm N/S	5.000000	1.000	0.500	0.0000126	0.08	
Ap	ple, dried (1100009000):						
	FoodForm N/S	5.000000	8.000	0.500	0.0000418	0.1%	
Ap	ple, dried-babyfood (110000 FoodForm N/S	5.000000	e 000	0 500	0.0000008	0.05	
Save Reports	ple, juice (1100010000):	31000000	5.000	0.000	01000008	0.01	
to File	FoodForm N/S	0.050000	1.300	0.500	0_0000205	0_18	
	ple, juice-babyfood (110001						
un Comment:	FoodForm N/S	0.050000	1.300	0.500	0.0000012	0.0%	
raining Ap	ple, sauce (1100011000):	-					
	FoodForm N/S ple, sauce-babyfood (110001		1.000	0.500	0.0001998	0.5%	
AP		5.000000	1 000	0.500	0.0000623	0.25	
	e wowe want in o	91999999	1.000	01000			
Charles I was	Crop group subtotal				0.0012530	3.18	
lear Form Show	A DE BUILT CLUTCH						

When you have completed your chronic assessment, you may exit the window by clicking on "File" then "Exit."

DEEM-FCID Acute Dietary Analysis (Tier 1 & 2)

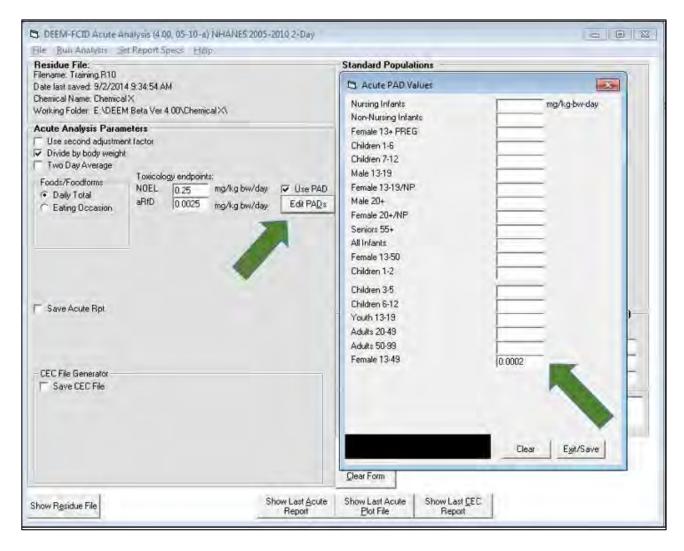
1) To run a DEEM-FCID acute dietary assessment, go to the DEEM-FCID main menu screen, click on "Analysis" then "Run Acute."



2) Select the file to be analyzed by clicking on "File" then "Open Residue File." For this example, open "Training.R10."

File Run Analysis Se	et Report Specs Help		
Residue File: Flename: Training R10 Date last saved: 9/2/201 Chemical Name: Chemica Working Folder: E:\DEEN Acute Analysis Paran Use second adjustme ▼ Divide by body weight Two Day Avetage Foods/Foodforms	NX If Beta Ver 4.00\Chemical X\ ieters nt factor	Standard Populations U.S. Population Hispanic Non-Hisp-White Non-Hisp-Black Non-Hisp-Other Norsing Infants Female 13+ PREG Children 1-6 Children 7-12 Male 13-19 Female 13-19/NP Male 20+ Female 20+/NP Semiors 55+	Female 13:50 Children 1-2 Children 3-5 Children 5-12 Youth 13:19 Adults 20:49 Adults 50:39 Female 13:49
🗂 Save Acute Apt		Name	er name, then click on number to open) Name
		m	(4)
CEC File Generator		(2)	(5)
Save CEC File		(3)	(6)
		Clear Form	
Show Residue File	Show Last <u>A</u> cute Report	Show Last Acute Show Last Plot File Report	

3) The toxicology endpoints should automatically appear (if you added them in the Edit Header option shown in section 3 of Getting Started). At this point, you will have the option of changing any of the toxicological endpoints identified in the file. In particular, for acute analysis, there may be a different toxicology endpoint for females 13-49 yrs. If we want to enter an acute Population Adjusted Dose (aPAD) equal to 0.0002 mg/kg/day for females 13-49 yrs, then click the "Edit PADs" button. A window will appear with a list of population subgroups; enter 0.0002 for Females 13-49 years old, then Click Exit/Save. DEEM will use the default aPAD (0.0025) in the R10 file for all other subpopulations.



Note: Generally, users should not select "Use second adjustment factor" in an acute dietary risk assessment. When performing a deterministic acute dietary exposure assessment, PCT is not used to refine anticipated residues and aggregate dietary exposure at the Per capita 95th percentile is the Percentile of Regulation. In refined dietary exposure assessments, the PCT is used indirectly to determine the expected number of samples that were treated but do not have detectable residues (i.e., number of $\frac{1}{2}$ LODs) and the Per capita 99.9th percentile is the Percentile of Regulation.

4) If you want to Save the results in a separate file, click "Save Acute Rpt" and enter a filename ("Training") in the blank space.

DEEM-FCID Acute Analysis (4.00, 05-10-a) NHANES 2005-2010 2-Day File Run Analysis Set Report Specs Help	
Life Bun Analysis Set Report Specs Help Residue File: Filename: Training R10 Date last saved: 9/2/2014 9:34:54 AM Chemical Name: Chemical X Working Folder: E:\DEEM Beta Ver 4.00\Chemical X\ Acute Analysis Parameters Use second adjustment factor Divide by body weight Two Day Average Foods/Foodforme Tosicology endpoints: NDEL 0.25 mg/kg bw/day Edit PADs HIP PADs	Standard Populations V U.S. Population Hispanic Non-Hisp-White Non-Hisp-Black Non-Hisp-Other Nursing Infants Non-Nursing Infants Non-Nursing Infants Children 1-6 Children 1-6 Children 1-712 Male 13-19 Female 13-19/NP Make 20+ Female 20+/NP Seniors 55+ All Infants
Save Acute Rpt File Name (*AC10) Training.AC10	Custom Subpopulations (Enter name, then click on number to open) Name Name (1) (4)
	(2) (5)
CEC File Generator	(3) (6)
F Save CEC File	Run Comment
	Clear Form
Show Residue File Show Last Acute Report	Show Last Acute Show Last CEC Plot File Report

5) The **Plot File** includes information about the actual (unweighted) and weighted number of people-days and user-days in the populations considered. It can be imported in a spreadsheet program for statistical manipulation or to produce graphs. The plot routine runs automatically with the acute analysis, however, if you want the option of viewing the results on the screen, saving it to a disk, or printing it, then you need to Click "Save Plot File" and enter a filename. After the simulation is completed, the Plot file can be accessed clicking the "Last Acute Plot Fl" button.

6) Critical Exposure Commodity (CEC) Analysis. The acute CEC analysis permits the user to identify commodities that are contributing to aggregate dietary exposures within the specified interval. To run a DEEM-FCID acute CEC analysis, select "Save CEC File." You will then be prompted to enter a CEC file name and the desired number of records, minimum exposure contribution, and exposure intervals.

Note: <u>Maximum CEC records (1-40000)</u>: This is the maximum number of individual exposure records that can be saved to a CEC file.

<u>Minimum Contribution (1-50%)</u>: Only foods/food forms that contribute more than this percentage amount to an individual's total exposure will be included in the CEC printout.

<u>Low/High Percentiles</u>: User-specified interval to determine commodities contributing to exposure between these percentiles. {*The interval* 95th to 100th percentile is typically specified for deterministic (*Tier 1 or 2*) assessments. Select "Excel Format" to facilitate importing into Excel, and "Suppress CEC warning" to allow DEEM to proceed with the analyses.}

C1 DEEM-FCID Acute Analysis (4.00, 05-10-a) NHANES 2005-2010 2-Day							
File Run Analysis Set Report Specs Help							
Residue File: Filename: Training,B10 Date last saved: 9/2/2014 9:34:54 AM Chemical Name: Chemical X Working Folder: E:\DEEM Beta Ver 4.00\Chemical X\	IT Hispanic IV Chi IT Non-Hisp-White IV Chi	nale 13-50 Idren 1-2 Idren 3-5					
Acute Analysis Parameters Use second adjustment factor Image: Divide by body weight Two Day Average Foods/Foodforms O Daily Total C Eating Decession Tostcology endpoints: Tostcology endpoints: NDEL 0.25 mg/kg bw/day Edil PADs	Image: Non-Hisp-Black Image: Children 6-12 Image: Non-Hisp-Other Image: Youth 13-19 Image: Non-Nursing Infants Image: Adults 20-49 Image: Non-Nursing Infants Image: Adults 50-99 Image: Female 13+ PREG Image: Female 13-49 Image: Children 1-6 Image: Female 13-19 Image: Children 7-12 Image: Male 13-19 Image: Female 13-19/NP Image: Male 20+ Image: Female 20+/NP Image: Seniors 55+ Image: Adults 50-99 Image: Seniors 55+ Image: Adults Adults 50-99 Image: Seniors 55+						
Save Acute Rpt File Name (*AC10) Training AC10	- Custom Subpopulations (Enter name, then Name	click on number to open) — Name					
Save Plot File File Name (*.PLT) Training, PLT	[1] (4)	<u></u>					
CEC File Generator Save CEC File File Name (* CSV) Training CSV Max number of printed 10 records (1-40000) Minimum Individual Exposure Contribution by Food (%, 1-50) 1	(2) [5) (3) (6) Run Comment Training						
Low Percentile 95% → High Percentile 1000 → Cuinul. Excel Format Suppress CEC warning = 96% 97% 97.5% 97.5% 97.5% 97.5% 97.5% 98% 97.5% 98% 99% 99% 99% 99.3% 99.3% 1000	Clear Form Show Last Acule Show Last CEC Plot File Report						

7) Under Standard Populations, select the subpopulations of interest. DEEM-FCID also allows users to create and perform acute dietary exposure assessments for up to 6 Custom Populations. To create a custom group, enter a (arbitrary) name for that group in one of the 6 blanks in the "Custom Subpopulations" section and click the number on the left side of that box. This will prompt the Custom Subpopulation menu to appear and you may then select your preferences for the indicated population. In the example below, the custom group 'test' is specified consists of all 1 year olds. Once the population group has been specified, click the Definition Complete button and you will be returned to the DEEM-FCID acute analysis screen.

Sex	-Pregnant/Nursing Status (Female) -	Definition Complete
V Male	AI.	Dennition Complete
Female	Not Pregnant/Not Nursing	
Age	✓ Pregnant ✓ Nursing	Cancel
	i v ivursing	and T
T All Ages	Nursing Status (<=3 years)	Help
or C months	Nursing and Non-Nursing	
from 1 (* years	Von-Nursing	
in Andrew	Vursing	
G months		
to 1 @ years		Note: At least one box in each frame
		must be checked to complete this screen (except for males only, do not
		check any box in the Pregnant/Nursin
		Status frame, and for ages above 3 years you do not need to check Nursir
		Status).
Pres		Note: with NHANES there is no regional
Race		Note: with NHANES there is no regional seasonal information
T All Races		
I [™] All Baces I Hispanic		
T All Races	aPAD	

8) Once you have identified the parameters for conducting the analyses and the population groups of interest, click on "Run Analysis" at the top of the Acute Analysis screen. A progress window will appear displaying the status of the analysis.

The Run Analysis Set	Peport Specs	Help						
Residue File: Tename: Training.R10 Date last saved: 9/2/2014 Chemical Name: Chemical Working Folder: E:\DEEM Acute Analysis Parame Use second adjustmen ✓ Divide by body weight Two Day Average Foods/Foodforms ← Daily Total ← Eating Decasion	9:34:54 AM X Beta Ver 4:00\Cl eters Liector Toxicology end NOEL	remical XV.		Standard Populations U.S. Population Hispanic Non-Hisp-White Non-Hisp-Black Non-Hisp-Other Nursing Infants Non-Nursing Infants Female 13+ PREG Clother 10	Female 13-50 Children 1-2 Children 3-5 Children 6-12 Youth 13-19 Adults 20-49 Adults 50-99 Female 13-49			
⊽ Save Acute Rpt File	Calib	due file: E:\DEEM Beta ⁻¹ rating Bins ress: 2% Training AC10	Ver 4.00\Chemi		ter name, then click on number (o open) Name			
	Name (".PLT)	Training,PLT		(1)	(4)			
Max number of printed records 11:40000) Minimum Individual Exp Contribution by Food (%,	1-50) 1	CEC Boundary Basis Percentile Amounts C Exposure Amounts		(3) (6) - Run Comment Training				
Low Percentile 95%		Percentile 100% <u>•</u> ming (*	Cumul. CEC Help	Glear Form				
ihow Residue File		Sh	ow Last Acute Report	Show Last Acute Show Las Plot File Repo				

9) Once the analysis is completed, you will have the option of viewing the results on the screen, saving it to disk, or printing it by clicking the "Last Acute Rpt" button at the bottom of the screen. The other two buttons allow users to view, save and/or print the Plot File and CEC Report.

Residue File: Ilename: Training,R10		Last Acute	Analysis	C)	andard Dopul	sticms				F		
tate last saved: 9/2/2014 Themical Name: Chemical Vorking Folder: E:\DEEM	X	US EPA DEEM-FCID	ACUTE Anal	veie for	r CHEMICAL)	e -	_	Ver. 4 NHANES 20	.00, 05-10			
Loute Analysis Param Use second adjustmen Divide by body weight Two Day Average Foods/Foodforms		Residue fi Analysis D NOEL (Acute Acute Pop J RAC/FF int.	le: Traini ate: 09-02 a) = 0.2 Adjusted D ake summed t: "Traini	ng.R10 -2014/1: 50000 mg ose (aP) over 20 ng"	l:46:46 3 g/kg body-wi AD) varies v 4 hours	Residue fi 5/day	le dated	iment facto i: 09-02-20	r #2 NOT (14/09:34:5	ised. 52		
Daily Total Eating Occasion	aRID 0.002	Summarty ea	Iculations	ner ci	anita-							
			Summary calculationsper capita: 95th Percentile 99th Percentile99.9th Percentile									
		Exposure	Calification of the second	-	Exposure				1	MOE		
		Total US P 0.015338 All Infent	\$13.51		0.040808	1632.33	6	0.092895	3715.61	2		
		0.060983	2439.34	4	0.128790	5151,58	1	0.242317	9692.68	1		
Save Acute Rpt File	Name (* AC10)	Children 1- 0.061963 Children 3-	2478.51	4	0.109666	4386.65	2	0.249246	9969.83	1		
Save Plot File File	Name (*.PLT)	0.046405 Children 5	1856.21	5	0.072727	2909.10	3	0.115790	4631.59	2		
		0.027070	1082.81	. 9	0,047253	1890.12	5	0.086989	3479.55	z		
CEC File Generator	Name (*.CSV) Tr	Youth 13-1 0.015347 Adults 20-	613.98	16	0.022342	993.68	11	0.054896	2195.85	4		
Max number of printed	10	0.011644	465.75	21	0.019411	776.43	12	0.042613	1704.52	Б		
records (1-40000) Minimum Individual Exp Contribution by Food (%.	osure	Adults 50-2 0.012019 Female 13-2	480.78	20	0.019300	772.00	12	0.032326	1293.05	7		
Low Percentile 95%	High F	0.012798		15	0.020189	>10000	12	0.042474	>10000	5		

10) DEEM allows users to tailor the results presented in the Acute Report. To edit those specifications, click the Set Report Specs button at the top of the Menu bar and select the parameters (percentiles) that you want to see in the report.

istributions were reported, along with summary statisti	s of DEEM Acute both per capita and user means and ics for the 95th, 99th, and 99.9th percentiles. Now you can wish to see. Your specifications will be saved and used for all of
Report User Distribution	Select 3 Percentiles for Exposure Summary
🔽 Report Per Capita Distribution	♥ 95% ♥ 99.75 ■ 97.5% ♥ 99.9%
✓ Header and page numbers on report	₩ 99%
Contribution in CEC Report (0-50%)	Save/Exit Cancel
More Info	

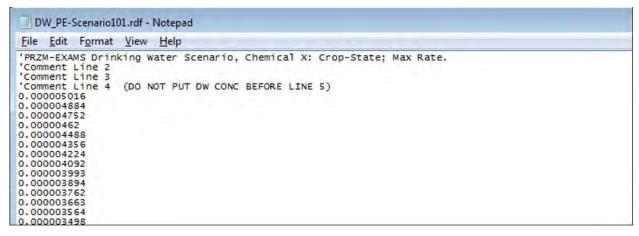
Performing Monte Carlo Simulations in DEEM-FCID

Creating Empirical Residue Distributions

In order to perform an acute probabilistic dietary risk assessment, the user needs to create and assign one or more empirical residue distribution files (rdf) to one or more FCID commodities. Such files may be created in Notepad or Wordpad. The figure below illustrates an rdf file created using residue monitoring data for fresh apples, "Apple_Fresh.rdf". The first five lines begin with a single apostrophe mark and are simply comments. The residue distribution consists of 521 zeros, 948 values at half the LOD (0.0370 ppm), and 19 detects listed below. Attachment 3 provides further details regarding construction of DEEM RDF files.

<u>File</u> <u>E</u> dit	mat <u>V</u> iew <u>H</u> elp	
'Chemical 'Subdirec' 'Residue= 'PDP Data	RDF File Created 035EP14 y: E:\DEEM Beta Ver 4.00\Chemical X, RDF Filename= TEN (ppm) PFR (2009,2010), Total Samples=1488, Total Detects Avg Residue (Detects)=0.013532, Avg HLOD (NonDete	=19, Total LODs=948, Total Zeros=521
0.0074 0.007 0.0049 0.0049 0.0035 0.0035 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002		

The next figure illustrates an rdf file "DrinkingWater_PRZMEXAMS.rdf" containing predicted DW concentrations from a PRZM-EXAMS (PE) simulation. As above, the first four lines contain comments, and the DW concentrations follow beginning on the fifth line.



When Creating DW Inputs (RDF Files) from PE data for DW Assessments make sure to:

- i. Check that DW concentrations are in ppm, and begins on January 1
- ii. Delete the entire 1st Year of Simulations (if not already done so) since there are no DW concentrations before the overall 1st app,
- Make sure last record is December 31st (complete year); otherwise, delete records for partial years (the last day of some PE outputs contain the first day of following year (e.g., Jan 1st, 1992),
- iv. Add Header and Comments in first four rows-DEEM-FCID assumes that the empirical residue data begins after the 4th row (unless otherwise specified), and
- v. Save file with *.rdf extension.

Assigning Empirical Residue Distributions

To assign empirical residue distribution (RDF file), enter a number in the "RDL Pntr #1" column, click the "Show RDL" button and wait for DEEM to open a Residue Distribution List (RDL) dialog box. Click on the cell under "Dist. Type", and type in the value "6" to specify an Empirical Distribution, then click the next cell under "Parameter #1"; the DEEM Residue Editor will open an Explorer Window-navigate the "Available RDF files" window.

0000700 commod	Inty co	< Qui ode fir	d Quick	k Save <u>H</u> elp		dities with N in NHANES				Res	ort to <u>Alp</u> Order	ha T	um Crop On	Grps Sho	w <u>R</u> DL	Close
EPA Cod	le	Crop Grp	Commod	lity Name				NEF	Residu	Default Adjust Residue Factor (ppm) #1	Adjust Factor #2	RDL Pntr #1	r Comment (documentation)			
1100007	000	11	Apple, fr	ruit with peel			4	-	5	1	.5	1	-			_
100008	000	11		eeled fruit			8		5	1	.5					
100008	001	11	Apple, p	eeled fruit-bal	oyfood		3		5	1	.5					
100009							4		5	8	.5					
100009	001	11	Apple, d	fried-babyfood	5		1		5	8	.5					
100010	000	11	Apple, ju	uice			1	0	.05	1.3	.5					
100010		11	Apple, ju	uice-babyfood			2	1.00	.05	1.3	.5					
100011			Apple, s	auce							.5					
							5	_	5							
		- 1.1		List (for use wi			1		5	1 el <u>U</u> nused	.5 Rows	Print F		Cancel/Close	Clo	se RDL
	Resi	due Di Ip C	stribution Code <u>D</u> efs	List (for use Wi Compute Dist	th the current		1 <u>B</u> enun	n Poir	5	el <u>U</u> nusec	Rows	-	Second Pro-	Cancel/Close	Clo	se RDL
	Resin	due Di Ip C	stribution Code <u>D</u> efs	List (for use wi	th the current		1 <u>B</u> enun	n Poir	5 nters De	el <u>U</u> nusec	Rows	-	Second Pro-	Cancel/Close	Clo	
	Resin	due Di lp C ex Dis	stribution Code <u>D</u> efs st.Type Pa	List (for use Wi Compute Dist	th the current		1 <u>B</u> enun	n Poir	5 nters De	el <u>U</u> nusec	Rows	-	Second Pro-	Cancel/Close	Clo	
	Resid	due Di lp C ex Dis	stribution Code <u>D</u> efs st.Type Pa	List (for use Wi Compute Dist	th the current		1 <u>B</u> enun	n Poir	5 nters De	el <u>U</u> nusec	Rows	-	Second Pro-	Cancel/Close	Clo	
	Resil	due Di lp C ex Dis	stribution Code <u>D</u> efs st.Type Pa	List (for use Wi Compute Dist	th the current		1 <u>B</u> enun	n Poir	5 nters De	el <u>U</u> nusec	Rows	-	Second Pro-	Cancel/Close	Clo	
40000	Resid	due Di lp C ex Dis	stribution Code <u>D</u> efs st.Type Pa	List (for use Wi Compute Dist	th the current		1 <u>B</u> enun	n Poir	5 nters De	el <u>U</u> nusec	Rows	-	Second Pro-	Cancel/Close	<u>C</u> lo	
40000	Resil	due Di lp C ex Dis	stribution Code <u>D</u> efs st.Type Pa	List (for use Wi Compute Dist	th the current		1 <u>B</u> enun	n Poir	5 nters De	el <u>U</u> nusec	Rows	-	Second Pro-	Cancel/Close	Clo	
40000	Resil	due Di lp C ex Dis	stribution Code <u>D</u> efs st.Type Pa	List (for use Wi Compute Dist	th the current		1 <u>B</u> enun	n Poir	5 nters De	el <u>U</u> nusec	Rows	-	Second Pro-	Cancel/Close	<u>C</u> lo	
140000 140000 140000 140000	Resid	due Di	stribution Code <u>D</u> efs st.Type Pa	List (for use Wi Compute Dist	th the current		1 <u>B</u> enun	n Poir	5 nters De	el <u>U</u> nusec	Rows	-	Second Pro-	Cancel/Close	Clo	
40000	Resid	due Di	stribution Code <u>D</u> efs st.Type Pa	List (for use Wi Compute Dist	th the current		1 <u>B</u> enun	n Poir	5 nters De	el <u>U</u> nusec	Rows	-	Second Pro-	Cancel/Close	Clo	
40000 40000 40000 40000	Resil	due Di	stribution Code <u>D</u> efs st.Type Pa	List (for use Wi Compute Dist	th the current		1 <u>B</u> enun	n Poir	5 nters De	el <u>U</u> nusec	Rows	-	Second Pro-	Cancel/Close	Clo	
40000	Resil	due Dis	stribution Code <u>D</u> efs st.Type Pa	List (for use Wi Compute Dist	th the current		1 <u>B</u> enun	n Poir	5 nters De	el <u>U</u> nusec	Rows	-	Second Pro-	Cancel/Close	Clo	
11000111 140000 140000 140000 140000 360100 360200	Resil	due Dis	stribution Code <u>D</u> efs st.Type Pa	List (for use Wi Compute Dist	th the current		1 <u>B</u> enun	n Poir	5 nters De	el <u>U</u> nusec	Rows	-	Second Pro-	Cancel/Close	Clo	

Navigate the Explorer Window to the appropriate subdirectory and select the desired RDF file. The first column "Index" matches with the index listed in the "RDL Pntr #1": "Apple, fruit with peel.rdf" is assigned to RDF Index=1. Repeat the procedure for other commodities, then save the file as: Training_Food+DW_wRDF.R10.

)000700 commodi	0 << ity cod	Quid de fin	ak Quid	ck Save	Help			th NFF=0 a IES 2005-2			Res	ort to Alp Order	ha T	Curn CropGips Sho	WBDL	<u>C</u> lose (Exi	Ð
PA Code		Crop Grp	Commo	dity Nan	ie				NFF	Default Residue (ppm)	Adjust Factor #1	Adjust Factor #2	RDL Pntr #1	Comment (docum	entation	1	
1000070	000	11	Apple,	fruit with	peel				4	5	1	.5	1			_	
1000080	000			peeled f					8	5	1	.5					
1000080	DO1	11	Apple.	· · · ·						-	-	1		1			-
1000090	000	11	Apple,	C Ava	ilable RDF	files											×
1000090			Apple,	N		a Philo	CTONI (CA	DEFEND	4-11-	400 1 0		19			Superior I		0
1000100			Apple,	A		e KING	STON (E:)	 DEEM Be 	ta Ve	4.00 • 0	nemical	I.A.		▼ + ₁ Search C	nemical	A	P
1000100	the second s		Apple,	0		New f	onace.				_				21	-	0
1000110			Apple,	Orga	anize 🔻	New I	older								10	• 🗔	0
1000110	001	11	Apple,	5	Docume	ents						1	Vame				Date
40000	Resid	ue Die	stributio		Music								-				-
_	T TRAILER												Aln	nond.rdf			5/7/2
	Help	0 0	ode Def		Pictures							6	Ap	ple_Fresh.rdf			9/3/2
	Inde	Ini	t.Type		Videos									ple_Juice.rdf	-	- Freidig	_
	1	K Dis	6													RDF File	
-	2				Computer									ple_Sauce.rdf	Date	96 bytes modified: 9/	2/2014 2
_	3			R	OSDisk (5	DW	PEScenario_101.rd	Later	noumeu: 97.	5/2014 5
	4			4													
	5				KINGSTO	ON (E)											
40000	6				DEEM	Beta Ver	4.00										
40000	7				Che	mical X											
40000	8					DEEMfol	dar										
60100	9							100									
60200	10	H			Acu	teNH05-1	10-24-2d-b	zip				+ 1	-	111			· •
	11										_		-	(mag at a			-
	12					Fi	le name: /	Apple_Fresh	.rdf						RDF)		•
Max RD	4													Open	-	Cancel	1

The file "Training_Food+DW_wRDF.R10" contains 5 empirical residue distributions (3 for apples, 1 for almonds, and 1 for DW) assigned to the corresponding commodities.

< Quid de fin	Guick Duick Court Hole			Res	ort to <u>A</u> lp Order	ha T	um CropGrps <u>O</u> n	Show <u>B</u> I	DL Close (I		
Crop Grp	Commo	dity Name		NFF	Residue	Factor	Factor	Pntr	Comment (c	locumenta	ation)
11	Apple.	fruit with peel		4	5	1					
11				8	5	1	.5	1			
11	Apple, peeled fruit-babyfood			3	5	1	.5	1			
11				4	5	8	.5	1			
11				1	5	8	.5	1			
11				10	.05	1	.5	2			
11				2	.05	1	.5	2	-		
11				5	5	1	.5	3			
11	Apple,	sauce-babyfood	Ś.	1	5	1	.5	3			
1 14 Almond 14 Almond-babyfood			9	10	1	1	4				
14	Almond	-babyfood		0	10	1	1	4			
14	Almond, oil			1	10	1	1	4			
230-Cooked; Dried; Cook Meth N/S			10	8	1	4					
04001 14 Almond, oil-babyfood 00000 86A Water, direct, all sources			0	10	1	1	4				
			1	.07	1	1	5	Direct-All			
00000 86B Water, indirect, all		indirect, all sou	ices	22	.07	1	11	5	Indirect-All	2	
	stributio Code <u>D</u> efi		h the current residue file) <u>Export RDL</u> Import RDL	<u>B</u> enum Pr	ointers D	el <u>U</u> nuser	d Rows	<u>P</u> rint)	RDL Canc	el/Close	<u>Close</u> RDL
elp (Code <u>D</u> ef:				ointers D Param #3		2 5 4 5 1 A	-	a contraction of the second se	el/Close	Close RDL
elp (Code <u>D</u> efi st. Type F	Compute Dist			acces 1		2 5 4 5 1 A	-	a contraction of the second se	el/Close	
elp (Code <u>D</u> efi st. Type F	Compute Dist			acces 1		2 5 4 5 1 A	-	a contraction of the second se	el/Close	
elp () ex Di	Code <u>D</u> ef: st.Type F 6 4 6 4	Compute Dist Parameter #1 Apple_Fresh.rdf			acces 1		2 5 4 5 1 A	-	a contraction of the second se	el/Close	
ex Di	Code <u>D</u> efr st. Type F 6 / 6 / 6 /	Compute Dist Parameter #1 Apple_Fresh.rdf Apple_Juice.rdf			acces 1		2 5 4 5 1 A	-	a contraction of the second se	el/Close	
ex Di	Code <u>D</u> efi st. Type F 6 / 6 / 6 / 6 /	Compute Dist Parameter #1 Apple_Fresh.rdf Apple_Juice.rdf Apple_Sauce.rdf	Export RDL Import RDL		acces 1		2 5 4 5 1 A	-	a contraction of the second se	el/Close	
ex Di	Code <u>D</u> efi st. Type F 6 / 6 / 6 / 6 /	Compute Dist Parameter #1 Apple_Fresh.rdf Apple_Juice.rdf Apple_Sauce.rdf	Export RDL Import RDL		acces 1		2 5 4 5 1 A	-	a contraction of the second se	el/Close	
	Crop Grp 11 11 11 11 11 11 11 11 11 11 11 11 11	Crop Grp Commo 11 Apple, 14 Almond 230-Cc 14 486A Water,	Crop Grp Commodity Name 11 Apple, fruit with peel 11 Apple, peeled fruit 11 Apple, peeled fruit 11 Apple, dried 11 Apple, dried-babyfood 11 Apple, dried-babyfood 11 Apple, sauce-babyfood 11 Apple, sauce-babyfood 11 Apple, sauce-babyfood 14 Almond 14 Almond, oil 230-Cooked; Dried; Cr 14 Almond, oil-babyfood 86A Water, direct, all source	Crop Grp Quick Save Help sumed in NHANES / Crop Grp Commodity Name 11 Apple, fruit with peel 11 11 Apple, peeled fruit 11 11 11 Apple, peeled fruit 11 Apple, dried-babyfood 11 11 Apple, dried-babyfood 11 11 Apple, juice 11 11 Apple, juice 11 11 Apple, juice 11 14 14 14 11 Apple, sauce 11 14 14 14 11 Apple, sauce/babyfood 14 14 230-Cooked; Dried; Cook Meth N/S 14 Almond, oil 230-Cooked; Dried; Droek 14 14	Apple, fruit with peel sumed in NHANES 2005-2010 Crop Grp Commodity Name NFF 11 Apple, fruit with peel 4 11 Apple, fruit with peel 4 11 Apple, peeled fruit 8 11 Apple, peeled fruit babyfood 3 11 Apple, dried-babyfood 1 11 Apple, dried-babyfood 10 11 Apple, juice 10 11 Apple, sauce-babyfood 2 11 Apple, sauce-babyfood 1 14 Almond 9 14 Almond_oil 1 230-Cooked; Dried; Cook Meth N/S 1 14 Almond, oil-babyfood 0 86A Water, direct, all sources 1	Crop Grp Commodity Name Default Residue 11 Apple, fruit with peel 4 11 Apple, peeled fruit 8 11 Apple, peeled fruit 8 11 Apple, peeled fruit 8 11 Apple, dried 4 11 Apple, dried 4 11 Apple, dried 1 11 Apple, dried-babyfood 1 11 Apple, dried-babyfood 1 11 Apple, dried-babyfood 1 11 Apple, sauce-babyfood 1 11 Apple, sauce-babyfood 1 11 Apple, sauce-babyfood 1 11 Apple, sauce-babyfood 1 14 Almond 9 10 14 Almond, oil 1 10 230-Cooked; Dried; Cook Meth N/S 10 10 14 Almond, oil-babyfood 0 10 14 Almond, oil-babyfood 0 10 86A Water, direct, all sources 1 .07	Crop Grip Quick Save Help sumed in NHANES 2005-2010 2-Day Crop Grip Commodity Name Default Residue (ppm) Adjust Factor (ppm) 11 Apple, fruit with peel 4 5 1 11 Apple, peeled fruit 8 5 1 11 Apple, peeled fruit 8 5 1 11 Apple, dried-babyfood 3 5 1 11 Apple, dried-babyfood 1 5 8 11 Apple, dried-babyfood 1 5 1 11 Apple, juice-babyfood 2 .05 1 11 Apple, sauce-babyfood 1 5 1 11 Apple, sauce-babyfood 1 5 1 14 Almond, oil 9 10 1 14 Almond, oil 1 10 1 230-Cooked; Dried; Cook Meth N/S 10 8 1 1 14 Almond, oil-babyfood 0 10 1 <td>Crop Grip Quick Save Help sumed in NHANES 2005-2010 2-Day Dider Order Crop Grip Commodity Name Default Residue NFF Adjust Factor Factor Factor<td>Crop Grip Commodity Name Default NFF Adjust Pactor Adjust Factor Factor Factor Factor Pactor Factor Factor Factor Pactor Factor Factor Factor Pactor Factor Factor Factor Factor</td><td>Crop Grip Commodity Name Sumed in NHANES 2005-2010 2-Day Drider Struct Adjust Factor Adjust Factor Adjust Factor Adjust Factor Main objective Factor BDL Factor Comment (or Factor 11 Apple, fruit with peel 4 5 1 .5 1 11 Apple, peeled fruit 8 5 1 .5 1 11 Apple, dried-babyfood 3 5 1 .5 1 11 Apple, dried-babyfood 1 5 8 .5 1 11 Apple, dried-babyfood 1 5 8 .5 1 11 Apple, juice 10 .05 1 .5 2 11 Apple, sauce-babyfood 2 .05 1 .5 2 11 Apple, sauce-babyfood 1 5 5 .5 .5 .5 .5 14 Almond 9 10 1 1 4 230-Cooked; Dried; Cook Meth N/S 1</td><td>Crop Grip Commodity Name Default NFF Adjust Factor (ppm) Adjust Adjust Hashed Default Hashed</td></td>	Crop Grip Quick Save Help sumed in NHANES 2005-2010 2-Day Dider Order Crop Grip Commodity Name Default Residue NFF Adjust Factor Factor Factor <td>Crop Grip Commodity Name Default NFF Adjust Pactor Adjust Factor Factor Factor Factor Pactor Factor Factor Factor Pactor Factor Factor Factor Pactor Factor Factor Factor Factor</td> <td>Crop Grip Commodity Name Sumed in NHANES 2005-2010 2-Day Drider Struct Adjust Factor Adjust Factor Adjust Factor Adjust Factor Main objective Factor BDL Factor Comment (or Factor 11 Apple, fruit with peel 4 5 1 .5 1 11 Apple, peeled fruit 8 5 1 .5 1 11 Apple, dried-babyfood 3 5 1 .5 1 11 Apple, dried-babyfood 1 5 8 .5 1 11 Apple, dried-babyfood 1 5 8 .5 1 11 Apple, juice 10 .05 1 .5 2 11 Apple, sauce-babyfood 2 .05 1 .5 2 11 Apple, sauce-babyfood 1 5 5 .5 .5 .5 .5 14 Almond 9 10 1 1 4 230-Cooked; Dried; Cook Meth N/S 1</td> <td>Crop Grip Commodity Name Default NFF Adjust Factor (ppm) Adjust Adjust Hashed Default Hashed</td>	Crop Grip Commodity Name Default NFF Adjust Pactor Adjust Factor Factor Factor Factor Pactor Factor Factor Factor Pactor Factor Factor Factor Pactor Factor Factor	Crop Grip Commodity Name Sumed in NHANES 2005-2010 2-Day Drider Struct Adjust Factor Adjust Factor Adjust Factor Adjust Factor Main objective Factor BDL Factor Comment (or Factor 11 Apple, fruit with peel 4 5 1 .5 1 11 Apple, peeled fruit 8 5 1 .5 1 11 Apple, dried-babyfood 3 5 1 .5 1 11 Apple, dried-babyfood 1 5 8 .5 1 11 Apple, dried-babyfood 1 5 8 .5 1 11 Apple, juice 10 .05 1 .5 2 11 Apple, sauce-babyfood 2 .05 1 .5 2 11 Apple, sauce-babyfood 1 5 5 .5 .5 .5 .5 14 Almond 9 10 1 1 4 230-Cooked; Dried; Cook Meth N/S 1	Crop Grip Commodity Name Default NFF Adjust Factor (ppm) Adjust Adjust Hashed Default Hashed

DEEM-FCID Probabilistic Acute Dietary Analysis

If a residue assignment file (R10) contains one or more residue distributions, the DEEM-FCID Acute Dietary Assessment Dialog Window will include a check box option for "Monte Carlo Analysis". If the user checks this option, then DEEM prompts the user to enter values for number of iterations performed per food diary, "Iterations (1-5000)", and a seed value for the pseudo random number generator, "Seed (0-32000)", to allow users to reproduce results on other computers.

Eile Bun Analysis Set Report Specs Help	
Residue File: Fleneme: Training_Food+DW_wRDF.R10 Date last saved: 9/8/2014 10:07:46 AM Chemical Name: Chemical X Working Folder: E: \DEEM Beta Ver 4.00\Chemical X\ Acute Analysis Parameters Use second adjustment factor Divide by body weight Two Day Average Foods/Foodhorms © Daily Total © Daily Total Eating Occa Wonte Carlo Analysis Iterations (1-5000) 1000 Seed (1-5000) Foods/Total Iterations (1-5000) Total	Standard Populations Image: U.S. Population Image: Female 13:50 Image: Hispanic Image: Children 1:2 Image: Non-Hisp-White Image: Children 3:5 Image: Non-Hisp-Other Image: Children 6:12 Image: Non-Nursing Infants Image: Adults 50:99 Image: Non-Nursing Infants Image: Adults 50:99 Image: Female 13: PREG Image: Female 13:49 Image: Children 1:6 Image: Female 13:19 Image: Children 7:12 Image: Maile 13:19 Image: Permale 13:19/NP Image: Maile 20:4 Image: Female 20:4/NP Image: State Image: State Image: State Image: State Image: Adults 20:4 Image: Female 20:4/NP Image: State Image: State Image: Adults 20:4 Image: State Image: State Image: State Image: State Image: State Image: State Image: State Image: State Image: State Image: State
T Save Acute Rpt	Custom Subpopulations (Enter name, then click on number to open) Name Name (1) [[4] [
	(2) (5)
CEC File Generator	[3] [6]
	Run Comment Training Clear Form
Show Residue File Show RDF Show Last Acute Summary Report	Show Last Acute Show Last CEC Elot File Report

As before, the "Show Residue File" and "Show RDF Summary" buttons allow users to view the residue assignments and summary statistics on the residue empirical distributions (RDF) before performing a Monte Carlo Simulation.

Current Residue File		er. 4.00	05-1	0-1-		
EEM-FCID Acute analysis for CHEMICAL X	v	er. 4.00	, 05-11	0-D		
esidue file name: E:\DEEM Beta Ver 4.00\Chemic	al X\Training	Food+DW	WEDE	P10		
nalysis Date 09-08-2014 Residue fi						
eference dose: aRfD = 0.0025 mg/kg bw/day NOE						
omment: Training	-					
DL indices and parameters for Monte Carlo Anal						
ndex Dist Parameter #1 Param #2 P	aram #3 Com	mment				
# Code						
1 6 Apple Fresh.rdf						
2 6 Apple Juice.rdf						
3 6 Apple Sauce.rdf						
4 6 Almond.rdf						
5 6 DW_PEScenario_101.rdf						
EPA Crop Food Name	Def Res					
Code Grp	(ppm)					=
400003000 14 Almond 400003001 14 Almond-babyfood	10.000000					
400003001 14 Almond-Babyrood 400004000 14 Almond. oil	10.000000	1.000	1.000	4		
230-Cooked; Dried; Cook Meth	N/S					
	10.000000	8.000	1.000	4		
400004001 14 Almond, oil-babyfood	10.000000					
100007000 11 Apple, fruit with peel	5.000000	1.000	0.500	1		
100008000 11 Apple, peeled fruit	5.000000	1.000	0.500	1		
100008001 11 Apple, peeled fruit-babyfood	5.000000	1.000	0.500	1		
100009000 11 Apple, dried	5.000000					
100009001 11 Apple, dried-babyfood	5.000000	8.000	0.500	1		
100010000 11 Apple, juice	0.050000					
100010001 11 Apple, juice-babyfood						
100011000 11 Apple, sauce	5.000000	1.000	0.500	3		
100011001 11 Apple, sauce-babyfood						
601000000 86A Water, direct, all sources	0.070000	1.000	1.000	5	Direct	
Full comment: Direct-All 602000000 86B Water, indirect, all sources	0.070000	1 000	1 000	-	Tadina	_
· · · ·	0.070000	1.000	1.000	5	indire	
Full comment: Indirect-All						

Sur	mmary of Residue	Distribution	Files (RDF)	listed	in E:\DEEM	Beta Ver	4.00\Chemical	X\Training_	Food+DW_wR
RDF #	File Name	N residues w freq's	N residues w/o freq's	N LODs	LOD Value	N Zeros			
1	Apple Fresh.rd:	E 0	19	948	0.037	521			
2	Apple Juice.rd	E 0	0	257	0.0145	139			
3	Apple Sauce.rd	E 0	0	464	0.001	250			
4	Almond.rdf	0	232	0	0.0005	315			
5	DW PEScenario	101.rdf							
		0	10592	0	0	0			

In the example below, 1000 iterations are specified with the Seed value set at 10 (any value can be entered). Agency risk assessments typically specify at least 1000 iterations per diary. As indicated in Attachment 1, the DEEM-FCID database contains a total of 49,346 food diaries, therefore, 1000 iterations will lead DEEM-FCID to simulate 49,346,000 person-days and calculate per capita exposures based on those outcomes.

DEEM-FCID Acute Analysis (4.00, 05-10-b) NHANES 2005-2010 2-Day	
File Run Analysis Set Report Specs Help	
File File Filename: Training_Food+DW_wRDF.R10 Date last saved: 9/8/2014 10:07:46 AM Chemical Name: Chemical X Working Folder: E:\DEEM Beta Ver 4.00\Chemical X\ Acute Analysis Parameters Use second adjustment factor Ø Divide by body weight Two Day Average Foods/Foodforms Foods/Foodforms NOEL 0.25 mg/kg bw/day Use PAD aR/D 0.0025 mg/kg bw/day	Standard Populations V U.S. Population Hispanic V Children 1-2 Non-Hisp-White V Children 3-5 Non-Hisp-Black V Children 6-12 Non-Hisp-Other V Youth 13-19 Nursing Infants V Adults 20-49 Non-Nursing Infants V Adults 50-99 Female 13+ PREG V Female 13-49 Children 1-6 Children 7-12 Male 13-19 Female 13-19/NP
✓ Monte Carlo Analysis Iterations (1-5000) Seed (0-32000) ✓ Save Acute Rpt File Name (*.AC10) ✓ Save Plot File File Name (*.PLT)	□ Female 13-13/NP □ Male 20+ □ Female 20+/NP □ Seniors 55+ □ All Infants □ Custom Subpopulations (Enter name, then click on number to open) Name Name [1] [4]
CEC File Generator ▼ Save CEC File File Name (*.CSV) Chemical X Food+Water.CS Max number of printed 10 records (1-40000) 1 Minimum Individual Exposure Contribution by Food (%, 1-50) 1 :	(2) (5) (6) (6) Training
Low Percentile 99.9% High Percentile 100% Cumul. Excel Format Suppress CEC warning Cumulative CEC Help Show Residue File Show RDF Show Last Acute Report	Clear Form Show Last Acute Plot File Report

The "Low", "High" ranges for the CEC analyses are set at 99.9 and 100 percentiles, to match the outcomes exceeding the aPAD in a highly refined acute assessment. As before, click Run Analysis, and select Acute Assessment to perform an acute probabilistic (Monte Carlo) risk assessment. For each person-day, DEEM-FCID randomly selects residue values from the corresponding empirical distributions to calculate dietary exposures for each of the various commodities (RAC-FF). For DW, DEEM-FCID will randomly select a single value from the DW PE file to calculate Total (Direct+Indirect) DW exposures for the corresponding person-day.

DEEM-FCID Acute Eating Occasions Analysis

To perform an Eating Occasions Analysis, select "Eating Occasion" option in the "Foods/Foodforms" box, click "Residue Reversal" option, then <u>enter a value</u> for "Half Life (hrs)". In the example below, 1 hour is specified. The option "Hold daily res amount constant", directs DEEM to select only one residue value for each commodity (RAC-FF) even though that person may have consumed that commodity multiple times throughout the day. {*This latter option is consistent with the use of residue monitoring data based on composite samples. For non-blended commodities, such as apples, each composite sample reflects the average residue for that 'bag' of apples. If a person ate four apples on four different eating occasions throughout the day, then DEEM will select one residue and apply that value to calculate dietary exposures from each of those four apples. If single serving residue data were used, then it would be appropriate not to select that option and allow the DEEM model to select a new residue for each eating occasion.*}"

Elle Bun Analysis Set Report Specs Help Residue File: Standard Populations Female 13-50 Filerame: Training_Food-DW_wRDF.R10 U.S. Population Female 13-50 Date last saved: 9/29/2014 4:56:28 AM U.S. Population Female 13-50 Chemical Name: Chemical X V.S. Population Female 13-50 Acute Analysis Parameters V.S. Population Female 13-50 Use second adjustment factor V.Nor-Hisp-Black C.Didden 6-12 Nore-Hisp-Diter V.Youth 13-13 Nor-Husp-Diter V.Youth 13-13 V Daily Total Toxicology endpoints: V.Aduts 20-49 Nor-Nursing Infants V.Aduts 20-49 Children 1-6 Obily Total NOEL 0.25 mg/kg bw/day Use PAD V Baily Total NOEL 0.25 mg/kg bw/day Use PAD Children 1-6 Children 1-8 Seed Intentions Female 13-19/NP Male 13-19 V Morte Catlo Analysis Female 13-19/NP Male 20+ Female 20+/NP Female 20+/NP Seriors 55+ V.All Infants V Save Plot File File Name (*AC10) Chemical X Food+Water_ED AC10 Name
Filename: Training_Food+DV/_wBDF.R10 Date last saved: 9/29/2014 4.56:28 AM Chemical Name: Chemical X Working Folder: E:\DEEM Beta Ver 4.00\Chemical X\ Acute Analysis Parameters Use second adjustment factor Divide by body weight Two Day Average Two Day Average Toxicology endpoints: Daily Total ARID 0.0025 mg/kg bw/day Water Early Sology Working Sology endpoints: Daily Total ARID 0.0025 mg/kg bw/day Water Early Sology Verter Reversal Haif Life (hrs): Haif Life (hrs): V Monte Carlo Analysis Iterations Save Acute Rpt File Name (".PLT) Chemical X Food+Water_E0.PLT CEC File Generator Save CEC File
Liear Form
Show Residue File Show RDF Show Last Acute Show Last Acute Show Last CEC Summary Report Plot File Report

Attachment 1. General Overview of WWEIA-FCID Database

DEEM-FCID Ver 4.00 incorporates food consumption data from the National Health and Nutrition Examination Survey)/"What We Eat in America" (NHANES/WWEIA) dietary survey for the years 2005-2010. The WWEIA survey collected food consumption data from 24,673 respondents. Each WWEIA respondent provided two days of food consumption data, which leads to a total of 49,346 food diaries. DEEM-FCID uses the WWEIA sampling weights to calculate per capita estimates. These weights sum to 296,898,902 million over the 24,673 persons, or a projected total 593,797,804 person-days for these 49,346 food diaries.

Group	Total Number of Respondents	Total Number of Food Diaries	Total Projected Person- Days
US Population	24,673	49,346	593,797,804
All Infants <1 year old	1,190	2,380	9,249,545
Children 1-2 years old	1,479	2,958	17,110,755
Children 3-5 years old	1,418	2,836	23,173,612
Children 6-12 years old	3,316	6,632	56,169,346
Youth 13-19 years old	3,486	6,972	58,583,237
Adults 20-49 years old	6,974	13,948	247,009,831
Adults 50+ years old	6,810	13,620	182,501,480
Females 13-49 years old	5,543	11,086	158,399,337

WWEIA-FCID 2005-10 Data (2 Day Respondents)

In order to improve the utility of the WWEIA food consumption survey for performing pesticide dietary exposure assessments, the U.S. EPA's Office of Pesticide Programs (OPP) developed the Food Commodity Intake Database (FCID), comprised in part of a collection of recipes for each food item in the WWEIA survey in order to translate those food items into Raw Agricultural Commodities.

Further information regarding the NHANES survey and the WWEIA-FCID database can be found at the following web sites: http://www.cdc.gov/nchs/nhanes/nhanes_questionnaires.htm; and http://fcid.foodrisk.org/.

Attachment 2. General Overview of Drinking Water (DW) Consumption In the WWEIA-FCID database, Drinking Water consists of Direct Water and Indirect Water. The NHANES WWEIA survey collected information on Direct DW Consumption from each survey respondent similar to the information collection on food intake. Direct DW is defined as either plain drinking water, from tap or plain bottled water. The WWEIA Total Nutrient Tables (2005-2010) provide tabulations on Total DW intake for plain tap water for plain bottled water. Prior to the 2011-2012 cycle, those tabulations only included only food code 94100100 "Water, bottled, unsweetened" as Direct Bottled Water; in the 2011-2012 cycle, NHANES-WWEIA added food code 94300100 "Water, baby, bottled, unsweetened" to Bottled Water. The WWEIA-FCID 2005-2010 includes both food codes in Direct DW. The WWEIA-FCID food diaries (DRIFF_0510) contain detailed information on each DW occasion, by type: Direct-Tap (94000100) and Direct-Bottled (94100100, 94300100).

	Included as Drinking Water Consumption				
Туре	Components	Examples			
Direct Water	Tap Water	Water from the tap or faucet; drinking fountain (not water cooler); water served in restaurants or other food service establishment that was not bottled; Tap water that has passed through a water filter (e.g., Brita); Tap water with lemon or lime added.			
	Bottled Water	Plain noncarbonated water such as spring water or other water sold in a store (e.g., Evian); Plain noncarbonated bottled water with lemon or lime added; Water from a water cooler (e.g., Poland Springs in an office)			
Indirect Watermake Beverages and other FoodsCoffee, Tea pasta, etc.) a		The water component to make Infant Formula or various beverages (e.g., Coffee, Tea), as well as water added to prepare foods (soups-add water; rice, pasta, etc.) are included as part of Indirect Water.			
	Not Iı	ncluded as Drinking Water Consumption			
Carbonated Beverages a Water v v		Carbonated water includes: Seltzer water, both flavored and plain; Club soda; Perrier and other similar sparkling waters, flavored or plain; Tonic water (regular and diet); Sweetened water beverages such as Clearly Canadian, Mystic, Sparkling water beverage with regular or artificial sweetener. These beverages are not included as Drinking Water Consumption in the FCID recipes			
Sodas	Beverages	Any water contained in all sodas (including clear sodas, such as Sprite, Slice or 7-UP) are not included as part of Drinking Water consumption.			
Food Products	Ready-to-eat	The FCID recipes do not include water added by commercial food producers (e.g., soup 'do not add water'), nor the (biological) moisture content in foods.			

Drinking Water Consumption in WWEIA-FCID

Indirect DW consists of water added by food preparers (individuals or restaurants) to food items and beverages, as presented in the FCID recipes. Carbonated water or water added by a commercial food processors are not included. Therefore, 8 fl oz of infant formula prepared from powder would contribute approximately 207 g (=244 g x 0.85) to DW intake, while ready-to-feed infant formulas and soft drinks (Cola) provides no contribution.

Attachment 3. Creating Empirical Residue Distributions (rdf files)

- Comments are preceded with an apostrophe mark. Comments usually take up the entire row, led with an apostrophe mark in the first Column.
- Residue values can begin at or below Row 5; DEEM will provide a warning if residues are listed in Rows 1-4.

DEEM has optional parameters that can be used to specify an empirical residue distribution. The following 3 options help to clarify the use of PCT in refining the distribution:

- TOTALZ indicates the total number of values that were not believed to be treated-i.e., containing a true Zero (0), based on the Max PCT parameter.
- LODRES indicates DW concentration at 'Half LOD'
- TOTALLOD indicates the total number of values containing a 'Half LOD' value based on the Max PCT parameter.

'Subdirectory: E:\DEEM Beta Ver 4.00\Chemical X, RDF Filename=Apple_Fresh.rdf 'Residue=CONCEN (ppm) 'POP Data: APFR (2009,2010), Total Samples=1488, Total Detects=19, Total LODS=948, Total Zeros=521 'MaxPCT=65%, Avg Residue (Detects)=0.013532, Avg HLOD (NonDetects)=0.0370 TOTALZ=521 TOTALLOD=948 LODRES=0.0370 0.145 0.029	<u>File Edit Format View H</u> elp	
0.011 0.0074 0.0049 0.0048 0.0035 0.0035 0.002 0.002 0.002 0.002	'Residue=CONCEN (ppm) 'PDP Data: APFR (2009,2010), Total Samples=1488, ' 'MaxPCT=65%, Avg Residue (Detects)=0.013532, Avg P TOTALZ=521 TOTALLOD=948 LODRES=0.0370 0.145 0.029 0.014 0.011 0.011 0.011 0.007 0.0049 0.0049 0.0049 0.0048 0.0035 0.0035 0.0035 0.0035 0.002	Total Detects=19, Total LODs=948, Total Zeros=521

- If an empirical distribution contains multiple occurrences of one or more residue concentrations, then those values can be specified by listing the number of occurrences, followed by the residue concentration, as shown below:
 - o 2,0.011
 - o 2,0.0035
 - o **8,0.002**
- If this option is used, then the number of distinct values must be specified: TOTALFREQ=3.
- Finally, TOTALR indicates the total number of values without FREQuency option. For the Apple_Fresh.rdf distribution above, the TOTALR would be equal to either 19 if TOTALFREQ is not used, or 7 if the TOTALFREQ option is used.