Staff Paper 38b

April 27, 1999

Explanation of Data Used in the Monte Carlo Analysis

OPP has revised the Monte Carlo Assessment for Azinphos-Methyl using USDA Pesticide Data Program (PDP) data and FDA Monitoring Data, as well as revised OPP Quantitative Usage Analysis (QUA) data. The data presented below provides an in-depth explanation and description of the specific data used for each crop and/or commodity.

BLENDED COMMODITIES

The following items are considered blended commodities in this analysis. **Bolded** commodities are those which are not generally considered to be blended under current HED policy. However, they have been considered (partially) blended for this analysis only. In any case, it is not expected that these commodities will be significant contributors to risk.

almonds
apple juice concentrate
blackberry juice
boysenberries
celery juice
cherries
cherries, juice
cranberry juice
dewberries
grape juice
grapefruit juice
lemon juice
lime juice
loganberries
orange juice concentrate
Pear nectar
plum/prune juice
Raspberries
Strawberry juice
Tangerine juice, concentrate
tomato catsup
tomato puree
walnut
apple juice, cider
blackberries
blueberries
cantaloupe nectar
celery seed
cherries, dried
cranberries
cranberry juice concentrate
filberts
grape juice concentrate
grapefruit juice, concentrate
lemon juice concentrate
lime juice concentrate
orange juice
peach juice
pecan
potatoes, dry
strawberries
tangerine juice
tomato juice
tomato paste
walnut oil
watermelon juice

In the Monte Carlo assessment, blended commodities are handled in several ways depending on the type of data available and whether the commodity has been processed.

Unprocessed

8) Where no monitoring data are available, the analysis uses the average of the field trial residue data incorporating % crop treated and ½ the Limit of Detection (LOD) for non-detects.

4) For small sized commodities (the ones in bold above) some degree of blending is assumed; therefore, where monitoring data were available, the analysis uses the full distribution of monitoring data without adjustment for single servings or percent crop treated and uses ½ the LOD for all non-detects.

Processed

9) Where no monitoring data are available, the analysis uses the average of the field trial residue data incorporating % crop treated, uses ½ the LOD for non-detects, and corrects for residue reduction/concentration during processing.

5) Where monitoring data are available for the related unprocessed commodity (e.g. cherries for cherry juice), the analysis uses the processing factor for the processed commodity multiplied by the average residue for the unprocessed commodity (which incorporates ½ the LOD and % crop treated).

6) Where monitoring data are available for the processed commodity itself (e.g. apple juice PDP data for apple juice), then the analysis uses the entire distribution of the monitoring data with no further adjustment for % crop treated.

Single Serving Commodities

Where monitoring data are available, the commodities were handled in four ways depending on the type, number and amount of detects.

1) Where greater than 30 detects were found, the data were adjusted to reflect single servings using ½ the LOD and % crop treated. For azinphos-methyl, peach data were adjusted to reflect single servings and these data were then used for similar crops.

2) If less than 30 detects were found, the monitoring data were used directly including ½ the LOD and % crop treated.

3) If the monitoring data showed numerous years in which no detectable residues were found, then ½ the LOD was used as a point estimate.

7) Where no monitoring data were available, field trial data were used. The entire distribution of data from the field trials was used incorporating % crop treated and ½ the LOD for non-detects. Note that regardless of whether ½ the LOD or zeros are used for non-detects in the analysis, the results are not significantly affected.

10) Where single serving PDP monitoring data (for pears) were available the data were used directly, including ½ the LOD and % crop treated. For azinphos-methyl pear data were then used for similar crops.

The chart that follows shows what data were used for each specific commodity. The "Analysis Scenario" column gives the number for the general scenario described above which was used for that crop.

Crop by Crop Description of Specific Data Used in Revised Analysis.

Crop	Residue Data Used	Analysis Scenario	% Crop Treated	Comments on data Selected
Alfalfa Sprouts	Tolerance of 2 ppm and 1% CT[1].	N/A	<0.5% [5]	
Almonds	Point estimate which = mean FT[2] data X 39% CT and assumed all almonds are at this level. 0.009 X 0.39 = 0.0035 [Field trials used 2 lb ai/A, 3 applications, PHI of 28 days].	8	39%	
Apples	Single Serving PDP[3] pear data incorporating 88% CT.	10	88%	
Apples, Dried	Single Serving PDP[3] pear data incorporating 88% CT and a concentration factor.	10	88%	
Apple Juice, Concentrate	Full distribution of PDP apple juice data and a concentration factor.	6	N/A	
Apple Juice, Cider	Full distribution of PDP apple juice data.	6	N/A	
Beans, Succulent	Composite PDP green bean data directly incorporating 1% CT.	2	<0.5%[5]	Few PDP residues (10) detected in three years of PDP data. Total of 1810 samples.
Blackberries	Composite FDA raspberry data directly incorporating 14% CT.	4	14%[6]	
Blackberry Juice	Point estimate using FDA raspberry data incorporating ½ LOD[4] and 14% CT = 0.002. Point estimate multiplied by processing factor.	5	14%[6]	
Blueberries	Composite FDA blueberry data directly incorporating 51% CT.	4	51%	
Boysenberries	Composite FDA raspberry data directly incorporating 14% CT.	4	14%[6]	

Crop	Residue Data Used	Analysis Scenario	% Crop Treated	Comments on data Selected
Broccoli	Composite PDP spinach data directly and 1% CT.	2	1%	Few PDP residues (4) detected in three years of PDP data. Total of 1806 samples.
Brussels Sprouts	Composite PDP spinach data directly and 2% CT.	2	2%	Few PDP residues (4) detected in three years of PDP data. Total of 1806 samples.
Cabbage, Green and Red	Cabbage FT data and 13% CT.	7	13%	
Cabbage Savoy	Cabbage FT data and 13% CT.	7	13%	
Cantaloupe Nectar	½ LOD = 0.0015	3	N/A	Not detected in four years of FDA monitoring (1994-97).
Cantaloupe Pulp	No detectable residue found. 1/2 LOD used incorporating 5% CT.	3	5%	Not detected in four years of FDA monitoring (1994-97).
Casaba	No detectable residue found. 1/2 LOD used incorporating 2% CT.	3	2%	Not detected in four years of FDA monitoring (1994-97).
Cauliflower	Composite PDP spinach data directly and 2% CT.	2	2%	Few PDP residues (4) detected in three years of PDP data. Total of 1806 samples.
Celery	Composite PDP spinach data directly and 13% CT.	2	13%	Few PDP residues (4) detected in three years of PDP data. Total of 1806 samples.
Celery Juice	Point estimate using PDP spinach data incorporating ½ LOD and 13% CT = 0.0030. Point estimate multiplied by processing factor.	5	13%	

Crop	Residue Data Used	Analysis Scenario	% Crop Treated	Comments on data Selected
Celery Seed	Point estimate using PDP spinach data incorporating ½ LOD and 13% CT = 0.0030. Point estimate multiplied by processing factor.	5	13%	
Cherries	Point estimate of mean FT data incorporating 58% CT for sweet cherries (2.05 X 0.58 = 1.19) and 80% CT for tart cherries (2.05 X 0.58 = 1.19) [Field trials used 0.75 lb ai/A, 4 or 5 applications, PHI of 7 days] .	8	58/80%[7]	
Cherries, Dried	Point estimate of mean FT data incorporating 58% CT for sweet cherries (2.05 X 0.58 = 1.19) and 80% CT for tart cherries (2.05 X 0.58 = 1.19) Point estimate is multiplied by a concentration factor [Field trials used 0.75 lb ai/A, 4 or 5 applications, PHI of 7 days].	Similar to 8	58/80%[7]	
Cherry Juice	Point estimate of mean FT data X 62% CT. 2.05 X 0.58 = 1.19. Point estimate is multiplied by a processing factor [Field trials used 0.75 lb ai/A, 4 or 5 applications, PHI of 7 days].	Similar to 8	58%	
Citrus Citron	Composite PDP orange data directly and 3% CT.	2	3%	Few PDP residues (3) detected in three years of PDP data. Total samples = 1209.
Cottonseed	Tolerance of 0.5 ppm and 11% CT.	N/A	11%	
Crabapples	Single Serving PDP Pear incorporating 1% CT.	10	1%	
Cranberries	Point estimate of cranberries mean FT data multiplied by 69% CT. 0.03X 0.69 = 0.021. [Field trials used 1.0 lb ai/A, 3 applications, PHI of 21 days].	8	69%	

Crop	Residue Data Used	Analysis Scenario	% Crop Treated	Comments on data Selected
Cranberry Juice	Point estimate of mean FT data multiplied by 69% CT. 0.03 X 0.69 = 0.021. Point estimate multiplied by processing factor. [Field trials used 1.0 lb ai/A, 3 applications, PHI of 21 days].	9	69%	
Cranberries Juice Concentrate	Point estimate of mean FT data multiplied by 69% CT. 0.03 X 0.69 = 0.021. Point estimate multiplied by processing factor. [Field trials used 1.0 lb ai/A, 3 applications, PHI of 21 days].	9	69%	
Crenshaw	No detectable residue found. 1/2 LOD used incorporating 2% CT	3	2%	Not detected in four years of FDA monitoring (1994-97).
Cucumbers	No detectable residue found. 1/2 LOD used incorporating 3% CT	3	3%	Not detected in four years of FDA monitoring (1994-97).
Dewberries	Composite FDA raspberry data directly and incorporating 14% CT.	4	14%[6]	
Filberts	Point estimate of mean of pecan FT data X 39% CT = 0.0156 [Field trials used 2.0 lb ai/A, 3 applications, PHI of 45 days].	8	39%	
Grapes	Composite PDP grape data directly and incorporating 2% CT.	2	2%	Low PDP residues (<0.05 ppm) detected in two years of PDP data. Total of 1215 samples.
Grape Juice	Point estimate of mean of PDP grape data X 2% CT = 0.0006. Point estimate multiplied by a processing factor.	5	2%	

Crop	Residue Data Used	Analysis Scenario	% Crop Treated	Comments on data Selected
Grape Juice Concentrate	Point estimate of mean of PDP grape data X 2% CT = 0.0006. Point estimate multiplied by a processing factor.	5	2%	
Grapes-Raisins	Composite PDP grape data directly and incorporated 2% CT and concentration factor.	Similar to 2	2%	Low PDP residue (<0.05 ppm) detected in two years of PDP data. Total of 1215.
Grape Leaves	Composite PDP grape data directly and incorporated 2% CT.	Similar to 2	2%	Low PDP residues (<0.05 ppm) detected in two years of PDP data. Total of 1215 samples.
Grapefruit Juice	Full distribution of PDP orange juice data.	6	N/A	
Grapefruit Juice Concentrate	Full distribution of PDP orange juice data and a processing factor.	Similar to 6	N/A	
Grapefruit Peel	Composite PDP orange data directly and incorporated 17% CT.	2	17%	Few PDP residues (3) detected in three years of PDP data. Total samples = 1209.
Grapefruit Peeled Fruit	Composite PDP orange data directly and incorporated 17% CT.	2	17%	Few PDP residues (3) detected in three years of PDP data. Total samples = 1209.
Honeydew Melons	No detectable residue found. 1/2 LOD used incorporating 2% CT.	3	2%	Not detected in four years of FDA monitoring (1994-97).
Kumquats	Composite PDP orange data directly and 3% CT.	2	3%	Few PDP residues (3) detected in three years of PDP data. Total samples = 1209.
Leeks	Green onion FT data and 2% CT. [Field trials used 0.75 lb ai/A, 3 applications, PHI of 14 days].	7	2%	

Crop	Residue Data Used	Analysis Scenario	% Crop Treated	Comments on data Selected
Lemon Juice	Full distribution of PDP orange juice data.	6	N/A	
Lemon Juice Concentrate	Full distribution of PDP orange juice data and processing factor.	Similar to 6	N/A	
Lemon Peel	Composite PDP orange data directly and 1% CT.	Similar to 2	<0.5%[5]	Few PDP residues (3) detected in three years of PDP data. Total samples = 1209.
Lemon Peeled Fruit	Composite PDP orange data directly and 1% CT.	Similar to 2	<0.5%[5]	Few PDP residues (3) detected in three years of PDP data. Total samples = 1209.
Lime Juice	Full distribution of PDP orange juice data.	6	N/A	
Lime Juice Concentrate	Full distribution of PDP orange juice data and a concentration factor.	Similar to 6	N/A	
Lime Peel	Composite PDP orange data directly and incorporating 3% CT.	2	3%	Few PDP residues (3) detected in three years of PDP data. Total samples = 1209.
Limes Peeled Fruit	Composite PDP orange data directly and incorporating 3% CT.	2	3%	Few PDP residues (3) detected in three years of PDP data. Total samples = 1209.
Loganberries	Composite FDA raspberry data directly and incorporating 14% CT.	4	14%[6]	
Nectarines	Composite PDP peach data adjusted for single servings incorporating 6% CT.	1	6%	689 detects from three years of PDP data (1995-1997). Total Sample = 1393.

Crop	Residue Data Used	Analysis Scenario	% Crop Treated	Comments on data Selected
Onions, Green	Green onion FT data and incorporating 2% CT. [Field trials used 0.75 lb ai/A, 3 applications, PHI of 14 days].	7	2%	
Onions, Dehydrated or Dried	Bulb onion FT data and incorporated 2% CT and processing factor. [Field trials used 0.75 lb ai/A, 3 applications, PHI of 21 days].	7	2%	
Onions, Dry Bulb	Bulb onion FT data and incorporated 2% CT.	7	2%	
Orange Juice	Full distribution of PDP orange juice data.	6	N/A	Used PDP orange juice data as blended although not generally considered to be blended. Rationale: comparable residues in orange and orange juice.
Orange Juice Concentrate	Full distribution of PDP orange juice data and a concentration factor.	Similar to 6	N/A	Used PDP orange juice data as blended although not generally considered to be blended. Rationale: comparable residues in orange and orange juice.
Orange Peel	Composite PDP orange data directly incorporating 3% CT.	2	3%	Few PDP residues (3) detected in three years of PDP data. Total samples = 1209.
Orange Peeled Fruit	Composite PDP orange data directly incorporating 3% CT.	2	3%	Few PDP residues (3) detected in three years of PDP data. Total samples = 1209.
Peaches	Composite PDP peach data adjusted for single servings and incorporated 30% CT.	1	30%	689 detects from three years of PDP data (1995-1997). Total samples = 1393.

Crop	Residue Data Used	Analysis Scenario	% Crop Treated	Comments on data Selected
Peaches, Dried	Composite PDP peach data adjusted for single servings incorporating 30% CT and processing factor.	1	30%	689 detects from three years of PDP data (1995-1997). Total samples = 1393.
Peaches, Juice	Point estimate using PDP peach data incorporating ½ LOD and 30% CT = 0.0157. Point estimate multiplied by processing factor.	5	30%	
Pears	Single Serving PDP pear data and incorporating 91% CT.	10	91%	
Pears, Dried	Single Serving PDP pear data incorporating 91% CT and processing factor.	10	91%	
Pear Nectar	Full distribution of apple juice PDP data.	Similar to 6	N/A	
Pecan	Point estimate which = mean FT data X 3% CT= 0.0012 [Field trials used 2.0 lb ai/A, 3 applications, PHI of 45 days].	8	3%	
Persian Melon	No detectable residue found. 1/2 LOD used incorporating 2% CT.	3	2%	Not detected in four years of FDA monitoring (1994-97).
Pistachios	Point estimate of mean of pecan FT data X 48% CT = 0.0172 [Field trials used 2.0 lb ai/A, 3 applications, PHI of 45 days].	8	48%	
Plum	Composite PDP peach data adjusted for single servings and incorporated 12% CT.	1	12%	689 detects from three years of PDP data (1995-1997). Total Samples = 1393.

Crop	Residue Data Used	Analysis Scenario	% Crop Treated	Comments on data Selected
Plum/Prunes, Dried	Composite PDP peach data adjusted for single servings, incorporating 12% CT and processing factor.	1	12%	689 detects from three years of PDP data (1995-1997). Total Samples = 1393.
Plum/Prune Juice	Point estimate using PDP peach data and incorporating 12%CT = 0.0104. Point estimate multiplied by processing factor.	5	12%	
Potatoes (White), Dry	½ LOD = 0.011	3	N/A	Not detected in two years of PDP monitoring (1995-96).
Potatoes (White) Unspecified	No detectable residue found. 1/2 LOD used incorporating 10% CT.	3	10%	Not detected in two years of PDP Monitoring (1995-96).
Potatoes (White), Whole	No detectable residue found. 1/2 LOD used incorporating 10% CT.	3	10%	Not detected in two years of PDP Monitoring (1995-96).
Quince	Single Serving PDP pear data and incorporating 75% CT.	10	75%	
Raspberries	Composite FDA raspberry data directly and incorporating 14% CT.	4	14%	
Shallots	Bulb onion FT data and incorporated 2% CT.	7	2%	
Strawberries	Composite FDA raspberry data directly and incorporating 12% CT.	4	12%	
Strawberry Juice	Point estimate using FDA strawberry data incorporating ½ LOD and 12% CT = 0.0025.	5	12%	
Tangelos	Composite PDP orange data directly and 3% CT.	2	3%	Few PDP residues (3) detected in three years of PDP data. Total samples =1209.

Crop	Residue Data Used	Analysis Scenario	% Crop Treated	Comments on data Selected
Tangerines	Composite PDP orange data directly and 3% CT.	2	3%	Few PDP residues (3) detected in three years of PDP data. Total samples = 1209.
Tangerine Juice	Full distribution of PDP orange juice data.	6	N/A	Used PDP orange juice data as blended although not generally considered to be blended. Rationale: comparable residues in orange and orange juice.
Tangerine Juice Concentrate	Full distribution of PDP orange juice data and a concentration factor.	Similar to 6	N/A	Used PDP orange juice data as blended although not generally considered to be blended. Rationale: comparable residues in orange and orange juice.
Tomato Juice	Point estimate using PDP tomato data incorporating ½ LOD and 11% CT = 0.0031. Point estimate multiplied by processing factor.	5	11%	
Tomato Catsup	Point estimate using PDP tomato data incorporating ½ LOD and 11% CT = 0.0031. Point estimate multiplied by processing factor.	5	11%	
Tomato Paste	Point estimate using PDP tomato data incorporating ½ LOD and 11% CT = 0.0031. Point estimate multiplied by processing factor.	5	11%	
Tomato Puree	Point estimate using PDP tomato data incorporating ½ LOD and 11% CT = 0.0031. Point estimate multiplied by processing factor.	5	11%	

Crop	Residue Data Used	Analysis Scenario	% Crop Treated	Comments on data Selected
Tomato, Whole	Composite PDP tomato data and incorporated 10% CT.	2	10%	Low PDP residues (<0.1) detected in three years of PDP data. Total of 879 samples.
Tomato, Dried	Composite PDP tomato data directly incorporating 10% CT and concentration factor.	2	10%	Low PDP residues (<0.1) detected in three years of PDP data. Total of 879 samples.
Walnut Oil	Point estimate using mean FT X 30% CT = 0.029. Point estimate multiplied by processing factor. [Field trials used 2.0 lb ai/A, 3 applications, PHI of 21 days].	9	30%	
Walnuts	Point estimate using mean FT X 30% CT = 0.029. [Field trials used 2.0 lb ai/A, 3 applications, PHI of 21 days].	8	30%	
Watermelon Juice	½ LOD = 0.0015	2	N/A	Not detected in four years of FDA monitoring (1994-97).
Watermelon	No detectable residue found. 1/2 LOD used incorporating 2% CT	2	2%	Not detected in four years of FDA monitoring (1994-97).
Wintermelon	No detectable residue found. 1/2 LOD used incorporating 2% CT	2	2%	Not detected in four years of FDA monitoring (1994-97).

[1] %CT = Percent Crop Treated
[2] FT = Field Trial
[3] PDP = Pesticide Data Program - This is a USDA pesticide residue monitoring program.
[4] LOD = Level of Detection
[5] When BEAD reports <0.5% crop treated (CT), 1% CT was used.
[6] Used % crop treated for raspberry
[7] 58% CT used for sweet cherries; 80% CT used for tart cherries.