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October 16, 1998

MEMORANDUM

SUBJECT: Methidathion. Chem No. 100301. Acute Dietary Risk Assessment (Monte Carlo analysis) DP Barcode D243700.

FROM: William Smith, Chemist
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THROUGH: F. B. Suhre, Branch Senior Scientist
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TO: Michael Goodis
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and

J. Rowland, Chief
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Attached is a Monte Carlo assessment of acute dietary risk for Methidathion. The assumptions and data inputs described below are all consistent with conclusions and tolerance reassessments contained in the Methidathion RED.

Please note that this assessment is being conducted in lieu of using a Monte Carlo assessment submitted by Novartis Crop Protection, Inc. (MRID 44491001). We concluded that their assessment needed to be revised to, among other things, exclude drinking water. We are relying heavily on the discussion provided in their submission to construct our assessment as described below in the detailed discussion section.

CONCLUSIONS

The results of the acute dietary risk assessment are provided in the attached Monte Carlo analysis for nine subpopulation groups. The most highly exposed subpopulations are infants and children. The margins of exposure at the 99.9th percentile of acute dietary exposure ranged from 156 for nursing infants less than 1 to 587

1928

for females (13+/pregnant/not nursing).

DISCUSSION

The Monte Carlo analysis was conducted using Novigen's Dietary Exposure Evaluation Model (DEEM) software and consumption data from the USDA Continuing Surveys of Food Intake by Individuals (CSFII) conducted from 1989 through 1992.

An acute NOEL of 0.2 mg/kg body-wt/day was based on decrease in plasma, RBC and brain ChE activity (J. Rowland, 10/8/97, Report of HED Hazard Identification Assessment Review Committee).

Residue distributions were estimated for food crops based on field trial or monitoring data and percent crop treated information. Percent crop treated information was obtained from BEAD (A. Grube, 2/20/96) and is summarized in Table 1. Data primarily covers the years 1990-1994 for most sites and as early as 1987 for some sites. Averages are based on weighted averages of data with most recent years and more reliable data weighted more. Early years are weighted very low. For the acute assessment the maximum percent reported was used. For some crops for which no data were available it was assumed that 100% of the crop is treated.

Table 1. Usage Data for Methidathion

CROP	AVERAGE (%)	MAXIMUM (%)
Artichokes	92	100
Cotton	0	1
Kiwifruit	13	26
Olives	1	2
Grapefruit	1	5
Lemons	1	2
Oranges	4	11
Other Citrus	-	11 ^a
Apples	2	3

CROP	AVERAGE (%)	MAXIMUM (%)
Pears	4	11
Other pome fruits	-	11 ^b
Apricots	9	18
Cherries	2	4
Nectarines	19	38
Peaches	10	13
Plums & Prunes	24	29
Other Stone Fruits	-	38 ^c
Almonds	14	22
Pecans	1	1
Walnuts	10	12
Other Tree Nuts	-	22 ^d

^a Maximum PCT for citrus crop group used.

^b Maximum PCT for pome fruit crop group used.

^c Maximum PCT for stone fruit crop group used.

^d Maximum PCT for tree nut crop group used.

Summary of Residue Inputs and Assumptions

Methidathion residues are generally not expected to occur on any food commodities except citrus. Methidathion is nonsystemic and is applied to pome fruits, stone fruits, tree nuts, and some other crops (detailed below) before the edible portion of the plant has formed. Foliar treatments of citrus commodities while the fruit are on the tree do result in residues; however, they are limited almost entirely to the peel. Processing of these fruit result in some residues in peeled fruit and juice (see PDP monitoring data in Table 2) at very low levels.

Most of the residue values entered in the current analysis are estimates based on nondetectable residues in field trials conducted at the maximum use rate. According to current guidance, it would be acceptable to assume that residues are present on these commodities at a level of $\frac{1}{2}$ the limit of detection (LOD); however, in the current analysis the more conservative estimate of $\frac{1}{2}$ the limit of quantitation (LOQ) was

used. This was done because the basis for determination of an LOD was not obvious. In the case of orange and grapefruit commodities an even more conservative approach was taken to residue data below the LOQ. In these cases it was assumed that maximal residues could occur at the level of the LOQ. This was done because of the potential for contamination of pulp and juice during peeling and the appearance of some detectable residues in fruits analyzed in the PDP program (see Table 2). The maximum residue reported for oranges and grapefruit are 0.034 ppm and 0.014 ppm.

Monitoring data available from PDP are summarized in Table 2. The data for apple juice (1997), orange juice (1997) and canned peaches (1997) were incorporated in the present analysis. The other data are provided for informational purposes.

Table 2. PDP Survey Data Available for Methidathion

COMMODITY	YEAR	NUMBER SAMPLES	NUMBER DETECTS	RESIDUES FOUND ^a	LOD ^a
Apple juice	97	683	0	-	0.003 (242) 0.004 (173) 0.008 (83) 0.01 (175)
Apple juice	96	177	0	-	0.003 (26) 0.004 (39) 0.008 (6) 0.01 (39)
Apples	96	530	0	-	0.002 (9) 0.003 (162) 0.004 (41) 0.005 (96) 0.007 (12) 0.008 (6) 0.010 (126) 0.014 (78)
Apples	95	693	0	-	NR
Apples	94	687	0	-	NR

COMMODITY	YEAR	NUMBER SAMPLES	NUMBER DETECTS	RESIDUES FOUND ^a	LOD ^a
Orange juice	97	692	10	0.005 (10)	0.003 (98) 0.004 (182) 0.005 (136) 0.008 (165) 0.013 (101)
Oranges	96	518	33	0.005- 0.025	NR
Oranges	95	691	21	0.004- 0.031	NR
Oranges	94	683	32	0.004- 0.030	NR
Oranges	93	633	35	0.002- 0.034	NR
Grapefruit	93	632	3	0.004- 0.014	NR
Peaches canned	97	756	0	-	0.003 (115) 0.004 (195) 0.005 (152) 0.008 (177) 0.013 (117)
Peaches	96	324	0	-	NR
Peaches	95	367	0	-	NR
Peaches	94	396	0	-	NR
Pears	97	708	1	0.005	0.003-0.01

^a Values in parentheses indicate number of samples. NR indicates that values are not being reported; however, the values are available from PDP.

The residue inputs for acute dietary risk assessment are detailed in the following discussion and in the residue distribution files listed following the discussion:

Citrus Fruits

Oranges and Grapefruit

Studies summarized in MRID 44491001 demonstrate that residues do

not migrate into the pulp of oranges and grapefruit. Residues in peeled fruit were < 0.05 following applications at the maximal label rate. A value of 0.05 ppm will be used for the maximum residue in the peeled fruit. This value may be considered to be conservative on comparison to other foods in this assessment where ½ the LOQ (0.025 ppm) is used; however, the full LOQ is being used here because of the potential for some contamination of pulp from peel fractions during peeling (see Table 2).

Residues in peel were estimated from the peeled fruit data using a processing factor of 46X. This factor was derived from a citrus processing study summarized previously (W. Smith, D228746, 12/3/96) in which factors for processing pulp, juice and peel from orange fruit were estimated to be 0.082, 0.065 and 3.8 respectively. In the current analysis a factor for conversion of pulp data to peel was estimated by the ration of 3.8/0.082= 46.

Residues in juice were estimated from PDP monitoring data on orange juice. A conversion factor for fresh juice to juice concentrate was derived from the ratio of the default factors for these two food forms in the DEEM software .

Lemons

See the comments for oranges and grapefruit. The orange juice monitoring data were used as surrogate residues for lemon juice.

Limes

See the comments for lemons

Tangerines

The residues in peeled fruit were based on one sample reported in a study summarized in MRID 44491001 in which residues occurred at 0.06 ppm. The other tangerine food forms were derived as for oranges.

Pome Fruits, Stone Fruits and Tree Nuts

Methidathion is used as a delayed dormant spray in fruit and nut orchards. Residue data [original references and summaries provided in MRID 44491001] support establishment of the existing crop group tolerances at 0.05 ppm, which is the limit of quantitation for the residue analytical method used in field trials. Processing studies were not required for any of these crops because of the use pattern and the absence of detectable residues, even in trials conducted at exaggerated rates. There

is no expectation of detectable residues in any food commodity derived from uses on crops in these three crop groups.

Some monitoring data are available confirming that residues are nondetectable even at lower LODs. Monitoring data from PDP were used in the present analysis for apple juice and canned peaches (see Table 2).

Miscellaneous Crops

Available residue data for the following crops are referenced and summarized in MRID 44491001.

Artichokes

Applications are made prior to bud formation and are not expected to result in residues. A tolerance of 0.05 ppm has been established. For acute assessment is assumed that all artichokes consumed contain $\frac{1}{2}$ LOQ (0.025 ppm).

Olives

Residues were nondetectable in field trials, even at exaggerated rates. No processing study was required on olives and no detectable residues are expected in olive oil. A residue level of $\frac{1}{2}$ LOQ (0.025 ppm) is assumed to occur in 2 percent of the olives consumed.

Cotton

A tolerance of 0.2 ppm has been established for cottonseed. A cotton processing study was summarized in the Methidathion FRSTR - Residue Chemistry Chapter dated 6/7/88. Residues were nondetectable in refined oil and meal. The maximum residue assumed in this assessment is $\frac{1}{2}$ LOQ (0.025 ppm).

Sunflower and Safflower

A sunflower processing study was summarized in the Methidathion FRSTR - Residue Chemistry Chapter dated 6/7/88. Residues were nondetectable in the oil. In the absence of data on safflower oil, sunflower data is used as a surrogate. The maximum residue is assumed to be 0.01 ppm. The residues on seeds were assumed to be at tolerance level, 0.5 ppm.

Carambola, Kiwi fruit and Longan fruit

It is assumed that tolerance level residues occur on all of these fruits.

Mangoes

A tolerance is established at 0.05 ppm and residues have not been detected at this level. A value of $\frac{1}{2}$ LOQ (0.025 ppm is assumed as a maximum exposure)

Potatoes

A tolerance of 0.2 ppm has been established for potatoes but there are no registered uses on this crop. The tolerance will be revoked during reregistration. No residue input is used in the current analysis.

Meat, Milk, Poultry & Eggs

Uses on major feed items are to be canceled and there is no expectation of any residues in these commodities. The Agency has recommended revocation of tolerances on meat, milk, poultry, eggs.

Residue Distribution files used in Current Analysis

1. oj.rdf (orange juice)

USDA PDP 1997 DATA. Assumes no zeros.

TOTALNZ=10

TOTALFREQ=5

0.005 0.005 0.005 0.005 0.005

0.005 0.005 0.005 0.005 0.005

182,0.002

165,0.004

101,0.0065

98,0.0015

136,0.0025

2. apple.rdf

TOTALNZ=3 assume 1/2 LOQ and 3% crop treated

TOTALZ=97

.025 .025 .025

3. pear.rdf

TOTALNZ=11 assume 1/2 LOQ and 11% crop treated

TOTALZ=89

0.025 0.025 0.025 0.025 0.025 0.025

0.025 0.025 0.025 0.025 0.025

4. aj.rdf (apple juice)

USDA PDP 1997 DATA assumes no zeroes

TOTALFREQ=4

173,0.002

242,0.0015

93,0.004

175,0.005

5. olive.rdf

TOTALNZ=2 assume 1/2 LOQ and 2% crop treated

TOTALZ=98

0.025 0.025

6. orangmax.rdf (used for citron & kumquats

orange based on max fld trial= 3.4 ppm (pulp=0.082x whole fruit)

TOTALNZ=11 assume 11% crop treated

TOTALZ=89

0.28 0.28 0.28 0.28 0.28 0.28

0.28 0.28 0.28 0.28 0.28

7. apricot.rdf

TOTALNZ=18 assume 1/2 LOQ and 18% crop treated

TOTALZ=82

.025	.025	.025	.025	.025	.025
.025	.025	.025	.025	.025	.025
.025	.025	.025	.025	.025	.025

8. cher.rdf (cherries)

TOTALNZ=4 assume 1/2 LOQ and 4% crop treated

TOTALZ=96

.025	.025	.025	.025
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9. Nect.rdf (Nectarines)

TOTALNZ=38 assume 1/2 LOQ and 38% crop treated

TOTALZ=62

0.025	0.025	0.025	0.025	0.025	0.025
0.025	0.025	0.025	0.025	0.025	0.025
0.025	0.025	0.025	0.025	0.025	0.025
0.025	0.025	0.025	0.025	0.025	0.025
0.025	0.025	0.025	0.025	0.025	0.025
0.025	0.025	0.025	0.025	0.025	0.025
0.025	0.025	0.025	0.025	0.025	0.025

10. Peach.rdf

TOTALNZ=13 assume 1/2 LOQ and 13% crop treated

TOTALZ=87

0.025	0.025	0.025	0.025	0.025	0.025
0.025	0.025	0.025	0.025	0.025	0.025
0.025					

11. plum.rdf

TOTALNZ=3 assume 1/2 LOQ and 3% crop treated

TOTALZ=7

.025	.025	.025
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12. almond.rdf

TOTALNZ=22 assume 1/2 LOQ and 22% crop treated

TOTALZ=78

0.005	0.005	0.005	0.005	0.005	0.005
0.005	0.005	0.005	0.005	0.005	0.005
0.005	0.005	0.005	0.005	0.005	0.005
0.005	0.005	0.005	0.005		

13. pecan.rdf

TOTALNZ=1 assume 1/2 LOQ and 1% crop treated

TOTALZ=99

0.025

10928

14. walnut.rdf

TOTALNZ=12 assume 1/2 LOQ and 12% crop treated

TOTALZ=88

0.025	0.025	0.025	0.025	0.025	0.025
0.025	0.025	0.025	0.025	0.025	0.025

15. Grpfrtmin.rdf (peeled grapefruit)

assume residue at LOQ in peeled fruit

TOTALNZ=5 assume 5% crop treated

TOTALZ=95

0.05	0.05	0.05	0.05	0.05
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16. Orangmin.rdf (peeled oranges)

assume residue at LOQ in peeled fruit

TOTALNZ=11 assume 11% CT

TOTALZ=89

0.05	0.05	0.05	0.05	0.05	0.05
0.05	0.05	0.05	0.05	0.05	

17. Lemonmin.rdf (peeled lemons)

assume residue at LOQ in peeled fruit

TOTALNZ=2 assume 2% crop treated

TOTALZ=98

0.05	0.05
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18. peachcan.rdf (canned peaches)

1997 PDP data assume no zeroes

TOTALFREQ=5

115,0.0015

195,0.002

152,0.0025

177,0.004

117,0.065

19. cot_oil.rdf(cottonseed oil and meal)

TOTALNZ=1 assume 1/2 LOQ and 1% crop treated

TOTALZ=99

0.025

20. kiwi.rdf

Tolerance level residues

TOTALNZ=26 assume 26% crop treated

TOTALZ=74

0.10	0.10	0.10	0.10	0.10	0.10
0.10	0.10	0.10	0.10	0.10	0.10
0.10	0.10	0.10	0.10	0.10	0.10
0.10	0.10	0.10	0.10	0.10	0.10

12928

0.10

0.10

21. Nutmax.rdf(nuts other than walnuts, almonds and pecans)

TOTALNZ=22 assume 1/2 LOQ and 22% crop treated

TOTALZ=78

0.025	0.025	0.025	0.025	0.025	0.025
0.025	0.025	0.025	0.025	0.025	0.025
0.025	0.025	0.025	0.025	0.025	0.025
0.025	0.025	0.025	0.025		

22. Tangerin.rdf

assume max residue in peeled fruit (0.06) and 11% CT

TOTALNZ=11

TOTALZ=89

0.06	0.06	0.06	0.06	0.06	0.06
0.06	0.06	0.06	0.06	0.06	

Attachment

cc: W. Smith (CEB-I), SF, RF

7509C:CEB-I:WOS:wos:Rm805b:CM2:305-5353:10/16/98

RDI: FSuhre (10/16/98).

ATTACHMENT

15928

U.S. Environmental Protection Agency
 DEEM ACUTE analysis for METHIDATHION
 Residue file name: methidat.R96

Ver. 6.54
 (1989-92 data)

Analysis Date: 10-16-1998/10:23:18 Residue file dated: 10-16-1998/08:24:18/8
 NOEL (Acute) = 0.200000 mg/kg body-wt/day
 MC iterations = 1000 MC list in residue file MC seed = 10

U.S. pop - all seasons -----	Daily Exposure Analysis 1/ (mg/kg body-weight/day)	
	per Capita	per User
Mean	0.000010	0.000010
Standard Deviation	0.000043	0.000043
Margin of Exposure 2/	20,896	20,127

Percent of Person-Days that are User-Days = 96.32%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000024	8,348
80.00	0.000000	>1,000,000	5.00	0.000046	4,388
70.00	0.000000	>1,000,000	2.50	0.000077	2,582
60.00	0.000000	>1,000,000	1.00	0.000132	1,519
50.00	0.000000	>1,000,000	0.50	0.000201	995
40.00	0.000000	652,885	0.25	0.000295	677
30.00	0.000004	49,955	0.10	0.000503	397
20.00	0.000010	19,693			

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000023	8,536
80.00	0.000000	>1,000,000	5.00	0.000045	4,469
70.00	0.000000	>1,000,000	2.50	0.000076	2,623
60.00	0.000000	>1,000,000	1.00	0.000130	1,535
50.00	0.000000	>1,000,000	0.50	0.000198	1,008
40.00	0.000000	750,829	0.25	0.000292	685
30.00	0.000004	55,865	0.10	0.000498	401
20.00	0.000010	20,648			

1/ Analysis based on all three-day participant records in CSFII 1989-92 survey.
 2/ Margin of Exposure = NOEL/ Dietary Exposure.

16428

U.S. Environmental Protection Agency
 DEEM ACUTE analysis for METHIDATHION
 Residue file name: methidat.R96
 Analysis Date: 10-16-1998/10:23:18
 NOEL (Acute) = 0.200000 mg/kg body-wt/day

Ver. 6.54
 (1989-92 data)

Adjustment factor #2 NOT used.

Residue file dated: 10-16-1998/08:24:18/8

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All infants (<1 year)	Daily Exposure Analysis (mg/kg body-weight/day)	
	per Capita	per User
Mean	0.000025	0.000047
Standard Deviation	0.000102	0.000135
Margin of Exposure	7,864	4,253

Percent of Person-Days that are User-Days = 54.09%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000105	1,913
80.00	0.000000	>1,000,000	5.00	0.000208	959
70.00	0.000000	>1,000,000	2.50	0.000379	527
60.00	0.000003	71,189	1.00	0.000768	260
50.00	0.000007	29,276	0.50	0.000879	227
40.00	0.000014	13,866	0.25	0.001041	192
30.00	0.000027	7,357	0.10	0.001561	128
20.00	0.000049	4,083			

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000057	3,485
80.00	0.000000	>1,000,000	5.00	0.000120	1,663
70.00	0.000000	>1,000,000	2.50	0.000234	853
60.00	0.000000	>1,000,000	1.00	0.000548	364
50.00	0.000000	>1,000,000	0.50	0.000785	254
40.00	0.000000	>1,000,000	0.25	0.000904	221
30.00	0.000005	43,162	0.10	0.001267	157
20.00	0.000018	10,939			

17928

U.S. Environmental Protection Agency
 DEEM ACUTE analysis for METHIDATHION
 Residue file name: methidat.R96
 Analysis Date: 10-16-1998/10:23:18
 NOEL (Acute) = 0.200000 mg/kg body-wt/day

Ver. 6.54
 (1989-92 data)

Adjustment factor #2 NOT used.

Residue file dated: 10-16-1998/08:24:18/8

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Nursing infants (<1 year)	Daily Exposure Analysis (mg/kg body-weight/day)	
	per Capita	per User
Mean	0.000010	0.000044
Standard Deviation	0.000076	0.000155
Margin of Exposure	20,014	4,557

Percent of Person-Days that are User-Days = 22.77%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000092	2,185
80.00	0.000000	>1,000,000	5.00	0.000188	1,064
70.00	0.000000	>1,000,000	2.50	0.000417	480
60.00	0.000000	>1,000,000	1.00	0.000827	241
50.00	0.000000	>1,000,000	0.50	0.001215	164
40.00	0.000005	36,611	0.25	0.001462	136
30.00	0.000015	13,171	0.10	0.001592	125
20.00	0.000036	5,539			

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000003	59,382
80.00	0.000000	>1,000,000	5.00	0.000032	6,246
70.00	0.000000	>1,000,000	2.50	0.000086	2,322
60.00	0.000000	>1,000,000	1.00	0.000244	821
50.00	0.000000	>1,000,000	0.50	0.000500	400
40.00	0.000000	>1,000,000	0.25	0.000801	249
30.00	0.000000	>1,000,000	0.10	0.001275	156
20.00	0.000000	>1,000,000			

15228

U.S. Environmental Protection Agency
 DEEM ACUTE analysis for METHIDATHION
 Residue file name: methidat.R96
 Analysis Date: 10-16-1998/10:23:18
 NOEL (Acute) = 0.200000 mg/kg body-wt/day

Ver. 6.54
 (1989-92 data)

Adjustment factor #2 NOT used.

Residue file dated: 10-16-1998/08:24:18/8

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Non-nursing infants (<1 yr) -----	Daily Exposure Analysis (mg/kg body-weight/day)	
	per Capita	per User
Mean	0.000032	0.000047
Standard Deviation	0.000110	0.000131
Margin of Exposure	6,263	4,213

Percent of Person-Days that are User-Days = 67.27%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000106	1,891
80.00	0.000000	>1,000,000	5.00	0.000212	941
70.00	0.000000	>1,000,000	2.50	0.000378	529
60.00	0.000004	45,529	1.00	0.000760	263
50.00	0.000008	26,113	0.50	0.000863	231
40.00	0.000015	13,151	0.25	0.000972	205
30.00	0.000028	7,102	0.10	0.001380	144
20.00	0.000051	3,901			

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000079	2,524
80.00	0.000000	>1,000,000	5.00	0.000160	1,246
70.00	0.000000	>1,000,000	2.50	0.000297	672
60.00	0.000000	>1,000,000	1.00	0.000636	314
50.00	0.000000	>1,000,000	0.50	0.000813	246
40.00	0.000005	43,780	0.25	0.000919	217
30.00	0.000012	17,039	0.10	0.001248	160
20.00	0.000029	6,949			

19928

U.S. Environmental Protection Agency
 DEEM ACUTE analysis for METHIDATHION
 Residue file name: methidat.R96
 Analysis Date: 10-16-1998/10:23:18
 NOEL (Acute) = 0.200000 mg/kg body-wt/day

Ver. 6.54
 (1989-92 data)

Adjustment factor #2 NOT used.

Residue file dated: 10-16-1998/08:24:18/8

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Children (1-6 years)	Daily Exposure Analysis (mg/kg body-weight/day)	
	per Capita	per User
Mean	0.000028	0.000029
Standard Deviation	0.000086	0.000087
Margin of Exposure	7,170	6,995

Percent of Person-Days that are User-Days = 97.56%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000071	2,797
80.00	0.000000	>1,000,000	5.00	0.000111	1,793
70.00	0.000000	>1,000,000	2.50	0.000173	1,159
60.00	0.000000	>1,000,000	1.00	0.000299	668
50.00	0.000002	118,889	0.50	0.000440	454
40.00	0.000013	15,273	0.25	0.000654	305
30.00	0.000025	8,008	0.10	0.001260	158
20.00	0.000041	4,927			

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000071	2,828
80.00	0.000000	>1,000,000	5.00	0.000110	1,810
70.00	0.000000	>1,000,000	2.50	0.000171	1,169
60.00	0.000000	>1,000,000	1.00	0.000297	673
50.00	0.000001	135,156	0.50	0.000437	457
40.00	0.000012	16,733	0.25	0.000649	308
30.00	0.000024	8,305	0.10	0.001250	160
20.00	0.000040	5,024			

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U.S. Environmental Protection Agency
 DEEM ACUTE analysis for METHIDATHION
 Residue file name: methidat.R96
 Analysis Date: 10-16-1998/10:23:18
 NOEL (Acute) = 0.200000 mg/kg body-wt/day

Ver. 6.54
 (1989-92 data)

Adjustment factor #2 NOT used.

Residue file dated: 10-16-1998/08:24:18/8

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Children (7-12 years)	Daily Exposure Analysis (mg/kg body-weight/day)	
	per Capita	per User
Mean	0.000015	0.000015
Standard Deviation	0.000055	0.000055
Margin of Exposure	13,068	12,922

Percent of Person-Days that are User-Days = 98.89%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000039	5,087
80.00	0.000000	>1,000,000	5.00	0.000068	2,944
70.00	0.000000	>1,000,000	2.50	0.000111	1,797
60.00	0.000000	>1,000,000	1.00	0.000183	1,090
50.00	0.000000	>1,000,000	0.50	0.000253	791
40.00	0.000002	96,359	0.25	0.000374	534
30.00	0.000010	19,967	0.10	0.000878	227
20.00	0.000019	10,399			

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000039	5,117
80.00	0.000000	>1,000,000	5.00	0.000068	2,958
70.00	0.000000	>1,000,000	2.50	0.000111	1,805
60.00	0.000000	>1,000,000	1.00	0.000183	1,094
50.00	0.000000	>1,000,000	0.50	0.000252	793
40.00	0.000002	100,469	0.25	0.000373	536
30.00	0.000010	20,517	0.10	0.000874	228
20.00	0.000019	10,513			

U.S. Environmental Protection Agency
 DEEM ACUTE analysis for METHIDATHION
 Residue file name: methidat.R96
 Analysis Date: 10-16-1998/10:23:18
 NOEL (Acute) = 0.200000 mg/kg body-wt/day

Ver. 6.54
 (1989-92 data)

Adjustment factor #2 NOT used.

Residue file dated: 10-16-1998/08:24:18/8

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Females (13+/preg/not nsg) -----	Daily Exposure Analysis (mg/kg body-weight/day)	
	per Capita	per User
Mean	0.000011	0.000011
Standard Deviation	0.000036	0.000037
Margin of Exposure	18,638	18,077

Percent of Person-Days that are User-Days = 96.99%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000022	9,016
80.00	0.000000	>1,000,000	5.00	0.000038	5,225
70.00	0.000000	>1,000,000	2.50	0.000072	2,759
60.00	0.000000	>1,000,000	1.00	0.000282	710
50.00	0.000000	>1,000,000	0.50	0.000305	655
40.00	0.000002	82,459	0.25	0.000317	631
30.00	0.000007	28,372	0.10	0.000341	586
20.00	0.000012	16,058			

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000022	9,140
80.00	0.000000	>1,000,000	5.00	0.000038	5,294
70.00	0.000000	>1,000,000	2.50	0.000071	2,800
60.00	0.000000	>1,000,000	1.00	0.000277	721
50.00	0.000000	>1,000,000	0.50	0.000304	657
40.00	0.000002	93,071	0.25	0.000317	631
30.00	0.000007	30,216	0.10	0.000340	587
20.00	0.000012	16,503			

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U.S. Environmental Protection Agency
 DEEM ACUTE analysis for METHIDATHION
 Residue file name: methidat.R96
 Analysis Date: 10-16-1998/10:23:19
 NOEL (Acute) = 0.200000 mg/kg body-wt/day

Ver. 6.54
 (1989-92 data)

Adjustment factor #2 NOT used.

Residue file dated: 10-16-1998/08:24:18/8

 Females (13+/nursing)

Daily Exposure Analysis
 (mg/kg body-weight/day)
 per Capita per User

Mean	0.000016	0.000016
Standard Deviation	0.000043	0.000044
Margin of Exposure	12,679	12,208

Percent of Person-Days that are User-Days = 96.28%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
-----			-----		
90.00	0.000000	>1,000,000	10.00	0.000043	4,626
80.00	0.000000	>1,000,000	5.00	0.000093	2,151
70.00	0.000000	>1,000,000	2.50	0.000143	1,396
60.00	0.000000	>1,000,000	1.00	0.000275	727
50.00	0.000000	>1,000,000	0.50	0.000301	664
40.00	0.000001	136,056	0.25	0.000322	621
30.00	0.000008	23,887	0.10	0.000445	449
20.00	0.000018	11,118			

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
-----			-----		
90.00	0.000000	>1,000,000	10.00	0.000042	4,733
80.00	0.000000	>1,000,000	5.00	0.000091	2,196
70.00	0.000000	>1,000,000	2.50	0.000141	1,415
60.00	0.000000	>1,000,000	1.00	0.000272	736
50.00	0.000000	>1,000,000	0.50	0.000300	666
40.00	0.000001	157,367	0.25	0.000321	622
30.00	0.000008	26,408	0.10	0.000442	452
20.00	0.000017	11,597			

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U.S. Environmental Protection Agency
 DEEM ACUTE analysis for METHIDATHION
 Residue file name: methidat.R96
 Analysis Date: 10-16-1998/10:23:19
 NOEL (Acute) = 0.200000 mg/kg body-wt/day

Ver. 6.54
 (1989-92 data)

Adjustment factor #2 NOT used.

Residue file dated: 10-16-1998/08:24:18/8

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Females (13-19 yrs/np/nm)	Daily Exposure Analysis (mg/kg body-weight/day)	
	per Capita	per User
Mean	0.000007	0.000007
Standard Deviation	0.000024	0.000024
Margin of Exposure	29,162	28,307

Percent of Person-Days that are User-Days = 97.07%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000020	10,016
80.00	0.000000	>1,000,000	5.00	0.000032	6,284
70.00	0.000000	>1,000,000	2.50	0.000047	4,269
60.00	0.000000	>1,000,000	1.00	0.000083	2,408
50.00	0.000000	>1,000,000	0.50	0.000131	1,527
40.00	0.000000	>1,000,000	0.25	0.000201	996
30.00	0.000002	83,857	0.10	0.000404	495
20.00	0.000010	21,041			

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding Margin of Exposure (MOE)

Percentile	Exposure	MOE	Percentile	Exposure	MOE
90.00	0.000000	>1,000,000	10.00	0.000020	10,177
80.00	0.000000	>1,000,000	5.00	0.000031	6,355
70.00	0.000000	>1,000,000	2.50	0.000046	4,311
60.00	0.000000	>1,000,000	1.00	0.000082	2,429
50.00	0.000000	>1,000,000	0.50	0.000129	1,544
40.00	0.000000	>1,000,000	0.25	0.000199	1,007
30.00	0.000002	91,525	0.10	0.000400	500
20.00	0.000009	22,039			

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U.S. Environmental Protection Agency
 DEEM ACUTE analysis for METHIDATHION

Ver. 6.54
 (1989-92 data)

Residue file name: methidat.R96

Adjustment factor #2 NOT used.

Analysis Date: 10-16-1998/10:23:19

Residue file dated: 10-16-1998/08:24:18/8

NOEL (Acute) = 0.200000 mg/kg body-wt/day

MC iterations = 1000

MC list in residue file

MC seed = 10

Summary calculations:

	95th Percentile		99th Percentile		99.9th Percentile	
	Exposure	MOE	Exposure	MOE	Exposure	MOE
U.S. pop - all seasons:	0.000045	4469	0.000130	1535	0.000498	401
All infants (<1 year):	0.000120	1663	0.000548	364	0.001267	157
Nursing infants (<1 year):	0.000032	6246	0.000244	821	0.001275	156
Non-nursing infants (<1 yr):	0.000160	1246	0.000636	314	0.001248	160
Children (1-6 years):	0.000110	1810	0.000297	673	0.001250	160
Children (7-12 years):	0.000068	2958	0.000183	1094	0.000874	228
Females (13+/preg/not nsg):	0.000038	5294	0.000277	721	0.000340	587
Females (13+/nursing):	0.000091	2196	0.000272	736	0.000442	452
Females (13-19 yrs/np/nn):	0.000031	6355	0.000082	2429	0.000400	500

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U.S. Environmental Protection Agency
 DEEM Acute analysis for METHIDATHION
 Residue file name: C:\deem96\RED\methidat.R96 Adjustment factor #2 NOT used.
 Analysis Date 10-16-1998 Residue file dated: 10-16-1998/08:24:18/8
 Reference dose (NOEL) .2 mg/day

Ver. 6.53
 1989-92 data

 RDF indices and file names for Monte Carlo Analysis

- 1 oj.rdf
- 2 Apple.rdf
- 3 pear.rdf
- 4 Aj.rdf
- 5 olive.rdf
- 6 orangmax.rdf
- 7 apricot.rdf
- 8 cher.rdf
- 9 nect.rdf
- 10 peach.rdf
- 11 plum.rdf
- 12 almond.rdf
- 13 pecan.rdf
- 14 walnut.rdf
- 15 grpfrtmin.rdf
- 16 orangmin.rdf
- 17 lemonmin.rdf
- 18 peachcan.rdf
- 19 cot_oil.rdf
- 20 kiwi.rdf
- 21 nutmax.rdf
- 22 Tangerin.rdf

Summary of Residue Distribution Files (RDF) listed in C:\deem96\RED\methidat.R96

RDF #	File Name	N residues w freq's	N residues w/o freq's	N LODs	LOD Value	N Zeros
1	oj.rdf	5	10	0	0	0
2	Apple.rdf	0	3	0	0	97
3	pear.rdf	0	11	0	0	89
4	Aj.rdf	4	0	0	0	0
5	olive.rdf	0	2	0	0	98
6	orangmax.rdf	0	11	0	0	89
7	apricot.rdf	0	18	0	0	82
8	cher.rdf	0	4	0	0	96
9	nect.rdf	0	38	0	0	62
10	peach.rdf	0	13	0	0	87
11	plum.rdf	0	3	0	0	7
12	almond.rdf	0	22	0	0	78
13	pecan.rdf	0	1	0	0	99
14	walnut.rdf	0	12	0	0	88
15	grpfrtmin.rdf	0	5	0	0	95
16	orangmin.rdf	0	11	0	0	89
17	lemonmin.rdf	0	2	0	0	98
18	peachcan.rdf	5	0	0	0	0
19	cot_oil.rdf	0	1	0	0	99
20	kiwi.rdf	0	26	0	0	74
21	nutmax.rdf	0	22	0	0	78
22	Tangerin.rdf	0	11	0	0	89

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Food Code	Crop Grp	Food Name	RESIDUE (ppm)	RDF #	Adj. Factors #1	Adj. Factors #2
020	10	Citrus citron	004.000000	6	01.000	01.000
022	10	Grapefruit-peeled fruit	004.000000	15	01.000	01.000
023	10	Grapefruit-juice	004.000000	1	01.000	01.000

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024	10	Kumquats	004.000000	6	01.000	01.000
026	10	Lemons-peeled fruit	004.000000	17	01.000	01.000
027	10	Lemons-peel	004.000000	17	46.000	01.000
028	10	Lemons-juice	004.000000	1	01.000	01.000
030	10	Limes-peeled fruit	004.000000	16	01.000	01.000
031	10	Limes-peel	004.000000	16	46.000	01.000
032	10	Limes-juice	004.000000	1	01.000	01.000
033	10	Oranges-juice-concentrate	004.000000	1	03.700	01.000
034	10	Oranges-peeled fruit	004.000000	16	01.000	01.000
035	10	Oranges-peel	004.000000	16	46.000	01.000
036	10	Oranges-juice	004.000000	1	01.000	01.000
037	10	Tangelos	004.000000	16	01.000	01.000
038	10	Tangerines	006.000000	22	01.000	01.000
039	10	Tangerines-juice	006.000000	1	01.000	01.000
040	14	Almonds	000.025000	12	01.000	01.000
041	14	Brazil nuts	000.025000	21	01.000	01.000
042	14	Cashews	000.025000	21	01.000	01.000
043	14	Chestnuts	000.025000	21	01.000	01.000
044	14	Filberts (hazelnuts)	000.025000	21	01.000	01.000
045	14	Hickory nuts	000.025000	21	01.000	01.000
046	14	Macadamia nuts (bush nuts)	000.025000	21	01.000	01.000
047	14	Pecans	000.025000	13	01.000	01.000
048	14	Walnuts	000.025000	14	01.000	01.000
049	14	Butter nuts	000.025000	21	01.000	01.000
051	14	Beechnuts	000.025000	21	01.000	01.000
052	11	Apples	000.025000	2	01.000	01.000
053	11	Apples-dried	000.025000	2	01.000	01.000
054	11	Apples-juice/cider	000.025000	4	01.000	01.000
055	11	Crabapples	000.025000	3	01.000	01.000
056	11	Pears	000.025000	3	01.000	01.000
057	11	Pears-dried	000.025000	3	01.000	01.000
058	11	Quinces	000.025000	3	01.000	01.000
059	12	Apricots	000.025000	7	01.000	01.000
060	12	Apricots-dried	000.025000	7	01.000	01.000
061	12	Cherries	000.025000	8	01.000	01.000
062	12	Cherries-dried	000.025000	8	01.000	01.000
063	12	Cherries-juice	000.025000	8	01.000	01.000
064	12	Nectarines	000.025000	9	01.000	01.000
065	12	Peaches	000.025000	10	01.000	01.000
		11-Uncooked	000.025000	10	01.000	01.000
		12-Cooked: NFS	000.025000	10	01.000	01.000
		13-Baked	000.025000	10	01.000	01.000
		14-Boiled	000.025000	10	01.000	01.000
		31-Canned: NFS	000.025000	18	01.000	01.000
		41-Frozen: NFS	000.025000	10	01.000	01.000
066	12	Peaches-dried	000.025000	10	01.000	01.000
067	12	Plums (damsons)	000.025000	11	01.000	01.000
068	12	Plums-prunes (dried)	000.025000	11	01.000	01.000
069	12	Plums/prune-juice	000.025000	11	01.000	01.000
080	0	Mangoes	000.025000		01.000	01.000
081	11	Loquats	000.025000	3	01.000	01.000

Food Code	Crop Grp	Food Name	RESIDUE (ppm)	RDF #	Adj. Factors #1	#2
082	O	Olives	000.050000	5	01.000	01.000
097	O	Kiwi fruit	000.100000	20	01.000	01.000
106	O	Carambola (starfruit)	000.100000		01.000	01.000
108	O	Longan fruit	000.100000		01.000	01.000
181	O	Artichokes-globe	000.025000		01.000	01.000
290	O	Cottonseed-oil	000.025000	19	01.000	01.000
291	O	Cottonseed-meal	000.025000	19	01.000	01.000
294	O	Safflower-seed	000.500000		01.000	01.000
295	O	Safflower-oil	000.010000		01.000	01.000
298	O	Sunflower-oil	000.010000		01.000	01.000
300	O	Olive oil	000.050000	5	01.000	01.000
377	11	Apples-juice-concentrate	000.025000	4	01.000	01.000
402	12	Peaches-juice	000.025000	10	01.000	01.000
404	11	Pears-juice	000.025000	3	01.000	01.000
410	12	Apricot juice	000.025000	7	01.000	01.000
417	O	Sunflower-seeds	000.500000		01.000	01.000
420	10	Tangerines-juice-concentrate	006.000000	1	03.200	01.000
431	14	Walnut oil	000.025000	14	01.000	01.000
441	10	Grapefruit-juice-concentrate	004.000000	1	03.900	01.000
442	10	Lemons-juice-concentrate	004.000000	1	05.700	01.000
443	10	Limes-juice-concentrate	004.000000	1	03.000	01.000
448	10	Grapefruit peel	004.000000	15	46.000	01.000

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