

Metaflumizone

Dietary Exposure and Risk Assessment

D393549



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OPP OFFICIAL RECORD  
HEALTH EFFECTS DIVISION  
SCIENTIFIC DATA REVIEWS  
EPA SERIES 361

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

Date: 14-September-2011

Subject: **Metaflumizone.** Acute and Chronic Dietary Exposure and Risk Assessment in Support of the Proposed Registration of Metaflumizone as a Granular Fly Bait.

|   |                             |
|---|-----------------------------|
| PC Code: 281250 (E Isomer); 281251 (Z Isomer) | DP Barcode: D393549         |
| Decision No.: 384157                          | Registration No.: 7699-226  |
| Petition No.: not applicable                  | Regulatory Action: fly bait |
| Risk Assessment Type: dietary                 | Case No.: 7446              |
| TXR No.: not applicable                       | CAS No.: 139968-49-3        |
| MRID No: none                                 | 40 CFR: 180.###             |

Reviewer/To: Tom Bloem, Chemist   
Risk Assessment Branch I/Health Effects Division (RABI/HED; 7509P)

Through: Amelia Acierto, Chemist, RABIII/HED   
Mohsen Sahafeyen, Chemist, RABVI/HED   
Dietary Exposure Science Advisory Council (DESAC)

George F. Kramer, Ph.D., Senior Chemist   
HED/RABI (7509P)

### Executive Summary

In support of the proposed metaflumizone fly bait application scenario, acute and chronic dietary risk assessments were conducted using the Dietary Exposure Evaluation Model - Food Consumption Intake Database (DEEM-FCID™, ver. 2.03) model. DEEM-FCID™ (ver. 2.03) incorporates consumption data from the United States Department of Agriculture (USDA) Continuing Surveys of Food Intakes by Individuals (CSFII; 1994-1996 and 1998). The acute and chronic dietary analyses assumed tolerance-level residues, 100% crop treated, and the Pesticide Root Zone Model-Exposure Analysis Modeling System (PRZM-EXAMS) drinking water estimates. DEEM™ (ver. 7.81) default processing factors were assumed for all commodities excluding grape raisin, grape juice, and citrus juice which were reduced to 1 based on empirical data (D345540, T. Bloem, 26-Jan-2010). The acute dietary risk estimate for females 13-49 years old was <1% of the acute population-adjusted dose (aPAD) and is, therefore, less than HED's level of concern (endpoint attributed to a single dose was not identified for the remaining population subgroups). The chronic dietary risk estimates were <1% the cPAD and are, therefore, less than HED's level of concern (children 1-2 years old were the most highly exposed population subgroup).

Revised in RAC  
9/24/2011  
ELC

## I. Introduction

Dietary risk assessment incorporates both exposure and toxicity of a given pesticide. For acute and chronic assessments, the risk is expressed as a percentage of a maximum acceptable dose (i.e., the dose which HED concluded will result in no unreasonable adverse health effects). This dose is referred to as the population-adjusted dose (PAD). The PAD is equivalent to point of departure (POD, NOAEL, LOAEL, e.g.) divided by the required uncertainty or safety factors. For acute and non-cancer chronic exposures, HED is concerned when estimated dietary risk exceeds 100% of the PAD. References which discuss the acute and chronic risk assessments in more detail are available on the EPA/pesticides web site: "Available Information on Assessing Exposure from Pesticides, A User's Guide," 21-Jun-2000, web link: [http://www.epa.gov/fedrgstr/EPA-PEST/2000/July/Day\\_2/6061.pdf](http://www.epa.gov/fedrgstr/EPA-PEST/2000/July/Day_2/6061.pdf); or see SOP 99.6 (20-Aug-1999). The most recent metaflumizone dietary exposure and risk analysis can be found in D366996 (T. Bloem, 26-Jan-2010).

## II. Residue Information

*Residues of Concern in Plants, Livestock, and Drinking Water:* Table 1 is a summary of the residues of concern in plants, livestock, rotational crops, and drinking water for tolerances expression and/or risk assessment (see Risk Assessment Document; D304496, R. Mitkus *et al.*, 24-Jan-2006).

HED notes the initial metaflumizone human-health risk assessment (D304496, R. Mitkus *et al.*, 24-Jan-2006) indicated that metaflumizone (E and Z isomers) and M320I23 were the residues of concern in drinking water and EFED provided estimated drinking water concentrations (EDWCs) for these compounds (D319414, M. Ruhman, 13-Mar-2006). Subsequent EDWC memorandum from EFED provided concentrations for parent only and noted that previously a conservative approach was taken by modeling parent plus M320I23. The environmental degradation section of the above referenced human-health risk assessment (Section 5.1.4) indicated the following: ...due to their low concentrations and slow formation, the environmental degradates of metaflumizone are not expected to be threats to surface water. Based on this and since the groundwater EDWC for combined parent and M320I23 was orders of magnitude lower than that for surface water, HED concludes that EDWCs representing parent only are acceptable.

| Matrix  | Residues included in Risk Assessment                     | Residues included in Tolerance Expression   |
|---|--|---|
| Plants <sup>1</sup>                               | metaflumizone (E and Z isomers) and M320I04              | metaflumizone (E and Z isomers) and M320I04 |
| Livestock (excluding ruminant liver) <sup>2</sup> | metaflumizone (E and Z isomers)                          | metaflumizone (E and Z isomers)             |
| Livestock ruminant liver <sup>2</sup>             | metaflumizone (E and Z isomers) and M320I28 <sup>3</sup> | metaflumizone (E and Z isomers)             |
| Rotational crops                                  | metaflumizone (E and Z isomers) and M320I04              | metaflumizone (E and Z isomers) and M320I04 |
| Drinking water                                    | metaflumizone (E and Z isomers)                          | Not applicable                              |

<sup>1</sup> This decision is contingent on the petitioner submitting data which address the following: (1) cabbage metabolism study - information pertaining to sample extraction and analysis dates; if the interval is > currently validated interval, then additional storage stability data are required; (2) cotton metabolism study - individual concentrations of the unknowns is needed; if any unknown comprises >10% of the total radioactive residue, then further characterization/identification procedures may be required (based on these data additional residues may be included for risk assessment).

<sup>2</sup> For future petitions, these conclusions will be re-evaluated; see Section 5.1.6 of D304496 (R. Mitkus *et al.*, 24-Jan-2006).

<sup>3</sup> Acetonitrile and acetic acid microwave extraction of the methanol extracted liver residues results in the formation of M320I28 (microwave assisted cleavage and/or derivatization; common moiety method).

*Established/Recommended Tolerances:* Residues are not expected in/on food/feed crops or livestock commodities as a result of the proposed fly bait application scenario. HED has previously recommended for establishment of tolerances in/on grape, the tree nut crop group, and the citrus crop group at 0.04 ppm (D345540, T. Bloem, 26-Jan-2010).

*Residues Used in the Acute and Chronic Dietary Risk Assessments:* The acute and chronic dietary analyses incorporated the previously HED-recommended 0.04 ppm tolerance for grape, the tree nut crop group, and the citrus crop group and assumed 100% crop treated for these crops (D345540, T. Bloem, 26-Jan-2010). The processing factors for grape raisin, grape juice, and citrus juice were reduced to 1 based on processing studies. Residues are not expected in/on food/feed crops or livestock commodities as a result of the proposed fly bait application scenario (see HED human-health risk assessment D393447 in draft).

### III. Drinking Water Data

Table 2 is a summary of the Environmental Fate and Effects Division (EFED) modeled ground (Screening Concentration in Groundwater (SCI-GROW)) and surface (Pesticide Root Zone Model-Exposure Analysis Modeling System (PRZM-EXAMS)) water estimated drinking water concentrations (EDWCs) resulting from the proposed fly bait application scenario (EFED memorandum; D383005 D367556, J. Meléndez, 3-Aug-2011). HED notes that these estimates are for parent only (see residues of concern paragraph above). These EDWCs are greater than those previously provided and were therefore incorporated into the current assessment. The water models and their description are available at the EPA internet site:

<http://www.epa.gov/oppefed1/models/water/>.

| Model                  | Yearly Application Rate           | Concentration (ppb) |              |
|------------------------|-----------------------------------|---------------------|--------------|
| Groundwater (SCI-GROW) | fly bait (26 x 0.0137 lb ai/acre) | acute and chronic   | 0.00214      |
| Surface water (FIRST)  | fly bait (26 x 0.0137 lb ai/acre) | acute               | <b>1.14</b>  |
|                        |                                   | chronic             | <b>0.597</b> |

<sup>1</sup> Bolded numbers were incorporated into the current analyses.

### IV. Program and Consumption Information

Acute and chronic dietary exposure assessments were conducted using DEEM-FCID™ (ver. 2.03) which incorporates consumption data from USDA's CSFII, 1994-1996 and 1998. The 1994-96, 98 data are based on the reported consumption of more than 20,000 individuals over two non-consecutive survey days. Foods "as consumed" (e.g., apple pie) are linked to EPA-defined food commodities (e.g. apples, peeled fruit - cooked; fresh or N/S; baked; or wheat flour - cooked; fresh or N/S, baked) using publicly available recipe translation files developed jointly by USDA/ARS and EPA. For chronic exposure assessment, consumption data are averaged for the entire U.S. population and within population subgroups, but for acute exposure assessment are retained as individual consumption events. Based on analysis of the 1994-96, 98 CSFII consumption data, which took into account dietary patterns and survey respondents, HED concluded that it is most appropriate to report risk for the following population subgroups: the general U.S. population, all infants (<1 year old), children 1-2, children 3-5, children 6-12, youth 13-19, adults 20-49, females 13-49, and adults 50+ years old.

For chronic dietary exposure assessment, an estimate of the residue level in each food or food-form (e.g., orange or orange juice) on the food commodity residue list is multiplied by the average daily consumption estimate for that food/food form to produce a residue intake estimate.

The resulting residue intake estimate for each food/food form is summed with the residue intake estimates for all other food/food forms on the commodity residue list to arrive at the total average estimated exposure. Exposure is expressed in mg/kg body weight/day and as a percent of the cPAD. This procedure is performed for each population subgroup.

For acute exposure assessments, individual one-day food consumption data are used on an individual-by-individual basis. The reported consumption amounts of each food item can be multiplied by a residue point estimate and summed to obtain a total daily pesticide exposure for a deterministic exposure assessment, or "matched" in multiple random pairings with residue values and then summed in a probabilistic assessment. The resulting distribution of exposures is expressed as a percentage of the aPAD on both a user (i.e., only those who reported eating relevant commodities/food forms) and a per-capita (i.e., those who reported eating the relevant commodities as well as those who did not) basis. In accordance with HED policy, per capita exposure and risk are reported for all tiers of analysis. However, for tiers 1 and 2, any significant differences in user vs. per capita exposure and risk are specifically identified and noted in the risk assessment.

## V. Toxicological Information

Table 3 is a summary of the endpoints chosen for dietary risk analysis. Based on toxicological considerations, the risk assessment team determined that a 3x Food Quality Protection Act (FQPA) safety factor (SF) is appropriate. For a more detailed discussion on the selection of these endpoints and the FQPA SF, see the HED risk assessment D???? (in draft).

| Exposure Scenario  | Dose Used in Risk Assessment, UF                               | FQPA SF or LOC for Risk Assessment           | Study and Toxicological Effects  |
|--|--|--|--|
| Acute Dietary-general population, including infants and children   | N/A  | N/A  | An endpoint of concern (effect) attributable to a single dose was not identified in the database. Quantification of acute risk to general population including infants and children is not required.   |
| Acute Dietary-females 13-49 years old                              | NOAEL = 100 mg/kg/day<br>UF = 100                              | FQPA SF = 3x<br>aPAD = aRfD = 0.33 mg/kg/day | Developmental toxicity (rabbit; gavage dosing)<br>Offspring LOAEL = 300 mg/kg/day based on absent subclavian artery  |
| Chronic Dietary-general population, including infants and children | NOAEL = 12 mg/kg/day<br>UF = 100                               | FQPA SF = 3x<br>cPAD = cRfD = 0.04 mg/kg/day | Chronic toxicity (dog; capsule dosing)<br>LOAEL = 30 mg/kg/day based on reduced general health condition, slight to severe ataxia, recumbency, and severe salivation, decreases in MCHC and total Hb and increased bilirubin, increased urobilinogen, and increased hemosiderin in the liver |
| Cancer (oral, dermal, inhalation)                                  | <b>Classification:</b> Not likely to be carcinogenic to humans |  |  |

UF = uncertainty factor, FQPA SF = Special FQPA Safety Factor, NOAEL = no-observed adverse-effect level, LOAEL = lowest-observed adverse-effect level, RfD = reference dose (a = acute, c = chronic), PAD = population-adjusted dose, MOE = margin of exposure, LOC = level of concern, N/A = Not Applicable

## VI. Results/Discussion

The acute dietary risk estimate for females 13-49 years old was <1% of the aPAD and is, therefore, less than HED's level of concern (endpoint attributed to a single dose was not identified for the remaining population subgroups). The chronic dietary risk estimates were <1% the cPAD and are, therefore, less than HED's level of concern (children 1-2 years old were the most highly exposed population subgroup). Table 4 is a summary of the acute and chronic dietary risk analyses.

**Table 4. Summary of Acute and Chronic Dietary Exposure and Risk for Metaflumizone (drinking water included).**

| Population Subgroup        | Acute                  |                         |       | Chronic             |                         |          |
|----------------------------|------------------------|-------------------------|-------|---------------------|-------------------------|----------|
|                            | aPAD<br>(mg/kg/day)    | Exposure<br>(mg/kg/day) | %aPAD | cPAD<br>(mg/kg/day) | Exposure<br>(mg/kg/day) | %cPAD    |
| General U.S. Population    | no endpoint identified | 0.000329                | <1.0  | 0.04                | 0.000092                | <1.0     |
| All Infants (< 1 year old) |                        |                         |       |                     | 0.000102                | <1.0     |
| Children 1-2 years old     |                        |                         |       |                     | 0.000323                | <1.0     |
| Children 3-5 years old     |                        |                         |       |                     | 0.000239                | <1.0     |
| Children 6-12 years old    |                        |                         |       |                     | 0.000132                | <1.0     |
| Youth 13-19 years old      |                        |                         |       |                     | 0.000079                | <1.0     |
| Adults 20-49 years old     |                        |                         |       |                     | 0.000066                | <1.0     |
| Adults 50+ years old       |                        |                         |       |                     | 0.000071                | <1.0     |
| Females 13-49 years old    |                        |                         |       |                     | 0.33                    | 0.000329 |

## VII. Characterization of Inputs/Outputs

The acute and chronic analyses assumed tolerance-level residues, 100% crop treated, and screening-level drinking water estimates. Therefore, the resulting exposure estimates are conservative.

## VIII. Conclusions

The DEEM-FCID (ver 2.03) acute and chronic dietary risk estimates are less than HED's level of concern (drinking water estimates were incorporated).

## IX. List of Attachments

- Attachment 1: DEEM-FCID™ acute exposure and risk estimates
- Attachment 2: DEEM-FCID™ acute residue file
- Attachment 3: DEEM-FCID™ chronic exposure and risk estimates
- Attachment 4: DEEM-FCID™ chronic residue file

T. Bloem:S10945:Potomac Yard 1:703-605-0217:7509P:RAB1

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**Attachment 1: DEEM-FCID™ acute exposure and risk estimates**

U.S. Environmental Protection Agency Ver. 2.02  
 DEEM-FCID ACUTE Analysis for METFLUMIZONE (1994-98 data)  
 Residue file: 281251a.R98 Adjustment factor #2 NOT used.  
 Analysis Date: 08-31-2011/08:58:36 Residue file dated: 08-31-2011/08:57:01/8  
 NOEL (Acute) = 100.000000 mg/kg body-wt/day  
 Daily totals for food and foodform consumption used.  
 Run Comment: "acute and chronic FQPA SF of 3x"

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 Summary calculations (per capita):

|                                      | 95th Percentile |        |          | 99th Percentile |        |          | 99.9th Percentile |        |     |
|--------------------------------------|-----------------|--------|----------|-----------------|--------|----------|-------------------|--------|-----|
|                                      | Exposure        | % aRfD | MOE      | Exposure        | % aRfD | MOE      | Exposure          | % aRfD | MOE |
| Females 13+ (preg/not nursing):      |                 |        |          |                 |        |          |                   |        |     |
| 0.000299                             | 0.09            | 333931 | 0.000464 | 0.14            | 215566 | 0.000821 | 0.25              | 121782 |     |
| Females 13+ (nursing):               |                 |        |          |                 |        |          |                   |        |     |
| 0.000357                             | 0.11            | 279874 | 0.000425 | 0.13            | 235407 | 0.000548 | 0.17              | 182346 |     |
| Females 13-19 (not preg or nursing): |                 |        |          |                 |        |          |                   |        |     |
| 0.000372                             | 0.11            | 269146 | 0.000683 | 0.21            | 146452 | 0.000956 | 0.29              | 104564 |     |
| Females 20+ (not preg or nursing):   |                 |        |          |                 |        |          |                   |        |     |
| 0.000292                             | 0.09            | 342758 | 0.000501 | 0.15            | 199756 | 0.000941 | 0.29              | 106216 |     |
| Females 13-50 yrs:                   |                 |        |          |                 |        |          |                   |        |     |
| 0.000328                             | 0.10            | 304981 | 0.000560 | 0.17            | 178610 | 0.000963 | 0.29              | 103796 |     |
| Females 13-49 yrs:                   |                 |        |          |                 |        |          |                   |        |     |
| 0.000329                             | 0.10            | 303616 | 0.000563 | 0.17            | 177537 | 0.000965 | 0.29              | 103619 |     |

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**Attachment 2: DEEM-FCID™ acute residue file**

Filename: C:\Documents and Settings\tbloem\metaflumizone\281251a.R98

Chemical: metflumizone

RfD(Chronic): .04 mg/kg bw/day NOEL(Chronic): 12 mg/kg bw/day

RfD(Acute): .33 mg/kg bw/day NOEL(Acute): 100 mg/kg bw/day

Date created/last modified: 08-31-2011/08:57:01/8

Program ver. 2.03

Comment: acute and chronic FQPA SF of 3x

| EPA Code | Crop Grp | Commodity Name               | Def Res (ppm) | Adj. Factors #1 | Adj. Factors #2 | Comment |
|----------|----------|------------------------------|---------------|-----------------|-----------------|---------|
| 10001060 | 10       | Citrus citron                | 0.040000      | 1.000           | 1.000           |         |
| 10001070 | 10       | Citrus hybrids               | 0.040000      | 1.000           | 1.000           |         |
| 10001080 | 10       | Citrus, oil                  | 0.040000      | 1.000           | 1.000           |         |
| 10001800 | 10       | Grapefruit                   | 0.040000      | 1.000           | 1.000           |         |
| 10001810 | 10       | Grapefruit, juice            | 0.040000      | 1.000           | 1.000           |         |
| 10001970 | 10       | Kumquat                      | 0.040000      | 1.000           | 1.000           |         |
| 10001990 | 10       | Lemon                        | 0.040000      | 1.000           | 1.000           |         |
| 10002000 | 10       | Lemon, juice                 | 0.040000      | 1.000           | 1.000           |         |
| 10002001 | 10       | Lemon, juice-babyfood        | 0.040000      | 1.000           | 1.000           |         |
| 10002010 | 10       | Lemon, peel                  | 0.040000      | 1.000           | 1.000           |         |
| 10002060 | 10       | Lime                         | 0.040000      | 1.000           | 1.000           |         |
| 10002070 | 10       | Lime, juice                  | 0.040000      | 1.000           | 1.000           |         |
| 10002071 | 10       | Lime, juice-babyfood         | 0.040000      | 1.000           | 1.000           |         |
| 10002400 | 10       | Orange                       | 0.040000      | 1.000           | 1.000           |         |
| 10002410 | 10       | Orange, juice                | 0.040000      | 1.000           | 1.000           |         |
| 10002411 | 10       | Orange, juice-babyfood       | 0.040000      | 1.000           | 1.000           |         |
| 10002420 | 10       | Orange, peel                 | 0.040000      | 1.000           | 1.000           |         |
| 10003070 | 10       | Pummelo                      | 0.040000      | 1.000           | 1.000           |         |
| 10003690 | 10       | Tangerine                    | 0.040000      | 1.000           | 1.000           |         |
| 10003700 | 10       | Tangerine, juice             | 0.040000      | 1.000           | 1.000           |         |
| 14000030 | 14       | Almond                       | 0.040000      | 1.000           | 1.000           |         |
| 14000031 | 14       | Almond-babyfood              | 0.040000      | 1.000           | 1.000           |         |
| 14000040 | 14       | Almond, oil                  | 0.040000      | 1.000           | 1.000           |         |
| 14000041 | 14       | Almond, oil-babyfood         | 0.040000      | 1.000           | 1.000           |         |
| 14000590 | 14       | Brazil nut                   | 0.040000      | 1.000           | 1.000           |         |
| 14000680 | 14       | Butternut                    | 0.040000      | 1.000           | 1.000           |         |
| 14000810 | 14       | Cashew                       | 0.040000      | 1.000           | 1.000           |         |
| 14000920 | 14       | Chestnut                     | 0.040000      | 1.000           | 1.000           |         |
| 14001550 | 14       | Filbert                      | 0.040000      | 1.000           | 1.000           |         |
| 14001560 | 14       | Filbert, oil                 | 0.040000      | 1.000           | 1.000           |         |
| 14001850 | 14       | Hickory nut                  | 0.040000      | 1.000           | 1.000           |         |
| 14002130 | 14       | Macadamia nut                | 0.040000      | 1.000           | 1.000           |         |
| 14002690 | 14       | Pecan                        | 0.040000      | 1.000           | 1.000           |         |
| 14002820 | 14       | Pistachio                    | 0.040000      | 1.000           | 1.000           |         |
| 14003910 | 14       | Walnut                       | 0.040000      | 1.000           | 1.000           |         |
| 86010000 | 0        | Water, direct, all sources   | 0.001140      | 1.000           | 1.000           |         |
| 86020000 | 0        | Water, indirect, all sources | 0.001140      | 1.000           | 1.000           |         |
| 95001750 | 0        | Grape                        | 0.040000      | 1.000           | 1.000           |         |
| 95001760 | 0        | Grape, juice                 | 0.040000      | 1.000           | 1.000           |         |
| 95001761 | 0        | Grape, juice-babyfood        | 0.040000      | 1.000           | 1.000           |         |
| 95001770 | 0        | Grape, leaves                | 0.040000      | 1.000           | 1.000           |         |
| 95001780 | 0        | Grape, raisin                | 0.040000      | 1.000           | 1.000           |         |
| 95001790 | 0        | Grape, wine and sherry       | 0.040000      | 1.000           | 1.000           |         |

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**Attachment 3: DEEM-FCID™ chronic exposure and risk estimates**

U.S. Environmental Protection Agency Ver. 2.00  
 DEEM-FCID Chronic analysis for METFLUMIZONE (1994-98 data)  
 Residue file name: C:\Documents and Settings\tbloem\metaflumizone\281251c.R98  
 Adjustment factor #2 NOT used.  
 Analysis Date 08-31-2011/08:58:59 Residue file dated: 08-31-2011/08:57:48/8  
 Reference dose (RfD, Chronic) = .04 mg/kg bw/day  
 COMMENT 1: acute and chronic FQPA SF of 3x

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Total exposure by population subgroup

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| Population Subgroup                 | Total Exposure    |                |
|-------------------------------------|-------------------|----------------|
|                                     | mg/kg body wt/day | Percent of Rfd |
| U.S. Population (total)             | 0.000092          | 0.2%           |
| U.S. Population (spring season)     | 0.000092          | 0.2%           |
| U.S. Population (summer season)     | 0.000090          | 0.2%           |
| U.S. Population (autumn season)     | 0.000089          | 0.2%           |
| U.S. Population (winter season)     | 0.000098          | 0.2%           |
| Northeast region                    | 0.000114          | 0.3%           |
| Midwest region                      | 0.000087          | 0.2%           |
| Southern region                     | 0.000080          | 0.2%           |
| Western region                      | 0.000096          | 0.2%           |
| Hispanics                           | 0.000111          | 0.3%           |
| Non-hispanic whites                 | 0.000087          | 0.2%           |
| Non-hispanic blacks                 | 0.000097          | 0.2%           |
| Non-hisp/non-white/non-black        | 0.000111          | 0.3%           |
| All infants (< 1 year)              | 0.000102          | 0.3%           |
| Nursing infants                     | 0.000039          | 0.1%           |
| Non-nursing infants                 | 0.000127          | 0.3%           |
| Children 1-6 yrs                    | 0.000256          | 0.6%           |
| Children 7-12 yrs                   | 0.000125          | 0.3%           |
| Females 13-19 (not preg or nursing) | 0.000077          | 0.2%           |
| Females 20+ (not preg or nursing)   | 0.000071          | 0.2%           |
| Females 13-50 yrs                   | 0.000077          | 0.2%           |
| Females 13+ (preg/not nursing)      | 0.000076          | 0.2%           |
| Females 13+ (nursing)               | 0.000086          | 0.2%           |
| Males 13-19 yrs                     | 0.000080          | 0.2%           |
| Males 20+ yrs                       | 0.000064          | 0.2%           |
| Seniors 55+                         | 0.000071          | 0.2%           |
| Children 1-2 yrs                    | 0.000323          | 0.8%           |
| Children 3-5 yrs                    | 0.000239          | 0.6%           |
| Children 6-12 yrs                   | 0.000132          | 0.3%           |
| Youth 13-19 yrs                     | 0.000079          | 0.2%           |
| Adults 20-49 yrs                    | 0.000066          | 0.2%           |
| Adults 50+ yrs                      | 0.000071          | 0.2%           |
| Females 13-49 yrs                   | 0.000071          | 0.2%           |

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**Attachment 4: DEEM-FCID™ chronic residue file**

Filename: C:\Documents and Settings\tbloem\metaflumizone\281251c.R98

Chemical: metflumizone

RfD(Chronic): .04 mg/kg bw/day NOEL(Chronic): 12 mg/kg bw/day

RfD(Acute): .33 mg/kg bw/day NOEL(Acute): 100 mg/kg bw/day

Date created/last modified: 08-31-2011/08:57:48/8

Program ver. 2.03

Comment: acute and chronic FQPA SF of 3x

| EPA Code | Crop Grp | Commodity Name               | Def Res (ppm) | Adj.Factors #1 | Adj.Factors #2 | Comment |
|----------|----------|------------------------------|---------------|----------------|----------------|---------|
| 10001060 | 10       | Citrus citron                | 0.040000      | 1.000          | 1.000          |         |
| 10001070 | 10       | Citrus hybrids               | 0.040000      | 1.000          | 1.000          |         |
| 10001080 | 10       | Citrus, oil                  | 0.040000      | 1.000          | 1.000          |         |
| 10001800 | 10       | Grapefruit                   | 0.040000      | 1.000          | 1.000          |         |
| 10001810 | 10       | Grapefruit, juice            | 0.040000      | 1.000          | 1.000          |         |
| 10001970 | 10       | Kumquat                      | 0.040000      | 1.000          | 1.000          |         |
| 10001990 | 10       | Lemon                        | 0.040000      | 1.000          | 1.000          |         |
| 10002000 | 10       | Lemon, juice                 | 0.040000      | 1.000          | 1.000          |         |
| 10002001 | 10       | Lemon, juice-babyfood        | 0.040000      | 1.000          | 1.000          |         |
| 10002010 | 10       | Lemon, peel                  | 0.040000      | 1.000          | 1.000          |         |
| 10002060 | 10       | Lime                         | 0.040000      | 1.000          | 1.000          |         |
| 10002070 | 10       | Lime, juice                  | 0.040000      | 1.000          | 1.000          |         |
| 10002071 | 10       | Lime, juice-babyfood         | 0.040000      | 1.000          | 1.000          |         |
| 10002400 | 10       | Orange                       | 0.040000      | 1.000          | 1.000          |         |
| 10002410 | 10       | Orange, juice                | 0.040000      | 1.000          | 1.000          |         |
| 10002411 | 10       | Orange, juice-babyfood       | 0.040000      | 1.000          | 1.000          |         |
| 10002420 | 10       | Orange, peel                 | 0.040000      | 1.000          | 1.000          |         |
| 10003070 | 10       | Pummelo                      | 0.040000      | 1.000          | 1.000          |         |
| 10003690 | 10       | Tangerine                    | 0.040000      | 1.000          | 1.000          |         |
| 10003700 | 10       | Tangerine, juice             | 0.040000      | 1.000          | 1.000          |         |
| 14000030 | 14       | Almond                       | 0.040000      | 1.000          | 1.000          |         |
| 14000031 | 14       | Almond-babyfood              | 0.040000      | 1.000          | 1.000          |         |
| 14000040 | 14       | Almond, oil                  | 0.040000      | 1.000          | 1.000          |         |
| 14000041 | 14       | Almond, oil-babyfood         | 0.040000      | 1.000          | 1.000          |         |
| 14000590 | 14       | Brazil nut                   | 0.040000      | 1.000          | 1.000          |         |
| 14000680 | 14       | Butternut                    | 0.040000      | 1.000          | 1.000          |         |
| 14000810 | 14       | Cashew                       | 0.040000      | 1.000          | 1.000          |         |
| 14000920 | 14       | Chestnut                     | 0.040000      | 1.000          | 1.000          |         |
| 14001550 | 14       | Filbert                      | 0.040000      | 1.000          | 1.000          |         |
| 14001560 | 14       | Filbert, oil                 | 0.040000      | 1.000          | 1.000          |         |
| 14001850 | 14       | Hickory nut                  | 0.040000      | 1.000          | 1.000          |         |
| 14002130 | 14       | Macadamia nut                | 0.040000      | 1.000          | 1.000          |         |
| 14002690 | 14       | Pecan                        | 0.040000      | 1.000          | 1.000          |         |
| 14002820 | 14       | Pistachio                    | 0.040000      | 1.000          | 1.000          |         |
| 14003910 | 14       | Walnut                       | 0.040000      | 1.000          | 1.000          |         |
| 86010000 | 0        | Water, direct, all sources   | 0.000597      | 1.000          | 1.000          |         |
| 86020000 | 0        | Water, indirect, all sources | 0.000597      | 1.000          | 1.000          |         |
| 95001750 | 0        | Grape                        | 0.040000      | 1.000          | 1.000          |         |
| 95001760 | 0        | Grape, juice                 | 0.040000      | 1.000          | 1.000          |         |
| 95001761 | 0        | Grape, juice-babyfood        | 0.040000      | 1.000          | 1.000          |         |
| 95001770 | 0        | Grape, leaves                | 0.040000      | 1.000          | 1.000          |         |
| 95001780 | 0        | Grape, raisin                | 0.040000      | 1.000          | 1.000          |         |
| 95001790 | 0        | Grape, wine and sherry       | 0.040000      | 1.000          | 1.000          |         |



13544

# R194773

**Chemical Name:** Metaflumizone  
4-{{(2Z)-2-({[4-(TRIFLUOROMETHOXY)ANILINO]CARBONYL}  
HYDRAZONO)-2-[3-  
(TRIFLUOROMETHYL)PHENYL]ETHYL}BENZONITRILE

**PC Code:** 281250

281251

**HED File Code:** 11000 Chemistry Reviews

**Memo Date:** 9/14/2011

**File ID:** 00000000

**Accession #:** 000-00-0137

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9/22/2011