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WASHINGTON D.C., 20460

OFFICE OF
CHEMICAL SAFETY AND
POLLUTION PREVENTION

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MEMORANDUM

SUBJECT: Emergency Exemption (Section 18) Dinotefuran Drinking Water Assessment for Use on Pome Fruit and Stone Fruit to Control the Brown Marmorated Stink Bug (BMSB) (*Halyomorpha halys*)

TO: Marcel Howard
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05/26/2011

THROUGH: Dana Spatz, Chief 5/26/11
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Katrina White 5/26/2011

Executive Summary

This memo summarizes the Environmental Fate and Effects Division's (EFED) Section 18 drinking water risk assessment for use on pome fruit and stone fruit to control the brown marmorated stink bug (BMSB).

The Virginia Department of Agriculture & Consumer Services has taken the lead in requesting an Emergency Exemption (Section 18) to control a BMSB infestation in pome fruit and stone fruit in Virginia, Delaware, North Carolina, West Virginia, Pennsylvania, New Jersey and Maryland. This section 18 would permit use of dinotefuran to control this infestation in all seven states.

Estimated Drinking Water Concentrations (EDWCs) simulated with the EFED FIRST model for the proposed new uses are approximately 20% higher than the EDWCs calculated previously by EFED. Table 1 below includes new concentrations for both parent dinotefuran and for the same four degradates of toxicological concern that were included in the previous drinking water assessment. Use on pome and stone fruits resulted in peak and annual average (chronic) surface water EDWC of 91.31 and 25.16 μg/L, respectively.

Estimated surface water concentrations were higher than groundwater concentrations. Use on pome and stone fruits resulted in an estimated groundwater concentration of 3.5 μg/L.

Both parent and degradate concentrations change linearly and equally with the application rate. Each degradate concentration in this assessment have been calculated by assuming a constant parent /degradate concentration ratio. Concentrations for degradates in groundwater have been adjusted relatively to the new SCIGROW concentration for dinotefuran on pome & stone fruits and on turfgrass.

This is a tier 1 exposure assuming that peak concentrations for the parent and all four degradates occur simultaneously.

Table 1. Tier 1 EDWC for Dinotefuran Uses on Pome & Stone Fruits (p&s) and on Turf.[1]

Crop (Scenario)	Percent Cropped Area (PCA)	Acute (peak) Surface Water Concentration (ppb)	Annual Average Surface Water Concentration (ppb)	Ground Water Concentration (ppb)
Pome and Stone Fruit (0.304 lbs ai/A, 2 applications, 7 day interval, airblast)	100%[2]	58.07	9.54	1.91
Turf Grass (0.54 lb ai/A, 1 application, aerial)	100%[2]	49.8	8.2	1.71
Degradates				
MNG	100%[2]	4.65	1.96	0.59 (p&s) 0.53 (turf)
DN	100%[2]	9.36	4.00	0.13 (p&s) 0.12 (turf)
UF	100%[2]	4.91	2.49	0.22 (p&s) 0.20 (turf)
DN-2-OH[3]	100%[2]	14.32	7.17	0.65 (p&s) 0.58 (turf)
Parent + All Degradates (Pome & Stone Fruits) (Assuming All Peaks Occur Simultaneously)	100%[2]	**91.31**	**25.16**	**3.5**

1 Parent residues are for the parent compound alone.
2 http://www.epa.gov/oppefed1/models/water/pca_adjustment_dwa.html
3 DN-2-OH represents DN-2-OH+DN-3-OH. These two were reported as one metabolite in the study.

Proposed Application Rate and Method Information for Use of Dinotefuran to Control the Brown Marmorated Stink Bug (BMSB) on Pome Fruit and Stone Fruit

The proposed maximum application amounts and methods for BMSB control are two foliar applications which range from 0.263 to 0.304 pound per acre at a minimum spacing of 7 days. See Table 2 below.

Table 2. Proposed Label Usage Information for Control of BMSB Pome & Stone Fruit

Source	Maximum Single Application Rate (lbs ai/A)	Maximum Number of Applications	Minimum Application Interval	Methods of Application
Venom Label (VA)	0.302	2 (based on 0.604 lb ai/A/season)	7	Foliar, Air or ground spray
Venom Label (DE)	0.263	2 (based on 0.526 lbs ai/season)	7	Foliar, Air or ground spray
Scorpion Label (DE, MD, NJ, NC, PA, VA, and WV)[1]	0.304	2 (based on 0.608 lbs ai/A/season)	7	Foliar spray, ground application

[1]The VA application recommends applications occur between April 15 and October 15.

ENVIRONMENTAL FATE CHARACTERIZATION

Dinotefuran has a molecular weight of 202.2 g/mole, a very high water solubility (39,830 ppm), and a low octanol/water partition coefficient (K_{OW} = 0.283), suggesting the potential for runoff and low bioaccumulation. The low vapor pressure (1.275 x 10^{-8} mm Hg) and a low Henrys's Law Constant (8.63 x 10^{-14} Atm • M^3/mol) suggest that this compound is not expected to volatilize substantially from water or soils in natural environment. The following environmental fate assessment for Dinotefuran was based on the data submitted by the registrant to support the environmental fate data requirements for terrestrial food crop uses. The Environmental fate and physico-chemical properties of Dinotefuran are listed in the Table 3 below.

Table 3. Summary Results of Environmental Fate and Physiochemical Parameters for Dinotefuran		
Parameter	**Value**	**Reference/ Comments**
Selected Physical Chemical Parameters		
Chemical Classification	Nitroguanidine	
Pesticide Classification	Systemic Insecticide	
Molecular Weight	202.2 g/mol	MRID # 45640101
Water Solubility (20°C)	39,830 ppm	MRID# 45640112
Vapor pressure (30°C)	<1.275x10^{-8} mm Hg	MRID# 45640105
Henry's Law Constant	8.63 x 10^{-14} Atm m^3/mol	Calculated
Octanol/Water Partition, K_{ow}	0.283	MRID # 45639702
log K_{OW}	-0.549	MRID # 45639702
Abiotic and Biotic Degradation		
Hydrolysis $t_{1/2}$ Parent pH 4 (50°C) pH 7 (50°C) pH 9 (50°C) pH 11 (50°C) pH 13 (50°C) Parent pH 4 (25°C) pH 7 (25°C) pH 9 (25°C) MNG pH 4, 7, and 9 (51°C) DN-Phosphate pH 4, 7, and 9 (50°C)	 ~stable ~stable ~48 days 1.9 days 0.18 days stable stable stable No major degradates at 25°C. stable stable Transformation products were not confirmed for dinotefuran at high temperatures.	 MRID# 45640101 (s) MRID# 45640102 (a) MRID# 45640103 (s) MRID# 45640104 (s)
Photolysis $t_{1/2}$ in water Parent	Invalid study 1.8 days (pH 7 buffer solution) Major products: UF, MG hydrogen chloride, DN-2-OH, DN-3-OH, BCDN succinate, CO_2, Minor Product : DN	MRID# 45640106 (u) MRID# 45640105 (s)
Photolysis $t_{1/2}$ in water MNG	2.4 days (assuming 12-hr light/dark cycle) in pH 7.1-7.2 buffer solution. Major products: G (max. 50.6% @ 6.8 days), MU (max. 18.6% @ 6.8 days). Minor Products: NG, and MG	MRID# 45640107 (s)
Photolysis $t_{1/2}$ in water DN-Phosphate pH 5 pH 7 pH 9	 53.4 days (12-hr light/dark cycle); major product: MG; 533.2 days (12-hr. light/dark cycle), minor product: MG; stable	MRID# 45640108 (s)
Photolysis $t_{1/2}$ in soil parent	Dinotefuran is persistent to soil photolysis	MRID# 45640109 and D316645 (s)
Photolysis $t_{1/2}$ in air parent	Unacceptable study	MRID# 45640110 (u)

Table 3. Summary Results of Environmental Fate and Physiochemical Parameters for Dinotefuran		
Parameter	**Value**	**Reference/ Comments**
Aerobic Soil metabolism $t_{1/2}$ parent	US Soil - LS 87.7 days, major degradate MNG (max. 14.5% @ 181 days) Five US soils, half-lives range: 17 - 89 days, major degradates MNG (max. 24.0% @ 42 days) and NG (max. 14.3% @ 42 days) Switzerland SiL – 16 days; major degradate MNG (max. 15.6% @ 28 d)	MRID# 45640112 and 46751101 (a) ~~MRID# 45640111 (s)~~ MRID# 46711201 (s)
Aerobic Soil metabolism $t_{1/2}$ MNG	$t_{1/2}$ = 67 days for the SiL, 166 days for the SL, and 73 days for the ClL, major degradate NG (25.7% @ study termination or 120 days)	MRID# 46711202 (s)
Aerobic Soil metabolism $t_{1/2}$ NG	At study termination (98 days) in nitro-guanidine treated soils, mineralized N levels were 37%, 46% and 63% for the SL, SiL and SiL, respectively, at the 100 µg N/g soil rate and 6%, 10% and 15%, respectively, at the 500 µg N/g soil rate.	MRID# 46751103 (s)
Anaerobic Soil metabolism $t_{1/2}$ parent	SiL soil from Switzerland 62 days; water 51 days, major degradate-DN (max. 29.2%@120 days)	MRID# 45891616 (s)
Aerobic Aquatic metabolism $t_{1/2}$ parent	Study using two radiolabeled materials: 79.3 days (total river system); 76 days (total pond system); major degradate: DN [max. 23.1% (17.6% in sediment + 5.5 % in water)@ 180d in river system and 32.6%(31.1% in sediment+1.5% in water) @ 103d in pond system]	MRID # 45640117 (s)
Anaerobic Aquatic metabolism $t_{1/2}$ parent	Study using radiolabeled material. 51 days (water), 62 days (soil); major degradate: none in water phase.	MRID# 45891616 (s)
Mobility		
Mobility in Soils Parent – Dinotefuran	<u>Parent</u> <u>Soil Source K_d K_{OC}</u> L US III 1.01 42 SL US I 0.71 45 CL US (MN) 1.22 42 LS Germany 0.12 6 SiL France 0.22 22 <u>Parent (screening study conducted at one concentration)</u> <u>Soil Source K_d K_{OC}</u> CL Japan 0.60 23.3 L Japan 0.38 31.4 C Japan 1.12 33.6 LS Japan 0.38 25.3	L - Loam; SL - Sandy Loam; CL - Clay Loam; LS- Loamy Sand; SiL - <u>Silty Loam; C - Clay</u> MRID# 45640114 (a) MRID# 45640115 (s)
Mobility in Soils	<u>Soil Source K_d K_{OC}</u>	MRID# 45640116 (s)

Table 3. Summary Results of Environmental Fate and Physiochemical Parameters for Dinotefuran		
Parameter	**Value**	**Reference/ Comments**
MNG	L US III 0.75 31 SL US I 0.12 8 CL US (MN) 0.70 24 LS Germany 0.16 8 SiL France 0.16 16	
Mobility in Soils DN-Phosphate	Soil Source K_d K_{OC} L US III 2.08 87 SL US I 2.07 58 CL US (MN) 72.54 2502 SL Germany 2.93 413 C Switzerland 7.11 270	MRID# 45640113 (s)
Terrestrial Field Dissipation		
Terrestrial Field Dissipation parent	**CA** (SL) $t_{1/2}$ = 65.2 days MNG (degradate) was detected in 0-15 cm soil at 31.5% @ 45 days after 2nd application. **GA** (SL) $t_{1/2}$ = 19.4 days MNG was detected in 0-15 cm soil at 5.3% max. mean concentration after 7 and 30 days after the 2nd application. **NY** (SL) $t_{1/2}$ = 55.9 days MNG was detected in 0-15 cm soil at 6.6% @ 45 and 120 days after the second application. Applied 2X @ 0.268 lb a.i/A @ 14-day interval to bare soil.	MRID# 45640118 (a)
Bioaccumulation		
Accumulation in Fish, max. BCF	NA	Waived (K_{OW} = 0.28)
* (a) = acceptable study that fulfills guideline requirement; (s) = supplemental study; (u) = unacceptable study; NA=Not Available; N/A=Not Applicable		

The major route of dissipation for dinotefuran appears to be aqueous photolysis (half-life 1.8 days) and leaching. Since there is no valid soil photolysis data, it is unknown if dinotefuran parent residues break down quickly in soil via photolysis. Dinotefuran appears to be relatively persistent to metabolism, both in aerobic (half-life = 17-89 days) and anaerobic (half-life = 51-62 days) conditions. It appears that under metabolic conditions, dinotefuran degrades to MNG and subsequently to NG. Dinotefuran is stable to hydrolysis in a range of pH's of 4-9. It is considered to be very highly mobile (K_{oc} = 6 – 45 L/kg-$_{OC}$) in various soil types. It is also very highly soluble (39,830 ppm). Since dinotefuran may persist in soils, it may have a high potential to leach to subsurfaces. Furthermore, it can migrate to adjacent bodies of water through spray drift and in runoff events, probably dissolved in the water column. Once in the rivers, ponds, or other bodies of water, the fate of dinotefuran is somewhat uncertain. Aqueous photolysis should be important in clear and shallow bodies of water; however, in deep ponds or rivers or flowing bodies of water, it is more likely to dissipate via dissolution, and subsequently via metabolism.

Degradates of Dinotefuran (See Figure 1, below)

There were six major transformation products identified in the laboratory studies (MNG, DN, UF, MG-HCl, DN-2-OH + DN-3-OH, and BCDN succinate). The degradate MNG was identified as a major product in aerobic soil metabolism and in the terrestrial field dissipation studies. The degradate, DN, was identified as a major product in anaerobic soil metabolism and aerobic aquatic metabolism studies.

As indicated earlier, it appears that the major route of dissipation for dinotefuran is aqueous photolysis (half-life 1.8 days), with the formation of multiple photolysates. Due to the fast dissipation of dinotefuran by aqueous photolysis, there is a likelihood that it may also dissipate via soil photolysis, but no data are available at this time. The photolysis half-life of a major transformation product, MNG, in a pH 7 buffer was 2.4 days, assuming a 12-hour light/dark cycle. A separate aqueous photolysis study of DN-phosphate, another transformation product of dinotefuran, in pH 7 buffer, resulted in an extrapolated half-life of 533 days assuming a 12-hour light/dark cycle.

DN phosphate (1-methyl-3-(tetrahydro-3-furylmethyl)guanidinium dihydrogen phosphate) was identified as a degradation product of dinotefuran in photodegradation in soil (MRID 45640109), photodegradation in water (MRID 45640106, 45640105) and anaerobic soil metabolism (MRID 45891616) studies. Although the phosphorus is not an elemental constituent of parent dinotefuran, DN phosphate was formed as a salt of orthophosphate and 1-methyl- 3-(tetrahydro-3-furylmethyl)guanidinium. Because the DN phosphate salt will dissociate in soil and aquatic environments to form (1-methyl-3-(tetrahydro-3-furylmethyl)guanidinium) and phosphoric acid, it is not expected to alter the environmental fate or toxicity of the organic moiety of DN phosphate (1-methyl-3-(tetrahydro-3-furylmethyl)guanidinium).

MNG contains the nitro guanidine structure and therefore is considered to possess similar toxicity as the parent. DN is also structurally similar to the parent and therefore considered to share similar toxicity as the parent. None of the dinotefuran degradates are expected to have any higher toxicity than the parent (HED Memo of 01/20/04. L. Cheng, D293759).

Dinotefuran, and its degradates, MNG and DN-phosphate are highly soluble in water (39,830 ppm, 11,480 ppm and 619,400 ppm, respectively). Similar to the parent compound MNG and DN are stable to hydrolysis and have high metabolic persistence. DN-phosphate, a salt of DN, was used by the registrant in lieu of DN, because it is a stable substance, to conduct laboratory studies. The other degradates were mostly photolysates.

The batch equilibrium - adsorption/desorption studies conducted on the parent and major degradates MNG and DN-phosphate, indicate that the parent dinotefuran, and MNG are very highly mobile (K_{oc}<50 L/kg), while DN is slightly to highly mobile. K_{oc} values for dinotefuran ranged from 6 to 45 L/kg for eight soils tested (four from Japan and four domestic). K_{oc} values for MNG ranged from 8 to 31 L/kg for five domestic and foreign soils. The study on DN-phosphate yielded a wide range of K_{oc} values (between 58 and 2502 L/kg).

In field dissipation studies dinotefuran was sprayed twice (at 14-day interval) using ground application equipment at three different sites (California, Georgia, and New York) at an application rate of 0.268 lb a.i./A/application. Rainfall was supplemented with irrigation to exceed the 10-year average rainfall at each test site. All soils were silt loams. The soil pHs at these sites ranged from 6.5 (GA) to 8.8 (CA). The half-lives of dinotefuran were 65.2 days (CA), 19.4 days (GA), and 55.9 days (NY), indicating moderate persistence for the parent. These results are in agreement with the results observed in the laboratory. In these field studies, the degradate MNG was the only one detected in substantial amounts. At the California site, MNG was 31.5% of the applied at 45 days after the second application in the 0-15 cm soil depth. MNG was also detected at lower concentrations at the GA (5.3%) and NY (6.6%) sites. Even though the field studies did not show substantial leaching, EFED believes that leaching of both dinotefuran, and MNG are highly possible and may have gone undetected.

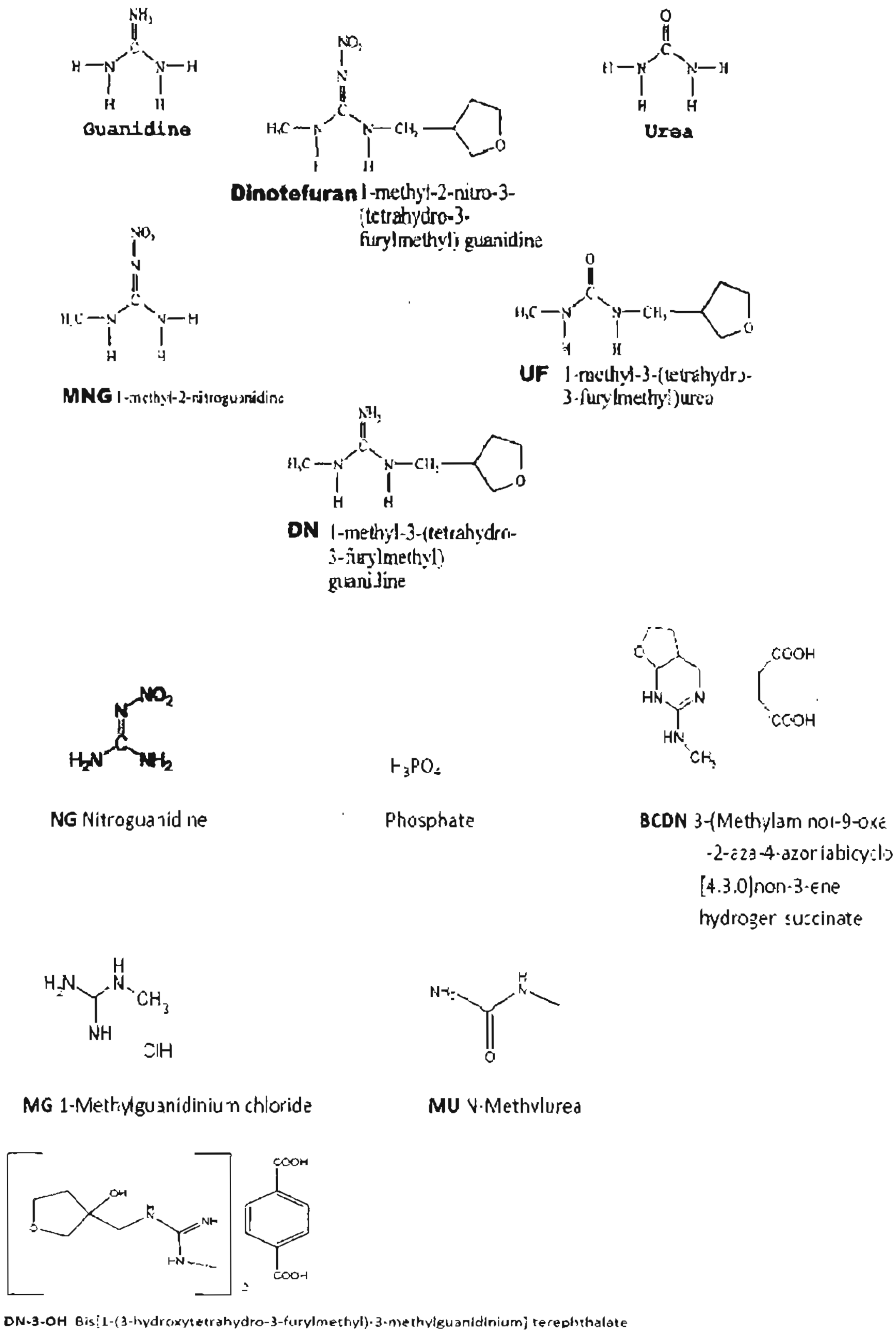

Figure 1. Dinotefuran and dinotefuran degradates (MTI-466)

1. Drinking Water Exposure Modeling.

EFED used the FQPA Index Reservoir Screening Tool (FIRST) model for this tier I drinking water exposure assessment. SciGrow was used to estimate concentrations in groundwater. Two of the possible application scenarios were simulated: an airblast application of 0.304 pounds per acre (Scorpion ® label) and an aerial application of 0.302 pounds per acre (Virginia Venom® label). A single application of 0.54 pounds per acre on turf grass was also simulated. A summary of selected environmental fate and effects parameters for dinotefuran as used as modeling inputs is presented in Table 4.

Table 4. Summary of FIRST and SciGrow Model Input Values for Dinotefuran.

Environmental Fate Parameter	Value	Justification	Source
Water Solubility	39,830 mg/L	Measured value	MRID 45640112
Organic Carbon Partition Coefficient (K_{oc}: mL/g)	30.1 (FIRST) 6 (SciGrow)	FIRST: Represents the mean of the following values: 42, 45, 42, 6, 22, 23.3, 31.4, 33.6, 25.3 mL/g for the parent compound. SciGrow: represents the lowest value	MRID 45640114, 45640115
Aerobic Soil Metabolism Half-life (days)	68 (FIRST) 38 (SciGrow)	FIRST: Represents the 90th percentile confidence bound on the mean half-life value of the following values: 87.7, 38, 17, 78, 89, 20, 15.9 days (four or more values) SciGrow: Median value	MRID 45640111, 45640112 / 46751101, 46711201
Aerobic Aquatic Metabolism Half -life (days)	82.73	Represents the 90th percentile confidence bound on the mean half-life. Two available values: 79.3 and 76.0 days: mean=77.65 days; standard dev.= 2.3335 days	MRID 45640117
Aqueous Photolysis Half-life (days)	1.8	Single Available Value	MRID 45640105

Drinking Water Exposure Modeling Results

FIRST and SciGrow Model estimated drinking water exposure concentrations are shown in Table 5.

Table 5. Tier I Estimated Drinking Water Concentrations for Parent Dinotefuran			
Crop (Scenario)	Acute (peak) Surface Water Concentration (ppb)	Annual Average Surface Water Concentration (ppb)	Ground Water Concentration (ppb)
Pome and Stone Fruit (0.304 lbs ai/A, 2 app., 7 day interval, airblast)	58.07	9.54	1.92
Pome and Stone Fruit (0.302 lb ai/A, 2 app., 7 day interval, aerial)	57.59	9.46	1.91
Turf Grass (0.54 lb ai/A, 1 app., aerial)	49.8	8.2	1.71

The maximum acute estimated drinking water concentration (EDWC) value from the simulation is 58.07 ppb and the maximum chronic (annual average) EDWC is 9.54 ppb. The maximum ground water concentration for pome and stone fruits as estimated with the SCIGROW model is 1.91 ppb. See results in FIRST and SciGrow model output files in Appendix A below.

The previous maximum EDWC parent dinotefuran values were 48.2 ppb, 8.0 ppb and 2.75 ppb respectively, in the original drinking water assessment (Revised Section 3 Environmental Risk Assessment for the Registration of Dinotefuran on Leafy Vegetable, Turfgrasses, Ornamentals and Residential Use) dated June 30, 2004 (See 044312 D285633 S3NC). Maximum modeling concentrations from that document were as follows in Table 6.

Table 6.0. Previous Tier I Estimated Drinking Water Concentrations for Turf			
Chemical	Acute (peak) Surface Water Concentration (ppb)	Annual Average Surface Water Concentration (ppb)	Ground Water Concentration (ppb)
Parent Dinotefuran	48.20	8.00	2.75
Degradates			
MNG	3.86	1.63	0.86
DN	7.77	3.32	0.19
UF	4.07	2.07	0.32
DN-2-OH[1]	11.88	5.95	0.94

1 - DN-2-OH represents DN-2-OH+DN-3-OH. These two were reported jointly as one metabolite in the study.

Appendix A.

FIRST model (Tier 1) and SCIGROW output for use of dinotefuran on pome & stone fruits for control of BMSB infestation in VA, DE, NC, WV, PA, NJ, and MD. (Note: Results are shown for use on turf because previous modeling applied a PCA to turf uses and the turf uses resulted in the highest EDWCs in both surface and ground water.)

```
                              FIRST Model

RUN No.   1 FOR  dinotefuran   ON  pome & stone fruit  * INPUT VALUES *
    --------------------------------------------------------------------
    RATE (#/AC)    No.APPS &   SOIL  SOLUBIL  APPL TYPE  %CROPPED INCORP
     ONE(MULT)     INTERVAL    Koc   (PPM )   (%DRIFT)     AREA    (IN)
    --------------------------------------------------------------------
  0.304(  0.587)   2   7     30.1 39830.0   ABLAST( 6.3) 100.0    0.0

    FIELD AND RESERVOIR HALFLIFE VALUES (DAYS)
    --------------------------------------------------------------------
    METABOLIC  DAYS UNTIL  HYDROLYSIS   PHOTOLYSIS   METABOLIC  COMBINED
     (FIELD)  RAIN/RUNOFF  (RESERVOIR)  (RES.-EFF)   (RESER.)   (RESER.)
    --------------------------------------------------------------------
      68.00         2          N/A      1.80-  223.20    82.73     60.36

    UNTREATED WATER CONC (MICROGRAMS/LITER (PPB)) Ver 1.1.1  MAR 26, 2008
    --------------------------------------------------------------------
         PEAK DAY  (ACUTE)        ANNUAL AVERAGE (CHRONIC)
           CONCENTRATION               CONCENTRATION
    --------------------------------------------------------------------
              58.072                        9.537


    RUN No.  2 FOR dinotefuran   ON  pome & stone fruit * INPUT VALUES *
    --------------------------------------------------------------------
    RATE (#/AC)    No.APPS &   SOIL  SOLUBIL  APPL TYPE  %CROPPED INCORP
     ONE(MULT)     INTERVAL    Koc   (PPM )   (%DRIFT)     AREA    (IN)
    --------------------------------------------------------------------
  0.302(  0.583)   2   7     30.1 39830.0   AERIAL(16.0) 100.0    0.0

    FIELD AND RESERVOIR HALFLIFE VALUES (DAYS)
    --------------------------------------------------------------------
    METABOLIC  DAYS UNTIL  HYDROLYSIS   PHOTOLYSIS   METABOLIC  COMBINED
     (FIELD)  RAIN/RUNOFF  (RESERVOIR)  (RES.-EFF)   (RESER.)   (RESER.)
    --------------------------------------------------------------------
      68.00         2          N/A      1.80-  223.20    82.73     60.36

    UNTREATED WATER CONC (MICROGRAMS/LITER (PPB)) Ver 1.1.1  MAR 26, 2008
    --------------------------------------------------------------------
         PEAK DAY  (ACUTE)        ANNUAL AVERAGE (CHRONIC)
           CONCENTRATION               CONCENTRATION
    --------------------------------------------------------------------
              57.587                        9.466


    RUN No.   3 FOR Dinotefuran       ON    Turf Grass     * INPUT VALUES *
    --------------------------------------------------------------------
    RATE (#/AC)    No.APPS &   SOIL  SOLUBIL  APPL TYPE  %CROPPED INCORP
     ONE(MULT)     INTERVAL    Koc   (PPM )   (%DRIFT)     AREA    (IN)
    --------------------------------------------------------------------
    .504(    .504)   1   1     30.1 39830.0   AERIAL(16.0) 100.0     .0
```

FIELD AND RESERVOIR HALFLIFE VALUES (DAYS)

METABOLIC (FIELD)	DAYS UNTIL RAIN/RUNOFF	HYDROLYSIS (RESERVOIR)	PHOTOLYSIS (RES.-EFF)	METABOLIC (RESER.)	COMBINED (RESER.)
68.00	2	N/A	1.80- 223.20	82.70	60.34

UNTREATED WATER CONC (MICROGRAMS/LITER (PPB)) Ver 1.1.0 JAN 1, 2007

PEAK DAY (ACUTE) CONCENTRATION	ANNUAL AVERAGE (CHRONIC) CONCENTRATION
49.780	8.181

SCIGROW
VERSION 2.3
ENVIRONMENTAL FATE AND EFFECTS DIVISION
OFFICE OF PESTICIDE PROGRAMS
U.S. ENVIRONMENTAL PROTECTION AGENCY
SCREENING MODEL
FOR AQUATIC PESTICIDE EXPOSURE

SciGrow version 2.3
chemical:Dinotefuran
crop: pome and stone fruit
time is 5/20/2011 9: 9: 5

Application rate (lb/acre)	Number of applications	Total Use (lb/acre/yr)	Koc (ml/g)	Soil Aerobic metabolism (days)
0.304	2.0	0.608	6.00E+00	38.0

groundwater screening cond (ppb) = 1.92E+00
****

SciGrow version 2.3
chemical:Dinotefuran
crop: pome & stone fruits
time is 5/23/2011 12:51:12

Application rate (lb/acre)	Number of applications	Total Use (lb/acre/yr)	Koc (ml/g)	Soil Aerobic metabolism (days)
0.302	2.0	0.604	6.00E+00	38.0

groundwater screening cond (ppb) = 1.91E+00
****

SCIGROW
VERSION 2.3
ENVIRONMENTAL FATE AND EFFECTS DIVISION
OFFICE OF PESTICIDE PROGRAMS
U.S. ENVIRONMENTAL PROTECTION AGENCY
SCREENING MODEL
FOR AQUATIC PESTICIDE EXPOSURE

SciGrow version 2.3
chemical:Dinotefuran
crop:Turfgrass
time is 5/23/2011 12:53:12

Application rate (lb/acre)	Number of applications	Total Use (lb/acre/yr)	Koc (ml/g)	Soil Aerobic metabolism (days)
0.540	1.0	0.540	6.00E+00	38.0

groundwater screening cond (ppb) = 1.71E+00
****