



# Pesticide Fact Sheet

**Name of Chemical:** Chlorantraniliprole  
**Reason for Issuance:** Unconditional  
Registration  
**Date Issued:** April 2008

## TABLE OF CONTENTS

|  |    |
|--|----|
| 1. Description of the Chemical.....                | 1  |
| 2. Use patterns and Formulations.....              | 2  |
| 3. Science Findings.....                           | 3  |
| 4. Human Health Exposure Assessment.....           | 9  |
| 5. Environmental Exposure and Risk.....            | 11 |
| 6. Regulatory Position and Rationale.....          | 29 |
| 7. Reduced Risk Classification.....                | 30 |
| 8. Contact Person.....                             | 31 |
| 9. Appendix I: Glossary of Terms and Acronyms..... | 32 |
| 10. Appendix II: Bibliography.....                 | 34 |

## 1. DESCRIPTION OF CHEMICAL

Chemical Name: 3-Bromo-*N*-[4-chloro-2-methyl-6-(methylcarbamoyl)phenyl]-1-(3-chloro-2-pyridine-2-yl)-1H-pyrazole-5-carboxamide

Empirical Formula: C<sub>18</sub>H<sub>14</sub>N<sub>5</sub>O<sub>2</sub>BrCl<sub>2</sub>

Common Name: Chlorantraniliprole

Experimental Name: DPX-E2Y45

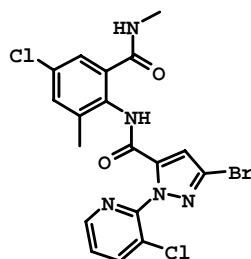
EPA PC Code: 090100

Chemical Class: Anthranilic diamide insecticide  
Mode of Action: Interruption of normal muscle contraction

Pesticide Type: Insecticide

U.S. Technical Registrant: DuPont Crop Protection  
P.O. Box 30  
Newark, DE 19714-0030

Chemical Structure:



## **2. USE PATTERNS AND FORMULATIONS**

Registered Uses: pome fruit (crop group 11), stone fruit (crop group 12), leafy vegetables (crop group 4), *Brassica* leafy vegetables (crop group 5), cucurbit vegetables (crop group 9), fruiting vegetables (crop group 8), cotton, grapes, potatoes, rice, and ornamentals and turf grass growing in residential, commercial, and public landscaped areas

Pests/Application Sites: moths, beetles, caterpillars, etc.

Application Rates: Seasonal Maximum:  
Food Crops- 0.2 lb a.i./acre  
(rice- 0.13 a.i./acre/year)  
Turf Grass- 0.5 lb a.i./acre  
Ornamentals- highly variable, range  
between 0.33 to 0.5 lb  
a.i./acre

Types of Formulations/  
Product Names:

Technical:  
DuPont Rynaxypyr Technical (95.3% a.i.)

End Use (Agricultural Uses):  
DuPont Coragen  
(18.4% a.i.; suspension concentrate)

DuPont Altacor  
(35% a.i.; water dispersible granule)

End Use (Turf and Ornamental Uses):

DuPont E2Y45 SC Insecticide  
(18.4% a.i.; suspension concentrate)

DuPont E2Y45 0.33G Insecticide  
(0.33% a.i.; granular)

DuPont E2Y45 0.16G Insecticide  
(0.16% a.i.; granular)

DuPont E2Y45 0.133G Insecticide +  
Fertilizer  
(0.133% a.i.; granular)

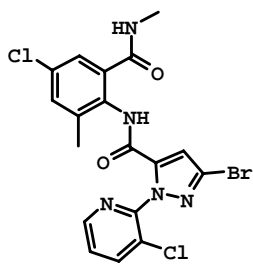
Manufacturing Concentrate (35% a.i.)

### 3. SCIENCE FINDINGS

#### Physical and Chemical Characteristics:

Available product chemistry data supporting the use of chlorantraniliprole are summarized below in Tables 1 and 1.1.

**Table 1. Chlorantraniliprole Nomenclature.**

|                           |   |
|---------------------------|---|
| Chemical structure        |                                       |
| Common name               | Chlorantraniliprole   |
| Company experimental name | DPX-E2Y45   |
| IUPAC name                | 3-Bromo- <i>N</i> -[4-chloro-2-methyl-6-(methylcarbamoyl)phenyl]-1-(3-chloro-2-pyridine-2-yl)-1H-pyrazole-5-carboxamide   |
| CAS name                  | 3-Bromo- <i>N</i> -[4-chloro-2-methyl-6-[(methylamino)carbonyl]phenyl]-1-(3-chloro-2-pyridinyl)-1H-pyrazole-5-carboxamide |
| CAS registry number       | 500008-45-7   |

**Table 1.1. Physiochemical Properties of the Technical Grade Test Compound**

| Parameter                | Value                                |
|--------------------------|--------------------------------------|
| Melting point/range (°C) | 200-202 (95.9%)/208 – 210 (99.2%)    |
| pH                       | 5.77 ± 0.087 at 20°C                 |
| Relative Density         | 1.5189 (95.9%)/1.507 (99.2%) at 20°C |

**Table 1.1. Physiochemical Properties of the Technical Grade Test Compound**

| Parameter   | Value   |
|---|---|
| Water solubility (20°C)                                     | Deionized Water 1.023 mg/L<br>pH 4 0.972 mg/L<br>pH 7 0.880 mg/L<br>pH 9 0.971 mg/L   |
| Solvent solubility (20°C)                                   | Acetone 3.446 ± 0.172 g/L<br>Acetonitrile 0.711 ± 0.072 g/L<br>Ethyl Acetate 1.144 ± 0.046 g/L<br>Dichloromethane 2.476 ± 0.058 g/L<br>Dimethylformamide 124 ± 4 g/L<br>n-Octanol 0.386 ± 0.01 g/L<br>Methanol 1.714 ± 0.057 g/L<br>n-Hexane <0.0001 g/L<br>o-Xylene 0.162 ± 0.01 g/L |
| Vapor pressure  | 6.3 x 10 <sup>-12</sup> Pa @ 20°C, 2.1 x 10 <sup>-11</sup> Pa @ 25°C  |
| Dissociation constant, pK <sub>a</sub>                      | 10.88 ± 0.71  |
| Octanol/water partition coefficient, K <sub>OW</sub> (20°C) | Deionized Water 589<br>pH 4 588<br>pH 7 721<br>pH 9 654   |
| UV/visible absorption (max)                                 | pH <2 no absorption max >200 nm, at 290 ε = 3941<br>pH 7 no absorption max >200 nm, at 290 ε = 4185<br>pH >10 absorption max at ~320 nm which may be due to decomposition of DPX-E2Y45, at 290 ε = 6082   |

**Metabolism Assessment:**

The nature of the residue in plants and livestock is adequately understood. Very little degradation was observed in primary and rotational crops. Unchanged parent chlorantraniliprole was the major identified residue in primary and rotational crops. The metabolism of chlorantraniliprole in livestock was extensive and followed the major steps similar to those observed in rice: (i) hydroxylation of the N-methyl group (to IN-H2H20) or hydroxylation of the tolyl methyl group (to IN-HXH44); (ii) cyclization with loss of water to a quinazolinone derivative (IN-EQW78); and (iii) N-demethylation via IN-H2H20 to IN-F9N04.

**Hazard Characterization:**

*Toxicology Requirements-*

The toxicology requirements (40 CFR 158.340) for a food use for chlorantraniliprole are in Table 2.

**Table 2. Toxicology Data Requirements**

| Test   | Technical |           |
|--|-----------|-----------|
|  | Required  | Satisfied |
| 870.1100 Acute Oral Toxicity .....                           | yes       | yes       |
| 870.1200 Acute Dermal Toxicity .....                         | yes       | yes       |
| 870.1300 Acute Inhalation Toxicity .....                     | yes       | yes       |
| 870.2400 Primary Eye Irritation .....                        | yes       | yes       |
| 870.2500 Primary Dermal Irritation .....                     | yes       | yes       |
| 870.2600 Dermal Sensitization .....                          | yes       | yes       |
| 870.3100 Oral Subchronic (rodent) .....                      | yes       | yes       |
| 870.3150 Oral Subchronic (nonrodent) .....                   | yes       | yes       |
| 870.3200 21-Day Dermal .....                                 | yes       | yes       |
| 870.3250 90-Day Dermal .....                                 | no        | -         |
| 870.3465 90-Day Inhalation .....                             | no        | -         |
| 870.3700a Developmental Toxicity (rodent) .....              | yes       | yes       |
| 870.3700b Developmental Toxicity (nonrodent) .....           | yes       | yes       |
| 870.3800 Reproduction .....                                  | yes       | yes       |
| 870.4100a Chronic Toxicity (rodent) .....                    | yes       | yes       |
| 870.4100b Chronic Toxicity (nonrodent) .....                 | yes       | yes       |
| 870.4200a Oncogenicity (rat) .....                           | yes       | yes       |
| 870.4200b Oncogenicity (mouse) .....                         | yes       | yes       |
| 870.4300 Chronic/Oncogenicity .....                          | yes       | yes       |
| 870.5100 Mutagenicity—Gene Mutation - bacterial .....        | yes       | yes       |
| 870.5300 Mutagenicity—Gene Mutation - mammalian .....        | yes       | yes       |
| 870.5385 Mutagenicity—Structural Chromosomal Aberrations ... | yes       | yes       |
| 870.5395 Mutagenicity—Micronucleus .....                     | yes       | yes       |
| 870.6100a Acute Delayed Neurotox. (hen) .....                | no        | -         |
| 870.6100b 90-Day Neurotoxicity (hen) .....                   | no        | -         |
| 870.6200a Acute Neurotox. Screening Battery (rat) .....      | yes       | yes       |
| 870.6200b 90-Day Neuro. Screening Battery (rat) .....        | yes       | yes       |
| 870.6300 Develop. Neuro .....                                | no        | -         |
| 870.7485 General Metabolism .....                            | yes       | yes       |
| 870.7600 Dermal Penetration .....                            | no        | -         |
| Special Studies  |           |           |
| 28-day immunotoxicity (rat) .....                            |           | yes       |
| 28-day immunotoxicity (mouse) .....                          |           | yes       |

*Acute Toxicity-*

Chlorantraniliprole Technical is toxicity category IV for all routes of exposure and is a non-sensitizer (Table 3).

**Table 3. Acute Toxicity of Technical Chlorantraniliprole**

| Guideline No. | Study Type                | MRID No. | Results               | Toxicity Category |
|---------------|---------------------------|----------|-----------------------|-------------------|
| 870.1100      | Acute oral toxicity       | 46889112 | LD50 = >5000 mg/kg bw | IV                |
| 870.1200      | Acute dermal toxicity     | 46889113 | LD50 = >5000 mg/kg bw | IV                |
| 870.1300      | Acute inhalation toxicity | 46889121 | LC50 = >5.1 mg/L      | IV                |

|          |                         |          |   |          |
|----------|-------------------------|----------|---|----------|
| 870.2400 | Acute eye irritation    | 46889115 | Iritis score of 1 in 1/3 rabbits, conjunctival redness score of 1 in 2/3 rabbits. All eyes returned to normal after 72 hours. | IV       |
| 870.2500 | Primary skin irritation | 46889114 | No dermal irritation, clinical signs or body weight loss  | IV       |
| 870.2600 | Dermal sensitization    | 46889221 | Not a dermal sensitizer   | Negative |

*Subchronic, Chronic and Other Toxicity-*

In short-term studies, the most consistent effects are those associated with non adverse pharmacological response to the xenobiotic, induction of liver enzymes and subsequent increase in liver weights. Chlorantraniliprole is not genotoxic, neurotoxic, immunotoxic, carcinogenic, or teratogenic. Overall, chlorantraniliprole exhibits minimal mammalian toxicity after long-term exposure. The only consistent observation in the mammalian toxicology studies is an increased degree of microvesiculation of the adrenal cortex after dermal or dietary administration of chlorantraniliprole. Based on the lack of adverse effect on the function of the adrenal gland, this observation was considered treatment related, but not “adverse.”

**Table 4. Subchronic, Chronic and Other Toxicity Profile**

| STUDY/<br>SPECIES                           | DOSES<br>(mg/kg/day)  | NOAEL<br>(mg/kg/day)          | LOAEL<br>(mg/kg/day) | EFFECTS   |
|---|---|-------------------------------|----------------------|---|
| 14-day Oral Gavage/ rat                     | 0, 25, 100, 1000  | 1000                          | Not established      | No adverse effects. Weak inducer of cytochrome P450 3A at all dose levels, with statistical significance at 100 and 1000 mg/kg/day.   |
| 28-Day Oral (feed)/rat                      | 0, 20.7, 106 and 584 (male); 0, 24, 128 and 675 (female)                      | 584 (male) and 675 (female)   | Not established      | No adverse effects. Slight increase in liver weight at 128 and 675 mg/kg/day in females and minimal hepatocellular hypertrophy at 675 mg/kg that is attributed to enzyme induction characterized by increased amount of eosinophilic cytoplasm with hepatocytes but no histomorphologic evidence of hepatocellular damage. In 128 and 675 mg/kg females, a statistically significant increase in UDP-GT activity was observed in HDT female rats, with a similar increase in males. These changes are consistent with a pharmacological response and were not considered adverse. |
| 28-Day Oral (feed)/mouse                    | 0, 52, 182, 538 and 1443 (male); 0, 64, 206, 658 and 1524 (female)            | 1443 (male) and 1524 (female) | Not established      | No adverse effects. Slight increase in liver wt. in 658 and 1524 mg/kg/day females corresponded with a mild increase in cytochrome P450 enzyme activity. No histopathological evidence of liver toxicity was observed.<br><br>A reduction in body weight gain was observed in HDT males (52%) but not in females. No statistically significant decrease in absolute body weight was observed therefore, this effect was not considered adverse.   |
| 28-day Oral (capsule)/ Dog                  | 0, 300, 1000  | 1000                          | Not established      | No adverse effects. Induction of cytochrome P450 enzyme activity (58%) in both males and females at 1000 mg/kg/day, specifically 1A1 and 2B1/2 at 300 and 1000 mg/kg/day.   |
| 28-day Oral (feed)/dog – Palatability study | 0, 26, 138, 266, 797 and 1302 (male); 0, 28, 138, 298, 888, and 1240 (female) | 1302 (male) and 1240 (female) | Not established      | No adverse effects. Food consumption generally increased as the study progressed with males generally demonstrating the highest food consumption when fed the HDT.  |
| 28-day                                      | 0, 100, 300 and   | 1000                          | Not                  | No adverse effects. Reductions in mean body   |

**Table 4. Subchronic, Chronic and Other Toxicity Profile**

| STUDY/<br>SPECIES                       | DOSES<br>(mg/kg/day)   | NOAEL<br>(mg/kg/day)                | LOAEL<br>(mg/kg/day)                                 | EFFECTS  |
|---|--|-------------------------------------|--|--|
| Dermal/rat                              | 1000   |                                     | established  | weight gain (22% and 19% for males and females) and food efficiency (19% and 17% for males and females) over the 28-day at the HDT.<br><br>Increased microvesiculation of adrenal cortex in males only, with no light or electronic microscopic evidence of adrenal cellular degeneration or toxicity. No effect on the capacity of the adrenal gland to produce corticosterone under either basal or following ACTH stimulation. Therefore, these effects were not considered adverse.  |
| 90-day Oral<br>(feed)/rat               | 0, 36.9, 120, 359,<br>1188 (male); 0, 47,<br>157, 460, 1526<br>(female)              | 1188 (male)<br>and 1526<br>(female) | Not<br>established                                   | No adverse effects. A slight increase in liver weight at HDT females and reduction in bilirubin in females at $\geq 157$ mg/kg/day, with no corresponding histopathological evidence of liver toxicity.  |
| 90-day Oral<br>(feed)/mouse             | 0, 32.6, 115, 345,<br>1135 (male); 0,<br>40.7, 158, 422,<br>1529 (female)            | 1135 (male)<br>and 1529<br>(female) | Not<br>established                                   | No adverse effects. Hyperactivity and hyperreactivity in females were observed near the end of the study and one male in the upper mid dose had convulsions, but these effects were considered spurious as they were not reproducible in the 18-month mouse study with a FOB.<br><br>A slight increase in liver weight at the HDT males and females, with no corresponding histopathological evidence of liver toxicity.   |
| 90-day Oral<br>(feed)/dog               | 0, 32.2, 119, 303,<br>1163 (male); 0,<br>36.5, 133, 318,<br>1220 (female)            | 1163 (male)<br>and 1220<br>(female) | Not<br>established                                   | No adverse effects. A mild increase in liver weight was observed in males at 1163 mg/kg/day, with no corresponding histopathological evidence of liver toxicity.   |
| 52-week<br>Oral<br>(feed)/dog           | 0, 32, 112, 317,<br>1164 (male); 0, 34,<br>113, 278, 1233<br>(female)                | 1164 (male)<br>and 1233<br>(female) | Not<br>established                                   | No adverse effects. A mild increase in liver weight in HDT males and females, and increase in alkaline phosphatase in HDT males, with no corresponding histopathological evidence of liver toxicity.<br><br>Body weight gain increase in HDT males for weeks 8-9 compared to controls, with an increase in food efficiency in week 9.  |
| 2-Year Oral<br>(feeding)/rat            | 0, 7.71, 39, 156,<br>805 (male); 0,<br>10.9, 51, 212, 1076<br>(female)               | 805 (male)<br>and 1076<br>(female)  | Not<br>established                                   | No evidence of carcinogenicity and no adverse findings. Increased adrenal cortical microvesiculation due to lipid was present in the zona fasciculata region of the adrenal gland of some male rats in all dose groups in both the one-year and main studies. This finding was considered test substance related but was not considered adverse as the adrenal morphology was generally in the range of what was observed in control rats, and the finding was not associated with any indication of cytotoxicity or other evidence of structural or functional impairment of the adrenal gland. |
| 18-Month<br>Oral<br>(feeding)/<br>Mouse | 0, 2.6, 9.2, 26.1,<br>158, 935 (male); 0,<br>3.34, 11.6, 32.9,<br>196, 1155 (female) | 158 (male)<br>and 1155<br>(female)  | 935 (male),<br>no LOAEL<br>established<br>for female | No evidence of carcinogenicity. Eosinophilic foci accompanied by hepatocellular hypertrophy and increased liver weight form the bases for the male LOAEL of 935 mg/kg/day.   |
| Two-<br>generation<br>oral<br>study/rat | 0, 200, 1000,<br>4000, 20000<br>ppm,<br>mg/kg bw/d                                   | 1199 (male)<br>and 1594<br>(female) | Not<br>established                                   | A slight increase in mean liver weights in P1 and F1 males and females at 238/318.9 mg/kg/day and above, slight increase in mean adrenal weight at 238/318.9 mg/kg/day and   |

**Table 4. Subchronic, Chronic and Other Toxicity Profile**

| STUDY/<br>SPECIES                             | DOSES<br>(mg/kg/day)  | NOAEL<br>(mg/kg/day)                | LOAEL<br>(mg/kg/day) | EFFECTS   |
|---|---|-------------------------------------|----------------------|---|
|   | equivalents:<br><u>pre-mating:</u><br>P1 m: 0, 12, 60,<br>238, 1199<br>F1 m: 0, 18, 89,<br>370, 1926<br>P1 f: 0, 16, 78,<br>318, 1594<br>F1 f: 0, 20, 104,<br>406, 2178<br><u>gestation:</u><br>P1 f: 0, 14, 68,<br>278, 1373<br>F1 f: 0, 14, 71,<br>272, 1465<br><u>lactation:</u><br>P1 f: 0, 32, 162,<br>654, 3118<br>F1 f: 0, 35, 183,<br>696, 3641 |                                     |                      | 1199/1594 mg/kg/day P1 and F1 males and females. Mean body weight of 1199/1594 mg/kg/day F1 pups was slightly reduced on lactation days 7, 14 and 21. No effects on F2 offspring weights during lactation.<br><br>Minimal to mild increase in adrenal cortical microvesiculation in P1 adult males and F1 adult males and females. P1 adult at 60.4/77.8 mg/kg/day and greater. F1 adult males at 12 mg/kg/day and greater. These effects were not observed in weanlings. No cytotoxicity or abnormal cellular structures were observed under light or electron microscopy. |
| Develop<br>mental<br>study/rat                | 0, 20, 100, 300,<br>1000  | 1000                                | Not<br>established   | No adverse effects.   |
| Develop<br>mental<br>study/rabbit             | 0, 20, 100, 300,<br>1000  | 1000                                | Not<br>established   | No adverse effects.   |
| Acute oral<br>neuro-<br>toxicity/rat          | 0, 200, 700, 2000<br>in 0.5% methyl<br>cellulose  | 2000                                | Not<br>established   | No evidence of neurotoxicity was observed at any dose   |
| Subchronic<br>oral<br>neuron-<br>toxicity/rat | 0, 12.7, 64.2,<br>255, 1313<br>(male); 0, 15.1,<br>77.3, 304, 1586<br>(female)  | 1313 (male)<br>and 1586<br>(female) | Not<br>established   | No evidence of neurotoxicity was observed at any dose.  |
| 28-day<br>Immuno-<br>toxicity/rat             | 0, 74, 363, 1494<br>(male); 0, 82,<br>397, 1601<br>(female)   | 1494 (male)<br>and 1601<br>(female) | Not<br>established   | No evidence of treatment-related effects on the sheep red blood cells specific antibody (IgM) responses in either male or female rats at any dietary concentration tested.  |
| 28-day<br>Immuno-<br>toxicity/<br>Mouse       | 0, 48, 264, 1144<br>(male); 0, 64,<br>362, 1566<br>(female)   | 1144 (male)<br>and 1566<br>(female) | Not<br>established   | No evidence of treatment-related effect on the sheep red blood cells specific antibody (IgM) responses in either male or female mice at any dietary concentration tested.   |

**Food Quality Protection Act (FQPA) Decisions:**

The Agency concluded that the toxicology database is adequate for Food Quality Protection Act (FQPA) purposes and that there are no concerns or residual uncertainties for pre-/post-natal toxicity. Therefore, a FQPA factor of 1X was selected. That decision was based on the following findings:

- a. The toxicology database for chlorantraniliprole is complete for the purposes of this risk assessment and the characterization of potential pre- and postnatal



risks to infants and children.

- b. No susceptibility was identified in the toxicological database, and there are no residual uncertainties re: pre-and/or postnatal exposure.
- c. There are no treatment-related neurotoxic findings in the acute and subchronic oral neurotoxicity studies in rats.
- d. The exposure assessment is protective: the dietary food exposure assessment utilizes tolerance level residues and 100% crop treated information for all commodities; the drinking water assessment utilizes values generated by models and associated modeling parameters which are designed to provide conservative, health protective, high-end estimates of water concentrations. By using these screening-level exposure assessments, the chronic dietary (food and drinking water) risk is not underestimated.
- e. Although residential exposure is expected over the short- and possibly intermediate-term (via the dermal and/or incidental oral route), there is no hazard expected via these routes/durations, and therefore no risk for these scenarios.

#### **4. HUMAN HEALTH EXPOSURE AND RISK ASSESSMENT**

##### **Residue Profile:**

##### **Dietary Exposure and Risk:**

Because an endpoint attributable to a single dose was not identified, the dietary exposure assessment considered only chronic exposure, since chlorantraniliprole was determined to be toxic only via the chronic oral exposure duration.

Chronic dietary risk assessments were conducted using the Dietary Exposure Evaluation Model (DEEM-FCID™, Version 2.03) which uses food consumption data from the U.S. Department of Agriculture's Continuing Surveys of Food Intakes by Individuals (CSFII) from 1994-1996 and 1998. The chronic assessments assumed that 100% of crops with requested uses of chlorantraniliprole are treated, and that all treated crops contain residues at tolerance level.

These assumptions result in conservative, health-protective estimates of exposure which are well below the Agency's level of concern (100% of the cPAD). The maximum estimate is less than 1% of the cPAD for all population subgroups. These analyses indicate that there are no dietary exposure considerations that would preclude registration of chlorantraniliprole for the requested uses.

A drinking water assessment for chlorantraniliprole, conducted based on PRZM/EXAMS (Pesticide Root Zone Model/Exposure Analysis Modeling System), was used to calculate the surface water estimated drinking water concentrations (EDWCs) and

the Screening Concentration in Ground Water (SCI-GROW) model was used to calculate the groundwater EDWC. The EDWCs do not exceed the Agency's level of concern.

**Table 5. Results of Chronic Dietary Exposure and Risk Estimates for Chlorantraniliprole**

| Population Subgroup | cPAD, mg/kg/day | Chronic Estimates (Food only) |              | Chronic Estimates (Food and Drinking Water) |              |
|---------------------|-----------------|-------------------------------|--------------|---|--------------|
|                     |                 | Exposure, mg/kg/day           | Risk, % cPAD | Exposure, mg/kg/day                         | Risk, % cPAD |
| U.S. Population     | 1.58            | 0.007679                      | <1           | 0.007756                                    | <1           |
| All infants         |                 | 0.007856                      | <1           | 0.008108                                    | <1           |
| Children 1-2 yrs    |                 | <b>0.014855</b>               | <b>&lt;1</b> | 0.014969                                    | <b>&lt;1</b> |
| Children 3-5 yrs    |                 | 0.012043                      | <1           | 0.012150                                    | <1           |
| Children 6-12 yrs   |                 | 0.007999                      | <1           | 0.008073                                    | <1           |
| Youth 13-19 yrs     |                 | 0.005850                      | <1           | 0.005906                                    | <1           |
| Adults 20-49 yrs    |                 | 0.007082                      | <1           | 0.007154                                    | <1           |
| Adults 50+ yrs      |                 | 0.007613                      | <1           | 0.007689                                    | <1           |
| Females 13-49 yrs   |                 | 0.007215                      | <1           | 0.007286                                    | <1           |

The population subgroup with the highest estimated exposure/risk is bolded.

**Residential Exposure Estimates:**

Although there are only two use sites (turfgrass and ornamental plants), as indicated on the 14 terrestrial non-food end use products, these use sites encompass a multitude of places that may be treated: home lawns, commercial lawns, industrial facilities, residential dwellings, business and office complexes, shopping complexes, multi-family residential complexes, institutional buildings, airports, cemeteries, interior landscapes, ornamental gardens, parks, wildlife plantings, playgrounds, schools, daycare facilities, golf courses, athletic fields, sod farms and other landscaped areas. The multitude of use sites, in addition to the persistence of chlorantraniliprole, indicates there is potential for short- and intermediate-term postapplication dermal (adults and children) and incidental oral (children only) exposure to chlorantraniliprole (inhalation exposure is not expected due to low vapor pressure). However, due to the lack of toxicity over the acute, short- and intermediate-term via the oral and dermal routes – no risk is expected from these exposures.

Long-term (greater than 6 months) dermal exposure to turfgrass is not expected because the use pattern suggests a seasonal window of application, and dislodgeable foliar residue (DFR) data indicate a maximum half-life of only 30 days on foliage. While chlorantraniliprole's persistence in soil (half-life up to 1130 days in dissipation studies on bareground plots) increases the possibility of long-term exposure for toddlers via incidental ingestion, the daily quantity of soil a toddler would need to eat to reach the cPAD is not feasible (more than 4 lbs/day, even when accounting for accumulation).

Due to the lack of toxicity resulting from chlorantraniliprole exposure (other than chronic oral ingestion), spray drift is not expected to pose a risk to residents near spraying operations.

## **Aggregate Risk:**

Although there is potential exposure to chlorantraniliprole from food, drinking water and residential use sites, the only identified hazard is via the oral route over a chronic duration. Residential exposures are expected to occur over a short- or intermediate-term duration. Therefore, the aggregate risk assessment considers only exposures from food and drinking water consumed over a long-term duration (greater than 6 months of daily exposure). That decision was based on the following findings:

- a. **Acute Risk.** No acute risk is expected because no acute hazard, attributable to a single dose, was identified.
- b. **Chronic Risk.** Using exposure assumptions, we concluded that exposure to chlorantraniliprole from food and water will utilize <1% of the cPAD for the population group children 1-2 years (the highest exposed subpopulation). Based on the use pattern, chronic residential exposure to residues of chlorantraniliprole is not expected.
- c. **Short-Term/Intermediate Risk.** There is potential for short- and intermediate-term post-application dermal (adults and children) and incidental oral (children only) exposure to chlorantraniliprole. However, due to the lack of toxicity via dermal route, as well as the lack of toxicity over the acute, short- and intermediate-term via the oral route – no risk is expected from these exposures. Inhalation exposure is not expected due to the low vapor pressure of chlorantraniliprole (so applied/deposited residues are not expected to volatilize into the air).
- d. **Aggregate Cancer Risk.** Chlorantraniliprole has been classified as a “not likely human carcinogen.” It is not expected to pose a cancer risk to humans.
- e. **Determination of Safety.** Based on the risk assessments, we conclude that there is a reasonable certainty that no harm will result to the general population, or to infants and children from aggregate exposure to chlorantraniliprole residues.

## **Occupational Exposure:**

The chlorantraniliprole toxicology database indicates there is no systemic hazard associated with short- and intermediate-term dermal and inhalation exposure, and therefore, no occupational exposure and risk assessment was conducted.

## **5. ENVIRONMENTAL EXPOSURE AND RISK**

### **Environmental Fate Characteristics:**

Chlorantraniliprole may be characterized as persistent and mobile in terrestrial and aquatic environments. Extended chlorantraniliprole use is expected to cause

accumulation of residues in soil from year to year. Major routes of dissipation are expected to be alkaline-catalyzed hydrolysis, photodegradation in water, leaching, and runoff.

Nine degradates/metabolites of the parent compound have been identified in environmental fate studies: IN-EQW78, IN-LBA22, IN-LBA24, IN-LBA23, IN-ECD73, IN-F6L99, IN-EVK64, IN-F9N04, and IN-GAZ70 (see Table 7). The greatest percentage production of a degradate was for IN-LBA24, which was 90% of applied parent produced in the photolysis study at pH7. The risk assessment did not quantify the risks from these degradates because they were commonly of lower toxic potency than the parent. For example IN-LBA24 is orders of magnitude less toxic than the parent pesticide. Coupling the observed lower toxic potency with the risk assessments exposure modeling assumptions of stability for the parent would suggest that excluding the degradates from quantitative risk estimation would not substantially affect the conclusion of the risk assessment.

**Table 6. Laboratory Environmental Fate Data for Chlorantraniliprole**

| Data   | Units                   | Value  |
|--|-------------------------|--|
| Molecular Weight                                   | g/mole                  | 483.15   |
| Solubility   | mg/L                    | 1.023  |
| Vapor Pressure                                     | Torr                    | 1.57E-13   |
| Henrys Constant                                    | atm m <sup>3</sup> /mol | 3.1E-15  |
| Hydrolysis @ pH 7                                  | Days                    | Stable   |
| Photodegradation in Water                          | Days                    | 0.31   |
| Aerobic Soil Metabolism                            | Days                    | 577.6 <sup>1</sup><br>537.3<br>374.6<br>410.1<br>246.6<br>228.0<br>888.6<br>924.1<br>396.0 |
| Aerobic Aquatic Metabolism                         | Days                    | 231<br>125   |
| Anaerobic Aquatic Metabolism                       | Days                    | 208  |
| Soil:Water Coefficients (Average K <sub>oc</sub> ) | L/g                     | 153-loam sand<br>509-silty clay loam<br>272-sandy loam<br>526-loamy sand<br>180-loam       |

**Table 7. Identified Degradates/Metabolites**

| Study      | Degradation Product | Maximum Formation Percentage (% of applied parent) | Chemical Name              |
|------------|---------------------|--|----------------------------|
| Hydrolysis | IN-EQW78            | 86.7 @ pH 9  | (2-[3-Bromo-1-(3-chloro-2- |

**Table 7. Identified Degradates/Metabolites**

| Study                            | Degradation Product | Maximum Formation Percentage (% of applied parent)   | Chemical Name   |
|----------------------------------|---------------------|--|---|
|                                  |                     |  | pyridinyl)-1H-pyrazol-5-yl]-6-chloro-3,8 dimethyl-4(3H)-quinazolinone                                   |
| <b>Photodegradation in Water</b> | IN-EQW78            | ND @ pH 7 buffer solution<br>ND @ natural water, sterile   | (2-[3-Bromo-1-(3-chloro-2-pyridinyl)-1H-pyrazol-5-yl]-6-chloro-3,8 dimethyl-4(3H)-quinazolinone         |
|                                  | IN-LBA22            | 52.1 @ pH 7 buffer solution<br>3.4 @ natural water, sterile  |   |
|                                  | IN-LBA24            | 90.2 @ pH 7 buffer solution<br>89.3 @ natural water, sterile   |   |
|                                  | IN-LBA23            | 40.8 @ pH 7 buffer solution<br>51.4 @ natural water, sterile   |   |
| <b>Soil Metabolism</b>           | IN-F6L99            | 2.1 @ 25 <sup>0</sup> C incubation<br>5.2 @ 35 <sup>0</sup> C incubation<br>4.2 @ 49 <sup>0</sup> C incubation   | N-Methyl-[3-bromo-1H-pyrazol-5-yl]carboxylic acid   |
|                                  | IN-EVK64            | ND @ 25 <sup>0</sup> C incubation<br>1.7 @ 35 <sup>0</sup> C incubation<br>5.3 @ 49 <sup>0</sup> C incubation    |   |
|                                  | IN-EQW78            | 9.5 @ 25 <sup>0</sup> C incubation<br>33.3 @ 35 <sup>0</sup> C incubation<br>71.6 @ 49 <sup>0</sup> C incubation | (2-[3-Bromo-1-(3-chloro-2-pyridinyl)-1H-pyrazol-5-yl]-6-chloro-3,8 dimethyl-4(3H)-quinazolinone         |
|                                  | IN-ECD73            | 4.9 @ 25 <sup>0</sup> C incubation<br>8.2 @ 35 <sup>0</sup> C incubation<br>9.1 @ 49 <sup>0</sup> C incubation   | 2-[3-bromo-1-(3-chloro-2-pyridinyl)-1H-pyrazole-5-yl]-6-chloro-3,8-dimethyl-4(3H)-quinazolinone         |
|                                  | INGAZ70             | 4.3 @ 25 <sup>0</sup> C incubation<br>7.4 @ 35 <sup>0</sup> C incubation<br>1.0 @ 49 <sup>0</sup> C incubation   | 2-[3-bromo-1-(3-chloro-2-pyridinyl)-1H-pyrazol-5-yl]-6-chloro-8-methyl-4(1H)-quinazolinone              |
| <b>Water/Sediment Metabolism</b> | IN-EQW78            | 30.2 @ no photodegradation<br>40.9 @ photodegradation  | (2-[3-Bromo-1-(3-chloro-2-pyridinyl)-1H-pyrazol-5-yl]-6-chloro-3,8 dimethyl-4(3H)-quinazolinone         |
|                                  | IN-F6L99            | 4.2 @ no photodegradation<br>ND @ photodegradation   | 5-bromo-N-methyl-1H-pyrazole-3-carboxamide  |
|                                  | IN-F9N04            | 2.7 @ no photodegradation<br>ND @ photodegradation   | N-[2-(Aminocarbonyl)-4-chloro-6-methylphenyl]-3-bromo-1-(3-chloro-2-pyridinyl)1H-pyrazole-5-carboxamide |
|                                  | IN-GAZ70            | 3.0 @ no photodegradation<br>ND @ photodegradation   | 2-[3-bromo-1-(3-chloro-2-pyridinyl)-1H-pyrazol-5-yl]-6-chloro-8-methyl-4(1H)-quinazolinone              |
|                                  | IN-ECD73            | 4.7 @ no photodegradation<br>0.8 @ photodegradation  | 2-[3-bromo-1-(3-chloro-2-pyridinyl)-1H-pyrazole-5-yl]-6-  |

**Table 7. Identified Degradates/Metabolites**

| Study | Degradation Product | Maximum Formation Percentage (% of applied parent)  | Chemical Name                           |
|-------|---------------------|---|---|
|       |                     |   | chloro-3,8-dimethyl-4(3H)-quinazolinone |
|       | INLBA22             | 11.1 @ no photodegradation<br>ND @ photodegradation |   |
|       | INLBA24             | 4.6 @ no photodegradation<br>1.5 @ photodegradation |   |
|       | INLNA23             | 2.3 @ no photodegradation<br>0.5 @ photodegradation |   |

**Ecological Effects and Risk:**

Chlorantraniliprole can be characterized as having very little toxicity to terrestrial and aquatic vertebrates. As can be expected for an insecticide, the compound is toxic to a number of terrestrial and aquatic invertebrates. The compound can produce limited adverse effects in terrestrial and aquatic plants.

Available data for formulated products suggested no concern for enhanced toxicity of formulations versus the active ingredient alone. Data for degradates suggest no concern for toxicity exceeding the parent compound and in most cases toxicity is orders of magnitude below the parent.

Terrestrial Hazard*Birds-*

Chlorantraniliprole, degradates and formulated products can be characterized as being practically non-toxic from the acute oral and dietary perspectives. The available data show no indications that formulated product, metabolites, or degradates are more toxic than the active ingredient.

**Table 8. Available Bird Toxicity Data for Chlorantraniliprole, Formulations, and Degradates**

| Test Material Identification  | Nature of Tested Material | Registrant Study ID | Test Species                                   | Test Type        | Endpoint Type                            | Effects Value Based on A.S. | Units of Active Substance |
|-------------------------------|---------------------------|---------------------|--|------------------|--|-----------------------------|---------------------------|
| Chlorantraniliprole Technical | Technical                 | DuPont-14380        | <i>Anas platyrhynchos (Mallard)</i>            | Subacute dietary | LC 50<br>NOAEC                           | >5620<br>5620               | mg/kg diet                |
| Chlorantraniliprole Technical | Technical                 | DuPont-14384        | <i>Anas platyrhynchos (Mallard)</i>            | Reproduction     | LOAEC (viable embryo reduction)<br>NOAEC | 250<br>500                  | mg/kg diet                |
| Chlorantraniliprole Technical | Technical                 | DuPont-14378        | <i>Colinus virginianus (Northern bobwhite)</i> | Acute oral dose  | LD 50<br>NOAEL                           | >2250<br>2250               | mg/kg bw                  |
| Chlorantraniliprole Technical | Technical                 | DuPont-14379        | <i>Colinus virginianus (Northern bobwhite)</i> | Subacute dietary | LC 50<br>NOAEC                           | >5620<br>5620               | mg/kg diet                |

**Table 8. Available Bird Toxicity Data for Chlorantraniliprole, Formulations, and Degradates**

| Test Material Identification  | Nature of Tested Material | Registrant Study ID | Test Species                                   | Test Type        | Endpoint Type  | Effects Value Based on A.S. | Units of Active Substance |
|-------------------------------|---------------------------|---------------------|--|------------------|--|-----------------------------|---------------------------|
| Chlorantraniliprole Technical | Technical                 | DuPont-14383        | <i>Colinus virginianus</i> (Northern bobwhite) | Reproduction     | LOAEC (egsheell thinning)<br>NOAEC                     | 250<br>120                  | mg/kg-diet                |
| IN-EQW78                      | Technical metabolite      | DuPont-18859        | <i>Colinus virginianus</i> (Northern bobwhite) | Acute oral dose  | LD 50<br>NOAEL   | >2250<br>2250               | mg IN-EQW78/kg bw         |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-18945        | <i>Colinus virginianus</i> (Northern bobwhite) | Acute oral dose  | LD 50<br>NOAEL(transient clinical signs, no mortality) | >2000<br>432                | mg a.i./kg bw             |
| Chlorantraniliprole 35WG      | Formulated Product        | DuPont-18946        | <i>Colinus virginianus</i> (Northern bobwhite) | Acute oral dose  | LD 50<br>NOAEL(transient clinical signs, no mortality) | >2250<br>486                | mg a.i./kg bw             |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-19420        | <i>Colinus virginianus</i> (Northern bobwhite) | Subacute dietary | LC 50<br>NOAEC   | >5620<br>5620               | mg a.i./kg diet           |

*Mammals-*

Acute toxicity study effects for the technical active ingredient in mammals are reported as follows:

Acute Oral Toxicity LD50: >5000 mg/kg (Rat)

Acute Dermal Toxicity LD50: >5000 mg/kg (Rat)

Acute Inhalation Toxicity LC50: >5.1 mg/L (Rat)

Formulated products are as equally non-toxic following acute exposures as is technical chlorantraniliprole. A single dose of chlorantraniliprole 20SC [200 g/L (w/v); 18.5% (w/w)] (chlorantraniliprole 20SC) was administered by oral gavage to three fasted female rats at a dose of 5000 mg/kg. The rats were dosed one at a time at a minimum of 48-hour intervals. All rats survived until the scheduled sacrifice. No clinical signs of toxicity were observed, and no body weight loss occurred after dosing. No gross lesions were present in the rats at necropsy. A single dose of chlorantraniliprole 35WG was administered by oral gavage to one fasted female rat each at a dose of 175, 550, or 1750 mg/kg and to three fasted female rats at a dose of 5000 mg/kg. No deaths occurred. The rats exhibited no clinical signs of toxicity during the study. No body weight losses occurred after dosing. No gross lesions were present in the rats at necropsy. For the purposes of this risk assessment, to facilitate a comparison of estimated dietary residues with toxicity endpoints for acute effects, the existing rate oral LD50 toxicity study was used to estimate a dietary concentration of the pesticide that would correspond to a daily oral dose equivalent to the LD50. To accomplish this, a conservative ingestion rate of 100 percent of the body weight was applied. The resulting estimated dietary acute toxicity endpoint is >5000 mg/kg-diet [ $(>5000 \text{ mg/kg-bw})(1 \text{ kg-bw/1kg-diet}) = >5000 \text{ mg/kg-diet}$ ].

In developmental toxicity studies in rats and rabbits, chlorantraniliprole exhibited no effects on any parameter in pregnant females or their offspring at levels up to and including the maximum tested dose of 1,000 mg/kg bw/day. The NOAEL for this study is 1,000 mg/kg/day.

No reproduction toxicity was observed in a two-generation reproduction study with chlorantraniliprole in rats. No adverse effects were observed on reproduction, fertility, sperm parameters, estrous cycle, litter size, pup survival and developmental landmarks up to the maximum tested dose of 20,000 ppm in the diet. There were no adverse histological findings indicative of reproductive toxicity. There was a slight reduction in the F1 pup (but not F2 pup) weight during lactation at the highest dose level (mean maternal intake during lactation equal to 3118 mg/kg-bw/day); this was attributed, in part, to weight loss in one dehydrated dam during lactation which had a litter with some of the lowest pup weights. The slight change in pup weight was without subsequent effects since overall body weight, weight gain and development in F1 rats fed 20,000 ppm were similar to control animals. The NOAEC for this study is 20,000 ppm or 1000 mg/kg bw/day as a NOAEL (estimated).

*Invertebrates-*

The available formulated product data, when adjusted for active ingredient suggest that there is no practical difference between the toxicity of active ingredient and formulated products to bees.

**Table 9. Terrestrial Invertebrate Toxicity Data for Chlorantraniliprole, Formulations, and Degradates**

| Test Material Identification | Nature of Tested Material | Registrant Study ID | Test Species                     | Test Type                  | Endpoint Type                   | Effects Value Based on A.S. | Units of Active Substance   |
|------------------------------|---------------------------|---------------------|----------------------------------|----------------------------|---------------------------------|-----------------------------|-----------------------------|
| Chlorantraniliprole 20SC     | Formulated Product        | DuPont-18423        | <i>Aphidius rhopalosiphi</i>     | Mortality and reproduction | LR 50 and ER 50                 | >750                        | g. chlorantraniliprole/ha   |
| Chlorantraniliprole 35WG     | Formulated Product        | DuPont-12405        | <i>Aphidius rhopalosiphi</i>     | Mortality and reproduction | LR 50 and ER 50                 | >750                        | g. chlorantraniliprole/ha   |
| Chlorantraniliprole 35WG     | Formulated Product        | DuPont-12753        | <i>Apis mellifera</i> (Honeybee) | Semi-field                 | NOEC                            | 156.16                      | g. chlorantraniliprole/ha   |
| Chlorantraniliprole 35WG     | Formulated Product        | DuPont-14387        | <i>Apis mellifera</i> (Honeybee) | Acute oral                 | LD50                            | >0.119                      | mg. chlorantraniliprole/bee |
| Chlorantraniliprole 35WG     | Formulated Product        | DuPont*-14387       | <i>Apis mellifera</i> (Honeybee) | Acute contact              | LD50                            | >0.100                      | mg. chlorantraniliprole/bee |
| Chlorantraniliprole 20SC     | Formulated Product        | DuPont-14388        | <i>Apis mellifera</i> (Honeybee) | semi-field                 | NOAEC                           | 52.5                        | g. chlorantraniliprole/ha   |
| Chlorantraniliprole 20SC     | Formulated Product        | DuPont-14706        | <i>Apis mellifera</i> (Honeybee) | semi-field                 | NOAEC                           | 52.5                        | g. chlorantraniliprole/ha   |
| Chlorantraniliprole 35WG     | Formulated Product        | DuPont-16269        | <i>Apis mellifera</i> (Honeybee) | Acute                      | Mortality <4%                   | 112.5                       | g. chlorantraniliprole/ha   |
| Chlorantraniliprole 20SC     | Formulated Product        | DuPont-16271        | <i>Apis mellifera</i> (Honeybee) | semi-field                 | NOAEC                           | >60                         | g chlorantraniliprole/ha    |
| Chlorantraniliprole 20SC     | Formulated Product        | DuPont-16272        | <i>Apis mellifera</i> (Honeybee) | semi-field                 | NOAEC                           | >60                         | g chlorantraniliprole/ha    |
| Chlorantraniliprole 20SC     | Formulated Product        | DuPont-17208        | <i>Apis mellifera</i> (Honeybee) | semi-field                 | NOAEC                           | 60                          | g. chlorantraniliprole/ha   |
| Chlorantraniliprole 20SC     | Formulated Product        | DuPont-17247        | <i>Apis mellifera</i> (Honeybee) | semi-field                 | LOAEC (mortality and decreased) | >60                         | g. chlorantraniliprole/ha   |



**Table 9. Terrestrial Invertebrate Toxicity Data for Chlorantraniliprole, Formulations, and Degradates**

| Test Material Identification  | Nature of Tested Material | Registrant Study ID | Test Species   | Test Type   | Endpoint Type                                    | Effects Value Based on A.S. | Units of Active Substance                                       |
|-------------------------------|---------------------------|---------------------|--|---|--|-----------------------------|---|
|                               |                           |                     |  |   | flight intensity)                                |                             |   |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-17248        | <i>Apis mellifera</i> (Honeybee)                           | semi-field  | LOAEC (mortality and decreased flight intensity) | 60                          | g. chlorantraniliprole/ha                                       |
| Chlorantraniliprole Technical | Technical                 | DuPont-17582        | <i>Apis mellifera</i> (Honeybee)                           | Acute oral  | LD 50  | >0.0274<br>>104.1           | µg/bee in water<br>µg/bee in acetone<br>chlorantraniliprole/bee |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-18085        | <i>Apis mellifera</i> (Honeybee)                           | semi-field  | NOAEC  | 60                          | g. chlorantraniliprole/ha                                       |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-18086        | <i>Apis mellifera</i> (Honeybee)                           | semi-field  | LOAEC (mortality and decreased flight intensity) | 60                          | g. chlorantraniliprole/ha                                       |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-18087        | <i>Apis mellifera</i> (Honeybee)                           | semi-field  | NOAEC  | 60                          | g. chlorantraniliprole/ha                                       |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-18426        | <i>Apis mellifera</i> (Honeybee)                           | Acute oral  | LD 50  | >114.1                      | µg. chlorantraniliprole/bee                                     |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-17301        | <i>Chrysoperla carnea</i> (Green lacewing) larvae          | Mortality<br>Reproduction   | EC50<br>LOEC                                     | 120<br>120                  | g chlorantraniliprole/ha  |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-19746        | <i>Coccinella septempunctata</i> (Lady bird beetle)        | Mortality<br>Reproduction   | LOAEC<br>LOAEC                                   | 60<br>60                    | g. chlorantraniliprole/ha                                       |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-17300        | <i>Coccinella septempunctata</i> (Lady bird beetle) larvae | Mortality<br>Reproduction   | EC50<br>LOEC                                     | <120<br>120                 | g. chlorantraniliprole/ha                                       |
| Chlorantraniliprole           | Technical                 | DuPont-14398        | <i>Eisenia fetida</i> (Earthworm)                          | Acute   | LC 50  | >1000                       | mg chlorantraniliprole /kg soil dry weight.                     |
| IN-EQW78                      | Technical metabolite      | DuPont-15389        | <i>Eisenia fetida</i> (Earthworm)                          | Acute   | LC 50  | >1000                       | mg IN-EQW78/kg soil dry weight.                                 |
| Chlorantraniliprole 35WG      | Formulated Product        | DuPont-16694        | <i>Eisenia fetida</i> (Earthworm)                          | Reproduction<br>Growth  | NOAEC  | 350                         | mg chlorantraniliprole /kg soil dry weight.                     |
| IN-EQW78                      | Technical metabolite      | DuPont-17093        | <i>Eisenia fetida</i> (Earthworm)                          | Reproduction<br>Growth  | NOAEC  | 1000                        | mg IN-EQW78/kg soil dry weight.                                 |
| IN-F6L99                      | Technical metabolite      | DuPont-17631        | <i>Eisenia fetida</i> (Earthworm)                          | Acute   | LC 50  | 632.5                       | mg IN-F6L99/kg soil dry weight.                                 |
| IN-ECD73                      | Technical metabolite      | DuPont-17632        | <i>Eisenia fetida</i> (Earthworm)                          | Reproduction<br>Growth  | NOAEC  | 1000                        | mg IN-ECD73/kg artificial soil dry weight                       |
| IN-GAZ70                      | Technical metabolite      | DuPont-17633        | <i>Eisenia fetida</i> (Earthworm)                          | Reproduction<br>Growth  | NOAEC  | 1000                        | mg IN-GAZ70/kg soil dry weight                                  |
| Chlorantraniliprole 35WG      | Formulated Product        | DuPont-18817        | <i>Eisenia fetida</i> (Earthworm)                          | Acute   | LC 50  | >350                        | mg chlorantraniliprole/kg drysoil                               |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-18818        | <i>Eisenia fetida</i> (Earthworm)                          | Acute   | LC 50  | >200                        | mg chlorantraniliprole/kg drysoil                               |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-16532        | <i>Episyrphus balteatus</i> (Hoverfly)                     | Mortality   | LR100  | 120                         | g chlorantraniliprole/ha  |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-18082        | <i>Episyrphus balteatus</i> (Hoverfly)                     | Mortality<br>Reproduction   | LR 50<br>ER 50                                   | 12.6<br>13.3                | g chlorantraniliprole/ha  |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-19747        | <i>Episyrphus balteatus</i> (Hoverfly)                     | Mortality 1 <sup>st</sup><br>treatment<br>Mortality 2 <sup>nd</sup> | <control<br>>control                             | 60<br>60                    | G chlorantraniliprole/ha<br>twice with 7-day interval           |

**Table 9. Terrestrial Invertebrate Toxicity Data for Chlorantraniliprole, Formulations, and Degradates**

| Test Material Identification | Nature of Tested Material | Registrant Study ID | Test Species                           | Test Type  | Endpoint Type                 | Effects Value Based on A.S. | Units of Active Substance                              |
|------------------------------|---------------------------|---------------------|--|--|-------------------------------|-----------------------------|--|
|                              |                           |                     |  | treatment<br>Reproduction  | NOAEL                         | 60                          |  |
| Chlorantraniliprole 35WG     | Formulated Product        | DuPont-18084        | <i>Episyrphus balteatus</i> (Hoverfly) | Mortality<br>Reproduction  | LR50<br>ER 50                 | 4.64<br>>4.4                | g. chlorantraniliprole/ha                              |
| Chlorantraniliprole 35WG     | Formulated Product        | DuPont-20303        | <i>Episyrphus balteatus</i> (Hoverfly) | Mortality 1 <sup>st</sup><br>treatment<br>Mortality 2 <sup>nd</sup><br>treatment<br>Reproduction | <control<br><control<br>NOAEL | 60<br>60<br>60              | g. chlorantraniliprole/ha<br>twice with 7-day interval |
| IN-EQW78                     | Technical metabolite      | DuPont-16531        | <i>Folsomia candida</i> (Springtail)   | Reproduction   | EC 50<br>NOEC                 | >100<br>100                 | mg IN-EQW78/kg dry soil                                |
| IN-ECD73                     | Technical metabolite      | DuPont-17083        | <i>Folsomia candida</i> (Springtail)   | Reproduction   | EC 50<br>NOEC                 | >100<br>100                 | mg IN-ECD73/kg dry soil                                |
| Chlorantraniliprole          | Technical                 | DuPont-18730        | <i>Folsomia candida</i> (Springtail)   | Reproduction   | EC 50<br>NOEC                 | 0.48<br>0.39                | mg chlorantraniliprole /kg dry soil                    |
| Chlorantraniliprole          | Technical                 | DuPont-19748        | <i>Hypoaspis aculeifer</i> (mite)      | Reproduction   | NOAEC                         | 100                         | mg chlorantraniliprole /kg dry soil                    |
| Chlorantraniliprole 20SC     | Formulated Product        | DuPont-18081<br>RV1 | <i>Orius laevigatus</i>                | Mortality<br>and<br>reproduction   | LR 50 &<br>ER 50              | >120                        | g. chlorantraniliprole/ha                              |
| Chlorantraniliprole 35WG     | Formulated Product        | DuPont-12406        | <i>Typhlodromus pyri</i>               | Mortality<br>and<br>reproduction   | LR 50<br>and ER<br>50         | >750                        | g. chlorantraniliprole/ha                              |
| Chlorantraniliprole 20SC     | Formulated Product        | DuPont-14704        | <i>Typhlodromus pyri</i>               | Mortality<br>and<br>reproduction   | LR 50<br>ER 50                | >750                        | g. chlorantraniliprole/ha                              |
| Chlorantraniliprole 20SC     | Formulated Product        | DuPont-17312        | <i>Typhlodromus pyri</i>               | Population<br>study  | NOAEC                         | 750                         | g. chlorantraniliprole/ha                              |
| Chlorantraniliprole 35WG     | Formulated Product        | DuPont-14705        | <i>Typhlodromus pyri</i>               | Population<br>reduction<br>(transient)   | LOAEC                         | 52.5                        | g. chlorantraniliprole/ha                              |
| Chlorantraniliprole 20SC     | Formulated Product        | DuPont-18424        | <i>Typhlodromus pyri</i>               | Mortality<br>and<br>reproduction   | LR 50<br>and ER<br>50         | >750                        | g. chlorantraniliprole/ha                              |

*Aquatic Hazard-*

*Freshwater Fish-*

While non-definitive LC50 values are only available for chlorantraniliprole, it can be characterized as being slightly to practically non-toxic to freshwater fish. The available data show no indications that formulated products are more toxic than active ingredient.

**Table 10. Freshwater Fish Toxicity Data for Chlorantraniliprole, Formulations, and Degradates**

| Test Material Identification  | Nature of Tested Material | Registrant Study ID | Test Species                         | Test Type | Endpoint Type | Effects Value Based on A.S. | Units of Active Substance |
|-------------------------------|---------------------------|---------------------|--------------------------------------|-----------|---------------|-----------------------------|---------------------------|
| Chlorantraniliprole Technical | Technical                 | DuPont-14278        | <i>Ictalurus punctatus</i> (Channel) | Acute     | LC 50         | >13.4                       | mg chlorantraniliprole/L  |

**Table 10. Freshwater Fish Toxicity Data for Chlorantraniliprole, Formulations, and Degradates**

| Test Material Identification  | Nature of Tested Material | Registrant Study ID | Test Species                                  | Test Type | Endpoint Type | Effects Value Based on A.S. | Units of Active Substance |
|-------------------------------|---------------------------|---------------------|---|-----------|---------------|-----------------------------|---------------------------|
|                               |                           |                     | <i>cafish</i> )                               |           |               |                             |                           |
| Chlorantraniliprole Technical | Technical                 | DuPont-12333        | <i>Lepomis macrochirus</i> (Bluegill sunfish) | Acute     | LC 50         | >15.1                       | mg chlorantraniliprole/L  |
| Chlorantraniliprole Technical | Technical                 | DuPont-12332        | <i>Oncorhynchus mykiss</i> (Rainbow trout)    | Acute     | LC 50         | >13.8                       | mg chlorantraniliprole/L  |
| Chlorantraniliprole Technical | Technical                 | DuPont-14279        | <i>Oncorhynchus mykiss</i> (Rainbow trout)    | Chronic   | NOAEC         | 0.11                        | mg chlorantraniliprole/L  |
| Chlorantraniliprole 35WG      | Formulated Product        | DuPont-15396        | <i>Lepomis macrochirus</i> (Bluegill sunfish) | Acute     | LC 50         | >1.19                       | mg chlorantraniliprole/L  |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-18602        | <i>Lepomis macrochirus</i> (Bluegill sunfish) | Acute     | LC 50         | >1.84                       | mg chlorantraniliprole/L  |
| Chlorantraniliprole 35WG      | Formulated Product        | DuPont-15386        | <i>Oncorhynchus mykiss</i> (Rainbow trout)    | Acute     | LC 50         | >1.09                       | mg chlorantraniliprole/L  |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-18601        | <i>Oncorhynchus mykiss</i> (Rainbow trout)    | Acute     | LC 50         | >2.16                       | mg chlorantraniliprole/ha |

*Freshwater Invertebrates-*

Chlorantraniliprole can be characterized as very highly toxic to freshwater invertebrates. The available data show no indications that formulated product, metabolites, or degradates are more toxic than active ingredient.

**Table 11. Freshwater Invertebrate Toxicity Data for Chlorantraniliprole, Formulations, and Degradates**

| Test Material Identification  | Nature of Tested Material | Registrant Study ID | Test Species                                 | Test Type | Endpoint Type                               | Effects Value Based on A.S. | Units of Active Substance                            |
|-------------------------------|---------------------------|---------------------|--|-----------|---|-----------------------------|--|
| Chlorantraniliprole Technical | Technical                 | DuPont-18428        | <i>Brachionus calyciflorus</i>               | Acute     | EC 50                                       | >1.00                       | mg chlorantraniliprole/L                             |
| Chlorantraniliprole Technical | Technical                 | DuPont-15109        | <i>Centroptilum triangulifer</i> (Mayfly)    | Acute     | LC 50                                       | 0.0116                      | mg chlorantraniliprole/L                             |
| Chlorantraniliprole Technical | Technical                 | DuPont-17585        | <i>Chimarra atterima</i> (Caddisfly)         | Acute     | LC 50                                       | 0.0117                      | mg chlorantraniliprole/L                             |
| Chlorantraniliprole Technical | Technical                 | DuPont-15112        | <i>Chironomus riparius</i> (Midge)           | Acute     | LC 50                                       | 0.0859                      | mg chlorantraniliprole/L                             |
| Chlorantraniliprole Technical | Technical                 | DuPont-14396        | <i>Chironomus riparius</i> (Midge)           | Chronic   | NOAEC (pore water from 28-d sediment study) | 0.005                       | mg chlorantraniliprole/kg spiked sediment dry weight |
| Chlorantraniliprole Technical | Technical                 | DuPont-18090        | <i>Copepods (of the suborder Cyclopoida)</i> | Acute     | LC 50                                       | >1.00                       | mg chlorantraniliprole technical/L                   |
| Chlorantraniliprole           | Technical                 | DuPont-             | 28-day old                                   | Acute     | EC 50                                       | 0.0166                      | mg chlorantraniliprole/L                             |

**Table 11. Freshwater Invertebrate Toxicity Data for Chlorantraniliprole, Formulations, and Degradates**

| Test Material Identification  | Nature of Tested Material | Registrant Study ID | Test Species   | Test Type | Endpoint Type  | Effects Value Based on A.S. | Units of Active Substance |
|-------------------------------|---------------------------|---------------------|--|-----------|----------------|-----------------------------|---------------------------|
| Technical                     |                           | 15868               | <i>Daphnia magna</i> (Water flea)                    |           |                |                             |                           |
| Chlorantraniliprole Technical | Technical                 | DuPont-12411*       | <i>Daphnia magna</i> (Water flea)                    | Acute     | EC 50          | 0.0116                      | mg chlorantraniliprole/L  |
| Chlorantraniliprole Technical | Technical                 | DuPont-12754 RV1    | <i>Daphnia magna</i> (Water flea)                    | Chronic   | NOAEC          | 0.00447                     | mg chlorantraniliprole/L  |
| LBA24-002                     | Technical metabolite      | DuPont-14889 RV1    | <i>Daphnia magna</i> (Water flea)                    | Acute     | EC 50<br>NOAEC | >10<br>10                   | mg LBA24-002/L            |
| LBA22-002                     | Technical metabolite      | DuPont-14890 RV1    | <i>Daphnia magna</i> (Water flea)                    | Acute     | EC 50<br>NOAEC | >0.24<br>0.24               | mg LBA22-002/L            |
| Chlorantraniliprole 35WG      | Formulated Product        | DuPont-15113        | <i>Daphnia magna</i> (Water flea)                    | Acute     | EC 50          | 0.011                       | mg chlorantraniliprole/L  |
| IN-EQW78                      | Technical metabolite      | DuPont-15388        | <i>Daphnia magna</i> (Water flea)                    | Acute     | EC 50<br>NOAEC | >0.138<br>0.138             | mg IN-EQW78/L             |
| Chlorantraniliprole Technical | Technical                 | DuPont-15874        | <i>Daphnia magna</i> (Water flea)                    | Chronic   | NOAEC          | 0.00447                     | mg chlorantraniliprole/L  |
| LBA23-000                     |                           | DuPont-16754 RV1    | <i>Daphnia magna</i> (Water flea)                    | Acute     | EC 50<br>NOAEC | >0.01                       | mg LBA23-000/L            |
| Chlorantraniliprole Technical | Technical                 | DuPont-17653        | <i>Daphnia magna</i> (Water flea)                    | Acute     | EC 50          | 0.0098                      | mg chlorantraniliprole/L  |
| IN-GAZ70                      | Technical metabolite      | DuPont-18387        | <i>Daphnia magna</i> (Water flea)                    | Acute     | EC 50<br>NOAEC | >0.00987<br>0.00987         | mg IN-GAZ70/L             |
| Chlorantraniliprole 20SC      | Formulated Product        | DuPont-18427 RV1    | <i>Daphnia magna</i> (Water flea)                    | Acute     | EC 50          | 0.0071                      | mg chlorantraniliprole/L  |
| IN-ECD73                      | Technical metabolite      | DuPont-18472        | <i>Daphnia magna</i> (Water flea)                    | Acute     | EC 50<br>NOAEC | >0.013<br>0.0138            | mg IN-ECD73/L             |
| IN-F6L99                      | Technical metabolite      | DuPont-18473        | <i>Daphnia magna</i> (Water flea)                    | Acute     | EC 50          | 46.8                        | mg IN-F6L99/L             |
| IN-F9N04                      | Technical metabolite      | DuPont-18474        | <i>Daphnia magna</i> (Water flea)                    | Acute     | EC 50          | 0.03                        | mg IN-F9N04/L             |
| Chlorantraniliprole Technical | Technical                 | DuPont-15877        | <i>Gammarus pseudolimnaeus</i>                       | Acute     | LC 50          | 0.0351                      | mg chlorantraniliprole/L  |
| Chlorantraniliprole Technical | Technical                 | DuPont-15114        | <i>Hyalella azteca</i>                               | Acute     | LC 50          | >0.389                      | mg chlorantraniliprole/L  |
| Chlorantraniliprole Technical | Technical                 | DuPont-15873        | <i>Lumbriculus variegatus</i> (California blackworm) | Acute     | LC 50          | >1.49                       | mg chlorantraniliprole/L  |
| Chlorantraniliprole Technical | Technical                 | DuPont-15872        | <i>Oronectes virilis</i> (Crayfish)                  | Acute     | LC 50          | >1.42                       | mg chlorantraniliprole/L  |
| Chlorantraniliprole Technical | Technical                 | DuPont-18804        | <i>Soyedina carolinensis</i> (Carolina Forestfly)    | Acute     | LC 50          | >0.978                      | mg chlorantraniliprole/L  |

Estuarine/Marine Animals

*Estuarine/Marine Fish-*

While non-definitive LC50 values are only available for chlorantraniliprole, it can be characterized as being slightly to practically non-toxic to estuarine/marine fish.

**Table 12. Estuarine/Marine Fish Toxicity Data for Chlorantraniliprole,**

## Formulations, and Degradates

| Test Material Identification  | Nature of Tested Material | Registrant Study ID | Test Species                                     | Test Type                 | Endpoint Type | Effects Value Based on A.S. | Units of Active Substance |
|-------------------------------|---------------------------|---------------------|--|---------------------------|---------------|-----------------------------|---------------------------|
| Chlorantraniliprole Technical | Technical                 | DuPont-12334        | <i>Cyprinodon variegatus</i> (Sheepshead minnow) | Acute                     | LC 50         | >12.0                       | mg/L                      |
| Chlorantraniliprole Technical | Technical                 | DuPont-14394        | <i>Cyprinodon variegatus</i> (Sheepshead minnow) | Early Life Stage Toxicity | NOAEC         | 1.28                        | mg/L                      |

### Estuarine/Marine Invertebrates-

Chlorantraniliprole is very highly toxic to certain estuarine marine invertebrates, based on the data for the eastern oyster. Because the most sensitive species acutely (oyster) is not represented by chronic values, the acute to chronic ratio for the mysid ( $1.15/0.695 = 1.65$ ) was applied to the oyster LC50 to estimate a chronic effects endpoint for this species ( $0.0399 \text{ mg/L}/1.65 = 0.024 \text{ mg/L}$ ).

**Table 13. Estuarine/Marine Invertebrate Toxicity Data for Chlorantraniliprole, Formulations, and Degradates**

| Test Material Identification  | Nature of Tested Material | Registrant Study ID | Test Species                                  | Test Type | Endpoint Type | Effects Value Based on A.S. | Units of Active Substance |
|-------------------------------|---------------------------|---------------------|---|-----------|---------------|-----------------------------|---------------------------|
| Chlorantraniliprole Technical | Technical                 | DuPont-12335        | <i>Americamysis bahia</i> (Mysid shrimp)      | Acute     | LC 50         | 1.15                        | mg chlorantraniliprole/L  |
| Chlorantraniliprole Technical | Technical                 | DuPont-14397        | <i>Americamysis bahia</i> (Mysid shrimp)      | Chronic   | NOAEC         | 0.695                       | mg chlorantraniliprole/L  |
| Chlorantraniliprole Technical | Technical                 | DuPont-12412        | <i>Crassostrea virginica</i> (Eastern oyster) | Acute     | EC 50         | 0.0399                      | mg chlorantraniliprole/L  |

## Plants

### Terrestrial Plants-

The following table presents the available terrestrial plant toxicity data.

**Table 14. Terrestrial Plant Toxicity Data for Chlorantraniliprole, Formulations, and Degradates**

| Test Material Identification | Nature of Tested Material | Registrant Study ID | Test Species   | Test Type        | Endpoint Type                 | Effects Value Based on A.S.                        | Units of Active Substance  |
|------------------------------|---------------------------|---------------------|--|------------------|-------------------------------|--|----------------------------|
| Chlorantraniliprole 20SC     | Formulated Product        | DuPont-19074        | <i>Zea mays</i> (corn)<br><i>Avena sativa</i> (oat)<br><i>Allium cepa</i> (common onion)<br><i>Lolium perenne</i> (perennial ryegrass) | Vegetative vigor | EC25 dicots<br><br>EC5 dicots | >300<br><br>>300 cucumber, rape<br><300 all others | g. chlorantraniliprole /ha |

**Table 14. Terrestrial Plant Toxicity Data for Chlorantraniliprole, Formulations, and Degradates**

| Test Material Identification | Nature of Tested Material | Registrant Study ID | Test Species  | Test Type          | Endpoint Type  | Effects Value Based on A.S.   | Units of Active Substance  |
|------------------------------|---------------------------|---------------------|---|--------------------|--|---|----------------------------|
|                              |                           |                     | <i>Cucumis sativa</i> (cucumber)<br><i>Brassica napus</i> (rape)<br><i>Pisum sativum</i> (pea)<br><i>Glycine max</i> (soybean)<br><i>Beta vulgaris</i> (sugarbeet)<br><i>Lycopersicon esculentum</i> (tomato)   |                    | EC25 monocots<br><br>EC5 monocots                                      | >300<br><br><300 Onion<br>>300 other species  |                            |
| Chlorantraniliprole 20SC     | Formulated Product        | DuPont-19075        | <i>Zea mays</i> (corn)<br><i>Avena sativa</i> (oat)<br><i>Allium cepa</i> (common onion)<br><i>Lolium perenne</i> (perennial ryegrass)<br><i>Cucumis sativa</i> (cucumber)<br><i>Brassica napus</i> (rape)<br><i>Pisum sativum</i> (pea)<br><i>Glycine max</i> (soybean)<br><i>Beta vulgaris</i> (sugarbeet)<br><i>Lycopersicon esculentum</i> (tomato) | Seedling emergence | EC25 monocots<br><br>EC5 monocots<br><br>EC25 dicots<br><br>EC5 dicots | >300 (except ryegrass with 34% effect)<br><br><300<br><300 all others<br><br>>300<br><br><300 (cucumber, rape, pea, sugar beet)<br>>300 other species | g. chlorantraniliprole /ha |

*Aquatic Plants-*

The following table presents the available aquatic plant toxicity data.

**Table 15. Aquatic Plant Toxicity Data for Chlorantraniliprole, Formulations, and Degradates**

| Test Material Identification  | Nature of Tested Material | Registrant Study ID | Test Species                                  | Test Type             | Endpoint Type | Effects Value Based on A.S. | Units of Active Substance |
|-------------------------------|---------------------------|---------------------|---|-----------------------|---------------|-----------------------------|---------------------------|
| Chlorantraniliprole Technical | Technical                 | DuPont-14390        | <i>Anabaena flos-aquae</i> (Blue-green algae) | Growth / Reproduction | EC50<br>NOAEC | >2<br>2                     | mg. chlorantraniliprole/L |
| Chlorantraniliprole Technical | Technical                 | DuPont-12409 RV1    | <i>Lemna gibba</i> (Duckweed)                 | Growth / Reproduction | EC50<br>NOAEC | >2<br>2                     | mg. chlorantraniliprole/L |
| Chlorantraniliprole Technical | Technical                 | DuPont-14392 RV1    | <i>Navicula pelliculosa</i>                   | Growth / Reproduction | EC50<br>NOEC  | >15.1<br>15.1               | mg. chlorantraniliprole/L |
| Chlorantraniliprole           | Technical                 | DuPont-             | <i>Selenastrum</i>                            | Growth /              | EC50          | >2                          | mg.                       |

|                               |                    |              |  |                       |           |               |                           |
|-------------------------------|--------------------|--------------|--|-----------------------|-----------|---------------|---------------------------|
| Technical                     |                    | 12408 RV1    | <i>capricornutum</i> (Green algae)                   | Reproduction          | NOEC      | 2             | chlorantraniliprole/L     |
| Chlorantraniliprole Technical | Technical          | DuPont-14391 | <i>Skeletonema costatum</i>                          | Growth / Reproduction | EC50 NOEC | >14.6<br>14.6 | mg. chlorantraniliprole/L |
| Chlorantraniliprole 20SC      | Formulated Product | DuPont-18088 | <i>Pseudokirchneriella subcapitata</i> (Green algae) | Growth / Reproduction | EC50 NOEC | >4<br>4       | mg. chlorantraniliprole/L |
| Chlorantraniliprole 35WG      | Formulated Product | DuPont-18089 | <i>Pseudokirchneriella subcapitata</i> (Green algae) | Growth / Reproduction | EC50 NOEC | >1.78<br>1.78 | mg. chlorantraniliprole/L |

### Exposure and Risk to Terrestrial and Aquatic Organisms:

For the purposes of the risk assessment, terrestrial non-target organisms were assumed to occupy areas immediately adjacent to treatment sites. The exposure pathways analyzed for terrestrial vertebrate wildlife included dietary uptake of food items directly treated with the pesticide at the time of application to the treated field. Exposures were calculated on a dietary basis alone. Dose-based exposures were not considered due to no evidence of acute oral toxicity. Accumulation from soil to plants or animal food sources was not considered in this risk assessment. The very low octanol/water partitioning coefficient ( $\log K_{ow} = 2.90$ ) suggested that bioaccumulation is not likely. Inhalation of vapor phase pesticide was not considered. The low vapor pressure of the parent compound ( $6.3 \times 10^{-12}$  PA) suggested that the pesticide does not readily volatilize and the rat acute inhalation LC50: >5.1 mg/L suggests that what little material that would volatilize would not be of significant toxicity. Dermal exposure for terrestrial vertebrates was not considered quantitatively. The low octanol/water partitioning coefficient suggested little potential to cross the dermal barrier, a conclusion supported by the demonstrated low dermal acute toxicity in the rat (LD50: >5000 mg/kg).

Other routes of exposure for terrestrial wildlife that are possible but not considered include drinking water exposure, inhalation of pesticide associated with suspended soil particulate, inhalation of spray droplets, and oral ingestion of soil particles through incidental contact while feeding and preening.

Terrestrial plant exposures considered potentially complete for this pesticide include exposure of vegetation adjacent to treatment sites via drift, sheet flow runoff, and runoff to drainage channels. Drift exposures were considered important to effects measures involving direct application to leaf surfaces. Drift and runoff exposures were also comparable to effects endpoints associated with application of pesticide to soil.

Dietary exposures for terrestrial vertebrates were estimated using the T-REX model version 1.3.1. The exposure endpoint for terrestrial vertebrates from the T-REX model's output corresponded to an upper bound single day peak concentration of pesticide in each of four generalized dietary items. These pesticide concentration estimates were then used for either direct comparison with dietary effects endpoints or first converted to daily oral dose estimates for feeding wildlife and then compared to daily dose effects endpoints.

For terrestrial vertebrate risks the T-REX model was used with an assumption of a maximum 0.5 lb ai/acre single application rate. This is the highest application rate from the proposed labels. The assumption of a single maximum application at the labeled crop

limit also allowed for consideration of the potential for systemic uptake of the pesticide.

For the purposes of the risk assessment aquatic non-target organisms were assumed to occupy a surface water body immediately adjacent to treatment sites. The likely pathways for introduction of the chemical stressor to this aquatic water body include:

- direct deposition of applied product through spray drift
- mass transport of chemical stressor dissolved in run-off from the treated field, and
- mass transport of chemical stressor adsorbed to eroded solids from the treated field.

Once pesticide enters the receiving waters, exposure is likely most significant through absorption of dissolved pesticide from the water column or interstitial water across the gill, integument, and perhaps the gut of the organism. Food chain exposures were not considered to be significant for this pesticide because chlorantraniliprole has a low fish bioconcentration factor of <21.

For estimating exposures of aquatic organisms to chlorantraniliprole, the risk assessment used the PRZM/EXAMS modeling shell (PE5V01). Inputs for this model are presented in Table 17. The screening risk assessment used estimates of the dissolved concentration of the pesticide over a single day, 21-day, and 60-day averaging periods and the exposure measurement point was that averaging period corresponding to a one in ten year return frequency for estimating exposure to water column dwelling organisms. This modeling effort focused on aerial and ground applications only, chemigation and injection were not included specifically as there was not adequate modeling scenarios. It is expected that over the top aerial and ground applications are adequate to represent injection and chemigation. The risk assessment used this approach, although the results are likely to be overestimates of exposure for such a stable compound as chlorantraniliprole because the model used up to 36 years of application events.

**Table 16. PRZM/EXAMS Input Parameters For Chlorantraniliprole**

| <b>Data</b>               | <b>Units</b>            | <b>Value</b>          | <b>Comments</b>  |
|---------------------------|-------------------------|-----------------------|--|
| Molecular Weight          | g/mole                  | 483.15                |  |
| Solubility                | mg/L                    | 1.023                 |  |
| Vapor Pressure            | Torr                    | 1.57E-13              |  |
| Henrys Constant           | atm m <sup>3</sup> /mol | 3.1E-15               | Calculated via solubility and vapor pressure   |
| Hydrolysis @ pH 7         | Days                    | Stable                |  |
| Photodegradation in Water | days                    | 0.31                  |  |
| Aerobic Soil Metabolism   | Days                    | 631.76 <sup>2,3</sup> | Calculated 90 <sup>th</sup> percentile of mean <sup>1</sup><br>Mean= 509 days<br>SD= 252 days<br><i>t</i> = 1.40 |



|   |      |        |  |
|---|------|--------|--|
|   |      |        | n= 9<br>*Several reported half-lives in MRID 46889124 were not used because of poor fit with first-order degradation model |
| Aerobic Aquatic Metabolism                | Days | 341.13 | Calculated 90 <sup>th</sup> percentile of mean <sup>1</sup><br>Mean= 178 days<br>SD= 74.95 days<br>t= 3.078<br>n=2         |
| Anaerobic Aquatic Metabolism              | Days | 208    | Value represents single half-life value <sup>4</sup>   |
| Soil:Water Coefficient (K <sub>oc</sub> ) | L/g  | 328    | Average K <sub>oc</sub>  |

#### *Risk to Terrestrial Animals-*

Risks of direct effects to terrestrial vertebrates are below Agency screening levels of concern.

#### *Aquatic to Animals-*

Risks of direct effects to freshwater fish and amphibians and estuarine/marine fish are below Agency screening levels of concern.

#### *Risk to Non-Target Insects-*

#### Terrestrial

Chlorantraniliprole has the potential to produce direct adverse effects in some non-target terrestrial insect species. It appears from the effects data that sensitivity to the pesticide is quite varied among tested invertebrates. If species specific risk assessment becomes necessary (e.g., assessment of a federally listed threatened or endangered species) it is recommended that closer evaluation of the potential representation of the invertebrate data set for a specific organism be considered.

#### Aquatic

Tables 17 – 18 present the conclusions of the risk assessment for freshwater invertebrates. Acute concerns are triggered by freshwater invertebrate RQ values for every exposure scenario modeled (except for ground spray for the Oregon apple and California turf scenarios, which involve lower rainfall assumptions and thus lower estimates of aquatic exposure). These concerns are limited primarily to acute effects to listed species and restricted use considerations.

Chronic freshwater invertebrate risk concerns were identified for proposed uses on Florida peppers (ground or aerial spray), Florida cucumbers (ground or aerial spray),

California nursery (ground spray), Florida nursery (ground spray), and Tennessee nursery (ground spray). In all cases the RQs were less than an order of magnitude above the Agency concern level. These chronic endpoints are calculated using the most sensitive chronic NOEC for daphnids (4.47 ug/L ug/L).

**Table 17. Tier II RQs for FW Invertebrates from Aerial Spray Application of DPX-E2Y45 for Various Crop Types**

| Scenario    | Application  |   |            | Peak  | 21-day Average | Acute <sup>1</sup> RQ | Chronic <sup>2</sup> RQ | Identified Concerns |
|-------------|--------------|---|------------|-------|----------------|-----------------------|-------------------------|---------------------|
|             | Rate (lbs/A) | # | Int (days) |       |                |                       |                         |                     |
| FL cabbage  | 0.065        | 3 | 3          | 2.652 | 2.146          | 0.1850                | 0.4801                  | RU,LS               |
| FL cucumber | 0.065        | 3 | 5          | 5.693 | 4.939          | 0.4258                | 1.1049                  | RU,LS, Chronic      |
| PA tomato   | 0.098        | 2 | 5          | 1.513 | 1.306          | 0.1126                | 0.2922                  | RU,LS               |
| CA tomato   | 0.098        | 2 | 5          | 1.080 | 0.922          | 0.0795                | 0.2063                  | LS                  |
| FL tomato   | 0.098        | 2 | 5          | 3.660 | 3.001          | 0.2587                | 0.6714                  | RU,LS               |
| FL peppers  | 0.098        | 2 | 5          | 6.749 | 5.683          | 0.4899                | 1.2714                  | RU,LS Chronic       |
| CA lettuce  | 0.065        | 3 | 3          | 3.579 | 2.997          | 0.2584                | 0.6705                  | RU,LS               |
| CA cotton   | 0.099        | 2 | 5          | 1.785 | 1.576          | 0.1359                | 0.3526                  | RU,LS               |
| NC cotton   | 0.099        | 2 | 5          | 3.730 | 3.207          | 0.2765                | 0.7174                  | RU,LS               |
| MS cotton   | 0.099        | 2 | 5          | 3.769 | 3.271          | 0.2820                | 0.7318                  | RU,LS               |
| NY grape    | 0.099        | 2 | 7          | 1.389 | 1.197          | 0.1032                | 0.2678                  | RU,LS               |
| CA grape    | 0.099        | 2 | 7          | 1.188 | 1.026          | 0.0884                | 0.2295                  | LS                  |
| NC apple    | 0.099        | 2 | 10         | 1.359 | 1.153          | 0.0994                | 0.2579                  | LS                  |
| PA apple    | 0.099        | 2 | 10         | 1.245 | 1.091          | 0.0941                | 0.2441                  | LS                  |
| OR apple    | 0.099        | 2 | 10         | 0.786 | 0.674          | 0.0581                | 0.1508                  | LS                  |
| ID potato   | 0.066        | 3 | 5          | 1.021 | 0.859          | 0.0741                | 0.1922                  | LS                  |
| ME potato   | 0.066        | 3 | 5          | 1.558 | 1.392          | 0.1200                | 0.3114                  | RU,LS               |
| GA peach    | 0.099        | 2 | 7          | 1.086 | 0.886          | 0.0764                | 0.1982                  | LS                  |
| MI Cherry   | 0.099        | 2 | 7          | 1.035 | 0.907          | 0.0782                | 0.2029                  | LS                  |

1-Acute Toxicity Endpoint= 11.6 µg/L

2-Chronic Toxicity Endpoint= 4.47 µg/L

\* RQ = EEC/toxicity endpoint

\*\* Acute RQs compared with acute LOCs for non listed species (0.5), restricted use (0.1), and listed species (0.05). Chronic RQs compared with chronic LOC of 1.

**Table 18. Tier II RQs for FW Invertebrates from Ground Spray Application of DPX-E2Y45 for Various Crop Types**

| Scenario    | Application  |   |     | Peak  | 21-day Average | Acute <sup>1</sup> RQ | Chronic <sup>2</sup> RQ | Identified Concerns |
|-------------|--------------|---|-----|-------|----------------|-----------------------|-------------------------|---------------------|
|             | Rate (lbs/A) | # | Int |       |                |                       |                         |                     |
| FL cabbage  | 0.065        | 3 | 3   | 2.531 | 2.045          | 0.1763                | 0.4575                  | RU,LS               |
| FL cucumber | 0.065        | 3 | 5   | 5.624 | 4.86           | 0.4190                | 1.0872                  | RU,LS, Chronic      |
| PA tomato   | 0.098        | 2 | 5   | 1.280 | 1.097          | 0.0946                | 0.2454                  | LS                  |
| CA tomato   | 0.098        | 2 | 5   | 0.731 | 0.619          | 0.0534                | 0.1385                  | LS                  |
| FL tomato   | 0.098        | 2 | 5   | 3.436 | 2.817          | 0.2428                | 0.6302                  | RU,LS               |
| FL peppers  | 0.098        | 2 | 5   | 6.501 | 5.475          | 0.4720                | 1.2248                  | RU,LS, Chronic      |
| CA lettuce  | 0.065        | 3 | 3   | 3.311 | 2.781          | 0.2397                | 0.6221                  | RU,LS               |
| CA cotton   | 0.099        | 2 | 5   | 1.470 | 1.28           | 0.1103                | 0.2864                  | RU,LS               |
| NC cotton   | 0.099        | 2 | 5   | 3.473 | 2.995          | 0.2582                | 0.6700                  | RU,LS               |
| MS cotton   | 0.099        | 2 | 5   | 3.575 | 3.116          | 0.2686                | 0.6971                  | RU,LS               |
| NY grape    | 0.099        | 2 | 7   | 1.189 | 1.025          | 0.0884                | 0.2293                  | LS                  |

|                |        |   |    |        |       |        |        |                |
|----------------|--------|---|----|--------|-------|--------|--------|----------------|
| CA grape       | 0.099  | 2 | 7  | 0.813  | 0.706 | 0.0609 | 0.1579 | LS             |
| NC apple       | 0.099  | 2 | 10 | 0.999  | 0.852 | 0.0734 | 0.1906 | LS             |
| PA apple       | 0.099  | 2 | 10 | 1.048  | 0.898 | 0.0774 | 0.2009 | LS             |
| OR apple       | 0.099  | 2 | 10 | 0.410  | 0.365 | 0.0315 | 0.0817 | None           |
| ID potato      | 0.066  | 3 | 5  | 0.812  | 0.68  | 0.0586 | 0.1521 | LS             |
| ME potato      | 0.066  | 3 | 5  | 1.350  | 1.195 | 0.1030 | 0.2673 | RU,LS          |
| GA peach       | 0.099  | 2 | 7  | 0.763  | 0.62  | 0.0534 | 0.1387 | LS             |
| MI Cherry      | 0.099  | 2 | 7  | 0.867  | 0.739 | 0.0637 | 0.1653 | LS             |
| FLTurf         | 0.26   | 2 | 7  | 0.837  | 0.707 | 0.0609 | 0.1582 | LS             |
| PA Turf        | 0.26   | 2 | 7  | 1.102  | 0.985 | 0.0849 | 0.2204 | LS             |
| CA Turf        | 0.26   | 2 | 7  | 0.654  | 0.554 | 0.0478 | 0.1239 | None           |
| CA Nursery     | 0.4992 | 1 | NA | 5.663  | 4.672 | 0.4028 | 1.0452 | RU,LS, Chronic |
| CA Residential | 0.4992 | 1 | NA | 1.779  | 1.543 | 0.1330 | 0.3452 | RU,LS          |
| FL Nursery     | 0.4992 | 1 | NA | 9.785  | 8.136 | 0.7014 | 1.8201 | RU,LS, Chronic |
| MI Nursery     | 0.4992 | 1 | NA | 2.508  | 2.284 | 0.1969 | 0.5110 | RU,LS          |
| TN Nursery     | 0.4992 | 1 | NA | 10.981 | 9.126 | 0.7867 | 2.0416 | RU,LS, Chronic |

1-Acute Toxicity Endpoint=11.6 µg/L

2-Chronic Toxicity Endpoint= 4.47 µg/L

3-(RU) Restricted Use

4-(LS) Listed Species

\* RQ = EEC/toxicity endpoint

\*\* Acute RQs compared with acute LOCs for non listed species (0.5), restricted use (0.1), and listed species (0.05). Chronic RQs compared with chronic LOC of 1.

### Estuarine/Marine

Risks to estuarine/marine invertebrates that exceed Agency concern levels are confined to the following Tier II modeling scenarios: Florida cabbage (aerial or ground spray), Florida cucumber (aerial or ground spray), Florida peppers (aerial or ground spray), Florida tomatoes (aerial spray), California lettuce (ground and aerial spray), North Carolina cotton (aerial or ground spray), Mississippi cotton (aerial or ground spray) California nursery (ground spray), Tennessee nursery (ground spray), Florida nursery (ground spray), and Mississippi nursery (ground spray). These risks are generally limited to acute effects to listed species. However, the restricted use LOCs are exceeded for the Florida vegetable scenarios (cucumber, peppers) and nursery use scenarios (California nursery, Tennessee nursery, and Florida nursery scenarios).

**Table 19. Tier II RQs for Estuarine/Marine Invertebrates from Aerial Spray Application of DPX-E2Y45 for Various Crop Types**

| Scenario    | Application  |   |     | Peak  | 21-day Average | Acute <sup>1</sup> RQ | Chronic <sup>2</sup> RQ | Identified Concerns |
|-------------|--------------|---|-----|-------|----------------|-----------------------|-------------------------|---------------------|
|             | Rate (lbs/A) | # | Int |       |                |                       |                         |                     |
| FL cabbage  | 0.065        | 3 | 3   | 2.652 | 2.146          | 0.0538                | 0.0894                  | LS                  |
| FL cucumber | 0.065        | 3 | 5   | 5.693 | 4.939          | 0.1238                | 0.2058                  | RU,LS               |
| PA tomato   | 0.098        | 2 | 5   | 1.513 | 1.306          | 0.0327                | 0.0544                  | None                |
| CA tomato   | 0.098        | 2 | 5   | 1.080 | 0.922          | 0.0231                | 0.0384                  | None                |
| FL tomato   | 0.098        | 2 | 5   | 3.660 | 3.001          | 0.0752                | 0.1250                  | LS                  |
| FL peppers  | 0.098        | 2 | 5   | 6.749 | 5.683          | 0.1424                | 0.2368                  | RU,LS               |
| CA lettuce  | 0.065        | 3 | 3   | 3.579 | 2.997          | 0.0751                | 0.1249                  | LS                  |
| CA cotton   | 0.099        | 2 | 5   | 1.785 | 1.576          | 0.0395                | 0.0657                  | None                |
| NC cotton   | 0.099        | 2 | 5   | 3.730 | 3.207          | 0.0804                | 0.1336                  | LS                  |
| MS cotton   | 0.099        | 2 | 5   | 3.769 | 3.271          | 0.0820                | 0.1363                  | LS                  |
| NY grape    | 0.099        | 2 | 7   | 1.389 | 1.197          | 0.0300                | 0.0499                  | None                |
| CA grape    | 0.099        | 2 | 7   | 1.188 | 1.026          | 0.0257                | 0.0428                  | None                |

|           |       |   |    |       |       |        |        |      |
|-----------|-------|---|----|-------|-------|--------|--------|------|
| NC apple  | 0.099 | 2 | 10 | 1.359 | 1.153 | 0.0289 | 0.0480 | None |
| PA apple  | 0.099 | 2 | 10 | 1.245 | 1.091 | 0.0273 | 0.0455 | None |
| OR apple  | 0.099 | 2 | 10 | 0.786 | 0.674 | 0.0169 | 0.0281 | None |
| ID potato | 0.066 | 3 | 5  | 1.021 | 0.859 | 0.0215 | 0.0358 | None |
| ME potato | 0.066 | 3 | 5  | 1.558 | 1.392 | 0.0349 | 0.0580 | None |
| GA peach  | 0.099 | 2 | 7  | 1.086 | 0.886 | 0.0222 | 0.0369 | None |
| MI Cherry | 0.099 | 2 | 7  | 1.035 | 0.907 | 0.0227 | 0.0378 | None |

1-Acute Toxicity Endpoint= 39.9 µg/L

2-Chronic Toxicity Endpoint= 24 µg/L

\* RQ = EEC/toxicity endpoint

\*\* Acute RQs compared with acute LOCs for non listed species (0.5), restricted use (0.1), and listed species (0.05). Chronic RQs compared with chronic LOC of 1.

**Table 20. Tier II RQs for Estuarine/Marine Invertebrates from Ground Spray Application of DPX-E2Y45 for Various Crop Types**

| Scenario       | Application |   |     | Peak   | 21-day Average | Acute <sup>1</sup> RQ | Chronic <sup>2</sup> RQ | Identified Concerns |
|----------------|-------------|---|-----|--------|----------------|-----------------------|-------------------------|---------------------|
|                | Rate (lb/A) | # | Int |        |                |                       |                         |                     |
| FL cabbage     | 0.065       | 3 | 3   | 2.531  | 2.045          | 0.0513                | 0.0852                  | LS                  |
| FL cucumber    | 0.065       | 3 | 5   | 5.624  | 4.86           | 0.1218                | 0.2025                  | RU,LS               |
| PA tomato      | 0.098       | 2 | 5   | 1.280  | 1.097          | 0.0275                | 0.0457                  | None                |
| CA tomato      | 0.098       | 2 | 5   | 0.731  | 0.619          | 0.0155                | 0.0258                  | None                |
| FL tomato      | 0.098       | 2 | 5   | 3.436  | 2.817          | 0.0706                | 0.1174                  | None                |
| FL peppers     | 0.098       | 2 | 5   | 6.501  | 5.475          | 0.1372                | 0.2281                  | RU,LS               |
| CA lettuce     | 0.065       | 3 | 3   | 3.311  | 2.781          | 0.0697                | 0.1159                  | LS                  |
| CA cotton      | 0.099       | 2 | 5   | 1.470  | 1.28           | 0.0321                | 0.0533                  | None                |
| NC cotton      | 0.099       | 2 | 5   | 3.473  | 2.995          | 0.0751                | 0.1248                  | LS                  |
| MS cotton      | 0.099       | 2 | 5   | 3.575  | 3.116          | 0.0781                | 0.1298                  | LS                  |
| NY grape       | 0.099       | 2 | 7   | 1.189  | 1.025          | 0.0257                | 0.0427                  | None                |
| CA grape       | 0.099       | 2 | 7   | 0.813  | 0.706          | 0.0177                | 0.0294                  | None                |
| NC apple       | 0.099       | 2 | 10  | 0.999  | 0.852          | 0.0214                | 0.0355                  | None                |
| PA apple       | 0.099       | 2 | 10  | 1.048  | 0.898          | 0.0225                | 0.0374                  | None                |
| OR apple       | 0.099       | 2 | 10  | 0.410  | 0.365          | 0.0091                | 0.0152                  | None                |
| ID potato      | 0.066       | 3 | 5   | 0.812  | 0.68           | 0.0170                | 0.0283                  | None                |
| ME potato      | 0.066       | 3 | 5   | 1.350  | 1.195          | 0.0299                | 0.0498                  | None                |
| GA peach       | 0.099       | 2 | 7   | 0.763  | 0.62           | 0.0155                | 0.0258                  | None                |
| MI Cherry      | 0.099       | 2 | 7   | 0.867  | 0.739          | 0.0185                | 0.0308                  | None                |
| FLTurf         | 0.26        | 2 | 7   | 0.837  | 0.707          | 0.0177                | 0.0295                  | None                |
| PA Turf        | 0.26        | 2 | 7   | 1.102  | 0.985          | 0.0247                | 0.0410                  | None                |
| CA Turf        | 0.26        | 2 | 7   | 0.654  | 0.554          | 0.0139                | 0.0231                  | None                |
| CA Nursery     | 0.4992      | 1 | NA  | 5.663  | 4.672          | 0.1171                | 0.1947                  | RU,LS               |
| CA Residential | 0.4992      | 1 | NA  | 1.779  | 1.543          | 0.0387                | 0.0643                  | None                |
| FL Nursery     | 0.4992      | 1 | NA  | 9.785  | 8.136          | 0.2039                | 0.3390                  | RU,LS               |
| MI Nursery     | 0.4992      | 1 | NA  | 2.508  | 2.284          | 0.0572                | 0.0952                  | LS                  |
| TN Nursery     | 0.4992      | 1 | NA  | 10.981 | 9.126          | 0.2287                | 0.3803                  | RU,LS               |

1-Acute Toxicity Endpoint=39.9 µg/L

2-Chronic Toxicity Endpoint= 24 µg/L

\* RQ = EEC/toxicity endpoint

\*\* Acute RQs compared with acute LOCs for non listed species (0.5), restricted use (0.1), and listed species (0.05). Chronic RQs compared with chronic LOC of 1.

*Risk to Plants-*

Risks of direct effects to terrestrial and aquatic plants are below Agency screening levels of concern.

Risk to Endangered Species

The following table summarizes the conclusions of potential concerns for direct and indirect effects to federally-listed threatened and endangered species (listed species).

**Table 21. Potential Effects to Federally Listed Taxa**

| Listed Taxa                                    | Direct Effects                            | Scenario Identified as of Concern  | Indirect Effects       | Scenario Identified as of Concern  |
|--|---|--|------------------------|--|
| Terrestrial and semi-aquatic plants - monocots | Yes <sup>4</sup>                          |  | Yes <sup>1</sup>       | all  |
| Terrestrial and semi-aquatic plants - dicots   | Yes <sup>4</sup>                          |  | Yes <sup>1</sup>       | all  |
| Terrestrial invertebrates                      | Yes                                       | all  | No                     |  |
| Birds  | No  |  | Yes <sup>1,2,3,5</sup> | All  |
| Terrestrial phase amphibians                   | No  |  | Yes <sup>1,2,5</sup>   | All  |
| Reptiles                                       | No  |  | Yes <sup>1,2,3,5</sup> | All  |
| Mammals  | No  |  | Yes <sup>1,2,3,5</sup> | All  |
| Aquatic vascular plants                        | No  |  | No                     |  |
| Freshwater fish                                | No  |  | Yes <sup>2,5</sup>     | All  |
| Aquatic phase amphibians                       | No  |  | Yes <sup>2,5</sup>     | All  |
| Freshwater crustaceans                         | Yes                                       | All except CA turf (ground spray) and OR apple (ground spray)  | Yes <sup>2,5</sup>     | All  |
| Mollusks                                       | Yes(may be subject to further evaluation) | All except CA turf (ground spray) and OR apple (ground spray)  | Yes <sup>2,5</sup>     | All  |
| Marine/estuarine fish                          | No  |  | Yes <sup>3</sup>       | FL cabbage, FL cucumber, FL pepper, NC cotton, MS cotton, CA lettuce, CA nursery, FL nursery, MI nursery, TN nursery |
| Marine/estuarine invertebrates                 | Yes                                       | FL cabbage, FL cucumber, FL pepper, NC cotton, MS cotton, CA lettuce, CA nursery, FL nursery, MI nursery, TN nursery | No                     |  |

**6. REGULATORY POSITION AND RATIONALE**

Available data provide adequate information to support the unconditional registration of chlorantraniliprole technical and end-use products on crops and turf grass and ornamentals.

**Labeling Restrictions:**

### *General Statements-*

"Do not apply directly to water. Drift and runoff may be hazardous to aquatic organisms in water adjacent to use sites."

### *Surface Water Advisory-*

"This product may contaminate water through runoff. This product has a high potential for runoff for several months or more after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. A level, well-maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential for contamination of water from runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours."

### *Ground Water Advisory-*

"This chemical has properties and characteristics associated with chemicals detected in ground water. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground-water contamination."

### *Non-Target Organism Advisory-*

"This pesticide is toxic to aquatic invertebrates, oysters, and shrimp."

### *Directions for Use-*

Since the residue data for pome fruit reflect spray volumes of 100 gallons per acre, the use directions for pome fruit should be revised to state "minimum spray volume of 100 gal/A (ground)." Also, as there are inadequate residue data that reflect use of adjuvants in end-use products in the residue field trials, the proposed labels should be revised to delete the use of adjuvants on all crops except *Brassica* crops. In the absence of residue data on crops grown in greenhouses, the label should prohibit use on crops grown in greenhouses. Given the results of the confined accumulation and limited field accumulation in rotational crops study, a restriction should be imposed on the proposed labels to prohibit the rotation to any crop not on the label.

## **7. REDUCED RISK CLASSIFICATION**

On April 3, 2007, the Reduced Risk Committee categorized chlorantraniliprole as a "reduced risk" pesticide when used on apple, lettuce, peach, pear, tomato and turf. The Committee noted that chlorantraniliprole's mammalian toxicity risk profile and ecotoxicity profile compared favorably with many of the registered alternatives. Since a reduced risk classification was granted, a public interest finding was not conducted.

Chlorantraniliprole is expected to be a major alternative to azinphos-methyl for apples and pears. It is also expected to be an alternative to phosmet for these same crops

and an alternative to pyrethroids for vegetables.

## **8. CONTACT PERSON AT EPA**

### **Mailing Address:**

Kable Bo Davis, Entomologist  
Insecticide-Rodenticide Branch  
Registration Division (7505P)  
Office of Pesticide Programs  
Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460

### **Office Location and Telephone Number:**

Room S-7225, One Potomac Yard  
2777 S. Crystal Drive  
Arlington, VA 22202  
703-306-0415

DISCLAIMER: The information presented in this Pesticide Fact Sheet is for informational purposes only may not be used to fulfill data requirements for pesticide registration and reregistration. The information is believed to be accurate as of the date on the document.

## **APPENDIX I**

### **GLOSSARY OF TERMS AND ABBREVIATIONS**

ADNT                      Acute delayed neurotoxicity

|                  |  |
|------------------|--|
| a.i.             | Active Ingredient  |
| aPAD             | Acute Population Adjusted Dose   |
| ARI              | Aggregate Risk Index   |
| BCF              | Bioconcentration Factor  |
| CAS              | Chemical Abstracts Service   |
| ChE              | Cholinesterase   |
| ChEI             | Cholinesterase inhibition  |
| cPAD             | Chronic Population Adjusted Dose   |
| %CT              | Percent crop treated   |
| DAT              | Days after treatment   |
| DEEM-FCID        | Dietary Exposure Evaluation Model - Food Consumption Intake Database   |
| DNA              | Deoxyribonucleic acid  |
| DNT              | Developmental neurotoxicity  |
| DIT              | Developmental immunotoxicity   |
| DWLOC            | Drinking Water Level of Comparison.  |
| EC               | Emulsifiable Concentrate Formulation   |
| EEC              | Estimated Environmental Concentration. The estimated pesticide concentration in an environment, such as a terrestrial ecosystem.   |
| EPA              | U.S. Environmental Protection Agency   |
| FQPA             | Food Quality Protection Act  |
| GLC              | Gas Liquid Chromatography  |
| GLN              | Guideline Number   |
| LC <sub>50</sub> | Median Lethal Concentration. A statistically derived concentration of a substance that can be expected to cause death in 50% of test animals. It is usually expressed as the weight of substance per weight or volume of water, air or feed, e.g., mg/l, mg/kg or ppm.       |
| LD <sub>50</sub> | Median Lethal Dose. A statistically derived single dose that can be expected to cause death in 50% of the test animals when administered by the route indicated (oral, dermal, inhalation). It is expressed as a weight of substance per unit weight of animal, e.g., mg/kg. |
| LOAEL            | Lowest Observed Adverse Effect Level   |
| LOAEC            | Lowest Observed Adverse Effect Concentration   |
| LOC              | Level of Concern   |
| LOD              | Limit of Detection   |
| LOQ              | Limit of Quantitation  |
| mg/kg/day        | Milligram Per Kilogram Per Day   |
| mg/L             | Milligrams Per Liter   |
| MOE              | Margin of Exposure   |



|            |   |
|------------|---|
| MRID       | Master Record Identification (number), EPA's system of recording and tracking studies submitted |
| MTD        | Maximum tolerated dose  |
| NA         | Not Applicable  |
| NOEC       | No Observable Effect Concentration  |
| NOEL       | No Observed Effect Level  |
| NOAEL      | No Observed Adverse Effect Level  |
| NOAEC      | No Observed Adverse Effect Concentration  |
| NPDES      | National Pollutant Discharge Elimination System   |
| OP         | Organophosphate   |
| OPP        | EPA Office of Pesticide Programs  |
| OPPTS      | EPA Office of Prevention, Pesticides and Toxic Substances                                       |
| PAD        | Population Adjusted Dose  |
| PAG        | Pesticide Assessment Guideline  |
| PAM        | Pesticide Analytical Method   |
| PHED       | Pesticide Handler's Exposure Data   |
| PHI        | Preharvest Interval   |
| ppb        | Parts Per Billion   |
| PPE        | Personal Protective Equipment   |
| ppm        | Parts Per Million   |
| PRZM/EXAMS | Tier II Surface Water Computer Model  |
| RAC        | Raw Agriculture Commodity   |
| RBC        | Red Blood Cell  |
| RED        | Reregistration Eligibility Decision   |
| REI        | Restricted Entry Interval   |
| RfD        | Reference Dose  |
| SCI-GROW   | Tier I Ground Water Computer Model  |
| SF         | Safety Factor   |
| TGAI       | Technical Grade Active Ingredient   |
| UF         | Uncertainty Factor  |
| µg         | micrograms  |
| µg/L       | Micrograms Per Liter  |
| µL/g       | Microliter per gram   |
| USDA       | United States Department of Agriculture   |
| WPS        | Worker Protection Standard  |

## APPENDIX II

### Citations Considered to be Part of the Data Base Supporting the Registration of Chlorantraniliprole.

- 46889000 E.I. du Pont de Nemours and Co, Inc. (2006) Submission of Product Chemistry, Residue, Fate, Environmental Fate and Toxicity Data in Support of the Experimental Use of DuPont Coragen SC and DuPont Altacor WG Insecticide Products Containing DPX-E2Y45 for Use in/on Apples, Celery, Head Lettuce, Leaf Lettuce, Pear, Pepper, Spinach, Squash, Tomato, and Watermelon and the Petition for Tolerance of DPX-E2Y45. Transmittal of 35 of 101 Studies.
- 46889001 Gagnon, M.; Hill, S.; Pentz, A.; et al. (2004) Analytical Method for the Determination of DPX-E2Y45 and Metabolites in Soil by LC/MS/MS. Project Number: DUPONT/10814. Unpublished study prepared by E. I. Du Pont De Nemours and Co., Inc. 80 p.
- 46889002 Hill, S.; Stry, J. (2004) Analytical Method for the Determination of DPX-E2Y45 in Crops Using LC/MS/MS. Project Number: DUPONT/11374. Unpublished study prepared by E. I. du Pont de Nemours And Co., Inc. 47 p.
- 46889003 Bilas, J.; Gagnon, M.; Stry, J. (2005) Analytical Method for the Determination of DPX-E2Y45 and Metabolites in Bovine Tissues, Milk, and Eggs Using LC/MS/MS. Project Number: DUPONT/11376. Unpublished study prepared by DuPont Crop Protection. 80 p.
- 46889004 MacDonald, A.; Paterson, K.; Coyle, D. (2005) The Metabolism of (Carbon 14)-DPX-E2Y45 in Apple Trees. Project Number: DUPONT/12264, 804125. Unpublished study prepared by Inveresk Research International. 126 p.
- 46889005 MacDonald, A.; Paterson, K.; Coyle, D. (2005) The Metabolism of (Carbon 14)-DPX-E2Y45 in Lettuce. Project Number: DUPONT/12265, 804172. Unpublished study prepared by Inveresk Research International. 72 p.
- 46889006 Macdonald, A.; Gray, J. (2005) The Metabolism of (Carbon 14)-DPX-E2Y45 in Tomato. Project Number: DUPONT/12266, 804167. Unpublished study prepared by Inveresk Research International. 91 p.
- 46889008 Samel, A. (2004) DPX-E2Y45 Technical: Static, Acute, 96-Hour LC50 to Rainbow Trout, *Oncorhynchus mykiss*. Project Number: DUPONT/12332, 14513, 228. Unpublished study prepared by E. I. du Pont de Nemours And Co., Inc. 34 p.
- 46889009 Samel, A. (2004) DPX-E2Y45 Technical: Static, Acute, 96-Hour LC50 to Bluegill Sunfish, *Lepomis macrochirus*. Project Number: DUPONT/12333, 14513, 226. Unpublished study prepared by E. I. du Pont de Nemours And Co., Inc. 34 p.
- 46889010 MacKenzie, S. (2004) DPX-E2Y45 Technical: Subchronic Toxicity 90-Day Feeding Study in Rats. Project Number: DUPONT/12403, 14513, 1026. Unpublished study prepared by E. I. du Pont de Nemours And Co., Inc. 609 p.
- 46889011 Samel, A. (2003) DPX-E2Y45 Technical: Static, Acute, 48-Hour EC50 to *Daphnia magna*. Project Number: DUPONT/12411, 14513, 241. Unpublished study prepared by E. I. du Pont de Nemours And Co., Inc. 38 p.
- 46889012 Lockett, E. (2004) DPX-E2Y45 Technical: 90-Day Oral Toxicity Study in Dogs. Project Number: DUPONT/12749, 14513, 1319. Unpublished study prepared by MPI Research, Inc. 916 p.
- 46889013 Finlay, C. (2006) DPX-E2Y45 Technical: Subchronic Toxicity 90-Day Feeding Study in Mice. Project Number: DUPONT/12750, 14513, 861. Unpublished study prepared

by E. I. du Pont de Nemours And Co., Inc. 456 p.

- 46889014 McCorquodale, G.; Addison, L. (2005) Aerobic Soil Metabolism of (Carbon 14)-DPX-E2Y45. Project Number: DUPONT/12779, 804235. Unpublished study prepared by Inveresk Research International. 118 p.
- 46889015 McCorquodale, G.; Mackie, D. (2005) (Carbon 14)-DPX-E2Y45: Rate of Degradation in Three Aerobic Soils. Project Number: DUPONT/12780, 804408. Unpublished study prepared by Inveresk Research International. 154 p.
- 46889016 Lynn, R.; McCorquodale, G. (2006) (Carbon 14)-DPX-E2Y45: Degradability and Fate in the Water/Sediment System. Project Number: DUPONT/12781, 804591. Unpublished study prepared by Inveresk Research International. 142 p.
- 46889017 Chapleo, S.; Paterson, K.; White, D. (2004) Hydrolytic Stability of (Carbon 14)-DPX-E2Y45 in Buffered Aqueous Solutions at pH 4, 7, and 9. Project Number: DUPONT/12782, 804083. Unpublished study prepared by Inveresk Research International. 100 p.
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