



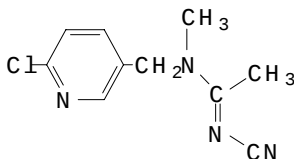
Pesticide
Fact Sheet

Name of Chemical: Acetamiprid
Reason for Issuance: Conditional Registration
Date Issued: March 15, 2002

1. **DESCRIPTION OF CHEMICAL**

Name (IUPAC): (E)-N¹-[(6-chloro-3-pyridyl)methyl]-N²-cyano-N¹-methyl
acetamidine

Chemical Structure:



Molecular Formula C₁₀H₁₁ClN₄

Molecular Weight 222.68

Common Name: Acetamiprid

EPA Shaughnessy Code: 099050

Chemical Abstracts
Service (CAS) Number: 135410-20-7

Year of Initial
Registration: 2002

Pesticide Type: Insecticide

Chemical Family: Neonicotinoid Insecticide

U.S. Producer: Aventis CropSciences

2. USE PATTERNS AND FORMULATIONS

Application Sites: Control of Sucking-Type Insects on Leafy Vegetables, Fruiting Vegetables, Cole Crops, Citrus Fruits, Pome Fruits, Grapes, Cotton, and Ornamental Plants and Flowers.

Types of Formulations: 99.5% technical product
70% WP end-use product
70% WSP end use product
0.006% RTU end use product

Types and Method of Application: Ground and aerial application using standard commercial sprayers

Application Rates: Application rates a maximum of 0.55 pounds active ingredient per acre per season.

Carrier: Water

Physical Characteristics

Property	Technical
Physical State	Solid, Powder
Color	99.9% PAI white powder TGAI Yellowish (very pale)
Odor	Odorless
Melting Point (99.7 TGAI)	98.9°C
Solubility in Water (distilled)	4.25 x 10 ⁺³ mg/L at 25°C
pH 5	3.48 x 10 ⁺³ mg/L at 25°C
pH 7	2.95 x 10 ⁺³ mg/L at 25°C
pH 9	3.96 x 10 ⁺³ mg/L at 25°C
Vapor Pressure	1 x 10 ⁻⁸ mm Hg
Octanol/Water Partition Coefficient	Kow = 6.27 Log K _{ow} = 0.8 @ 20°C No significant variations with pH
pKa	0.7 @ 25°C

Summary of Registered Uses

Summary of Use Information for the Insecticide Acetamiprid				
Formulation	Method of Application	Target Crops	Application Rate, Frequency, and Timing	Seasonal Rate
Assail™ 70% a.i. wetable powder	Broadcast Foliar (aerial or ground)	Cotton	4 apps/season; 28-day PHI; 7-day Retreatment Interval (RTI)	0.4 lb ai/A
		Leafy Vegetables	5 apps/season; 7-day PHI; 7-day RTI	0.375 lb ai/A
		Cole Crops	5 apps/season; 7-day PHI; 7-day RTI	0.375 lb ai/A
		Fruiting Vegetables	4 apps/season; 7-day PHI; 7-day RTI	0.30 lb ai/A
		Citrus Fruits	4 apps/season at 0.075 lb ai/A + 1 app at 0.25 lb ai/A; 7-day PHI; 7-day RTI	0.55 lb ai/A
		Pome Fruit	4 apps/season; 7-day PHI; 12-day RTI	0.60 lb ai/A
		Grapes	2 apps/season; 7-day PHI; 14-day RTI	0.10 lb ai/A
Pristine™ 0.006% ready-to-use liquid	Directed foliar spray	Leafy Vegetables	Same as for agricultural crops	Less than for agricultural crops
		Cole Crops		
		Fruiting Vegetables		
		Citrus Fruits		
		Pome Fruit		
		Flowers and Ornamental Plants		
Chipco™ 70% a.i. water-soluble packets	Directed foliar spray	Flowers and Ornamental Plants grown outdoors, in greenhouses, shadehouses, and lathhouses	5 apps/season; 7-day RTI; do not apply to bearing fruit trees or vegetables.	0.55 lb ai/A

3. SCIENCE FINDINGS

Summary Science Statements

Health Findings

- Acetamiprid pesticide has been classified as a “unlikely” human carcinogen.
- In mammals, acetamiprid caused generalized, nonspecific toxicity and did not appear to have specific target organ toxicity.
- Aggregate exposure to acetamiprid resulting from the requested uses are not expected to exceed the Agency’s level of concern (MOEs range from 100 to 110,000) for any population subgroup, including infants and children
- Acetamiprid has relatively low acute and chronic toxicity in mammals and

there was no evidence of carcinogenicity, neurotoxicity, mutagenicity and/or endocrine disruption

- Aggregate risk estimates for acetaminophen for food and water do not exceed the Agency's level of concern for acute and chronic levels of exposure.
- FQPA Safety Factor of 3 due to qualitative evidence of increased susceptibility following pre-/postnatal exposure in the 2 generation reproductive study in rats.

ACUTE AND CHRONIC EXPOSURE AND RISK:

- The Agency calculated exposures from food, drinking water, occupational, and residential routes of exposure for the appropriate age groups in the population. The Agency also calculated aggregate risks for acute and chronic exposures. The values were all below the level of concern.

Acute dietary exposure:

The dietary (food only) exposure estimate is greatest for the population subgroup composed of children ages 1-6 years. Acute dietary exposure is estimated to be 0.039606 mg/kg (95th percentile of exposure), which is equal to 40% of the acute population-adjusted dose (aPAD = 0.10 mg/kg: FQPA safety factor =1).

The lowest acute aggregate exposure DWLOC is 600 ppb (children 1-6 years) and is greater than the acute surface water DWEC of 17 ppb.

Short- and Intermediate-term exposure:

The lowest short- and intermediate-term DWLOC is 400 ppb for multiple population subgroups. This is significantly greater than the chronic DWEC of 4 ppb.

Chronic dietary exposure:

The dietary (food only) exposure estimate is greatest for the population subgroup composed of children ages 1-6 years. Chronic dietary exposure is estimated to be 0.014687 mg/kg/day, which is equal to 64% of the chronic population-adjusted dose (cPAD = 0.023 mg/kg/day: FQPA safety factor =3).

The lowest chronic aggregate exposure DWLOC is 80 ppb (children 1-6 years old) and is greater than the chronic DWEC of 4 ppb.

All of the acute, short-term, intermediate-term, and chronic DWLOC's are based on conservative estimates of dietary and non-dietary exposures and are greater than their respective DWECs; therefore, aggregate exposure to acetaminophen resulting from the requested uses is not expected to

exceed the Agency's level of concern for any population subgroup, including those of infants and children.

Occupational:

Since both dermal and inhalation endpoints were based on the same studies and the same toxicological effects for short-, intermediate-, and long-term exposures, the route specific MOE's were combined into a total MOE. The level of concern for occupational risks is an MOE less than 100. For the requested foliar uses, the lowest MOE for short- and intermediate-term handlers is 100 and for long-term handlers is 460. The lowest MOE for short- and intermediate-term postapplication exposure is 190 and for long-term postapplication exposure is 90 on the day of application for activities such as hand harvesting and pruning. One day following application, this MOE is 100. Therefore, a 24 hour REI will be included on the label and the risks to handlers and for postapplication exposure will not exceed the Agency's level of concern.

Ecological Effects Risk and Environmental Fate Findings

ENVIRONMENTAL FATE:

- Acetamiprid degrades rapidly by aerobic soil metabolism
- No major issues for soil mobility since low use rate and rapid degradation reduce the amount for offsite movement.
- Environmental residues in drinking water are predicted to be low.
- Acetamiprid will not bioaccumulate in fish and in sediment.
- Acetamiprid poses low risks to the environment relative to most other insecticides

ECOLOGICAL EFFECTS:

- Acetamiprid use would pose minimal risk to fish and wildlife
- Toxicity of acetamiprid is selective to insects, but some uses may pose risk to certain non-target aquatic invertebrates.
- Acetamiprid is only moderately toxic to bees.
- Acetamiprid use would generally pose low risk to threatened and endangered species
- Acetamiprid use would pose minimal risk to non target plants
- Moderate risk to be mitigated by label restrictions and warning.
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Benefits Findings:

- Registration of acetamiprid, with its low acute risk to mammals, birds, fish, and invertebrates, will support EPA's goals of finding less toxic products.
- This pesticide will be a significant organophosphate (OP) replacement for the labeled uses.

Toxicology Characteristics

Acute Toxicity of Acetamiprid Technical		
Guideline No.	Study Type	Toxicity Category
870.1000	Acute Oral - rat	II
870.1100	Acute Dermal - rat	III
870.1200	Acute Inhalation - rat	III
870.2400	Primary Eye Irritation - rabbit	IV
870.2500	Primary Skin Irritation - rabbit	IV
870.2600	Dermal sensitization - guinea pig	neg.

Acute Toxicity of Acetamiprid End-Use Products Assail 70%WP and Chipco brand Tristar 70%WSP and (Pristine RTU 0.006% acetamiprid)		
Guideline No.	Study Type	Toxicity Category
870.1000	Acute Oral - rat	III (IV)
870.1100	Acute Dermal - rat	III (III)
870.1200	Acute Inhalation - rat	IV (IV)
870.2400	Primary Eye Irritation - rabbit	IV (IV)
870.2500	Primary Skin Irritation - rabbit	IV (IV)
870.2600	Dermal sensitization - guinea pig	neg.

Guideline No./Study Type	Results
870.3100 13-Week feeding - rat	NOAEL: 12.4/14.6 mg/kg/day (M/F) LOAEL: 50.8/56.0 mg/kg/day (M/F: decreased BW, BW gain and food consumption).
870.3100 13-Week feeding - mouse	NOAEL: 106.1/129.4 mg/kg/day (M/F) LOAEL: 211.1/249.1 mg/kg/day (reduced BW and BW gain, decreased glucose and cholesterol levels, reduced absolute organ weights).
870.3150 3-Month feeding - dog	NOAEL: 13/14 mg/kg/day (M/F) LOAEL: 32 mg/kg/day (reduced BW gain in both sexes).
870.3200 21-Day dermal toxicity - rabbit	NOAEL: 1000 mg/kg/day (HDT) LOAEL: >1000 mg/kg/day
870.3700 Developmental toxicity - rat	Maternal NOAEL: 16 mg/kg/day Maternal LOAEL: 50 mg/kg/day (reduced BW & BW gain and food consumption, increased liver weights). Developmental NOAEL: 16 mg/kg/day Developmental LOAEL: 50 mg/kg/day (increased incidence of shortening of the 13 th rib)
870.3700 Developmental toxicity - rabbit	Maternal NOAEL: 15 mg/kg/day Maternal LOAEL: 30mg/kg/day (BW loss and decreased food consumption). Developmental NOAEL: 30 mg/kg/day (HDT) Developmental LOAEL: > 30 mg/kg/day
870.3800 2-Generation reproduction - rat	Parental systemic NOAEL: 17.9/21.7 mg/kg/day (M/F) Parental systemic LOAEL: 51.0/60.1 mg/kg/day (M/F) (decreased body weight, body weight gain and food consumption). Offspring systemic NOAEL: 17.9/21.7 mg/kg/day (M/F) Offspring systemic LOAEL: 51.0/60.1 mg/kg/day (M/F: reductions in pup weight, litter size, viability and weaning indices; delay in age to attain preputial separation and vaginal opening). Reproductive NOAEL: 17.9/21.7 mg/kg/day (M/F) Reproductive LOAEL: 51.0/60.1 mg/kg/day (M/F: reductions in litter weights and individual pup weights on day of delivery).
870.4100 1-Year oral - dog	NOAEL: 20/21 mg/kg/day (M/F) LOAEL: 55/61 mg/kg/day (M/F: initial BW loss and overall reduction in BW gain).
870.4200 Carcinogenicity - mouse	NOAEL: 20.3/75.9 mg/kg/day (M/F) LOAEL: 65.6/214.6 mg/kg/day (M/F: decreased BW & BW gain and amyloidosis in numerous organs (M) and decreased BW and BW gain (F)). Not oncogenic under conditions of study.
870.4300 Chronic/carcinogenicity - rat	NOAEL: 7.1/8.8 mg/kg/day (M/F) LOAEL: 17.5/22.6 mg/kg/day (M/F, decreases in mean BW & BW gain (F) and hepatocellular vacuolation (M)) Evidence of treatment-related increase in mammary tumors was not statistically significant.

Guideline No./Study Type	Results
870.5100 <i>Salmonella typhimurium</i> /E. coli Reverse gene mutation assay	Not mutagenic under the conditions of the study.
870.5300 Mammalian cells in culture Forward gene mutation assay - CHO cells	Not mutagenic under the conditions of the study.
870.5375 <i>In vitro</i> mammalian chromosomal aberrations - CHO cells	Acetamiprid is a clastogen under the conditions of the study.
870.5385 <i>In vivo</i> mammalian chromosome aberrations - rat bone marrow	Acetamiprid did not induce a significant increase in chromosome aberrations in bone marrow cells when compared to the vehicle control group.
970.5395 <i>In vivo</i> mammalian cytogenetics - micronucleus assay in mice	Acetamiprid is not a clastogen in the mouse bone marrow micronucleus test.
870.5550 UDS assay in primary rat hepatocytes/mammalian cell culture	Acetamiprid tested negatively for UDS in mammalian hepatocytes <i>in vivo</i> .
870.6200 Acute neurotoxicity - rat	NOAEL: 10 mg/kg LOAEL: 30 mg/kg (reduction in locomotor activity).
870.6200 Subchronic neurotoxicity - rat	NOAEL: 14.8/16.3 mg/kg/day (M/F) LOAEL: 59.7/67.6 mg/kg/day (M/F: reductions in BW, BW gain, food consumption and food efficiency).
N/A 28-Day feeding - dog	NOAEL: 16.7/19.1 mg/kg/day (M/F) LOAEL: 28.0/35.8 mg/kg/day (reduced BW gain).
870.7485 Metabolism - rat	Extensively and rapidly metabolized. Metabolites 79-86% of administered dose. Profiles similar for males and females for both oral and intravenous dosing. Three-seven percent of dose recovered in urine and feces as unchanged test article. Urinary and fecal metabolites from 15-day repeat dose experiment only showed minor differences from single-dose test. Initial Phase I biotransformation: demethylation of parent. 6-chloronicotinic acid most prevalent metabolite. Phase II metabolism shown by increase in glycine conjugate.

Guideline No./Study Type	Results
870.7485 Metabolism - mice, rats, rabbits Special study	Male mice, rats or rabbits were administered single doses of acetamiprid by gavage, intraperitoneal injection (i.p.) or intravenous injection (i.v.) up to 60 mg/kg. The animals were assessed for a variety of neurobehavioral parameters. <i>In vitro</i> experiments were also done using isolated ileum sections from guinea pigs to assess contractile responses in the absence and presence of agonists (acetylcholine, histamine diphosphate, barium chloride and nicotine tartrate). Acetamiprid was also assessed via i.v. in rabbits for effects on respiratory rate, heart rate and blood pressure; via gavage in mice for effects on gastrointestinal motility; and via i.p. in rats for effects on water and electrolyte balance in urine, and blood coagulation, hemolytic potential and plasma cholinesterase activity. Based on a number of neuromuscular, behavioral and physiological effects of acetamiprid in male mice, under the conditions of this study, a overall NOAEL of 10 mg/kg (threshold) and LOAEL of 20 mg/kg could be estimated for a single dose by various exposure routes.
§ 870.7600 Dermal absorption	The majority of the dose was washed off with the percent increasing with dose. Skin residue was the next largest portion of the dose with the percent decreasing with dose. In neither case was there evidence of an exposure related pattern. Absorption was small and increased with duration of exposure. Since there are no data to demonstrate that the residues remaining on the skin do not enter the animal, then as a conservative estimate of dermal absorption, residues remaining on the skin will be added to the highest dermal absorption value. The potential total absorption at 24 hours could be approximately 30%.

Toxicological Endpoints

Summary of Toxicological Dose and Endpoints for Acetamiprid for Use in Human Risk Assessment			
Exposure Scenario	Dose Used in Risk Assessment, UF	FQPA SF* and Endpoint for Risk Assessment	Study and Toxicological Effects
Acute Dietary <u>general population</u> including infants and children	NOAEL = 10 mg/kg UF = 100 Acute RfD = 0.10 mg/kg/day	FQPA SF = 1 aPAD = 0.10 mg/kg/day	Acute mammalian neurotoxicity study in the rat LOAEL = 30 mg/kg based on reduction in locomotor activity in males.
Chronic Dietary <u>all populations</u>	NOAEL = 7.1 mg/kg/day UF = 100 Chronic RfD = 0.07 mg/kg/day	FQPA SF = 3 cPAD = 0.023 mg/kg/day	Chronic/oncogenicity study in the rat LOAEL = 17.5 mg/kg/day based on reduced body weight and body weight gain (females) and hepatocellular vacuolation (males).

Exposure Scenario	Dose Used in Risk Assessment, UF	FQPA SF* and Endpoint for Risk Assessment	Study and Toxicological Effects
Short- and Intermediate-Term Incidental Oral (1 to 30 days and 1 month to 6 months) (Residential)	NOAEL= 15 mg/kg/day	LOC for MOE = 300 (Residential)	Co-critical studies: subchronic oral (rat); subchronic neurotoxicity (rat) developmental toxicity (rat); LOAEL = 50 mg/kg/day based on reductions in body weight, body weight gain and food consumption.
Short- and Intermediate-Term Dermal (1 to 30 days; and 1 month to 6 months) (Residential)	oral study NOAEL= 17.9 mg/kg/day (dermal absorption rate = 30%)	LOC for MOE = 100 (Occupational) 300 (Residential)	2-generation reproduction study (rat) LOAEL = 51.0 mg/kg/day based on reductions in pup weights in both generations, reductions in litter size and viability and weaning indices among F ₂ offspring, significant delays in age to attain vaginal opening and preputial separation.
Long-Term Dermal (6 months to lifetime) (Residential)	oral study NOAEL= 7.1 mg/kg/day (dermal absorption rate = 30%)	LOC for MOE = 100 (Occupational) 300 (Residential)	Chronic/oncogenicity study in the rat LOAEL = 17.5 mg/kg/day based on reduced body weight and body weight gain (females) and hepatocellular vacuolation (males).
Short- and Intermediate-Term Inhalation (1 to 30 days and 1 month to 6 months) (Residential)	oral study NOAEL= 17.9 mg/kg/day (inhalation absorption rate = 100%)	LOC for MOE = 100 (Occupational) 300 (Residential)	2-generation reproduction study (rat) LOAEL = 51.0 mg/kg/day based on reductions in pup weights in both generations, reductions in litter size and viability and weaning indices among F ₂ offspring, significant delays in age to attain vaginal opening and preputial separation.
Long-Term Inhalation (6 months to lifetime) (Residential)	oral study NOAEL= 7.1 mg/kg/day (inhalation absorption rate = 100%)	LOC for MOE = 100 (Occupational) 300 (Residential)	Chronic/oncogenicity study in the rat LOAEL = 17.5 mg/kg/day based on reduced body weight and body weight gain (females) and hepatocellular vacuolation (males).
Cancer (oral, dermal, inhalation) - not likely to be carcinogenic.			

Exposure Scenario	Dose Used in Risk Assessment, UF	FQPA SF* and Endpoint for Risk Assessment	Study and Toxicological Effects
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* The reference to the FQPA Safety Factor refers to any additional safety factor that is retained due to concerns unique to the FQPA. The PAD (Population-adjusted Dose) incorporates the FQPA Safety Factor into the dose for use in risk assessment: $PAD = RfD/FQPA\ SF$.

Endocrine Disruption

There is no evidence of endocrine disruption following exposure to acetamiprid.

EXPOSURE ASSESSMENT

Human Exposures and Risks

Acute and Chronic Dietary

Summary of the Tier 1 Dietary Exposure and Risk Analyses for Acetamiprid.					
Population Subgroup	Acute		Chronic		Cancer
	95 th %ile Exposure, mg/kg	% aPAD	Exposure, mg/kg/day	% cPAD	Risk or MOE
U.S. Population (total)	0.016921	17	0.005395	24	NA
All Infants (< 1 year)	0.038317	38	0.010261	45	NA
Children 1-6 years	0.039606	40	0.014687	64	
Children 7-12 years	0.022084	22	0.008072	35	
Females 13-50	0.011451	11	0.003970	17	
Males 13-19	0.011627	12	0.004460	19	
Males 20+ years	0.009624	10	0.003673	16	
Seniors 55+	0.010242	10	0.004005	17	

¹ % aPAD and % cPAD are exposures presented as percentages of the acute and chronic population-adjusted doses, respectively. For acetamiprid, the aPAD = 0.1 mg/kg; the cPAD = 0.023 mg/kg/day.

Water Exposure/Risk Pathway

For the surface water assessment, the application rate for citrus fruits was used, which represents the highest label rate (i.e., 0.25 lb a.i./A, applied twice at 7-day intervals) for a single application for any crop. (Note that while the highest label rate for a seasonal application to citrus fruits is 0.55 lb a.i./A, the modeled application rate was equal to only 0.50 lb a.i./A due to limitations imposed by the use of two applications at the highest single application rate.)

For the groundwater assessment, the application rate for pome fruits was used, which represents the highest label rate (i.e., 0.60 lb a.i./A/season, applied in four applications of 0.15 lb a.i./A) for a seasonal application for any crop.

Tier I Eecs for Drinking Water Risk Assessment Based on Acetamiprid Use on Citrus Fruits ¹ or Pome Fruits ² .		
Water Source	Acute EEC, ppb	Chronic EEC, ppb
Surface water drinking water sources	17	4.0
Groundwater drinking water sources	0.0008	0.0008

¹Surface water numbers were generated using a citrus fruit application scenario. ²Groundwater numbers were generated using a pome fruits application scenario.

Acetamiprid is a mobile, rapidly biodegradable compound in most soils. The primary degradation pathway is aerobic soil metabolism. Acetamiprid is stable to hydrolysis at environmental temperatures, and photodegrades relatively slowly in water. Acetamiprid is metabolized moderately rapidly in aerobic aquatic systems, but is only slowly metabolized in anaerobic aquatic systems. Acetamiprid is expected to be moderately to highly mobile in most soils and aquatic sediments; however, based on guideline study data, it is not expected to be persistent in the environment.

Environmental Characteristics

STUDY TYPE	HALF LIFE/OTHER
Hydrolysis	No significant hydrolysis at pH 5 and 7 (22, 35 and 45°C and 9 at 22°C (Stable))
Photolysis in Water	Not a significant process with a half life of 34 days at pH 7 at 25°C
Photolysis on Soil	No reliable data available to determine the half life but all indications are that photodegradation on soil is not an important process.
Aerobic Soil Metabolism	A very important degradation process with short half lives ranging from <1 day to 8.2 days in all studies with various US and European soils. A half life of 8.2 days at 25°C in US loamy sand soil, was used in the risk assessment. The major degradate –methyl(6-chloro-3-pyridyl)methyl amine, was substantially more persistent than the parent acetamiprid, reaching a maximum of 73.3% of the applied material after 121 days. Therefore, the degradate was also addressed in the risk assessment but was found to be of low significance.

Anaerobic Aquatic Metabolism	An estimated half life of 45 days with the major degradate –methyl(6-chloro-3-pyridyl)methyl amine reaching a maximum of 62.3% of the applied material after 6 months and declining to 32.5% at the 10 month interval. Two other degradates reached a maximum level of 21% (1 month) and 17.7% (6 months) and degraded further thereafter
Mobility of acetamiprid	Moderately to highly mobile in four tested soils with Kd values of less than 4.1(1/n 0.82-0.91) mL/g and Koc values in the range of 132-267 mL/g at 20°C
Mobility of the degradates of acetamiprid	Moderately to high mobility
Terrestrial Field Dissipation	Non persistent with dissipation half-lives of less than 18 days in seven studies. Leaching to lower depth was not significantly observed for the parent acetamiprid. Surface water contamination is more of a concern than ground water contamination due to overland runoff.

Potential to Contaminate Groundwater and Surface Water.

Available data indicate that acetamiprid is relatively non persistent and though it is mobile rapid degradation will reduce its potential to leach to groundwater. The primary degradation pathway for the compound is aerobic soil metabolism, which results in rapid biodegradation in soil. It is stable to hydrolysis at environmental temperatures, and photodegrades relatively slowly in water which makes it more persistent in water. Acetamiprid is a moderately to highly mobile in most soils and is not expected to bind strongly to aquatic sediments.

The potential for the degradation products to leach to groundwater is significantly higher being more persistent than the parent acetamiprid. The mobility and persistence of the major degradation product in the environment may result in groundwater contamination. However, all indications are that such contamination will not be of toxicological significance. Acetamiprid could potentially reach surface water via spray drift or runoff under certain environmental conditions.

The predicted estimated environmental concentrations (EEC's) for use in human health dietary risk assessment are presented in Table 1 (for additional information, see Section VI).

Table 1. EEC's for use in human health risk assessment.

Water Sources	Crop	Appl. Rate (lb a.i./A)	EEC's
Surface water drinking water sources	Citrus fruits ¹	0.25 x 2	acute: 16.6 µg/L (ppb) chronic: 4.0 µg/L
Groundwater drinking water sources	Pome fruits ²	0.15 x 4	0.763 ng/L (parts per trillion)

¹Surface water numbers were generated using the FIRST model with a citrus fruit application scenario which represents the highest single application rate among all crops. ²Groundwater numbers were generated using the SCI-GROW model with a pome fruits application scenario which represents the highest seasonal application rate among all crops.

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