United States
Environmental Protection
Agency

Office of Prevention, Pesticides
and Toxic Substances
(7501C)

Pesticide Fact Sheet

Name of Chemical: **Ethaboxam**
Reason for Issuance: **New Chemical/ Import Tolerance**
Date Issued: **September 2006**

Fact Sheet Number:

Description of Chemical

Chemical Name:	N-(cyano-2-thienylmethyl)-4-ethyl-2-(ethlyamino)-5-thiazolecarboxamide
Common Name:	LGC-30473
Trade Name(s):	LGC-30473 10% SC
Common End Use Product Names:	LGC-30473 10% SC
Chemical Abstract Number (CAS):	162650-77-3
EPA Chemical Code:	090205
Registration Status:	NA
Pesticide Type:	Fungicide
Chemical Family:	Thiazole Carboxamide
U.S. Agent:	LG Life Sciences, LTD. c/o Landis International, Inc.
International Producer:	LG Life Sciences, LTD.

Twin Tower
20 Yoido-dong, Youngdeungpo-gu
Seoul 150-721, Korea

Tolerances Established

An import tolerance was established for Ethaboxam in the 40 CFR Section 180.622 for grape at 6.0 ppm.

Use Patterns and Formulation

The end use product contains ethaboxam, to be used as a fungicide in or on grapes. Presently, ethaboxam is not registered in the U.S., yet, ethaboxam is registered for use in South Korea. Meanwhile the petitioner has an impending registration for ethaboxam in the EU. Ethaboxam tolerances have been established for residues on imported grapes to the U.S. The active ingredient (ai), ethaboxam will be formulated as a 10% suspension concentrate to control various diseases caused by oomycetes on grape.

Types and Methods of Applications:

According to the non-US label, three to five applications may be applied to grapes (inclusive of all grapevine cultivars and grapevine nursery plants) using a ground equipment sprayer. Alternatively, the end-use product application may be supplemented by tank mixing with copper oxychloride and applied accordingly.

Application Rates:

Based on the non-US products' "Directions For Use on Grapes:"

Product may be applied by spray during any crop growth stage at a rate of 0.178 lb ai/A (gallon active ingredient per hectare conversion: 200). Product application is not to exceed 5 applications per season, whereby the maximum seasonal application rate is 0.892 lb ai/A (gallon active ingredient per hectare conversion: 1,000). Product retreatment interval (RTI) is 7 – 10 days, while the post harvest interval (PHI) is for 21 days.

Type of Formulation:	Aqueous solution
Usual Carriers:	Water

Science Findings

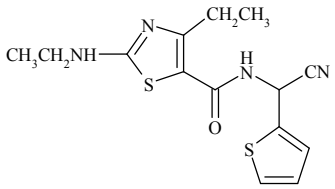
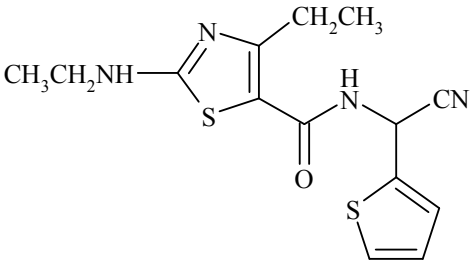
Table 1. Nomenclature of Ethaboxam	
Compound	
Common name	Ethaboxam
Company experimental name	LGC-30473
IUPAC name	(RS)-*N*-(α-cyano-2-thienyl)-4-ethyl-2-(ethylamino)-1,3-thiazole-5-carboxamide
CAS name	*N*-(cyano-2-thienylmethyl)-4-ethyl-2-(ethylamino)-5-thiazolecarboxamide
CAS #	162650-77-3
End-use product (EP)	LGC-30473 10% SC (100 g/L ethaboxam)

Table 2. Physicochemical Properties of Ethaboxam.

Parameter	**Value**
Melting point/range	decomposes on melting at 185 ºC
pH	6.8 (1% w/v suspension)
Density	1.28 at 24 °C
Water solubility	12.4 mg/L at 25 °C
Solvent solubility	at 20 °C n-heptane 0.39 mg/L xylene 0.14 g/L n-octanol 0.37 g/L 1,2-dichloroethane 2.9 g/L ethyl acetate 11 g/L methanol 18 g/L acetone 40 g/L
Vapor pressure	8.1×10^{-5} Pascals at 25 ºC
Dissociation constant, pK_a	3.6
Octanol/water partition coefficient, $Log(K_{OW})$	2.73 at pH 4; 2.89 at pH 7; 2.91 at pH 10
UV/visible absorption spectrum	Solvent System [1] / λmax (nm) / Absorbance / Є (dm^3/mol/cm) Water:ACN 231 (shoulder) 0.696 11200 311 1.144 18400 0.125M HCl:ACN 235 0.794 12800 284 1.006 16200 0.125M NaOH:ACN 252 0.678 10900 262 (shoulder) 0.622 10000 289 0.647 10400 335 1.098 17700 No absorption maxima at wavelengths >400 nm.

[1] ACN = acetonitrile; all ratios were 4:1, v:v.

Physical/Chemical Structure:



Summary Science Statement

Ethaboxam's product chemistry and acute toxicity data satisfied the applicable guidelines for series 830 and 870 respectively. Currently, ethaboxam is not registered for use on any sites that would result in residential exposure or residues in drinking water in the U.S. Therefore, the aggregate risk is the sum of the risk from food only, which does not exceed the Agency's level of concern.

Physical and Chemical Characteristics

Color:	Very pale yellow
Physical State:	Solid powder
Odor:	No significant odor detected
Melting Point:	185°C with decomposition
Boiling Point:	n/a
Density, Bulk Density, or Specific Gravity:	1.28 at 24°C 1.0 at 25°C
Solubility:	in water (mg/L) = Purified water (4.8); pH 4 buffer (6.0); pH 7 buffer (5.2); pH 10 buffer (5.2)
Vapor Pressure:	8.1 x 10E -5 Pascals at 25°C
Dissociation Constant:	2.5 x 10E -4 (pKa=3.6)
Water Partition Coefficient:	2.73 at pH 4; 2.89 at pH7; 2.91 at pH 10
pH:	6.8
Stability:	Stable at 54°C for 14 days
Oxidizing or Reducing Action:	None

Flammability:	Not flammable
Explodability:	Not explosive
Viscosity:	Not Applicable
Miscibility:	Not Applicable
Corrosion Characteristics:	No data submitted
Dielectric Breakdown Voltage:	Not applicable

Toxicology Profile

TABLE 3 Acute Toxicity for Ethaboxam

Guideline No.	Study Type	MRID(s)	Results	Toxicity Category
870.1100	Acute oral rat	46378518 (LKF/040)	LD_{50} > 5000 mg/kg	IV

Technical Acute Toxicity		Toxicity Category
Acute Oral	MRID #46378518	IV
Acute Dermal	Not applicable for proposed use pattern (Import tolerance)	
Acute Inhalation	Not applicable for proposed use pattern (Import tolerance)	
Primary Eye Irritation	Not applicable for proposed use pattern (Import tolerance)	
Primary Skin Irritation	Not applicable for proposed use pattern (Import tolerance)	

Dermal Sensitization Not applicable for proposed use pattern (Import tolerance)

Table 4. Chronic and Other Toxicity Profile for Ethaboxam

Guideline No.	Study Type/ Classification	MRID No. (year)/ Classification/ Dose Levels	Results
870.3100	13 WEEK FEEDING-RAT	46387805 (1997) Acceptable/Guideline 0, 200, 650 or 2000 ppm M: 0, 16.3, 49.7 or 154 mg/kg/day F: 0, 17.9, 58 or 164 mg/kg/day	NOAEL (mg/kg/day) M: 16.3 F: 58 LOAEL (mg/kg/day): M: 49.7, based on testicular/epididymal effects (abnormal spermatids in the testes, and abnormal spermatogenic cells in the epididymides) F: 164, based on decreased body weights and fine vacuolation of the adrenal zona glomerulosa.
870.3100	13 WEEK FEEDING-MOUSE	46387802 (2002) Acceptable/Guideline 0, 200, 450 or 1000 ppm M: 0, 33, 74, 163 or 405 mg/kg/day F: 0, 41, 93, 195 or 483 mg/kg/day	NOAEL (mg/kg/day) M: 450 F: 483 LOAEL (mg/kg/day): not determined
870.3150	13 WEEK FEEDING-DOG	46387803 (2001) Acceptable/Guideline 0, 15, 40 or 100 mg/kg/day	NOAEL (mg/kg/day): M: 100, F: not determined LOAEL (mg/kg/day): M: not determined F: 15, based on reduced body weight (10%) and reduced body weight gain (62%)
870.3700a	DEVELOPMENTAL TOXICITY-RAT	46387808 (1997) 46488701 (1997) Acceptable/Guideline 0, 10, 30, 100 or 300 mg/kg/day	Maternal: NOAEL = 30 mg/kg/day Maternal: LOAEL = 100 mg/kg/day based on hair loss (7/25) and increased water consumption (124%). Developmental: NOAEL = 30 mg/kg/day LOAEL: 100 mg/kg/day based on abnormal liver lobation (4 fetuses from 4 litters).

Table 4. Chronic and Other Toxicity Profile for Ethaboxam

Guideline No.	Study Type/ Classification	MRID No. (year)/ Classification/ Dose Levels	Results
870.3700b	DEVELOPMENTAL TOXICITY-RABBIT	46490401 (1997) Acceptable/Guideline 0, 25, 75 or 125 mg/kg/day	Maternal: NOAEL = 75 mg/kg/day LOAEL = 125 mg/kg/day based on inappetence (2 animals sacrificed), decreased food consumption (70%), and body weight loss (-73g vs. -16 controls). Developmental: NOAEL = 125 mg/kg/day LOAEL was not determined
870.3800	2-GENERATION REPRODUCTION-RAT	46387804 (2002) Acceptable/Guideline 0, 65, 200 or 650 ppm M: 0, 5.2, 16.2 or 52.6 mg/kg/day F: 0, 5.7, 17.6 or 56.1 mg/kg/day	Parental: NOAEL = M: 16.2 mg/kg/day, F:17.6 mg/kg/day LOAEL = M: 52.6 mg/kg/day, F:56.1 mg/kg/day based on decreased premating body weight gain of the F_0 and F_1 generation males (10.5-22% and 10.7-14.5%, respectively), decreased premating body weight of the F_1 males and females (10.3-17.45 and 7-12.9%, respectively). Reproductive: NOAEL = M: 16.2 mg/kg/day, F: 56.1 mg/kg/day LOAEL = M: 52.6 mg/kg/day based on testicular lesions and reduced fertility in F_1 males, whereas F: was not determined. Offspring: NOAEL = M: 16.2 mg/kg/day, F:17.6 mg/kg/day LOAEL = M: 52.6 mg/kg/day, F:56.1 mg/kg/day based on decreased body weight in male and female F_1 pups (13.1-15.7%), and decreased viability of the F_1 (14%) and F_2 (17%) males during lactation.

Table 4. Chronic and Other Toxicity Profile for Ethaboxam

Guideline No.	Study Type/ Classification	MRID No. (year)/ Classification/ Dose Levels	Results
870.4300	104 WEEK COMBINED CHRONIC TOXICITY/CARCINOGENICITY-RAT	46387811 (2002) Acceptable/Guideline 0, 100, 300 or 650 ppm M: 0, 5.5, 16.4 or 35.8 mg/kg/day F: 0, 7, 21 or 45.5 mg/kg/day	NOAEL = M: 5.5 mg/kg/day, F: 21 mg/kg/day LOAEL = M: 16.4 mg/kg/day based on adverse effects seen in the male reproductive organs (testes, epididymides, prostate, seminal vesicles) F: 45.5 mg/kg/day based on decreased body weight (12%) and body weight gain (16%). Evidence of carcinogenicity Interstitial/Leydig cell adenoma at the highest dose tested for males at 35.8 mg/kg/day and for females at 45.5 mg/kg/day
870.4100	52 WEEK FEEDING-DOG	46387809 (2001) Acceptable/Non-guideline 0, 5, 10 or 30 mg/kg/day	NOAEL = M: 30 mg/kg/day, F: 30 mg/kg/day LOAEL (mg/kg/day) was not determined.
870.4200	52 WEEK CARCINOGENICITY-MICE	46235628 (2003) Acceptable/Guideline 0, 100, 300 or 900 ppm M: 0, 12, 35 or 117 mg/kg/day F: 0, 14, 44 or 135 mg/kg/day	NOAEL (mg/kg/day) M: 35 mg/kg/day , F:44 mg/kg/day LOAEL = M: 117 mg/kg/day, F: 135 mg/kg/day based on decreased body weight was 9% for both sexes, accompanied by a body weight gain in both sexes of 20% and food efficiency of the male was 16%; while the female was 19%, and liver toxicity was observed in males. There was no evidence of carcinogenicity.
870.5100	BACTERIAL REVERSE MUTATION ASSAY	46378529 (2004) Acceptable/Guideline	Negative

Table 4. Chronic and Other Toxicity Profile for Ethaboxam			
Guideline No.	**Study Type/ Classification**	**MRID No. (year)/ Classification/ Dose Levels**	**Results**
870.5300	*IN VITRO* MAMMALIAN CELL GENE MUTATION TEST	46378530 (2001) Acceptable/Guideline	Negative
870.5375	*IN VITRO* MAMMALIAN CELL CHROMOSOME ABERRATION TEST	46378531 (2001) Unacceptable/Guideline	LGC-30473 induced significant ($p< 0.01$) increases in chromosome aberrations and a marked increase in the mitotic index at a concentration of 250 µg/mL (-S9) after a 3 hour exposure and at 100 µg/mL after 19 hours of continuous exposure.
870.5395	MAMMALIAN ERYTHROCYTE MICRONUCLEUS TEST (XDE-750)	46378532 (2001) Acceptable/Guideline	Negative

Table 4. Chronic and Other Toxicity Profile for Ethaboxam			
Guideline No.	**Study Type/ Classification**	**MRID No. (year)/ Classification/ Dose Levels**	**Results**
870.7485	METABOLISM AND PHARMOKINETICS-RAT	46378533 (2003) Acceptable/Guideline Thiazole or Thiophene radiolabeled mg/kg/day = Low dose: 10 High dose: 150 Thiazole radiolabeled Mg/kg/day = 10 Daily for 14 days	Excretion-Majority of the radiolabeled compound was excreted in the feces or urine within 48 hours of administration, regardless of radiolabel, dose, or sex. For both radiolabels, fecal and urinary excretion combined accounted for 96-104% of the administered dose. The main route of excretion was feces (66-74% of single or repeated administered low-dose), followed by urine (23-30% of the administered low-dose). Biliary excretion-thiazole radiolabeled compound absorbed in males and females within 48 hours; low dose = 71 and 72%, respectively, high-dose = 48 and 61%, respectively. After 48hrs, 79-94% compound absorbed depending upon the dose. Tissue distributions-minimal amounts (<1% of the dose) of the radiolabeled compound were retained in the tissues up to 120 hours post dosing. The thyroid generally contained the highest µg equivalents/g of the thiazole label, but only minimal amounts of the thiophene label.

Table 4. Chronic and Other Toxicity Profile for Ethaboxam			
Guideline No.	**Study Type/ Classification**	**MRID No. (year)/ Classification/ Dose Levels**	**Results**
870.7485 Continued	METABOLISM AND PHARMOKINETICS-RAT Continued	46378533 (2003) Acceptable/Guideline Thiazole or Thiophene radiolabeled mg/kg/day = Low dose: 10 High dose: 150 Thiazole radiolabeled Mg/kg/day = 10 Daily for 14 days	Pharmacokinetic studies- minimal differences between the thiazole or thiophene label, except for the longer $t_{1/2}$ in blood cells. The blood cell pharmacokinetic values were generally comparable to or lower than plasma values. Minimal quantitative differences were noted within the metabolic profiles of urine, feces, or bile from rats administered the same doses of compound with the thiazole or thiophene label. The major urinary radioactive component was LGC-32801, followed by LGC-32800. The major fecal component was the parent compound (LGC-30473), followed by LGC-32802, LGC-32803 and LGC-32801. The main biliary radioactive components were LGC-32801 and LGC-32794.

Subchronic Toxicity

The male reproductive system is a target for ethaboxam, with alterations to the male reproductive organs observed in several rat studies. In a 90-day feeding study in rats, there were severe testicular alterations (atrophy, abnormal spermatids, and interstitial cell hyperplasia) at 650 ppm. In the epididymides, there were abnormal spermatogenic cells (ducts) and absent spermatozoa.

In a 90-day feeding study in mice, liver findings were limited to increases in liver weight and centrilobular hepatocyte hypertrophy at 450 ppm (males) and 1000 ppm (females); these findings were considered adaptive responses. There were no treatment-related male reproductive effects observed in mice but there were mild effects seen on the liver.

In dogs, there were no treatment-related male reproductive or liver effects observed. In a 90-day feeding study in dogs, the only treatment-related effect seen was decreased body weight and body weight gain at 15 mg/kg/day in females only. There were no treatment-related effects observed in male or female dogs in a chronic feeding study.

Chronic Toxicity

A combined chronic/carcinogenicity study in rats demonstrated testicular toxicity in the form of seminiferous tubule atrophy and degeneration at 650 ppm. In the epididymides, there were absent/reduced spermatozoa, abnormal spermatogenic cells (duct), epithelial vacuolation (duct), and intraepithelial lumina. Also at 650 ppm, there were increased incidences of acinar atrophy and reduced colloid in the prostate, and seminal vesicle atrophy. There were no treatment-related male reproductive effects observed in mice but there were mild effects seen on the liver.

Developmental Toxicity

Two submitted developmental toxicity studies in rats demonstrated an increased qualitative susceptibility. In one study, there were observable dose related increases in water consumption in all treated maternal animals. While the second study contains observable increases in abnormal liver lobation at 100, 300 and 1000 mg/kg/day. At 1000 mg/kg/day abnormal liver lobation was accompanied by thin diaphragm and protrusion of the liver. Relevance of abnormal liver lobation without concurrent diaphragm malformation remains unclear, however, it must be taken in consideration since historical control data is not available.

The developmental study indicates the developmental NOAEL to be 30 mg/kg/day, based on increased incidences of abnormal liver lobation, likewise, this trend was evident at the LOAEL 100 mg/kg/day. Maternal NOAEL is 30 mg/kg/day, based on less severe effects of increased water consumption and alopecia observable at the LOAEL of 100 mg/kg/day. In the reproduction study, the developmental NOAEL is 200 ppm, based on decreased body weight and decreased viability of offspring during lactation at 650 ppm. Overall, the toxicity profile and doses and endpoints selected for ethaoxam has a low Degree of Concern. Since the developmental/offspring effects observed in studies are well characterized and occur in the presence of maternal toxicity allowed for a clear NOAEL to be identified in both studies whereby no residual uncertainties for pre-and/or postnatal toxicity were apparent. Furthermore, the toxicology endpoint established for risk assessment is based on a lower NOAEL, and thus considered protective of developmental/ offspring effects.

Toxicological Endpoints

Table 5. Summary of Ethaboxam Toxicological Doses and Endpoints for Use in Human Health Risk Assessments.			
Exposure Scenario	**Dose Used in Risk Assessment, UF**	**FQPA SF and Level of Concern for Risk Assessment**	**Study and Toxicological Effects**
Acute Dietary (General population including infants and children)	N/A	N/A	No appropriate endpoint attributable to a single dose identified.
Acute Dietary (Females 13-49 years of age)	NOAEL = 30 mg/kg UF = 100 Acute RfD = 0.3 mg/kg	aPAD = aRfD/FQPA SF = 0.3 mg/kg	Developmental Toxicity-Rat Developmental LOAEL: 100 mg/kg/day based on abnormal liver lobation.
Chronic Dietary (all populations)	NOAEL = 5.5 mg/kg/day UF = 100 Chronic RfD = 0.055 mg/kg/day	cPAD = cRfD/FQPA SF = 0.055 mg/kg/day	Combined Chronic/Carcinogenicity-Rat LOAEL: 16.4 mg/kg/day based on effects observed in the male reproductive organs (testes, epididymides, prostate, seminal vesicles).
Dermal All Durations	Risk assessments for these routes and durations are not required at this time. The requested action is for tolerance on imported commodities. There are no proposed uses that would result in non-dietary exposures in the US.		
Inhalation All Durations			
Cancer (all routes)	Classification: "Suggestive Evidence of Carcinogenicity." The chronic RfD is protective of potential cancer effects.		

1. UF= Uncertainty Factor.
2. FQPA SF = special FQPA Safety Factor.
3. NOAEL = No Observed Adversed Effect Level.
4. RfD = Reference Dose.
5. PAD = Population Adjusted Dose (a=acute, c=chronic).
6. LOAEL = Lowest Observed Adverse Effect Level.

Food Quality Protection Act Considerations

FQPA Safety Factor:

Based on the hazard and exposure data, the Agency has reduced the special FQPA SF to 1X because there are no/low concerns nor residual uncertainties with regard to pre- and/or post-natal toxicity. This recommendation is based on the following:

1. Although there was evidence of increased qualitative susceptibility observed in the rat developmental and reproduction studies, there are no residual uncertainties with regard to

pre-and postnatal toxicity. The developmental/ offspring effects observed in the studies are well characterized (clear NOAEL established), and the dose selected for risk assessment (NOAEL = 5.5 mg/kg/day) is protective of effects seen in both studies.

2. The dietary exposure assessment is based on models and input parameters designed to be protective of human health.

3. The proposed use is for import tolerances; therefore residential and occupational exposure is not anticipated.

Exposure Assessment

Ethaboxam is proposed for use only on imported grapes. Since there are no registered uses associated with ethaboxam in the U.S., the only route of exposure is dietary (food only). Dietary exposure will be limited to residues from imported grapes. There are no proposed U.S. registrations for ethaboxam, nor any expectation of ethaboxam residues to appear in surface or ground water sources of drinking water. Therefore, no aggregate nor occupational exposure is expected.

Acute: The acute dietary exposure assessment for the only population subgroup of concern, females 13-49 years old, assumed 100% crop treated and tolerance level residues of 6 ppm. It is estimated that dietary (food only) exposure to ethaboxam will utilize approximately 4% of the aPAD and is below the Agency's level of concern.

Chronic: The chronic dietary exposure assessment for the most highly exposed population subgroup, children 1-2 years old, assumed 100% crop treated and tolerance level residues of 6 ppm. It is estimated that dietary (food only) exposure for children 1-2 years old will utilize approximately 31% of the cPAD and is below the Agency's level of concern. The chronic dietary exposure estimate for the U.S. general population and all other population subgroups was lower.

Cancer: Ethaboxam is classified as having "**Suggestive Evidence of Carcinogenicity."** The cancer dietary exposure estimate for the U.S. population (total) is 3×10^{-5} mg/kg/day. This is equivalent to a risk of 9.03×10^{-7} which is below the Agency's level of concern (generally in the range of 1×10^{-6}).

Contact Person at EPA:

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Disclaimer: The information in this Pesticide Fact Sheet is a summary only and is not to be used to satisfy any data requirements for pesticide registration or reregistration.

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_{50}	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_{50}	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 Import Tolerance for Ethaboxam.

MRID	Citation	Receipt Date
46378500	LG Life Sciences Ltd (2004) Submission of Toxicity, Residue, Environmental Fate, Fate and Product Chemistry Data in Support of the Petition of Tolerance of Ethaboxam. Transmittal of 23 Studies.	04-Oct-2004
46378501	Kim, D. (2003) The Method of Manufacture for LGC-30473. Unpublished study prepared by LG Life Sciences, LTD. 13 p.	04-Oct-2004
46378502	Comb, A. (2002) LGC-30473 (Technical Grade): Physico-Chemical Properties. Project Number: LFK/028, LFK028/014165, A3. Unpublished study prepared by Huntingdon Life Sciences Ltd. 58 p.	04-Oct-2004
46378503	Comb, A. (2003) LGC-30473: Five Batch Analysis. Project Number: LFK/029, LFK029/022003. Unpublished study prepared by Huntingdon Life Sciences, Ltd. 46 p.	04-Oct-2004
46378504	Comb, A. (2002) LGC-30473 (Pure Grade): Physico-Chemical Properties. Project Number: LFK/027, LFK027/014116, A2. Unpublished study prepared by Huntingdon Life Sciences, Ltd., Specialist Analysis and Technology Consultancy Service Ltd. 89 p.	04-Oct-2004
46378505	Langford-Pollard, A. (2002) LGC-30473: Hydrolysis under	04-Oct-2004

	Simulated Processing Conditions. Project Number: LFK/067, LFK/067/022457. Unpublished study prepared by Huntingdon Life Sciences, Ltd. 73 p.	
46378506	Langford-Pollard, A. (2002) LGC-30473: Metabolism in Potatoes. Project Number: LKF/017, LKF/017/022460. Unpublished study prepared by Huntingdon Life Sciences, Ltd. 169 p.	04-Oct-2004
46378507	Haynes, L. (2003) LGC-30473: Investigation into the Identity of Unknown Metabolites: Interim Report. Project Number: LFK/049, LFK/049/022992. Unpublished study prepared by Huntingdon Life Sciences, Ltd. 338 p.	04-Oct-2004
46378508	Haynes, L. (2004) LGC-30473: Metabolism in Tomoatoes. Project Number: LFK/126, LFK/126/042119. Unpublished study prepared by Huntingdon Life Sciences, Ltd. 156 p.	04-Oct-2004
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