Material Safety Data Sheet
Knox Fertilizer Company, Inc.

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: *Shaw's® Turf Food with Grub Control 15, 20, 25*

EPA REGISTRATION NO: 432-1349-8378, 432-1353-8378, 432-1354-8378
CHEMICAL FAMILY: Fertilizer with Chloronicotinyl Insecticide
CHEMICAL NAME/SYNONYMS: Merit®, Imidacloprid

MANUFACTURER/FORMULATOR: Knox Fertilizer Co., Inc
P.O. Box 248
Knox, IN 46534
EMERGENCY PHONE: 1.800.424.9300

SECTION 2 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Ingredients	CAS No.	% by Weight	PEL/TLV
Imidacloprid	138261-41-3	0.15 – 0.25	None Established
Inert Ingredients		99.85 – 99.75	

SECTION 3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Likely Routes of Exposure: Skin, Eyes, Inhalation, Ingestion.

POTENTIAL HEALTH EFFECTS:
Harmful if swallowed or absorbed through skin. Causes eye irritation. Avoid contact with skin, eyes, or clothing.
Eye Contact: This product causes eye irritation.
Skin Contact: This product may cause skin irritation.
Ingestion: This product is harmful if swallowed.
Inhalation: Not known.
Medical Conditions Aggravated by Exposure: No known medical conditions are known which may be aggravated by exposure to active ingredient.

POTENTIAL ENVIRONMENTAL EFFECTS:
This product is highly toxic to aquatic invertebrates. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters. This chemical demonstrates the properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

SECTION 4 FIRST AID MEASURES

EYES: Hold eye open and rinse slowly and gently with water for 15 – 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice.
SKIN: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 – 20 minutes. Call a poison control center or doctor for treatment advice.
INGESTION: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.
INHALATION: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration preferably by mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.
NOTES TO MEDICAL DOCTOR: No known antidote is available. Treat patient symptomatically.

SECTION 5 FIRE FIGHTING MEASURES

FLASH POINT (Method):	Not Applicable
FLAMMABLE LIMITS (LEL & UEL):.	Not Applicable
EXTINGUISHING MEDIA:	CO_2, foam, water spray or fog.
HAZARDOUS COMBUSTION PRODUCTS:	May include but are not limited to oxides of carbon, hydrogen chloride, hydrogen fluoride, oxides of nitrogen, oxides of phosphorus, oxides of sulfur, hydrogen sulfide.
SPECIAL FIRE FIGHTING PROCEDURES:	Use water spray to cool containers exposed to fire. Remain upwind. Avoid breathing smoke. Wear self-contained breathing apparatus and full protective gear. Contain run-off by diking to prevent entry into sewers or waterway. Fertilizer will become slippery when wet; guard against falls.
UNUSUAL FIRE & EXPLOSION HAZARDS:	If heated to decomposition, the fertilizer contained in this product will give off toxic vapors of ammonia and formaldehyde. Under fire conditions, urea may decompose to cyanuric acid, biuret or ammonia. Dispersion of fine dust in the air may form an explosive mixture.

SECTION 6 ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: If material is spilled, keep unnecessary people away. Isolate area and deny entry. Avoid contact with spilled product or contaminated surfaces. Avoid generating dust. Avoid breathing dusts, Avoid skin contact. Use recommended protective equipment while sweeping up spilled material. Place in covered container for reuse or disposal.
Scrub contaminated area with soap and water. Rinse with water. Use dry absorbent material such as clay granules to absorb and collect wash solution for proper disposal. Contaminated soil may have to be removed and disposed of. Do not allow material to enter streams, sewers or other waterways.

SECTION 7 HANDLING AND STORAGE

HANDLING: Handle and open container in a manner to prevent spillage.
STORAGE: Store in original container and out of the reach of children, preferably in a locked storage area. Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food or feeds. Do not contaminate water, food, or feed by storage or disposal.

SECTION 8 EXPOSURE CONTROL/PERSONAL PROTECTION

ENGINEERING CONTROLS: Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.

RESPIRATORY PROTECTION: Not normally required. If vapors or dusts exceed acceptable levels, wear a MSHA/NIOSH approved pesticide respirator.

EYE PROTECTION: Chemical goggles or shielded safety glasses.

SKIN PROTECTION: Wear protective clothing: long-sleeved shirts and long pants, socks and shoes. The use of chemical-resistant gloves is recommended.

WORKER HYGENIC PRACTICES: After using product, remove clothing and launder separately before reuse. Promptly and thoroughly wash hands and exposed skin with soap and water. Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

GENERAL COMMENTS: Facilities storing or utilizing this material should be equipped with an eyewash facility and safety shower.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Multi-colored granules with a slight pungent odor.

SPECIFIC GRAVITY: Not Applicable
VAPOR PRESSURE: Not Applicable
BOILING POINT: Not Applicable
PERCENT VOLATILE: Not Applicable
EVAPORATION RATE: Not Applicable

SOLUBILITY IN WATER: Not Soluble
VAPOR DENSITY: Not Applicable
MELTING POINT: Not Applicable
pH: Not Applicable
BULK DENSITY: 45 – 65 lbs./cu ft.

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID: Extremely high temperatures; ignition sources

INCOMPATIBLE MATERIALS: Strong oxidizers or strong alkalies

HAZARDOUS POLYMERIZATION: Not known to occur.

HAZARDOUS DECOMPOSITION PRODUCTS: For imidacloprid: hydrogen chloride, hydrogen cyanide, carbon monoxide, nitrogen oxides
For fertilizer: ammonia, formaldehyde, oxides of nitrogen, carbon and sulfur, cyanuric acid, biuret

SECTION 11 TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA:

Oral: Rat LD_{50}: >5,136 mg/kg
Dermal: Rat LD_{50}: >2,000 mg/kg
Inhalation: Rat 4-hr LC_{50}: >5.016 mg/l
Inhalation: Rat 1-hr LC_{50}: >20 mg/l
Eye Irritation: Rabbits: Mild irritation to the conjunctiva was observed with all irritation clearing within 72 hours.
Skin Irritation: Rabbits: Slight dermal irritant.
Skin Sensitization: Guinea Pig: Not a dermal sensitizer.

SUBCHRONIC TOXICITY: In a 3 week dermal toxicity study, rabbits were treated with the active ingredient, imidacloprid, at the limit dose level of 1,000 mg/kg for 6 hours per day, 5 days per week. There were no local or systemic effects observed at any of the levels tested. The "no-observed-effect-level" (NOEL) was 1,000 mg/kg. In a 4 week inhalation study, rats were exposed to dust concentrations of imidacloprid at 5.5, 30.5, and 191.2 mg/cubic meter for 6 hours per day, 5 days per week. Effects observed at the high concentration included decreased body weight gains, decreased heart and thymus weights, increased liver weight and induction of hepatic mixed-function oxidases. Histopathological examinations did not reveal any organ damage or local injury to the respiratory tract. The NOEL was 5.5 mg/cubic meter based on induction of hepatic mixed-function oxidases.

CHRONIC TOXICITY: Dogs were administered imidacloprid for 1 year at dietary concentrations of 200, 500, or 1250 ppm. Due to the lack of significant effects, the high dose was increased to 2500 ppm for 17 weeks for the remainder of the study. Effects observed at the high dose included decreased food consumption, increased liver weights and elevated serum chemistries. The NOEL was 500 ppm. In chronic studies using rats, imidacloprid was administered for 2 years to rats at dietary concentrations of 100, 300, 900 or 1800 ppm. Histopathology examinations revealed an increased incidence of mineralization in the colloid of the thyroid follicles at concentrations of 300 ppm and greater. At 1800 ppm, there were changes in the serum chemistries and a slight increase in the incidence of parafollicular hyperplasia seen in the thyroids. Body weight gains were reduced at 900 and 1800 ppm. The overall NOEL was 100 ppm.

CARCINOGENICITY: Imidacloprid was investigated for carcinogenicity in chronic feeding studies using mice and rats at maximum levels of 200 and 1800 ppm respectively. There was no evidence of a carcinogenic potential observed in either species.

MUTAGENICITY: The imidacloprid mutagenicity studies, taken collectively, demonstrate that the active ingredient is not genotoxic or mutagenic.

DEVELOPMENTAL TOXICITY: In developmental toxicity study using rats, imidacloprid was administered by oral gavage during gestation at does of 10, 30, and 100 mg/kg. At the maternally toxic dose of 100 mg/kg, skeletal examinations of the fetuses revealed a slight increase in the incidence of wavy ribs. The NOELs for maternal and developmental toxicity were 10 and 30 mg/kg, respectively. Teratogenic effects were not observed at any of the doses tested. Rabbits were administered imidacloprid during gestation at oral doses of 8, 24, or 72 mg/kg. At the maternally toxic dose of 72 mg/kg, reduced body weights and delayed skeletal ossification were observed in the fetuses. The NOELs for maternal and developmental toxicity were 8 and 24 mg/kg, respectively. Teratogenic effects were not observed at any of the doses tested.

REPRODUCTIVE TOXICITY: In a reproduction study, imidacloprid was administered to rats for 2 generations at dietary concentrations of 100, 250, or 700 ppm. Offspring at 700 ppm, exhibited reduced mean body weights and body weight gains. No other reproductive effects were observed. The maternal and reproductive NOELs were 100 and 50 ppm, respectively.

NEUROTOXICITY: In an acute oral neurotoxicity study using rats, imidacloprid was administered as a single dose at concentrations of 42, 151, or 307 mg/kg. Clinical observations and neurotoxicity evaluations were performed over a period of 15 days followed by a neurohistopathological examination. Deaths attributed to imidacoprid were observed at the high dose within a day of treatment. The NOEL for motor and locomotor activity was 42 mg/kg for males. Females at the low dose exhibited minimal decrease in activity in the figure-eight maze. In a subsequent study, the NOEL for motor and locomotor activity in females was 20 mg/kg. All clinical signs and neurobehavioral effects were ascribed to acute cholinerfic toxicity, with complete recovery at sub-lethal doses within 7 days following treatment. The NOEL for neurotoxicity was 307 mg/kg based on the absence of treatment—related microscopic lesions in skeletal muscle or neural tissue. In a 13 week neurotoxicity study, imidacloprid was administered to rats at dietary concentrations of 140. 963, or 3027 ppm. At the mid-and –high dose, effects observed included reductions in body weight and feed consumption, and clinical chemistry findings. Neurobehavorial changes were observed only in males at the high dose. There were no correlative micropathologic findings in muscle or neural tissues in any animals at any treatment level. The NOEL for neurotoxicity was 3027 ppm. The overall NOEL was 140 ppm.

SECTION 12 ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: This product is toxic to aquatic invertebrates. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate surface or ground water when disposing of equipment washwaters.

SECTION 13 DISPOSAL CONSIDERATIONS

PRODUCT DISPOSAL: Waste resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures.

CONTAINER DISPOSAL: Do not reuse bag. Completely empty bag into application equipment. Dispose of emptied bag(s) in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

SECTION 14 TRANSPORT INFORMATION

DOT SHIPPING DESCRIPTION: Not regulated
U.S. SURFACE FREIGHT CLASSIFICATION: Fertilizing compounds, NOI; Dry (NMFC 68140, Sub 5; Class 50)

SECTION 15 REGULATORY INFORMATION

OSHA STATUS: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

SARA TITLE III

SEC 311/312:

Y Immediate (Acute Health)
N Delayed (Chronic Health)
N Fire
N Sudden Release of Pressure
Y Reactivity

SEC 302: Not Applicable
SEC 304: Not Applicable
SEC 313: Not Applicable
CERCLA RQ: Not Applicable
CAA RQ: Not Applicable

National Fire Protection Association (NFPA) Ratings:

Health: 1 **Fire:** 1 **Reactivity:** 1 **Specific:** none

SECTION 16 OTHER INFORMATION

Issue Date: 25 OCT 2005
Supercedes MSDS Dated: 12 SEP 1995

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