NUFARM AGRICULTURE INC.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

SUPPLIED BY:
Nufarm Agriculture Inc.
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Calgary, AB. T2H 1H9
Phone Number: (403)-253-8471
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MANUFACTURED BY:
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Calgary, AB T2H 1H9
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PRODUCT: **Amitrol 240 Liquid Herbicide**
PCP NUMBER: 25684
DATE PREPARED: January 6, 2015
PREPARER: Nufarm Agriculture Inc.; Regulatory Affairs & Research Department
CHEMICAL FAMILY/USE: Herbicide.
FORMULA: $C_2H_4N_4$
CHEMICAL SYNONYMS: Amitrole; aminotriazole; ATA; 1*H*-1,2,4-triazol-3-amine; 3-amino-*s*-triazole; 3-amino-1,2,4-triazole; 1*H*-1,2,4-triazol-3-ylamine.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients	Wt. %	CAS NO.
Amitrole	19.5-21.5	61-82-5
Ammonium thiocyanate	18-20	1762-95-4
Surfactants and other proprietary ingredients	3-5	NA

Note: The other major ingredient in this product is water.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: CAUTION-POISON. Keep out of reach of children. Avoid contact with skin, eyes and clothing. Avoid breathing spray mist or vapours. Causes irritation to eyes. May cause skin irritation. Harmful if absorbed through the skin. Harmful if swallowed or inhaled.

EFFECTS OF ACUTE EXPOSURE:
INGESTION: Harmful if swallowed. The active ingredient amitrole is of low acute toxicity, but the additive ammonium thiocyanate may cause nausea, vomiting, gastrointestinal irritation, disorientation, weakness, low blood pressure, convulsions and muscle spasms.
SKIN CONTACT: The ammonium thiocyanate additive may cause irritation. Overexposure by skin absorption may cause symptoms similar to those for ingestion.
INHALATION: May cause nosebleeds, irritation of the upper respiratory tract and symptoms similar to those from ingestion.
EYE CONTACT: May cause eye irritation.

MEDICAL CONDITIONS AGGRAVATED: Skin exposure may aggravate preexisting skin conditions. Inhalation of mist may aggravate preexisting respiratory conditions. Amitrole and ammonium thiocyanate both can cause thyroid effects, which may aggravate preexisting thyroid conditions.
SUBCHRONIC (TARGET ORGAN) EFFECTS: (An adverse effect with symptoms that develop slowly over a long period of time): Repeated overexposure may cause thyroid effects such as enlargement, decrease in metabolic rate and hypothyroidism.
CHRONIC EFFECTS/CARCINOGENICITY: The International Agency for Research on Cancer (IARC) states that amitrole is not classifiable as to its carcinogenicity in humans (Group 3). IARC concluded that amitrole produces thyroid tumours in mice and rats by a non-genotoxic mechanism and would not be expected to produce thyroid cancer in humans exposed to concentrations that do not

alter thyroid hormone homeostasis. IARC further observed that liver tumours in mice and benign pituitary tumours in rats were also produced by a non-genotoxic mechanism.
REPRODUCTIVE TOXICITY: In laboratory animal studies on amitrole, reproductive effects were observed, but only at doses toxic to parental animals.
DEVELOPMENTAL TOXICITY: Studies with amitrole in laboratory animals have shown decreased fetal body weights and a variety of variations in the offspring, but only at doses toxic to mother animals.
GENOTOXICTY: There have been some positive and some negative studies, but the weight of evidence from a series of well documented studies is that amitrole is not mutagenic.
PRINCIPLE ROUTES OF EXPOSURE: Eye contact. Skin absorption. Inhalation. Oral.
TOXICOLOGICALLY SYNERGISTIC MATERIALS: None known.
OTHER: None known.

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 eye. Call a poison control centre or doctor for treatment advice.
SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. Call a poison control centre or doctor for treatment advice.
INGESTION: Call a poison control centre 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 a poison control centre 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 centre or doctor for further treatment advice.
Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.
NOTE TO PHYSICIAN: No specific antidote. Employ supportive care. Treatment should be based on judgement of the physician in response to reactions of the patient.

5. FIRE FIGHTING MEASURES

FLASH POINT: .....> 100°C.
CONDITIONS OF FLAMMABILITY:.....NAp.
FLAMMABLE LIMITS IN AIR - Upper (%):.....NAp
FLAMMABLE LIMITS IN AIR - Lower (%):.....NAp
AUTOIGNITION TEMPERATURE: .....NAp
SENSITIVITY TO MECHANICAL IMPACT (Y/N): .....NA. No sensitivity expected based on long handling history.
SENSITIVITY TO STATIC DISCHARGE: .....NA. No sensitivity expected based on long handling history.
EXTINGUISHING MEDIA: Water fog, alcohol foam, carbon dioxide, dry chemical.
SPECIAL FIREFIGHTING PROCEDURES: Firefighters should wear self-contained breathing apparatus and full protective clothing when fighting chemical fires. Minimize and contain water runoff.

6. ACCIDENTAL RELEASE MEASURES

ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Use safety equipment and procedures appropriate to the size of the spill. Keep unnecessary people away. Avoid runoff to natural waters and sewers. Surround and absorb spills with inert material such as perlite, sawdust, clay granules, vermiculite, sand or dirt. Contain all affected material in a closed, labeled container for proper disposal. Isolate from other waste materials. Clean contaminated area such as hard surfaces with detergent and water, collecting cleaning solution for proper disposal. Large spills to soil or similar surfaces may necessitate removal of top soil.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep from freezing. Store at temperatures above freezing point (see Section 9) and preferably above 0°C. Keep away from food and feed products. Avoid storage in close proximity to insecticides, fungicides, fertilizers, plants and seeds. Avoid contact with eyes, skin and clothing. Keep container tightly closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS:

Hazardous Ingredients	TWA*	ACGIH TLV®	STEL	Units
Amitrole	N/E	0.2	N/E	mg/M^3
Ammonium thiocyanate	5** (skin)	N/E	N/E	mg/M^3

*8-hour TWA unless otherwise noted

**Based on established limit for cyanides as CN

ENGINEERING CONTROLS: Use in a well ventilated area. General ventilation with a good source of make-up air recommended as minimum for indoor situations. Ventilation should be adequate to maintain air concentrations below exposure limits.
RESPIRATORY PROTECTION EQUIPMENT: Use an approved pesticide respirator if ventilation is not adequate or exposure to sprays, mists or vapours is likely.
PROTECTIVE GLOVES: All types of chemical-resistant gloves for handling chemicals are acceptable, provided that they can be cleaned. Rinse gloves before removal.
EYE AND FACE PROTECTION: Goggles or face shield when handling concentrate.
OTHER PROTECTIVE EQUIPMENT: Long sleeved shirt, long pants, socks and shoes are minimum work clothing. Use other equipment appropriate to specific situation.
VENTILATION: Use only in well ventilated area.

9. PHYSICAL AND CHEMICAL PROPERTIES

NOTE: Physical data are typical values, but may vary from sample to sample. A typical value should not be construed as a guaranteed analysis or as a specification.
BOILING POINT: .....NA. Expected to be similar to water: >100°C.
VAPOR PRESSURE: .....NA. Product expected to be similar to water.
VAPOR DENSITY (air = 1):.....NA.
FREEZING POINT:.....-12.2°C.
MELTING POINT: .....NA. (Amitrole 159°C.)
PHYSICAL STATE:.....Liquid.
ODOUR: .....Mildly sweet and ammoniacal.
COLOUR:.....Dark Brown.
ODOR THRESHOLD (ppm):.....NA
EVAPORATION RATE (butyl acetate = 1):.....NA
SPECIFIC GRAVITY (water = 1): 1.12
DENSITY @ 25°C: 1.12
pH:.....Approximately 6-7
SOLUBILITY IN WATER (20°C):.....Soluble.
COEFFICIENT OF WATER/OIL DISTRIBUTION:.....NA. Product water soluble.

10. STABILITY AND REACTIVITY

STABILITY: Stable.
HAZARDOUS POLYMERIZATION: Will not occur.
HAZARDOUS THERMAL DECOMPOSITION/COMBUSTION PRODUCTS: Hydrogen cyanide, other cyanide compounds, hydrogen sulfide, sulfur dioxide, hydrogen, ammonia, oxides of carbon, oxides of nitrogen and other potentially toxic combustion products may be present.
INCOMPATIBILITY (MATERIALS TO AVOID): Avoid contact with strong acidic, basic or oxidizing agents. Toxic products can be generated and violent reaction possible in extreme case. Amitrole is mildly corrosive to iron, aluminum, copper and copper alloys.
CONDITIONS TO AVOID: None known.

11. TOXICOLOGICAL INFORMATION

Data are from laboratory studies conducted on technical amitrole**:**
ACUTE ORAL LD_{50} (mg/kg):.....24,600 (Rat)
ACUTE DERMAL LD_{50} (mg/kg): .....> 10,000 (Rabbit)
ACUTE INHALATION LC_{50} (mg/l): .....NA.
OTHER: Tested as slightly irritating to the eye (Rabbit) and nonirritating to the skin (Rabbit)

Data are from laboratory studies conducted on ammonium thiocyanate**:**
ACUTE ORAL LD_{50} (mg/kg):.....750 (Rat)

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:
Data on amitrole technical:
96-HOUR LC_{50} (mg/L): > 1000 (Rainbow Trout)
96-HOUR LC_{50} (mg/L): > 1000 (Bluegill)
48-HOUR EC_{50} (mg/L): 18 (Daphnia)
DIETARY LC_{50} (ppm): > 5000 (Bobwhite Quail)
DIETARY LC_{50} (ppm): > 5000 (Mallard Duck)

Data on ammonium thiocyanate:
96-HOUR LC_{50} (mg/L): 100 (Fathead Minnow)
48-HOUR LC_{50} (mg/L): 420 (Mosquito Fish)
96-HOUR EC_{50} (mg/L): 170 (Daphnia)

CHEMICAL FATE INFORMATION: At usual application rates, amitrole is microbially degraded with a typical half-life of 2 to 3 weeks.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Disposal should be made in accordance with federal, provincial and local regulations. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean up of spills.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. Do not reuse container for any purpose. If applicable, return container in accordance with return program. If a recyclable

container, dispose of at a container collection site. Contact local distributor, dealer or municipality for the location of the nearest collection site. Before taking the container to the collection site, triple or pressure rinse the empty container adding rinsings to spray tank, and make container unsuitable for further use. If there is no container collection site in your area, dispose of the container in accordance with provincial requirements.

14. TRANSPORT INFORMATION

CANADIAN TDG DESCRIPTION (Road & Rail): Not regulated. Contact manufacturer for updates to transport information.

15. REGULATORY INFORMATION

WHMIS HAZARD CLASS: D2B Toxic Material
WHMIS TRADE SECRET: Exempt. (This product is regulated under the Pest Control Products Act - WHMIS exempt.)
CANADIAN INVENTORY: This product is currently exempt from CEPA.
HAZARD RATING SYSTEMS:
HMIS: Not Available
National Fire Protection Association (NFPA®) Hazard Ratings:

Ratings for This Product		Key to Ratings	
2	Health Hazard	0	Minimal
1	Flammability	1	Slight
1	Instability	2	Moderate
		3	Serious
		4	Severe

16. OTHER INFORMATION

EMERGENCY TELEPHONE NUMBERS:
For spills or transportation accidents, Chemtrex, 1-800-424-9300.
For health or environmental emergencies, Prosar, 1-877-325-1840.
For product and use information, Nufarm Agriculture Inc., 1-800-868-5444.

REVISIONS:
The following has been revised since the last issue of this MSDS: Sections 1.

ADDITIONAL INFORMATION:
Abbreviations used throughout the MSDS are:
NA = Not available
NAp = Not applicable
N/E = None Established.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Company references utilized in preparation of the MSDS.

END OF MSDS