1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: TROOPER™ PRO Herbicide
EPA Reg. No.: 228-599
Synonyms: Mixture of Picloram and Fluroxypyr
Product Type: Herbicide
Company Name: Nufarm Americas Inc.
150 Harvester Drive, Suite 200
Burr Ridge, IL 60527
Telephone Numbers: For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident,
Call CHEMTREC Day or Night: 1-800-424-9300
For Medical Emergencies Only, Call 1-877-325-1840
Date of Issue: July 15, 2009
Supersedes: New
Sections Revised: New

2. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance and Odor: Clear, light amber colored liquid with an aromatic odor.
Warning Statements: Danger. Keep out of reach of children. Corrosive, causes irreversible eye damage. Do not get in eyes, on skin, or on clothing.

Potential Health Effects:
Likely Routes of Exposure: Inhalation, skin and eye contact.
Eye Contact: Causes irreversible eye damage. Vapors and mists can cause irritation.
Skin Contact: Slightly toxic and slightly irritating based on toxicity studies.
Ingestion: Very low toxicity if swallowed based on toxicity studies. The petroleum hydrocarbon component, if aspirated into the respiratory system during ingestion or vomiting may cause mild or severe pulmonary injury, possibly progressing to death.
Inhalation: Low inhalation toxicity. Overexposure to petroleum hydrocarbon component may cause irritation to respiratory tract, headaches, anaesthesia, drowsiness, unconsciousness and other central nervous system effects, possibly including death.
Medical Conditions Aggravated by Exposure: Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.

See Section 11: TOXICOLOGICAL INFORMATION for more information.

Potential Environmental Effects:
Fluroxypyr is toxic to fish, and both picloram and fluroxypyr are toxic to some plants at very low concentrations. Non-target aquatic organisms and plants may be adversely affected if this product is allowed to drift from areas of application.

See Section 12: ECOLOGICAL INFORMATION for more information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CAS NO.</th>
<th>% BY WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picloram, Triisopropanolamine Salt</td>
<td>6753-47-5</td>
<td>19.42</td>
</tr>
<tr>
<td>Fluroxypyr, 1-Methylheptyl Ester</td>
<td>81406-37-3</td>
<td>15.61</td>
</tr>
<tr>
<td>Other Ingredients Including:</td>
<td></td>
<td>64.97</td>
</tr>
</tbody>
</table>

July 15, 2009
4. FIRST AID MEASURES

If in Eyes: Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on Skin: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.

If Swallowed: 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.

If Inhaled: 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.

Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage. Contains petroleum distillate, vomiting may cause aspiration pneumonia.

5. FIRE FIGHTING MEASURES

Flash Point: >212°F (>100°C) Pensky-Martens
Autoignition Temperature: Not Determined Flammability Limits: Not Determined

Extinguishing Media: Recommended for large fires: foam or water spray. Recommended for small fires: dry chemical or carbon dioxide.

Special Fire Fighting Procedures: Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

Unusual Fire and Explosion Hazards: Containers will burst from internal pressure under extreme fire conditions. If water is used to fight fire or cool containers, dike to prevent runoff contamination of municipal sewers and waterways.

Hazardous Decomposition Materials (Under Fire Conditions): May produce gases such as hydrogen chloride, hydrogen fluoride and oxides and nitrogen.

National Fire Protection Association (NFPA) Hazard Rating:
Rating for this product: Health: 3 Flammability: 1 Reactivity: 0
Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

Environmental Precautions: Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.

Methods for Containment: Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.

Methods for Cleanup and Disposal: Pump any free liquid into an appropriate closed container. Collect washings for disposal. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.
Other Information: Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

### 7. HANDLING AND STORAGE

**Handling:**
Do not get in eyes, on skin, or on clothing. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/Personal Protective Equipment (PPE) immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. If pesticide gets on skin, wash immediately with soap and water. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

**Storage:**
If exposed to subfreezing temperatures (below 32°F), this product should be warmed to at least 40°F and agitate thoroughly before using. Do not contaminate water, food, or feed by storage or disposal.

### 8. EXPOSURE CONTROLS / 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.

**Personal Protective Equipment:**

**Eye/Face Protection:** To avoid contact with eyes, wear face shield, goggles or safety glasses with front, brow and temple protection. An emergency eyewash or water supply should be readily accessible to the work area.

**Skin Protection:** To avoid contact with skin, wear long pants, long-sleeved shirt, shoes, socks and chemical-resistant gloves. An emergency shower or water supply should be readily accessible to the work area.

**Respiratory Protection:** Not normally required. If vapors or mists exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.

**General Hygiene Considerations:** Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

**Exposure Guidelines:**

<table>
<thead>
<tr>
<th>Component</th>
<th>OSHA</th>
<th>ACGIH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TWA</td>
<td>STEL</td>
</tr>
<tr>
<td>Picloram Acid</td>
<td>15 (T)</td>
<td>NE</td>
</tr>
<tr>
<td></td>
<td>5 (R)</td>
<td>NE</td>
</tr>
<tr>
<td>Fluroxypyr</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>10</td>
<td>NE</td>
</tr>
<tr>
<td>1-Methylnaphthalene</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>2-Methylnaphthalene</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>DPGME</td>
<td>100</td>
<td>NE</td>
</tr>
</tbody>
</table>

T = Total Dust  
NE = Not Established  
R = Respirable Fraction
9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Clear, light amber colored liquid with an aromatic odor.
Boiling Point: Not determined  Solubility in Water: Emulsifiable
Density: 9.15 pounds/gallon  Specific Gravity: 1.099 @ 20°C
Evaporation Rate: Not determined  Vapor Density: Not determined
Freezing Point: Not determined  Vapor Pressure: Not determined
pH: 7 – 8 (1% solution)  Viscosity: 283.715 cst @ 20°C

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.

10. STABILITY AND REACTIVITY

Chemical Stability: This material is stable under normal handling and storage conditions.
Conditions to Avoid: Excessive heat. Do not store near heat or flame.
Hazardous Decomposition Products: Under fire conditions may produce gases such as hydrogen chloride, hydrogen fluoride and oxides and nitrogen.
Hazardous Reactions: Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological Data:
Data from laboratory studies on this product are summarized below:
Oral: Rat LD<sub>50</sub>: >5,000 mg/kg (female)
Dermal: Rat LD<sub>50</sub>: >5,000 mg/kg
Inhalation: Rat 4-hr LC<sub>50</sub>: >2.02 mg/L
Eye Irritation: Rabbit: Severely irritating/corrosive
Skin Irritation: Rabbit: Slightly irritating
Skin Sensitization: Not a contact sensitizer in guinea pigs following repeated skin exposure.

Subchronic (Target Organ) Effects: Repeated overexposure to picloram may affect the liver. Repeated overexposure to Fluroxypyr may cause effects to bone marrow, kidney, liver and respiratory tract.
Carcinogenicity / Chronic Health Effects: Picloram acid did not cause cancer in laboratory animals. Fluroxypyr did not cause cancer in laboratory animals. The hydrocarbon component may contain naphthalene, which is listed by IARC as a class 2B and the U.S. National Toxicology Program as reasonably anticipated to be a human carcinogen.
Reproductive Toxicity: Picloram acid did not interfere with reproduction in animal studies. In animal studies, fluroxypyr has been shown not to interfere with reproduction.
Developmental Toxicity: Picloram acid did not cause birth defects or any other fetal effects in laboratory animals, even at exposure level having an adverse effect on the mother. Fluroxypyr did not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects in the mother.
Genotoxicity: The preponderance of data shows picloram to be non-mutagenic in in-vitro tests and in animal studies. Animal tests with fluroxypyr did not demonstrate mutagenic effects.

Assessment Carcinogenicity:
This product contains substances that are considered to be probable or suspected human carcinogens as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Regulatory Agency Listing As Carcinogen</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACGIH</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>No</td>
</tr>
</tbody>
</table>

*Reasonably anticipated to be a human carcinogen
12. ECOLOGICAL INFORMATION

Ecotoxicity:

Data on Picloram TIPA Salt:
- Rainbow Trout Acute LC₅₀: 25 mg/l
- Honey Bee Contact LD₅₀: >100 mg/bee
- Tidewater Silverside Acute LC₅₀: 57.2 mg/l
- Oyster, Shell deposition EC₅₀: 10-18 mg/l

Bobwhite Quail 8-day Dietary LC₅₀: >10,000 ppm
Mallard Duck 8-day Dietary LC₅₀: >10,000 ppm
Growth Inhibition EC₅₀ Blue-Green Algae: 740 mg/l

Data on Fluroxypyr 1-Methylheptyl Ester:
- Fluroxypyr 1-Methylheptyl Ester is highly toxic to aquatic invertebrates on an acute basis (LC₅₀ or EC₅₀ is between 0.1 and 1 mg/L). Concentrations for fish were not determined because they exceed water solubility. Fluroxypyr 1-Methylheptyl Ester is highly insoluble in water. Fluroxypyr 1-Methylheptyl Ester is practically non-toxic to birds on an acute and dietary basis (LD₅₀ >2,000 mg/kg and LC₅₀ >5,000 ppm).

Environmental Fate:

In laboratory and field studies, TIPA salt of Picloram acid rapidly dissociated to parent acid in the environment. However, Picloram may be present in ionized form at environmental pH contributing to high solubility in water and high potential mobility in soils. Picloram variably binds to organic materials in the soils with adsorption increasing as the levels of organic matter and clay increase. It is stable to hydrolysis and anaerobic degradation processes. Under aerobic soil conditions the typical half-life ranges from 167 - 513 days, but may be as little as 30-90 days in the presence of adequate soil moisture and warm temperatures. Photolysis half-life ranges from 2.3 - 9.58 days and is a secondary route of degradation. In laboratory and field studies, Fluroxypyr 1-Methylheptyl Ester rapidly de-esterfied to parent acid in the environment. The typical soil half-life for fluroxypyr (acid and ester) ranged from one to four weeks. Microbial metabolism is the primary degradation mechanism in soil. The typical aquatic half-life ranged from 4 to 14 days.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Pesticides wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law and may contaminate groundwater. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Handling and Disposal:
- **Nonrefillable Containers 5 Gallons or Less:** Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. **Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or, if allowed by State and local authorities, by burning. If burned stay out of smoke.

- **Nonrefillable containers larger than 5 gallons:** Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and
forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. **Refillable containers larger than 5 gallons:** Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water and, if possible, spray all sides while adding water. Agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

### 14. TRANSPORTATION INFORMATION

Follow the precautions indicated in Section 7: HANDLING AND STORAGE of this MSDS.

**DOT**

- **< 440 gallons per complete package**
  - Non Regulated

- **≥ 440 gallons per complete package**
  - RQ, UN 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (NAPHTHALENE), 9, III

**IMDG**

- Non Regulated

**IATA**

- Non Regulated

### 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**TSCA Inventory:** This product is exempted from TSCA because it is solely for FIFRA regulated use.

**SARA Hazard Notification/Reporting:**

**Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370):**

- Immediate and Delayed

**Section 313 Toxic Chemical(s):**

- Picloram (CAS No. 1918-02-1), 10.84% equivalent by weight in product
- Naphthalene (CAS No. 91-20-3), < 2.5% by weight in product

**Reportable Quantity (RQ) under U.S. CERCLA:**

- Naphthalene (CAS No. 91-20-3) 100 pounds

**RCRA Waste Code:**

- Naphthalene (CAS No. 91-20-3) U165
State Information:
The following product components are cited on certain state lists. Check individual state requirements.

- 1-Methylnaphthalene (CAS No. 90-12-0) >1.0%
- 2-Methylnaphthalene (CAS No. 91-57-6) >1.0%
- Dipropylene Glycol Monomethyl Ether (CAS No. 34590-94-8) >1.0%

California Proposition 65: WARNING. This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

16. OTHER INFORMATION

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of Federal law to use a pesticide product in any manner not prescribed on the EPA-accepted label.

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