

**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

**Product Name:** MEPEX<sup>®</sup> Plant Growth Regulator  
**EPA Reg. No.:** 228-608  
**Synonyms:** Mepiquat chloride; N, N-dimethylpiperidinium chloride  
**Product Type:** Plant Growth Regulator

**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:** June 8, 2012                      **Supersedes:** May 15, 2009  
**Sections Revised:** Reviewed, no changes

**2. HAZARDS IDENTIFICATION****Emergency Overview:**

**Appearance and Odor:** Purple colored liquid.

**Warning Statements:** Caution. Keep out of reach of children. Harmful if swallowed or absorbed through the skin. Causes moderate eye irritation. Avoid contact with eyes, skin, or clothing.

**Potential Health Effects:**

**Likely Routes of Exposure:** Inhalation, eye and skin contact.

**Eye Contact:** Slightly irritating based on acute toxicity studies.

**Skin Contact:** Minimally toxic and slightly irritating based on toxicity studies.

**Ingestion:** Slightly toxic if ingested based on toxicity studies.

**Inhalation:** Low inhalation toxicity based on toxicity studies.

**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:**

Mepiquat chloride is practically non-toxic to birds, small mammals, fish and estuarine species, honey bees and aquatic plants.

See Section 12: ECOLOGICAL INFORMATION for more information.

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

| COMPONENT         | CAS NO.    | % BY WEIGHT |
|-------------------|------------|-------------|
| Mepiquat chloride | 24307-26-4 | 4.2         |
| Other Ingredients |            | 95.8        |

**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 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 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 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.

**5. FIRE FIGHTING MEASURES**

**Flash Point:** Not applicable due to aqueous formulation

**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:** If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.

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

**National Fire Protection Association (NFPA) Hazard Rating:**

**Rating for this product: Health: 1    Flammability: 0    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:**

Avoid contact with eyes, skin, or 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. 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:**

Do not store below 32°F or above 100°F. Store in a dry place away from heat or open flame. Do not contaminate water, food or feed by storage and 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:** Not normally required. To avoid contact with eyes, wear chemical goggles or shielded safety glasses. 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, socks, shoes and chemical-resistant gloves made of any waterproof material. 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:**

| Component         | OSHA |      | ACGIH |      | Unit |
|-------------------|------|------|-------|------|------|
|                   | TWA  | STEL | TWA   | STEL |      |
| Mepiquat Chloride | NE   | NE   | NE    | NE   |      |

NE = Not Established

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance and Odor:** Purple colored liquid.

**Boiling Point:** Not determined

**Density:** 8.35 pounds/gallon

**Evaporation Rate:** Not determined

**Freezing Point:** Not determined

**pH:** 5.5 – 7.5

**Solubility in Water:** Soluble

**Specific Gravity:** ~1.00

**Vapor Density:** Not determined

**Vapor Pressure:** Not determined

**Viscosity:** Not determined

**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:** Do not allow product to freeze.

**Incompatible Materials:** None known.

**Hazardous Decomposition Products:** Under fire conditions may produce gases such as hydrogen chloride and oxides of nitrogen.

**Hazardous Reactions:** Hazardous polymerization will not occur.

## 11. TOXICOLOGICAL INFORMATION

### **Toxicological Data:**

Data from laboratory studies conducted on a similar, but not identical, formulation:

**Oral:** Rat LD<sub>50</sub>: 6,950 mg/kg

**Dermal:** Rat LD<sub>50</sub>: >5,000 mg/kg

**Inhalation:** Rat 4-hr LC<sub>50</sub>: > 20 mg/L

**Eye Irritation:** Rabbit: Slightly irritating

**Skin Irritation:** Rabbit: Slightly irritating

**Skin Sensitization:** Not a contact sensitizer in guinea pigs following repeated skin exposure.

**Subchronic (Target Organ) Effects:** Excessive exposure to mepiquat chloride may affect the kidneys.

**Carcinogenicity / Chronic Health Effects:** Mepiquat chloride caused kidney effects and/or neurological signs (e.g. spasms and/or tremors) in chronic toxicity studies in dogs and rats. Mepiquat chloride did not cause cancer in long-term animal studies.

**Reproductive Toxicity:** Mepiquat chloride was not a reproductive toxicant in a two generation study in rats.

**Developmental Toxicity:** Mepiquat chloride was not a primary developmental toxicant in rats and rabbits. Developmental effects were observed at doses that caused maternal toxicity.

**Genotoxicity:** Mepiquat chloride does not cause genetic damage in bacterial or mammalian cell cultures

**Assessment Carcinogenicity:** None listed with ACGIH, IARC, NTP or OSHA.

See Section 2: HAZARDS IDENTIFICATION for more information.

## 12. ECOLOGICAL INFORMATION

### **Ecotoxicity:**

Data on Mepiquat Chloride (46%):

96-hour LC<sub>50</sub> Bluegill: 2,580 mg/l

96-hour LC<sub>50</sub> Rainbow Trout: 730 mg/l

48-hour EC<sub>50</sub> Daphnia: 50.8 mg/l

Honey Bee LD<sub>50</sub>: >100 ug/bee

Bobwhite Quail 8-day Dietary LC<sub>50</sub>: >4,600 ppm

Bobwhite Quail Oral LD<sub>50</sub>: > 2,134 mg/kg

Mallard Duck 8-day Dietary LC<sub>50</sub>: >4,600 ppm

### **Environmental Fate:**

Mepiquat chloride is stable to hydrolysis and photolysis. Soil and aqueous photolysis are not routes of dissipation. Under aerobic conditions, mepiquat chloride appears to degrade rapidly to CO<sub>2</sub>. Under anaerobic conditions, it appears to be stable.

## 13. DISPOSAL CONSIDERATIONS

### **Waste Disposal Method:**

Pesticide wastes are toxic. Waste resulting from this product may be disposed of on site or at an approved waste disposal facility. Improper disposal of excess pesticide, spray mix, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact the State Agency responsible for pesticide regulation 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**

Non Regulated

**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):**

None Listed

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

None

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

None

**RCRA Waste Code:**

None

**State Information:**

Other state regulations may apply. Check individual state requirements.

**California Proposition 65:** Not Listed**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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