RHONOX® MCPA ESTER HERBICIDE

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY DESCRIPTION

Product Name: Nufarm Rhonox MCPA Ester Herbicide
Synonyms: MCPA 2EHE; MCPA IOE; 2-methyl-4-chlorophenoxyacetic acid, isoctyl (2-ethylhexyl) ester.
EPA Reg. No.: 11685-21-71368
Company Name: Nufarm Americas, Inc.
Burr Ridge, IL 60521
Phone Numbers: For Chemical Emergency, Spill, Leak, Fire, Exposure, Or Accident, Call CHEMTREC Day or Night: 1-800-424-9300. For Medical Emergencies Only, Call 877-325-1840. For additional non-emergency information, call: 1-800-852-5234.
Date: January 12, 2001
Revisions: New or updated information in all sections.
Reasons for Revisions: General revision utilizing more specific data.
Supersedes: March 1, 2000

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CAS REG. NO.</th>
<th>% BY WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-methyl-4-chlorophenoxyacetic acid, isoctyl (2-ethylhexyl) ester*</td>
<td>29450-45-1</td>
<td>67.9</td>
</tr>
<tr>
<td>Inert ingredients including aromatic petroleum distillates*, emulsifier and other ingredients (trade secret)</td>
<td>95-63-6, 1330-20-7, 100-41-4, others</td>
<td>32.1</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

Appearance and Odor: Amber to brown liquid, aromatic odor.
Warning Statements: CAUTION. Keep out of reach of children. Causes moderate eye irritation. Harmful if swallowed, inhaled or absorbed through the skin. Avoid contact with eyes, skin or clothing. Avoid breathing vapors or spray mist.

Potential Adverse Health Effects:

Likely Routes of Exposure: Inhalation, eye and skin contact.
Eye Contact: Moderately irritating.
Skin Contact: Moderately irritating. Overexposure by skin absorption may cause headache, dizziness, nausea, vomiting, gastrointestinal irritation, weakness and central nervous system depression.
Inhalation: Low inhalation toxicity. High concentrations of vapors from undiluted product may cause headache, dizziness, nausea, vomiting, gastrointestinal irritation, weakness and central nervous system depression.
Ingestion: Harmful if swallowed. May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation, weakness and central nervous system depression. If aspirated into the respiratory tract during ingestion or vomiting, small amounts of the solvent component may cause pulmonary injury possibly progressing to death.
Medical Conditions Possibly 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.
Subchronic (Target Organ) Effects: (An adverse effect with symptoms that develop slowly over a long period of time): Repeated overexposure may cause effects to liver, kidneys, blood chemistry, testes and gross motor function. Rare cases of peripheral nerve damage have been reported for phenoxy herbicides, but extensive animal studies have failed to substantiate these observations, even at high doses of MCPA for prolonged periods.
Chronic Effects/Carcinogenicity: The International Agency for Research on Cancer (IARC) lists exposure to chlorophenoxy herbicides as a class 2B carcinogen, the category for limited evidence for carcinogenicity in humans. Newer rat and mouse lifetime feeding studies did not show carcinogenic potential for MCPA. The solvent component of this product contains ethyl benzene, which IARC lists as a class 2B carcinogen.
Reproductive Toxicity: Testicular effects and lower male fertility have been noted in animal studies.
Developmental Toxicity: MCPA studies in laboratory animals have shown decreased fetal body weights and delayed development in the offspring at doses toxic to mother animals.
Genotoxicity: There have been some positive and some negative studies, but the weight of evidence is that MCPA is not mutagenic.

4. FIRST AID MEASURES

If swallowed: Call a physician or Poison Control Center. If patient is conscious and alert, give 2 to 3 glasses of water. Do not induce vomiting. May cause aspiration pneumonia. Never give anything by mouth to an unconscious person. Get medical attention.
If on skin: Wash with plenty of soap and water, if available. Get medical attention.
If in eyes: Flush with a steady, gentle stream of water for 15 minutes. Call a physician if irritation persists.
Note to Physician: No specific antidote is available. All treatments should be based on observed signs and symptoms of distress in the patient. Overexposure to materials other than this product may have occurred. This product contains petroleum distillates. If large amounts (greater than 1 ml/kg body weight) of the product have been ingested, the stomach should be evacuated by gastric intubation with the aid of a cuffed endotracheal tube to prevent aspiration of petroleum distillates. After removal of stomach contents, wash stomach by instilling 30 to 50 grams of activated charcoal in 3 to 4 ounces of water through the stomach tube and again remove stomach contents. Avoid oily laxatives.

This product contains a phenoxy herbicide. Myotoxic effects may include muscle fibrillations, myotonia, and muscular weakness. Ingestion of massive doses may result in persistent fall of blood pressure. Myoglobin and hemoglobin may be found in urine. Elevations in lactate dehydrogenase (LDH), SGOT, SGPT and aldolase indicate the extent of muscle damage.

5. FIRE FIGHTING MEASURES

Flash Point: Approximately 134° F (56.7° C) by Seta-Flash method.
Autoignition Temperature: Not determined. Solvent approximately 880° F (471.1° C)
Flammability Limits (% in air): Not determined. Approximate values for solvent at 77° F (25° C):
   Lower: 1.9  Upper: 12.6
Extinguishing Media: Recommended (large fire): foam, water spray. Recommended (small fires): dry chemical, carbon dioxide.
Special Fire Fighting Procedures: Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

Unusual Fire and Explosion hazards: When heated above the flash point, this material emits vapors, which when mixed with air, can burn or be explosive. Heavier than air vapors may travel a considerable distance to a source of ignition and flash back along a vapor trail. Under fire conditions, toxic, corrosive fumes are emitted. Containers will burst from internal pressure under fire conditions.


6. ACCIDENTAL RELEASE MEASURES

Evacuation Procedures and Safety: Ventilate closed spaces before entering. Eliminate all sources of ignition until area is determined to be free from explosion or fire hazard. Use non-sparking tools. Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

Containment of Spill: Dike spill using absorbent or impervious materials such as earth, sand or clay. Do not use combustible absorbent such as sawdust. Collect and contain absorbent and dike material for disposal.

Cleanup and Disposal of Spill: Pump any free liquid into an appropriate closed container. Use explosion proof electrical equipment. Collect washings for disposal. Decontaminate tools and equipment following cleanup. (See Section 13.)

Environmental and Regulatory Reporting: Prevent material from entering public sewer system or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of top soil. The affected area should be removed and placed in an appropriate container for disposal. Spills may be reportable to federal, state and/or local agencies.

7. HANDLING AND STORAGE

Handling:
Handle containers carefully to avoid damage and spills. Use appropriate electrical grounding and bonding procedures to minimize potential for electrostatic discharge.

Storage:
Store in original container in a dry, secured storage area away from excessive heat and ignition sources. Storage in direct sunlight may increase internal pressure in containers and should be avoided. Do not contaminate water, food or feed by storage or disposal. Avoid storage in close proximity to insecticides, fungicides, fertilizers and seeds. Keep container tightly closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

General:
These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended usage, including maintenance and repair of equipment. Contact personal protective equipment manufacturers for assistance with selection, use and maintenance of such equipment.

Personal Protective Equipment:

Respiratory Protection: When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industrial recommendations. Under normal conditions, in the absence of other airborne contaminants, the following devices should provide protection from this material up to the conditions specified by the appropriate OSHA or ANSI standard(s): Air-purifying (half-mask/full-face) respirator with cartridges/canister approved for use against pesticides. Under conditions immediately dangerous to life or health, or emergency conditions with unknown concentrations,
use a full-face positive pressure air-supplied respirator equipped with an emergency escape air supply unit or use a self-contained breathing apparatus unit.

**Eye/Face Protection:** Eye and face protection requirements will vary dependent upon work environment conditions and material handling practices. Appropriate ANSI Z87 approved equipment should be selected for the particular use intended for this material. Eye contact should be prevented through use of protective eyewear such as chemical safety glasses with side shields or splash proof goggles. An emergency eye wash should be readily accessible to the work area.

**Skin Protection:** Skin contact should be avoided through the use of permeation resistant clothing, gloves and footwear, selected with regard for use conditions and exposure potential. An emergency shower should be readily accessible to the work area. Consider both durability and permeation resistance of clothing.

**Work Practice Controls:** 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>Exposure Limits:</th>
<th>OSHA PEL*</th>
<th>ACGIH TLV®️️</th>
<th>ACGIH STEL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-methyl-4-chlorophenoxyacetic acid, isoctyl (2-ethylhexyl) ester</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
<td>NAp</td>
</tr>
<tr>
<td>Trimethylbenzene</td>
<td>N/E</td>
<td>25</td>
<td>N/E</td>
<td>ppm</td>
</tr>
<tr>
<td>Xylene</td>
<td>100</td>
<td>100</td>
<td>150</td>
<td>ppm</td>
</tr>
<tr>
<td>Ethyl benzene</td>
<td>100</td>
<td>100</td>
<td>125</td>
<td>ppm</td>
</tr>
</tbody>
</table>

*8-hour TWA unless otherwise noted.  NAp = Not applicable.  N/E = None Established

**Ventilation:**

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

### 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.

**Physical Appearance:** Amber to brown liquid.

**Odor:** Aromatic.

**pH:** Not Available.

**Specific Gravity:** Approximately 1.018

**Water Solubility:** Product is emulsifiable in water.

**Melting Point Range:** Not Applicable.

**Boiling Point Range:** Not Available. Based on components, expected to be >150°C.

**Vapor Pressure:** 7.36 x 10⁶ mm Hg @ 26.5°C (data on MCPA 2EHE)

**Molecular Weight:** 312.8 (data on MCPA 2EHE)

### 10. STABILITY AND REACTIVITY

**Chemical Stability:** This material is stable under normal handling and storage conditions described in Section 7.

**Conditions To Be Avoided:** Excessive heat, ignition sources, static electricity.

**Incompatibility With Other Materials:** Strong oxidizing agents: bases, acids.
Hazardous Decomposition Products:
Decomposition Type: Thermal
Hazardous Polymerization: Does not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological Data:
Data on this product:

Eye Irritation: Moderately irritating (Rabbit).
Skin Irritation: Moderately irritating (Rabbit).
Dermal: Slightly toxic. (Rabbit LD$_{50}$ >2000 mg/kg).
Inhalation: Slightly toxic. (Rat 4-hr LC$_{50}$: 1.37 mg/L)
Oral: Slightly toxic. (Rat LD$_{50}$ 1525 mg/kg).

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

<table>
<thead>
<tr>
<th>Ingredients Name</th>
<th>Regulatory Agency Listing As Carcinogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorophenoxy herbicides</td>
<td>OSHA: No</td>
</tr>
<tr>
<td>Ethyl benzene</td>
<td>OSHA: No</td>
</tr>
</tbody>
</table>

(Also see Section 3.)

12. ECOLOGICAL INFORMATION

Aquatic Toxicity:
Data on this product:

96-hr LC$_{50}$ Bluegill: > 6.6 mg/l
96-hr LC$_{50}$ Rainbow Trout: > 5.8 mg/l
48-hr EC$_{50}$ Daphnia: 0.3 mg/l

Avian Toxicity:
Data on MCPA 2EHE:

Bobwhite Quail Dietary LC$_{50}$: >5620 ppm
Mallard Duck 8-day Dietary LC$_{50}$: >5620 ppm

Environmental Fate:
MCPA 2EHE rapidly hydrolyzes to parent MCPA acid. In soil, MCPA is microbially degraded with typical half-life of approximately 10 to 14 days.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:
Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law and may contaminate ground water. 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:
Do not reuse empty container. Triple rinse (or equivalent) adding rinsate to application equipment. Then offer empty container for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke. This material may accumulate a static charge that can discharge violently. Empty unrinsed containers can retain combustible liquid product or vapors that should be kept away from heat or ignition sources. Improper handling may cause injury or death.

### 14. TRANSPORTATION INFORMATION

**NOTE:** Information is for surface transportation of package sizes generally offered and does not address regulatory variations due to changes in package size, mode of shipment or other conditions.

Packages with a rated capacity of less than or equal to 119 gallons of this product are generally not regulated. For packages with a rated capacity over 119 gallons:

- **DOT Proper Shipping Name:** COMBUSTIBLE LIQUID, N.O.S. (CONTAINS PETROLEUM DISTILLATES).
- **DOT Hazard Class / I.D. No.:** 3 / NA1993
- **DOT Label:** None - COMBUSTIBLE Placard (package over 119 gallons capacity)
- **U.S. Surface Freight Classification:** Weed killing compound, N.O.I.B.N.

### 15. REGULATORY INFORMATION

**Federal Regulations:**

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

**SARA Hazard Notification:**

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

Section 313 Toxic Chemical(s): XYLENE, CAS NO. 1330-20-7 (approx. 3.7% by weight in product); ETHYL BENZENE, CAS NO. 100-41-4 (approx. 0.9% by weight in product); 1,2,4-TRIMETHYLBENZENE, CAS NO. 95-63-6 (approx. 5.7% by weight in product).

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

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>RQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>XYLENE</td>
<td>100 lbs. (approximately 322 gallons of this product)</td>
</tr>
<tr>
<td>ETHYL BENZENE</td>
<td>1000 lbs. (approximately 13888 gallons of this product)</td>
</tr>
</tbody>
</table>

**Selected State Regulations:**

This product contains the following components that are regulated under California Proposition 65:

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>Cancer List</th>
<th>Reproductive List</th>
<th>Risk Level (ug/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>California</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

### 16. OTHER INFORMATION

**National Fire Protection Association (NFPA®) Hazard Ratings:**
### Abbreviations and Acronyms Not Defined Elsewhere:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Governmental Industrial Hygienists</td>
</tr>
<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
</tr>
<tr>
<td>CERCLA</td>
<td>Comprehensive Environmental Response, Compensation and Liability Act</td>
</tr>
<tr>
<td>DOT</td>
<td>Department of Transportation</td>
</tr>
<tr>
<td>FIFRA</td>
<td>Federal Insecticide, Fungicide and Rodenticide Act</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>MSHA</td>
<td>Mine Safety and Health Administration</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety and Health</td>
</tr>
<tr>
<td>NTP</td>
<td>National Toxicology Program</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
</tr>
<tr>
<td>SARA</td>
<td>Superfund Amendments and Reauthorization Act of 1986</td>
</tr>
<tr>
<td>STEL</td>
<td>Short Term Exposure Limit</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>TSCA</td>
<td>Toxic Substances Control Act</td>
</tr>
<tr>
<td>TWA</td>
<td>Time Weighted Average</td>
</tr>
<tr>
<td>USEPA</td>
<td>U.S. Environmental Protection Agency</td>
</tr>
</tbody>
</table>

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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