

ESTERON[®] 99 CONCENTRATE HERBICIDE

1. CHEMICAL PRODUCT AND COMPANY DESCRIPTION

Product Name: Esteron 99 Concentrate Herbicide
Synonyms: 2,4-D 2EHE; 2,4-D IOE; 2,4-Dichlorophenoxyacetic acid, isooctyl (2-ethylhexyl) ester.

EPA Reg. No.: 62719-9-71368

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.

Date: March 12, 2002

Revisions: New or updated information in all sections.

Reasons for Revisions: More specific data

Supersedes: December 14, 2000

2. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS REG. NO.	% BY WEIGHT
Acetic acid, (2,4-dichlorophenoxy)-, isooctyl (2-ethylhexyl) ester*	1928-43-4	65.9
Inert ingredients including kerosene*, Polyglycol 26-3 (ethylene oxide)* and other ingredients (trade secret)	8008-20-6 [kerosene] 69020-39-6 [Polyglycol 26-3 (ethylene oxide)]	34.1

*OSHA hazard

3. HAZARDS IDENTIFICATION

Emergency Overview:

Appearance and Odor: Amber liquid, hydrocarbon odor.

Warning Statements: CAUTION. Keep out of reach of children. Harmful if swallowed or absorbed through the skin. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals. Avoid breathing vapors or mists. Avoid contact with skin, eyes or clothing. Hazardous chemical. May cause moderate eye irritation. Prolonged exposure may cause skin irritation. Toxic to fish, avian wildlife and aquatic organisms. Flash point 150°F (66°C).

Potential Adverse Health Effects:

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

Eye Contact: May cause moderate eye irritation. Corneal injury is unlikely.

Skin Contact: Prolonged exposure may cause skin irritation. A single prolonged exposure is not likely to result in the material being absorbed through the skin in harmful amounts. The dermal LD₅₀ has not been determined. Overexposure by skin absorption may cause nausea, vomiting, abdominal pain, decreased blood pressure, muscle weakness, muscle spasms.

Inhalation: A single prolonged (hours) inhalation exposure is not likely to cause adverse effects. Overexposure may cause symptoms similar to those from ingestion. Kerosene component may cause upper respiratory tract irritation, dizziness, weakness, nausea, headache or possible unconsciousness. In animals, anesthetic or narcotic effects have been reported following exposure to aerosols.

Ingestion: Single dose oral toxicity is low. Single dose LD₅₀ has not been determined. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. May cause nausea, vomiting, gastrointestinal effects, decreased blood pressure, muscle weakness, muscle spasms. Kerosene component may cause dizziness, weakness, nausea, headache, unconsciousness, respiratory failure, or in extreme cases, 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, and gross motor function. Rare cases of peripheral nerve damage have been reported, but extensive animal studies have failed to substantiate these observations, even at high doses of 2,4-D for prolonged periods. For the solvent, in animals, effects have been reported on the following organs following exposure to aerosols: central nervous system and respiratory tract. Observations in animals include anesthetic or narcotic effects.

Chronic Effects/Carcinogenicity: Prolonged overexposure can cause liver, kidney and muscle damage. 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. However, more current 2,4-D lifetime feeding studies in rats and mice did not show carcinogenic potential. The USEPA has given a class D classification (not classifiable as to human carcinogenicity). In a lifetime animal dermal carcinogenicity study, an increased incidence of skin tumors was observed when kerosene was applied at doses that also produced skin irritation. This response was similar to that produced in skin by other types of chronic chemical/physical irritation. No increase in tumors was observed when non-irritating dilutions of kerosene were applied at equivalent doses, indicating that kerosene is unlikely to cause skin cancer in the absence of long-term continued skin irritation.

Reproductive Toxicity: No impairment of reproductive function attributable to 2,4-D has been noted in laboratory animal studies.

Developmental Toxicity: Studies in laboratory animals with 2,4-D have shown decreased fetal body weights and delayed development in the offspring at doses toxic to mother animals. Products similar to the kerosene component have given negative results (no effect) in rat studies.

Genotoxicity: There have been some positive and some negative studies, but the weight of evidence is that 2,4-D is not mutagenic. Products similar to the kerosene component have given mixed and inconsistent results in mutagenicity studies.

4. FIRST AID MEASURES

If swallowed: Call a physician or Poison Control Center. Do not induce vomiting. Do not give anything by mouth to an unconscious person.

If on skin: Immediately flush skin with plenty of water or shower. Get medical attention if irritation persists.

If in eyes: Immediately flush eyes with plenty of water. Irrigate with flowing water continuously for 15 minutes. Get medical attention.

If inhaled: Remove to fresh air if effects occur. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult a physician.

Note to Physician: This product contains petroleum distillates. May cause chemical pneumonitis if aspirated. If lavage is performed, suggest endotracheal and/or esophagoscopy control.

This product contains a phenoxy herbicidal chemical. There is no specific antidote. 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.

Myotonic 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. It has been suggested that overexposure in humans may affect both the central and peripheral nervous systems. The acute effects on the central nervous system resemble those produced by alcohol or sedative drugs. In isolated cases, peripheral neuropathy and reduced nerve conduction velocities have been reported although these observations may be related to other factors. Gas-liquid chromatography for detecting and measuring chlorophenoxy compounds in blood and urine may be useful in confirming and assessing the magnitude of chlorophenoxy absorption.

5. FIRE FIGHTING MEASURES

Flash Point: 150°F (66°C) by Tag closed cup method.

Autoignition Temperature: Not determined.

Flammability Limits: Not determined.

Extinguishing Media: Recommended (large fire): foam, water fog. 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 flammable vapors which, when mixed with air, can burn or be explosive. Fine mist or spray may be flammable at temperatures below the flash point. Under fire conditions, toxic, corrosive fumes are emitted. Containers will burst from internal pressure under extreme fire conditions.

Hazardous Decomposition Materials (Under Fire Conditions): Hydrogen chloride, oxides of nitrogen, and oxides of carbon.

6. ACCIDENTAL RELEASE MEASURES

Evacuation Procedures and Safety: 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. Collect and contain contaminated absorbent and dike material for disposal.

Cleanup and Disposal of Spill: Pump any free liquid into an appropriate closed container. 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 the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

Handling:

Handle containers carefully to avoid damage and spills.

Storage:

Store in original container in a dry secured storage area. 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. Keep out of reach of children.

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:

Exposure Limits:	OSHA PEL*	ACGIH TLV®*	STEL	Units
Acetic acid, (2,4-Dichlorophenoxy)-, isooctyl (2-ethylhexyl) ester	10**	10**	ND	mg/M ³

*8-hour TWA unless otherwise noted.

**Based on adopted limit for 2,4-D.

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 liquid.

Odor: Hydrocarbon.

pH: Not Available.

Specific Gravity: Approximately 1.03 at 68°F (20°C)

Water Solubility: Product is emulsifiable in water.

Melting Point Range: Not Available.

Boiling Point Range: > 300°F (150°C).

Vapor Pressure: 3.6×10^{-6} mm Hg @ 25°C (data on 2,4-D 2EHE) 0.4 mm Hg @ 68°F (data on kerosene)

Molecular Weight: 333.27 (data on 2,4-D 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. Avoid temperatures near or above the flash point.

Incompatibility With Other Materials: Strong oxidizing agents: bases, acids.

Hazardous Decomposition Products:

Decomposition Type: Thermal

Decomposition Products: Hydrogen chloride, oxides of carbon, nitrogen and sulfur.

Hazardous Polymerization: Does not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological Data:

Data on a similar product:

Eye Irritation: Minimally irritating (Rabbit).

Skin Irritation: Minimally irritating (Rabbit).

Dermal: Slightly toxic. (Rabbit LD₅₀ >2000 mg/kg).

Inhalation: Slightly toxic. (Rat 4-hr LC₅₀: >5 mg/L)

Oral: Slightly toxic. (Rat LD₅₀ 1161 mg/kg).

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

Ingredients Name	Regulatory Agency Listing As Carcinogen			
	OSHA	IARC	NTP	ACGIH
Chlorophenoxy herbicides	No	2B	No	No

(Also see Section 3.)

12. ECOLOGICAL INFORMATION

Aquatic Toxicity:

Data on 2,4-D 2EHE or EC formulation:

96-hr LC₅₀ Bluegill: >5 mg/l

96-hr LC₅₀ Rainbow Trout: 7.2 mg/l

48-hr EC₅₀ Daphnia: >5 mg/l

Avian Toxicity:

Data on 2,4-D 2EHE:

Bobwhite Quail Dietary LC₅₀: >5620 ppm

Mallard Duck 8-day Dietary LC₅₀: >5620 ppm

Environmental Fate:

In representative laboratory and field studies, 2,4-D 2EHE rapidly hydrolyzed to parent acid in the environment. The typical half-life of the resultant 2,4-D acid ranged from a few days to a few weeks.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Pesticide wastes are toxic. Improper disposal of excess pesticide 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.

14. TRANSPORT 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 containing less than 26 gallons of this product are generally not regulated. For packages containing 26 gallons or higher:

DOT Proper Shipping Name: COMBUSTIBLE LIQUID, N.O.S. (CONTAINS KEROSENE), RQ (2,4-D ESTER)

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:

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

Fire:	Reactive:	Release of Pressure:	Acute Health:	Chronic Health:
Yes	No	No	Yes	Yes

Section 313 Toxic Chemical(s):

ACETIC ACID, (2,4-DICHLOROPHENOXY)-, 2-ETHYLHEXYL ESTER, CAS NO. 1928-43-4 (65.9% by weight in product)

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

Ingredient	RQ
ACETIC ACID, (2,4-DICHLOROPHENOXY) -	100 lbs (approximately 26 gallons of this product)

Selected State Regulations:

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

Ingredient Name	Cancer List	Reproductive List	Risk Level (ug/day)	
			California	Nufarm
Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

16. OTHER INFORMATION

National Fire Protection Association (NFPA®) Hazard Ratings:

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

Abbreviations and Acronyms Not Defined Elsewhere:

ACGIH American Conference of Governmental Industrial Hygienists

ANSI American National Standards Institute

CERCLA Comprehensive Environmental Response, Compensation and Liability Act

DOT Department of Transportation

FIFRA Federal Insecticide, Fungicide and Rodenticide Act

IARC International Agency for Research on Cancer

MSHA Mine Safety and Health Administration

NIOSH National Institute for Occupational Safety and Health

NTP National Toxicology Program

OSHA Occupational Safety and Health Administration

PEL Permissible Exposure Limit

SARA Superfund Amendments and Reauthorization Act of 1986

STEL Short Term Exposure Limit

TLV Threshold Limit Value

TSCA Toxic Substances Control Act

TWA Time Weighted Average

USEPA U.S. Environmental Protection Agency

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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