



## NUFARM AGRICULTURE INC.

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**SUPPLIED BY:**

Nufarm Agriculture Inc.  
5507 1<sup>st</sup> Street, SE  
Calgary, AB T2H 1H9

Phone Number: (403)-253-8471

Fax Number: (403)-253-8478

**MANUFACTURED BY:**

Nufarm Agriculture Inc.  
5507 1<sup>st</sup> Street, SE  
Calgary, AB T2H 1H9

Phone Number: (403)-253-8471

Fax Number: (403)-253-8478

**PRODUCT:****Embutox® Liquid Herbicide****PCP NUMBER:**

27912

**DATE PREPARED:**

September 6, 2011

**PREPARER:**

Nufarm Agriculture Inc.; Regulatory Affairs & Research Department

**CHEMICAL FAMILY/USE:**

Herbicide

**FORMULA:**

C<sub>10</sub>H<sub>10</sub>Cl<sub>2</sub>O<sub>3</sub>

**CHEMICAL SYNONYMS:**

2,4-DB 2-ethylhexyl ester (2-EHE); 2,4-DB isooctyl ester (IOE); 4-(2,4-dichlorophenoxy) butanoic acid, isooctyl (2-ethylhexyl) ester.

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients	Wt. %	CAS NO.
2,4-DB 2-EHE	85 - 89	1320-15-6
Hydrocarbon solvent	< 10	64742-47-8

Other ingredients are proprietary.

### 3. HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW:** CAUTION-POISON. Keep out of reach of children. Avoid contact with skin, eyes and clothing. May cause eye and skin irritation. Harmful if absorbed through the skin. Harmful if swallowed.

**EFFECTS OF ACUTE EXPOSURE:**

**INGESTION:** Harmful if swallowed. May cause nausea, vomiting, abdominal pain, decreased blood pressure, muscle weakness, muscle spasms.

**SKIN CONTACT:** Causes moderate skin irritation. Overexposure by skin absorption may cause nausea, vomiting, abdominal pain, decreased blood pressure, muscle weakness, muscle spasms. May cause allergic reaction in sensitive individuals.

**INHALATION:** Contains materials that may be moderately toxic. Vapours could cause headache, dizziness, respiratory irritation and symptoms similar to those from ingestion.

**EYE CONTACT:** Causes moderate eye irritation.

**MEDICAL CONDITIONS AGGRAVATED:** Skin exposure may aggravate preexisting skin conditions. Inhalation of mist may aggravate preexisting respiratory conditions.

**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, uterus, gross motor function and reduced body weight gain. 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-DB for prolonged periods.

**CHRONIC EFFECTS/CARCINOGENICITY:** The International Agency for Research on Cancer (IARC) lists exposure to



## NUFARM AGRICULTURE INC.

chlorophenoxy herbicides as a class 2B carcinogen, the category for limited evidence for carcinogenicity in humans. However, more current 2,4-DB lifetime feeding studies in rats and mice did not show carcinogenic potential. Products similar to the hydrocarbon component are not considered to be mutagenic and are unlikely to cause tumors.

**REPRODUCTIVE TOXICITY:** No impairment of reproductive function attributable to 2,4-DB has been noted in laboratory animal studies. At doses toxic to parental animals, there were effects on the kidneys, adrenals and ovaries of offspring. At the highest dose, offspring mortalities and growth reductions were observed during lactation.

**DEVELOPMENTAL TOXICITY:** Studies in laboratory animals with 2,4-DB have shown decreased litter sizes, decreased fetal body weights and skeletal variations in the offspring at doses toxic to mother animals. These are considered to result from maternal toxicity. Products similar to the hydrocarbon component are not considered to be developmental toxicants.

**GENOTOXICITY:** Genotoxicity studies on 2,4-DB have been inconclusive with some positive and some negative results. Products similar to the hydrocarbon component are not considered to be mutagenic.

**PRINCIPLE ROUTES OF EXPOSURE:** Eye contact. Skin absorption. Inhalation. Oral.

**TOXICOLOGICALLY SYNERGISTIC MATERIALS:** None known.

**OTHER:** None known.

### 4. FIRST AID MEASURES

**If swallowed,** call a poison control centre or doctor immediately for treatment advice. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

**In case of skin or clothing contact,** 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.

**If in 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.

**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 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:** This product contains petroleum distillates. If large amounts have been ingested, empty the stomach by gastric intubation with the aid of a cuffed endotracheal tube to prevent aspiration and possible chemical pneumonia.

This product contains a phenoxy herbicidal chemical. No specific antidote. Treatment based on sound judgment of physician and individual reactions of patient. Overexposure to materials other than this product may have occurred.

### 5. FIRE FIGHTING MEASURES

**FLASH POINT:** .....>100°C.

**CONDITIONS OF FLAMMABILITY:** .....Combustible mixture. 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 to an ignition source.

**FLAMMABLE LIMITS IN AIR - Upper (%):** .....NA.

**FLAMMABLE LIMITS IN AIR - Lower (%):** .....NA.

**AUTOIGNITION TEMPERATURE:** .....NA.

**SENSITIVITY TO MECHANICAL IMPACT (Y/N):** .....NA. No sensitivity expected based on long handling history.

**SENSITIVITY TO STATIC DISCHARGE:** .....NA.

**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



## NUFARM AGRICULTURE INC.

**ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:** Use safety equipment and procedures appropriate to the size of the spill. Keep potential ignition sources and unnecessary people away. Avoid runoff to natural waters and sewers. Surround and absorb spills with inert material such as perlite, 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:** Handle as a combustible liquid. Keep away from potential ignition sources. 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
2,4-DB EHE	N/E	N/E	N/E	NAp
Hydrocarbon solvent	1200**	N/E	N/E	mg/M <sup>3</sup>

\*8-hour TWA unless otherwise noted

\*\*Manufacturers recommendation, total hydrocarbon.

**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 and flammable 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. Gloves are not required for applicator in enclosed tractor or airplane cockpit.

**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.

**VAPOR PRESSURE:** .....NA.

**VAPOR DENSITY (air = 1):** .....NA. Hydrocarbon solvent >1.

**FREEZING POINT:** .....NA.

**MELTING POINT:** .....NA.

**PHYSICAL STATE:** .....Liquid.

**ODOUR:** .....Characteristic phenolic and aromatic.

**COLOUR:** .....Brown.



## NUFARM AGRICULTURE INC.

ODOR THRESHOLD (ppm): .....NA.  
EVAPORATION RATE (butyl acetate = 1): .....NA.  
SPECIFIC GRAVITY (water = 1): .....1.09  
DENSITY @ 25°C: .....1.09  
pH: .....5.7 (1% dilution)  
SOLUBILITY IN WATER (20°C): .....Product is emulsifiable in water.  
COEFFICIENT OF WATER/OIL DISTRIBUTION: .....NA. Product is oil soluble.

### 10. STABILITY AND REACTIVITY

**STABILITY:** Stable.

**HAZARDOUS POLYMERIZATION:** Will not occur.

**HAZARDOUS THERMAL DECOMPOSITION/COMBUSTION PRODUCTS:** Hydrogen chloride, other chlorine compounds, carbon dioxide, carbon monoxide, and other potentially toxic combustion products may be present.

**INCOMPATIBILITY (MATERIALS TO AVOID):** Avoid contact with strong acidic, basic or oxidizing agents.

**CONDITIONS TO AVOID:** None known.

### 11. TOXICOLOGICAL INFORMATION

Data on this product or a similar formulation:

**ACUTE ORAL LD<sub>50</sub> (mg/kg):** .....1603 (Rat)

**ACUTE DERMAL LD<sub>50</sub> (mg/kg):** .....>2000 (Rabbit)

**ACUTE INHALATION LC<sub>50</sub> (mg/l):** .....>2.67 mg/l (Rat, 4-hour nose-only exposure)

**OTHER:** Tested as mildly irritating to the eye and slightly irritating to skin (Rabbit).

### 12. ECOLOGICAL INFORMATION

#### ECOTOXICOLOGICAL INFORMATION:

Data on 2,4-DB acid:

**96-HOUR LC<sub>50</sub> (mg/L):** 2 (Rainbow Trout)

**96-HOUR LC<sub>50</sub> (mg/L):** 7.5 (Bluegill)

**48-HOUR EC<sub>50</sub> (mg/L):** 25 (Daphnia)

**DIETARY LC<sub>50</sub> (ppm):** > 5000 (Bobwhite Quail)

**DIETARY LC<sub>50</sub> (ppm):** > 5000 (Mallard Duck)

**CHEMICAL FATE INFORMATION:** The average field half-life of 2,4-DB is approximately 7 days.

### 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.

