



## NUFARM AGRICULTURE INC.

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**SUPPLIED BY:**

Nufarm Agriculture Inc.  
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Calgary, AB. T2H 1H9

Phone Number: (403)-253-8471  
Fax Number: (403)-253-8478

**MANUFACTURED BY:**

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**PRODUCT:****2,4-D Amine 600 Liquid Herbicide****PCP NUMBER:**

14726

**DATE PREPARED:**

November 26, 2013

**PREPARER:**

Nufarm Agriculture Inc.; Regulatory Affairs &amp; Research Department

**CHEMICAL FAMILY/USE:**

Herbicide.

**FORMULA:** $C_{10}H_{13}Cl_2NO_3$ **CHEMICAL SYNONYMS:**

2,4-D DMA; 2,4-Dichlorophenoxyacetic acid, dimethylamine salt.

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients	Wt. %	CAS NO.
2,4-D DMA salt	47-51	2008-39-1

Note: The other major ingredient in this product is water.

### 3. HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW:** WARNING-POISON. Keep out of reach of children. Avoid contact with skin, eyes and clothing. Do not inhale fumes. Severely irritating to eyes. May cause skin irritation. Harmful if absorbed through the skin. Harmful if swallowed or inhaled.

**EFFECTS OF ACUTE EXPOSURE:**

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

**SKIN CONTACT:** May cause slight transient irritation. Overexposure by skin absorption may cause nausea, vomiting, abdominal pain, decreased blood pressure, muscle weakness, muscle spasms.

**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 severe eye irritation including corneal opacity and irreversible eye damage. Causes redness and tearing. Vapours and mist can cause 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, 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 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. However, more current 2,4-D lifetime feeding studies in rats and mice did not show carcinogenic potential.

**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



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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 2,4-D is not 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. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person.

**If on skin or clothing,** 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.

**In case of eye contact,** 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:** 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:** ..... May burn under fire conditions.

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

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

**AUTOIGNITION TEMPERATURE:** ..... NAp

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

**SENSITIVITY TO STATIC DISCHARGE:** ..... NA. No sensitivity expected based on long handling history.

**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

**ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:** Use safety equipment and procedures appropriate to the size of the spill. Keep unnecessary people away. Avoid runoff to natural waters and sewers. Surround and absorb spills with inert material such as perlite, sawdust, 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:** Keep from freezing. Store at temperatures above 0°C. If subjected to freezing temperatures, warm to at least 5°C and mix thoroughly. 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



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**EXPOSURE LIMITS:**

<b>Hazardous Ingredients</b>	<b>TWA*</b>	<b>ACGIH TLV®</b>	<b>STEL</b>	<b>Units</b>
2,4-D DMA salt	10**	10**	N/E	mg/M <sup>3</sup>

\*8-hour TWA unless otherwise noted

\*\*based on adopted limit for 2,4-D

**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.

**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. Coveralls or a chemical-resistant apron should also be worn when open pouring from containers greater than 5L. 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. Expected to be similar to water: >100°C.

**VAPOR PRESSURE:** .....2,4-D negligible. Product expected to be similar to water.

**VAPOR DENSITY (air = 1):** .....NA.

**FREEZING POINT:** .....NA. Expected to be similar to water: 0°C.

**MELTING POINT:** .....NA. 2,4-D technical 135-138°C.

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

**ODOUR:** .....Characteristic organic amine and phenolic.

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

**ODOR THRESHOLD (ppm):** .....NA

**EVAPORATION RATE (butyl acetate = 1):** .....NA

**SPECIFIC GRAVITY (water = 1):** .....1.2

**DENSITY @ 25°C:** .....1.2

**pH:** .....7.5-9

**SOLUBILITY IN WATER (20°C):** .....Soluble.

**COEFFICIENT OF WATER/OIL DISTRIBUTION:** .....NA. Product water 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, oxides of nitrogen 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 are from laboratory studies conducted on 2,4-D DMA:

**ACUTE ORAL LD<sub>50</sub> (mg/kg):** .....949 (Rat)



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

**ACUTE INHALATION LC<sub>50</sub> (mg/l):**.....> 3.5 mg/l (Rat)

**OTHER:** Tested as severely irritating to the eye (Rabbit).

### 12. ECOLOGICAL INFORMATION

#### ECOTOXICOLOGICAL INFORMATION:

Data on 2,4-D DMA:

**96-HOUR LC<sub>50</sub> (mg/L):** 250 (Rainbow Trout)

**96-HOUR LC<sub>50</sub> (mg/L):** 524 (Bluegill)

**48-HOUR EC<sub>50</sub> (mg/L):** 184 (Daphnia)

**ORAL LD<sub>50</sub> (mg/kg):** 500 (Bobwhite Quail)

**DIETARY LC<sub>50</sub> (ppm):** > 5620 (Mallard Duck)

**CHEMICAL FATE INFORMATION:** In laboratory and field studies, 2,4-D DMA salt rapidly dissociated to parent acid. The typical half-life of the resultant 2,4-D acid ranged from a few days to a few weeks.

### 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.

### 14. TRANSPORT INFORMATION

**CANADIAN TDG DESCRIPTION (Road & Rail):** UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (2,4-D), Class 9, PG III.

Section 1.45.1 of the TDG Regulations provides an exemption from documentation and safety marks only for this product and only when transported by a road or railway vehicle.

### 15. REGULATORY INFORMATION

**WHMIS HAZARD CLASS:** D2B Toxic Material

**WHMIS TRADE SECRET:** Exempt. (This product is regulated under the Pest Control Products Act - WHMIS exempt.)

**CANADIAN INVENTORY:** This product is currently exempt from CEPA.

#### HAZARD RATING SYSTEMS:

**HMIS:** Not Available

**National Fire Protection Association (NFPA®) Hazard Ratings:**

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

### 16. OTHER INFORMATION



## **NUFARM AGRICULTURE INC.**

### **REVISIONS:**

The following has been revised since the last issue of this MSDS: Sections 1 & 14 revisions.

### **ADDITIONAL INFORMATION:**

Abbreviations used throughout the MSDS are:      NA = Not available  
   NAp = Not applicable  
   N/E = None Established.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Company references utilized in preparation of the MSDS.

**\*\*\*END OF MSDS\*\*\***