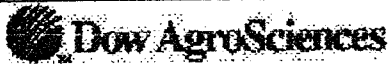


MATERIAL SAFETY DATA SHEET



CROSSBOW* HERBICIDE

Emergency Phone: 800-992-5994
Dow AgroSciences LLC • Indianapolis, IN
46268

Effective Date: 01/01/98
Product Code: 01662
MSDS: 001715

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: CROSSBOW* HERBICIDE

COMPANY IDENTIFICATION:

Dow AgroSciences
P.O. Box 661428
9330 Zionsville Road
Indianapolis, IN 46268-1189
www.dowagro.com

2. COMPOSITION/INFORMATION ON INGREDIENTS:

2,4-Dichlorophenoxyacetic acid, 3-butoxyethyl ester	CAS# 001929-73	34.4%
Triclopyr, butoxyethyl ester	CAS# 064700-56-7	16.5%
Other proprietary ingredients, total:		49.1%
Kerosene	CAS# 008008-20-6	

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR) 1910.1200. In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

3. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Hazardous chemical. Reddish brown liquid with sweet odor. May cause moderate eye irritation. Prolonged exposure may cause skin irritation; prolonged skin contact may cause allergic reaction in susceptible individuals. The LD50 for skin absorption is >2000 mg/kg; oral LD50 for male rats is 2590 mg/kg and 2400 mg/kg for female rats; LC50 for male rats is 5 mg/l and >5 mg/l for female rats. Flash point: 149°F (64.4°C); avoid temperatures above flash point. Combustible. Nitrogen oxide, hydrogen chloride or phosgene may be produced during fire. Toxic to fish.

EMERGENCY PHONE NUMBER: (U.S.) 800-992-5994

POTENTIAL HEALTH EFFECTS: This section includes possible adverse effects which could occur if this material is not handled in the recommended manner.

EYE: May cause moderate eye irritation. Corneal injury is unlikely.

SKIN: Prolonged exposure may cause skin irritation.

Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals. A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. Repeated skin exposure may result in absorption of harmful amounts. The LD50 for skin absorption in rabbits is >2000 mg/kg.

INGESTION: Single dose oral toxicity is low. The oral LD50 for male rats is 2590 mg/kg and for female rats is 2400 mg/kg. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; swallowing amounts larger than that may cause injury. If aspirated (liquid enters the lung), may cause lung damage or even death due to chemical pneumonia.

INHALATION: Excessive exposure may cause irritation to upper respiratory tract. Signs and symptoms of excessive exposure may be central nervous system effects, (kerosene). The LC50 for male rats is approximately 5 mg/l and for female rats is >5 mg/l.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:

Excessive exposure may cause liver, kidney, blood, gastrointestinal, muscular and respiratory effects.

CANCER INFORMATION: Neither triclopyr nor 2,4-Dichlorophenoxyacetic acid caused cancer in long term animal studies.

TERATOLOGY (BIRTH DEFECTS): Did not cause birth defects; other fetal effects occurred only at doses toxic to the mother.

REPRODUCTIVE EFFECTS: In animal studies, triclopyr has been shown not to interfere with reproduction. Excessive dietary levels of 2,4-Dichlorophenoxyacetic acid have caused decreased weight and survival in offspring in a rat reproduction study.

4. FIRST AID:

EYES: Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.

SKIN: Wash off in flowing water or shower.

INGESTION: Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

INHALATION: Remove to fresh air if effects occur. If not breathing, give artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

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NOTE TO PHYSICIAN: The decision of whether to induce vomiting or not should be made by an attending physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: 148°F, 64.4°C

METHOD USED: Setaflash

FLAMMABLE LIMITS:

LFL: Not determined **UFL:** Not determined

EXTINGUISHING MEDIA: Water fog, foam, CO₂, dry chemical.

FIRE & EXPLOSION HAZARDS: Combustible. Noxious fumes under fire conditions. Contain water from fire fighting to prevent entry to surface and ground water.

FIRE-FIGHTING EQUIPMENT: Use positive pressure self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES:

(See Section 15 for Regulatory Information)

ACTION TO TAKE FOR SPILLS/LEAKS: Use appropriate safety equipment. Use non-combustible absorbent material, such as sand or Zorball, and shovel into suitable container. Dike area in case of large spills, notify CHEMTREC and consult Dow AgroSciences for assistance. Do not use water for clean up.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

HANDLING: Keep out of reach of children. Harmful if swallowed, inhaled, or absorbed through skin. Causes eye irritation. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals. Avoid contact with eyes, skin and clothing. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

STORAGE: Keep product away from open flame. Do not exceed 140°F. Do not store with acids, bases or oxidizing materials. See product label for handling/storage precautions relative to the end use of this product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION:

These precautions are suggested for conditions with a high potential for exposure. If handling procedures are such that there is only a low potential for exposure, less protection may be needed. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINE(S):

Triclopyr, butoxyethyl ester: Dow AgroSciences Industrial Hygiene Guide is 2 mg/m³ as acid equivalent.

Kerosene: Dow AgroSciences Industrial Hygiene Guide is 10 mg/m³.

2,4-Dichlorophenoxyacetic acid: ACGIH Threshold Limit Value (TLV) and OSHA Permissible Exposure Limit (PEL) is 10 mg/m³.

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use a NIOSH approved air-purifying respirator for organic vapors.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items, such as faceshield, gloves, boots, apron, or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse.

EYE PROTECTION: Use chemical goggles.

9. PHYSICAL AND CHEMICAL PROPERTIES:

BOILING POINT: >175°C (kerosene)

VAP PRESS: 0.1mm @37.8°C (kerosene)

VAP DENSITY: 4.7 (kerosene)


SOL. IN WATER: Forms an emulsion

SP. GRAVITY: 1.013 @ 20°C/20°C

APPEARANCE: Reddish brown liquid.

ODOR: Sweet odor.

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10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) Avoid temperatures above or near flash point.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Acid, base and oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS: Noxious fumes, nitrogen oxide, hydrogen chloride and phosgene may result under fire conditions.

HAZARDOUS POLYMERIZATION: Will not occur.

The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

11. TOXICOLOGICAL INFORMATION:

For detailed toxicological data, write the address shown in Section 1 or call the emergency phone number.

MUTAGENICITY (EFFECTS ON GENETIC MATERIAL):

For the components tested, in vitro and animal mutagenicity studies were predominantly negative.

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
2,4-D ESTERS	001929-73-3	34.4%

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories: An immediate health hazard A delayed health hazard A fire hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA)

All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

12. ECOLOGICAL INFORMATION:

For detailed ecological data, write the address shown in Section 1 or call the emergency phone number.

ENVIRONMENTAL FATE: Toxic to fish.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: Improper disposal of excess pesticide is a violation of Federal law. 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.

CHEMICAL NAME	CAS NUMBER	LIST
2,4-D ESTERS	001929-73-3	PA3 NJ3 PA1
KEROSENE	008008-20-6	NJ3 PA1

NJ3=New Jersey Workplace Hazardous Substance (present at greater than or equal to 1.0%).
PA1=Pennsylvania Hazardous Substance (present at greater than or equal to 1.0%).
PA3=Pennsylvania Environmental Hazardous Substance (present at greater than or equal to 1.0%).

OSHA HAZARD COMMUNICATION STANDARD:

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

14. TRANSPORT INFORMATION:

For DOT regulatory information, if required, consult transportation regulations, product shipping papers, or contact your Dow AgroSciences representative.

15. REGULATORY INFORMATION:

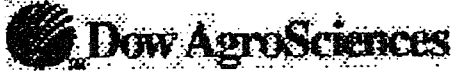
NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

RATINGS:

Health	1
Flammability	2
Reactivity	0

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**COMPREHENSIVE ENVIRONMENTAL RESPONSE
 COMPENSATION AND LIABILITY ACT
 (CERCLA, or SUPERFUND):**

This product contains the following substance(s) listed as "Hazardous Substances" under CERCLA which may require reporting of releases:

Category:

Chemical Name	CAS#	RQ	% in
Product 2,4-Dichlorophenoxyacetic acid, butoxyethyl ester	001929-73-3	100	34.4%

16. OTHER INFORMATION:

MSDS STATUS:

Updated to reflect name change

The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult Dow AgroSciences LLC For Further Information.

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