

# MATERIAL SAFETY DATA SHEET



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

## REDEEM\* R&P HERBICIDE

Effective Date: 3/12/01  
Product Code: 78163  
MSDS: 003599

### 1. PRODUCT AND COMPANY IDENTIFICATION:

**PRODUCT:** Redeem\* R&P Herbicide

#### COMPANY IDENTIFICATION:

Dow AgroSciences  
9330 Zionsville Road  
Indianapolis, IN 46268-1189

### 2. COMPOSITION/INFORMATION ON INGREDIENTS:

Triclopyr ((3,5,6-trichloro-2-pyridinyl)oxy)acetic acid), as the triethylamine salt	CAS# 057213-69-1	33.0%
Clopyralid (3,6-dichloro-2-pyridinecarboxylic acid), as the triethylamine salt	CAS# 057754-85-5	12.1%
Inert ingredients, total, including: N,N-Diethylethanamine EDTA (Ethylenediamine Tetraacetic Acid)(Ethanol)	CAS# 000121-44-8 CAS# 000060-00-4	54.9%

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. Clear amber liquid, slight amine odor. May cause severe eye irritation and/or moderate corneal injury. The LD<sub>50</sub> for skin absorption in rabbits is >2000 mg/kg. The oral LD<sub>50</sub> for rats is 2164 mg/kg (male) and 1521 (female). Material is slightly toxic to aquatic organisms.

**EMERGENCY PHONE NUMBER:** 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 severe eye irritation with moderate corneal injury. Effects may be slow to heal. Vapors of amines may cause swelling of the cornea resulting in visual disturbances such as blurred, smoky or halo vision.

**SKIN:** Prolonged exposure is not likely to cause significant 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. The LD<sub>50</sub> for skin absorption in rabbits is >2000 mg/kg. May cause allergic skin reaction in susceptible individuals. With the dilute mix, no allergic skin reaction is expected.

**INGESTION:** Single dose oral toxicity is low. The oral LD<sub>50</sub> for male rats is 2164 mg/kg and females is 1521 mg/kg. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; swallowing larger amounts may cause injury. Ingestion may cause gastrointestinal irritation or ulceration.

**INHALATION:** Single exposure to vapors is not likely to be hazardous. LC50 for rats is >1.06 mg/L for 4 hours.

**SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:** In animals, effects have been reported on the following organs: heart, kidney, and liver.

**CANCER INFORMATION:** Triclopyr and clopyralid did not cause cancer in laboratory animals. This material contains ethanol. Epidemiology studies provide evidence that drinking of alcoholic beverages (containing ethanol) is associated with cancer, and IARC has classified alcoholic beverages as carcinogenic to humans.

**TERATOLOGY (BIRTH DEFECTS):** Triclopyr did not cause birth defects in laboratory animals. Clopyralid caused birth defects in test animals, but only at greatly exaggerated doses that were severely toxic to the mothers. No birth defects were observed in animals given clopyralid at doses several times greater than those expected during normal exposure.

**REPRODUCTIVE EFFECTS:** For triclopyr and clopyralid, in laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent.

### 4. FIRST AID:

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

# MATERIAL SAFETY DATA SHEET



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

## REDEEM\* R&P HERBICIDE

Effective Date: 3/12/01  
Product Code: 78163  
MSDS: 003599

**SKIN:** Wash off in flowing water or shower.

**INGESTION:** Do not induce vomiting. Give large amounts of water or milk if available and transport to medical facility. Do not give anything by mouth to an unconscious person.

**INHALATION:** Remove to fresh air if effects occur. Consult a physician.

**NOTE TO PHYSICIAN:** May cause tissue destruction leading to stricture. If lavage is performed, endotracheal and/or esophageal control is suggested. Exposure to amine vapors may cause minor transient edema of the corneal epithelium (glauropsia) with blurred vision, blue haze and halos around bright objects. Effects disappear in a few hours and temporarily reduce ability to drive vehicle. 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:** 150°F (66°C)

**METHOD USED:** FCC

#### FLAMMABLE LIMITS

LFL: Not determined

UFL: Not determined

**EXTINGUISHING MEDIA:** Foam, CO<sub>2</sub>

**FIRE AND EXPLOSION HAZARDS:** Irritating vapors under fire conditions. Material is a water solution and except under gross fire conditions should not burn. Avoid contaminating water supplies with run-off water.

**FIRE-FIGHTING EQUIPMENT:** Under fire conditions use positive-pressure, self-contained breathing apparatus and full protective clothing.

### 6. ACCIDENTAL RELEASE MEASURES:

**ACTION TO TAKE FOR SPILLS:** Absorb small spills with inert materials such as Zorbball, Hazorb or sand. Report large spills to Dow AgroSciences 1-800-992-5994.

### 7. HANDLING AND STORAGE:

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:** Keep out of reach of children. Harmful if swallowed, inhaled, or absorbed through skin. Causes eye irritation. May cause allergic skin reactions in some individuals. Avoid contact with eyes, skin, and clothing. Store in original container with the lid tightly closed.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

#### EXPOSURE GUIDELINES:

3,5,6-Trichloro-2-pyridyloxyacetic acid (Triclopyr), triethylamine salt: Dow AgroSciences Industrial Hygiene Guideline is 2 mg/M<sup>3</sup> as acid equivalent, Skin.  
Triethylamine: ACGIH TLV is 1 ppm, TWA, 3 ppm STEL, Skin, A4. OSHA PEL is 10 ppm TWA, 15 ppm STEL.  
3,6-Dichloropicolinic acid (Clopyralid): Dow AgroSciences Industrial Hygiene Guideline is 10 mg/M<sup>3</sup>.  
Ethanol (ethyl alcohol): ACGIH TLV and OSHA PEL are 1000 ppm. ACGIH classification is A4.

PELs are in accord with those recommended by OSHA, as in the 1989 revision of PELs.

A "skin" notation following the exposure guideline refers to the potential for dermal absorption of the material. It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

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

#### RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

**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.

# MATERIAL SAFETY DATA SHEET



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

Effective Date: 3/12/01  
Product Code: 78163  
MSDS: 003599

## REDEEM\* R&P HERBICIDE

**SKIN PROTECTION:** When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material. Selection of specific items such as faceshield, gloves, boots, apron, or full-body suit will depend on operations.

**EYE PROTECTION:** Use chemical goggles. If vapor exposure causes eye discomfort, use a NIOSH approved full-face respirator.

**APPLICATORS AND ALL OTHER HANDLERS:** Refer to the product label for personal protective clothing and equipment.

### 9. PHYSICAL AND CHEMICAL PROPERTIES:

**BOILING POINT:** Approximately 212°F (100°C)

**VAPOR PRESSURE:** Similar to that of water

**VAPOR DENSITY (Air =1):** Not determined

**SOLUBILITY IN WATER:** Miscible

**SPECIFIC GRAVITY:** 1.14 @ 68°F/68°F

**APPEARANCE:** Clear amber liquid

**ODOR:** Slight amine smell

### 10. STABILITY AND REACTIVITY:

**STABILITY:** (CONDITIONS TO AVOID) Store under cool, dry conditions. Avoid elevated temperatures and direct sunlight.

**INCOMPATIBILITY:** (SPECIFIC MATERIALS TO AVOID) Avoid acid, oxidizing material, halogenated organics, brass, copper, zinc, and aluminum.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Hydrogen chloride, nitrogen oxides under fire conditions; chlorinated pyridine.

**HAZARDOUS POLYMERIZATION:** Not known to occur.

### 11. TOXICOLOGICAL INFORMATION:

**MUTAGENICITY:** For triclopyr and clopyralid, in-vitro and animal mutagenicity studies were negative.

### 12. ECOLOGICAL INFORMATION:

#### ENVIRONMENTAL FATE:

**MOVEMENT & PARTITIONING:** Based largely or completely on component information. Bioconcentration potential is low (BCF <100 or Log Pow <3).

**DEGRADATION & PERSISTENCE:** Based largely or completely on data for major components. Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD is >40%).

**ECOTOXICOLOGY:** Based on information for triclopyr TEA salt and triethylamine. Material is slightly toxic to aquatic organisms on an acute basis (LC<sub>50</sub>/EC<sub>50</sub> is between 10 and 100 mg/L in the most sensitive species). Based on information for clopyralid. Material is practically non-toxic to aquatic organisms on an acute basis (LC<sub>50</sub>/EC<sub>50</sub> is >100 mg/L in most sensitive species).

### 13. DISPOSAL CONSIDERATIONS:

**DISPOSAL METHOD:** Excess wastes are toxic. Improper disposal of excess wastes are 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.

### 14. TRANSPORT INFORMATION:

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

# MATERIAL SAFETY DATA SHEET



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

Effective Date: 3/12/01  
Product Code: 78163  
MSDS: 003599

## REDEEM\* R&P HERBICIDE

### 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. 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:

Chemical Name	CAS Number	Concentration
N,N-Diethylethanamine	000121-44-8	1.5%
Triclopyr, TEA Salt	057213-69-1	33%

**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.

CHEMICAL NAME	CAS NUMBER	LIST
Ethylenediamine		
Tetraacetic Acid	000060-00-4	NJ3 PA1
N,N-Diethylethanamine	000121-44-8	NJ1 NJ3 PA1

NJ1=New Jersey Special Health Hazard Substance (present at greater than or equal to 0.1%).  
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.

#### **NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:**

Health	3
Flammability	2
Reactivity	0

**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:

Chemical Name	CAS Number	RQ	% in Product
Ethanol	000060-00-4	5000	1.7%
N,N-Diethylethanamine	000121-44-8	5000	1.5%

# MATERIAL SAFETY DATA SHEET



## REDEEM\* R&P HERBICIDE

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

Effective Date: 3/12/01  
Product Code: 78163  
MSDS: 003599

### 16. OTHER INFORMATION:

**MSDS STATUS:** Revised Section: 15  
Reference: DR-0297-5555  
Replaces MSDS Dated: 1/18/01  
Document Code: D03-125-003  
Replaces Document Code: D03-125-002

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