

MATERIAL SAFETY DATA SHEET



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

Effective Date: 5-Jul-07
Product Code: 78163
MSDS: 003599

REDEEM* R&P HERBICIDE

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Redeem* R&P Herbicide

COMPANY IDENTIFICATION:

Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Clear amber liquid, slight amine odor. May cause severe eye irritation and/or moderate corneal injury. Material is toxic to aquatic organisms.

EMERGENCY PHONE NUMBER: 800-992-5994

2. COMPOSITION/INFORMATION ON INGREDIENTS:

COMPONENT	CAS NUMBER	W/W%
Triclopyr TEA Salt	57213-69-1	33.0
Clopyralid TEA Salt	119308-91-7	12.1
EDTA	60-00-4	1.7
Ethanol	64-17-5	1.6
Balance		53.2

4. FIRST AID:

EYES: Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, and then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.

SKIN: Wash skin with plenty of water.

INGESTION: Do not induce vomiting. Give one cup (8 ounces or 240 mL) of water or milk if available and transport to medical facility. Do not give anything by mouth to an unconscious person.

INHALATION: Move person to fresh air; if effects occur, consult a physician.

NOTE TO PHYSICIAN: Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. 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 vehicles. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: 150°F (66C)

METHOD USED: FCC

FLAMMABLE LIMITS

LFL: Not determined

UFL: Not determined

EXTINGUISHING MEDIA: Foam, CO₂

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 Zorball, Hazorb or sand and place in a suitable container for disposal. 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.

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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:

Triclopyr triethylamine salt: Dow AgroSciences Industrial Hygiene Guideline is 2 mg/M³ as acid equivalent, D-SEN. Clopyralid triethylamine salt: Dow AgroSciences Industrial Hygiene Guideline is 10 mg/M³ as acid equivalent. Ethanol (ethyl alcohol): ACGIH TLV and OSHA PEL are 1000 ppm. ACGIH classification is A4.

A "D-SEN" notation following the exposure guideline refers to the potential to produce sensitization, as confirmed by human or animal data.

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 an approved air-purifying respirator. The following should be effective types of air-purifying respirators: organic vapor cartridge.

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

EYE PROTECTION: Use chemical goggles. If exposure causes eye discomfort, use a 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 (100C)

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:

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. May cause 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 or hazy vision. Bright lights may appear to be surrounded by halos. Effects may be delayed and typically disappear spontaneously.

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SKIN: Prolonged exposure is not likely to cause significant skin irritation. Prolonged skin contact is unlikely to result in absorption of harmful amounts. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals. Skin contact may cause an allergic skin reaction. With the dilute mix, no allergic skin reaction is expected. The LD₅₀ for skin absorption is >2,000 mg/kg (rabbits) and >5,000 mg/kg (rats).

INGESTION: Low toxicity if swallowed. The oral LD₅₀ for female rats is 1,521 mg/kg. Small amounts swallowed incidentally as a result of normal handling operations is unlikely to cause injury; however, swallowing larger amounts may cause injury. Swallowing may result in gastrointestinal irritation or ulceration.

INHALATION: No adverse effects are anticipated from single exposure to vapor. The inhalation 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.

MUTAGENICITY: For triclopyr and clopyralid, in-vitro and animal genetic toxicity 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 (LC₅₀ or EC₅₀ is between 10 and 100 mg/L in the most sensitive species tested).

Based on information for clopyralid.

Material is practically non-toxic to aquatic organisms on an acute basis (LC₅₀ or EC₅₀ is >100 mg/L in most sensitive species tested).

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws and regulations.

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14. TRANSPORT INFORMATION:

U.S. DEPARTMENT OF TRANSPORTATION (DOT) INFORMATION:

For non-bulk shipments by all modes of transportation:
This material is not regulated for transport.

For bulk shipments by land:
COMBUSTIBLE LIQUID, N.O.S./(CONTAINS
ETHANOL)/COMBUSTIBLE LIQUID/NA1993/PG III

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
Triclopyr, TEA Salt	57213-69-1	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

CALIFORNIA PROPOSITION 65: The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986:

WARNING: This product contains a chemical(s) known to the State of California to be a developmental toxic and cause cancer. The chemical is Ethanol.

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
EDTA	60-00-4	NJ3 PA1
Ethanol	64-17-5	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%).

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
ETDA	60-00-4	5000 lbs.	1.7
Ethanol	64-17-5	100 lbs.	1.6

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16. OTHER INFORMATION:

MSDS STATUS: Revised Sections: 2, 3, 4, 8, 11, 12, 15
Reference: DR-0297-5555
Replaces MSDS Dated: 10-Nov-04
Document Code: D03-125-004
Replaces Document Code: D03-125-003

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