Material Safety Data Sheet

Dow AgroSciences™

Treflan* E.C. Herbicide (NAF-74)

*Trademark of Dow AgroSciences LLC

In case of emergency call CANUTEC at 613 996 6666

1. Product Identification:

Product name: Treflan* E.C. Herbicide (NAF-74)

Product use: A selective liquid herbicide for pre-plant soil incorporated weed control in many field crops, vegetables and ornamentals.

Effective date: May 26, 2009

Supplier:
Dow AgroSciences Canada Inc.
Suite 2100, 450 - 1st Street SW,
Calgary, Alberta,
Canada, T2P 5H1
www.dowagro.ca

This product is regulated under authority of the Pest Control Products Act

2. Composition:

Component	CAS Number	% (w/w)
Trifluralin	001582-09-8	44.7
Balance, total		55.3
Including:		
Aromatic solvent	064742-94-5	
Naphthalene[1]	000091-20-3	7.0[2]

[1]Contained in aromatic solvent
[2]as a percentage of entire formulation

3. Hazard Identification:

Emergency Overview:
This product is a clear orange liquid with an aromatic odor. Contact may cause eye and skin irritation. This product is toxic to aquatic organisms.

Special Health Precautions: This product contains a petroleum-based solvent. Health studies have shown that many petroleum-based solvents pose potential human health risks, which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes of solvents contained in this product should be minimized.

Potential Health Effects:
Eyes: This product may cause moderate eye irritation. Corneal injury is unlikely.
Skin contact: Brief contact may cause slight skin irritation. Exposure may cause drying or flaking of the skin.
Skin absorption: Prolonged contact is unlikely to result in the material being absorbed in harmful amounts.
Ingestion: Small amounts ingested incidental to normal handling operations are not likely to cause injury; swallowing larger amounts may cause injury. Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.
Inhalation: No adverse effects are anticipated from single exposure to the vapor of this product.

4. First Aid Measures:

Consult a physician in every case of suspected chemical poisoning. Never give fluids or induce vomiting if a patient is unconscious or convulsing regardless of cause of injury. If breathing difficulties occur seek medical attention at once.

Eyes: Flush eyes thoroughly with water for several minutes. Remove contact lenses after initial one to two minutes and continue flushing for several additional minutes. If effects occur, get specialist medical attention.
Skin: Wash skin with plenty of water.
Ingestion: If swallowed, get medical attention. Do not induce vomiting unless instructed to do so by qualified medical personnel.
Inhalation: Remove individual to fresh air. If breathing difficulty occurs, get medical attention.

Have the Material Safety Data Sheet, and if available, the product container or label with you when calling for or going for medical assistance.

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Note to physician: This product contains a petroleum-based solvent. The decision of whether to induce vomiting or not should be made by an attending physician. If lavage is performed, endotracheal and/or esophageal control is suggested. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. There is no specific antidote. Supportive care is recommended. Treatment should be based on judgment of the physician in response to reactions of the patient.

5. Fire Fighting Measures:

Flash point: 99°C (PMCC)
Flammability limits: For the solvent at 25°C:
LFL: 1.8% (approx.)
UFL: 11.8% (approx.)
Auto-ignition temperature: Not available
Extinguishing media: Water, CO2 or dry chemical
Sensitivity to mechanical impact / static discharge: Not available
Unusual fire and explosion hazards:
Hazardous combustion products may include but are not limited to nitrogen oxides, carbon monoxide, carbon dioxide and fluorinated hydrocarbons. Dense smoke is emitted when Treflan EC is burned without sufficient oxygen. Isolate the fire area and deny unnecessary entry. Closed containers may explode due to pressure build-up when subjected to excessive heat or intense fire. Containers exposed to intense heat from fires should be kept cool with water to prevent container weakening or rupture. Move exposed containers from fire area if this is possible without hazard. Contain firefighting water for future disposal.
Fire-fighting equipment: Wear full turnout gear and positive-pressure self-contained breathing apparatus

6. Accidental Release Measures:

Soak up small spills with absorbent material such as HAZORB, or ZORBALL, peat moss, commercial sweeping compound or similar absorbent material; if these are not available use adsorbing agents such as kitty litter, sand, clay or topsoil. Store collected absorbed/adsorbed material in secure containers until safe disposal can be arranged. Avoid the use of water for cleanup, since spent water must be collected and treated as hazardous waste. Use hot water and heavy duty detergent to clean up any residual stains on hard surfaces. Small spills on topsoil should be allowed to degrade under natural conditions (see Section 13. Ecological Information – Degradation and Metabolism – Soil). Do not allow spilled material to contaminate water supplies. For large spills, dike and barricade the affected area and contact CANUTEC at 613 996 6666 and local authorities.

7. Handling and Storage:

Handling: Keep Treflan EC out of reach of children or animals. Avoid breathing mist or vapors or swallowing this product. Avoid contact with eyes, skin and clothing. Contaminated clothing should be washed separately from domestic laundry and line-dried. Once used for contaminated clothing, the washing machine should be operated through a complete cycle with hot water and soap only, prior to use for domestic laundry. Workers should wash hands before eating, drinking, chewing gum, or using the toilet.
Storage: Store Treflan E.C. in original containers at temperatures greater than 2°C. If this product is frozen, poor weed control may result. Do not store near heat or open flame.

8. Exposure Controls, Personal Protection and Exposure Limits:

Exposure limits:
Trifluralin: Not available
Aromatic solvent: Not available; manufacturer recommends 100 ppm for product, which is a mixture of aromatic hydrocarbons, including:
Naphthalene: ACGIH TLV and OSHA PEL are 10 ppm TWA, 15 ppm STEL, skin.
Note: A "skin" notation following the exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact. 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.

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Engineering controls: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.
Breathing: Atmospheric levels should be maintained below the exposure guidelines. When respiratory protection is required for certain operations, use an approved air-purifying respirator equipped with organic vapor cartridge(s) or positive-pressure supplied-air respirator, depending on the potential airborne concentration.
Protective clothing: For brief contact during manufacture, warehousing and transport, wear clean body-covering clothing and gloves chemically resistant to this material. During operations where exposure to the concentrated product may occur, use protective clothing impervious to this product. Use of items made of heavy-duty neoprene or nitrile rubber is suggested. Selection of specific items such as face-shield, respirator, boots, gloves, apron or full body suit will depend on the operation being carried out. Applicators and other field handlers, including persons repairing or cleaning application equipment, must wear coveralls over clean body-covering clothing, impervious gloves and boots. In addition, persons making and/or transferring field dilutions of this product must wear an impervious apron. Users should remove clothing if pesticide gets inside. Then wash thoroughly and put on clean clothing.
Eyes: Use chemical workers' goggles.
Other protection: None specified.

9. Physical and Chemical Properties:
Boiling point: 232 to 275°C (for solvent)
Vapor pressure: >1 mm Hg at 20°C (for solvent)
Vapor density: 4.7 (relative to air) (for solvent)
pH: Not available
Appearance: Clear deep orange liquid
Odor: Aromatic-odor
Coefficient of water/oil distribution: Not available
Specific gravity: 1.12 (approximately)
Evaporation rate: Not available
Solubility in water: Emulsifies in water
Freezing point: Not available
Odor threshold: Not available
Melting point: Not applicable

10. Stability and Reactivity:
Stability: This product is stable under recommended storage conditions.
Incompatibility: Avoid contact with strong oxidizers. Avoid freezing.
Hazardous decomposition products: Hazardous decomposition products may include, but are not limited to carbon dioxide, carbon monoxide, nitrogen oxide, and fluorinated hydrocarbons.
Hazardous polymerization: Not known to occur.

11. Toxicological Information:
Skin absorption: Acute dermal LD50 (rabbit) is >5000 mg/kg.
Ingestion: Acute oral LD50 (rat) is 3738 mg/kg.
Inhalation: The LC50 for rat is 5.59 mg/L (male) and >6.05 mg/L (female) for four hours.
Sensitization: This product has caused allergic skin reactions when tested in guinea pig.
Chronic effects: For trifluralin, in animals, effects have been reported on the: blood, kidney and liver. For the solvent, in animals, effects have been reported on the: lungs, stomach, thyroid gland and urinary tract. Cataracts and other eye effects have been reported in humans repeatedly exposed to naphthalene vapor or dust.
Cancer: This product contains naphthalene, which has caused cancer in some laboratory animals. A low incidence of urinary tract tumors was seen in one strain of rat in one of five two-year chronic studies on trifluralin. Trifluralin is not anticipated to be a cancer risk to man. This product contains naphthalene, which has caused cancer in some laboratory animals.
Birth defects: Trifluralin did not cause birth defects in animal studies; other effects to the fetus occurred only at doses that were toxic to the mother.
Reproductive effects: Trifluralin did not interfere with reproduction in animal studies.
Mutagenicity: For the major component(s) in this formulation, *in-vitro* genetic toxicity studies were negative. For trifluralin, animal genetic toxicity studies were predominantly negative. For the solvent, animal mutagenicity studies were negative.

12. Ecological Information:

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Trifluralin is considered non-toxic to bees. Trifluralin is highly toxic to aquatic organisms on an acute basis, and practically non-toxic to birds on an acute or dietary basis. Bio-concentration potential for trifluralin is considered to be moderate. Bio-concentration potential for the aromatic solvent in this formulation is considered high.

Degradation and Metabolism:
In soil: Trifluralin is absorbed by the soil and is extremely resistant to leaching. There is little lateral movement in soil. Chemical degradation is by dealkilation of the amino group, reduction of the nitro group to an amino group, partial oxidation of the trifluoromethyl group to a carboxy group and subsequent degradation to smaller fragments. The average half-life of trifluralin in most Canadian agricultural soils ranges from 100 to 120 days. Typically there is about 25% of the applied material present in the soil one year after treatment. Dissipation of trifluralin in soil is more rapid under warm, moist conditions than cold dry conditions.
In plants: Degradation of trifluralin in plants is as for soil.
In animals: Following oral administration, about 70% is eliminated in the urine and 15% in the feces within 72 hours. Degradation of trifluralin in animals is then as for soil.

13. Disposal Considerations:
Unused unwanted product: Contact Dow AgroSciences or your provincial regulatory agency for disposal information.
Container disposal: Refer to the product label for instructions regarding cleaning and disposal of empty pesticide containers. If these instructions are missing or not understood, contact Dow AgroSciences at 800 667 3852 or your provincial regulatory agency for direction.

14. Transport Information:
This product is classified as "**Not Regulated**" under regulations of the Transportation of Dangerous Goods Act.

15. Regulatory Information:
Pest Control Products Act registration number: 23933
For information phone: 800 667 3852
MSDS Status: Revised sections: 1. Product Identification
Date of last revision: May 8, 2006

16. Other Information:
National Fire Code classification: Not regulated
NFPA Classification: Health: 2; Flammability: 1; Reactivity: 1.
Notice: The information contained in this Material Safety Data Sheet ("MSDS") is current as of the effective date shown in Section 1 of this MSDS and may be subject to amendment by Dow AgroSciences Canada Inc. ("DASC") at any time. DASC accepts no liability whatsoever which results in any way from the use of MSDS that are not published by DASC, or have been amended without DASC express written authorization. Users of this MSDS must satisfy themselves that they have the most recent and authorized version of this MSDS and shall bear all responsibility and liability with respect thereto. Any conflict or inconsistencies as to the contents of this MSDS shall be resolved in favor of DASC by the most recent version of the MSDS published by DASC.