

MATERIAL SAFETY DATA SHEET



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

TELONE* II SOIL FUMIGANT

Effective Date: 2/14/00
Product Code: 85456
MSDS: 000405

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Telone* II Soil Fumigant

COMPANY IDENTIFICATION:

Dow AgroSciences
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. COMPOSITION/INFORMATION ON INGREDIENTS:

1,3-Dichloropropene	CAS# 000542-75-6	97.5%
Cis isomer	CAS# 010061-01-5	
Trans isomer	CAS# 010061-02-6	
Other ingredients, total, including:		2.5%
1,3,3-trichloropropene-1		
Cis isomer	CAS# 002953-50-6	
Trans isomer	CAS# 002598-01-8	

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. Colorless to straw colored liquid. Pungent, sweet, penetrating odor. Highly toxic and irritating fumes are released in fire situations. May cause severe eye irritation or slight corneal injury. LD₅₀ for skin absorption in rabbits is 300-500 mg/kg. Potential skin sensitizer. Oral LD₅₀ for rats is 200-300 mg/kg. Toxic to aquatic organisms.

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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 and slight corneal injury. Vapors may cause lacrimation (tears) and irritation.

SKIN: A single prolonged exposure may result in the material being absorbed in harmful amounts. The LD₅₀ for skin absorption in rabbits is 300-500 mg/kg. Prolonged or repeated exposure may cause skin irritation. Animal data indicate that 1,3-dichloropropene is a potential skin sensitizer.

INGESTION: Single dose oral toxicity is moderate. The oral LD₅₀ for rats is approximately 200-300 mg/kg. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury, even death. If aspirated (liquid enters the lung), may be rapidly absorbed through the lungs and result in injury to other body systems.

INHALATION: Excessive vapor concentrations are readily attainable and may cause serious adverse effects, even death. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. The vapor LC₅₀ for rats is 855-1035 ppm (males) and 904 ppm (females) for 4 hours.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: In animals, effects have been reported on the following organs: bladder, kidney, liver, lungs, stomach, and upper respiratory tract.

CANCER INFORMATION: Has been shown to cause cancer in laboratory animals by the oral route. Inhalation exposure resulted in an increase in the normal occurrence of benign lung tumors in male mice. For hazard communications purposes under OSHA Standard 29 CFR Part 1910.1200, this chemical is listed as a potential carcinogen by IARC and NTP.

TERATOLOGY (BIRTH DEFECTS): Birth defects are unlikely. Even exposures having an adverse effect on the mother should have no effect on the fetus.

REPRODUCTIVE EFFECTS: In animal studies, has been shown not to interfere with reproduction.

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4. FIRST AID:

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

SKIN: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician if irritation persists. Destroy and dispose items which cannot be decontaminated, such as shoes and other leather items.

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

INHALATION: Remove to fresh air. 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.

NOTE TO PHYSICIAN: Because rapid absorption may occur through lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a 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. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive Care. Treatment based on judgment of the physician in response to reactions of the patient. Repeated excessive exposure may aggravate pre-existing lung, liver and kidney disease. Persons receiving a significant exposure of this material by inhalation should be observed 24-48 hours for delayed pulmonary edema.

5. FIRE FIGHTING MEASURES:

FLASH POINT: 81.5°F (27.5°C)

METHOD USED: TCC

FLAMMABLE LIMITS

LFL: 5.5% @ 80°C (176°F)

UFL: 14.5% @ 80°C (176°F)

EXTINGUISHING MEDIA: Water fog, foam, CO₂, dry chemical. For large-scale fires, straight or direct water streams may be ineffective to extinguish fire, but copious fine water spray will help control situation by its cooling action. General purpose foams are preferred if available. Alcohol resistant foams may function also. Water fog, applied gently, may be used as a blanket for fire extinguishing. If possible, contain fire run-off water.

FIRE & EXPLOSION HAZARDS: Keep unnecessary people away; isolate hazard area and deny unnecessary entry. Highly toxic and irritating fumes are released in fire situations. Keep product vapors away from possible ignition sources. Vapors can form flammable mixtures at ordinary temperatures. Static electricity may accumulate and create a fire ignition. Vapors are heavier than air and may travel a considerable distance where they may linger and/or find an ignition source and flash back. Stay upwind; keep out of low areas.

FIRE-FIGHTING EQUIPMENT: Use NIOSH or MSHA approved positive-pressure, self-contained breathing apparatus and special protective clothing, including heavy neoprene or rubber boots and neoprene gloves.

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS/LEAKS:(FOR FURTHER INFORMATION ON SPILLS, LEAKS, AND DISPOSAL, REFER TO EMERGENCY PROCEDURES IN THE USER'S GUIDE FOR TELONE II SOIL FUMIGANT).

PERSONAL PROTECTIVE EQUIPMENT: For small spills outdoors or in well ventilated areas, wear a NIOSH approved half-face or full-face tight fitting respirator or loose fitting powered air-purifying respirator equipped with organic vapor cartridges (MSHA/NIOSH approval TC-23°C) or canister approved for pesticides (MSHA/NIOSH approval TC-14G). Chemical goggles must be worn when using a half-face respirator. In addition to respiratory protection, wear coveralls; chemical resistant gloves such as barrier laminate (EVAL) or viton; chemical resistant footwear and socks; chemical resistant headgear for overhead exposure; and chemical apron.

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For clean-up of large spills, or small spills in a confined area, wear a NIOSH positive-pressure, atmosphere-supplying respirator (MSHA/ NIOSH approval number prefix TC-19°C or TC-13°F). In addition, body protection providing gas-tight protection is required to prevent possible skin effects (read product label).

CLEAN-UP FOR SMALL SPILLS: If it can be done safely, invert or reposition the leaking container of Telone II so that the area with the leak is up and the flow is reduced. If possible, put the container into an overpak. Cover or confine the leakage with an absorbent such as diatomaceous earth, clay, sand, or other non-combustible absorptive material. Collect the spent absorbent material in a disposal drum. If the spill is on the ground, dig up enough of the soil to eliminate the contamination and place the soil in a disposal drum.

CLEAN-UP FOR LARGE SPILLS: Contact Dow AgroSciences at 800-992-5994.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: HANDLING: Keep out of reach of children. Hazardous liquid and vapor. May be fatal if swallowed. Causes substantial but temporary eye injury. May be fatal if absorbed through the skin. Causes skin irritation, and, if confined, skin burns. May cause allergic skin reaction. May be fatal if inhaled. May cause lung, liver, and kidney damage and respiratory system prolonged contact. Do not swallow any of this product. Do not get in eyes, on skin, or on clothing. Do not breathe vapor. Users should remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Users should remove personal protective equipment (PPE) immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing. Follow manufacturer's instructions for cleaning/maintaining PPE. If there are no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Wash PPE after each days use. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product. Do not reuse them. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

STORAGE: Store in tightly-closed original container in a cool place away from dwellings. Do not allow contamination of seeds, plants, fertilizers or other pesticide chemicals. Do not contaminate food, feedstuffs, drugs or domestic water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

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

EXPOSURE GUIDELINE: 1,3-Dichloropropene: ACGIH TLV and OSHA PEL are 1 ppm, Skin. PELs are in accord with those recommended by OSHA as in the 1989 revision of PELs.

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guideline. Lethal concentrations may exist in areas with poor ventilation.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guidelines. When respiratory protection is required for certain operations, use a NIOSH approved positive-pressure supplied-air respirator.

For emergency and other conditions where the exposure guideline may be greatly exceeded, use a NIOSH approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. In confined or poorly ventilated areas, use a NIOSH approved positive-pressure supplied-air respirator.

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. Safety shower should be located in immediate work area. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse. Items which cannot be decontaminated, such as shoes, belts, and watchbands, should be removed, destroyed, and disposed of.

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

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

9. PHYSICAL AND CHEMICAL PROPERTIES:

BOILING POINT: Approximately 220°F (104°C)

VAPOR PRESSURE: 28 mm Hg at 25°C (77°F)

VAPOR DENSITY: Not applicable

SOLUBILITY IN WATER: Approximately 0.1%

SPECIFIC GRAVITY: 1.211 at 20°C (68°F)

APPEARANCE: Colorless to straw colored liquid

ODOR: Pungent, sweet, penetrating odor

10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) May form explosive mixtures with air when confined.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID)

Corrosive to some metals. Do not use containers or equipment containing aluminum, magnesium, zinc, cadmium, or their alloys. Avoid strong bases.

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen chloride and other toxic, irritating gases may be formed if product is involved in fire.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

MUTAGENICITY: In-vitro mutagenicity studies were negative in some cases and positive in other cases. Animal mutagenicity studies were negative.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

MOVEMENT & PARTITIONING: Bioconcentration potential is low (BCF <100 or Log Pow <3). Log octanol/water partition coefficient (Log Pow) is estimated using a structural fragment method to be 1.603. Measured log octanol/water partition coefficient (Log Pow) is 2.06. Potential for mobility in soil is very high (Koc between 0 and 50). Soil organic carbon/water partition coefficient (Koc) is 23 and 26.

DEGRADATION & PERSISTENCE: The hydrolysis half-life is 2-70 days. Tropospheric half-life is estimated to be 29-50 hours. Biodegradation reached in Closed Bottle Test (OECD Test No. 301D) after 28 days: 8%. Biodegradation may occur under aerobic conditions (in the presence of oxygen).

ECOTOXICOLOGY: Material is very highly toxic to aquatic organisms on an acute basis (LC₅₀/EC₅₀ <0.1 mg/L in most sensitive species).

Acute LC₅₀ in sheepshead minnow (*Cyprinodon variegatus*) is 0.068-1.8 mg/L.

Acute LC₅₀ in water flea (*Daphnia magna*) is 0.09-6.2 mg/L.

Acute LC₅₀ in mysid (*Mysidopsis bahia*) is 0.79 mg/L.

Acute LC₅₀ in rainbow trout (*Oncorhynchus mykiss*) is 2.96 mg/L.

Acute LC₅₀ in channel catfish (*Ictalurus punctatus*) is 4.4 mg/L.

Acute LC₅₀ in bluegill (*Lepomis macrochirus*) is 3.9-6.1 mg/L.

Acute LC₅₀ in fathead minnow (*Pimephales promelas*) is 4.1 mg/L.

Material is practically non-toxic to birds on an acute basis (LD₅₀ is >200 mg/kg).

Acute contact LD₅₀ in honey bee (*Apis mellifera*) is >6.6 µg/bee.

Growth inhibition EC₅₀ in green alga (*Selenastrum capricornutum*) is 4.95 mg/L.

Growth inhibition EC₅₀ in marine diatom (*Skeletonema costatum*) is 1.0 mg/L.

Growth inhibition EC₅₀ in diatom (*Navicula sp.*) is 0.28 mg/L.

Growth inhibition EC₅₀ in blue-green alga (*Anabaena flos-aquae*) is 15.5 mg/L.

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13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: Dispose of washings, contaminated materials, used absorbents, and other waste material as directed by local, state, and federal regulations. If these wastes can not be disposed of locally as directed by regulations, call Dow AgroSciences at 800-9920-5994. Improper disposal of excess pesticide and rinsates is a violation of federal law. If excess pesticide or rinsate can not be disposed of 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 consult 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. 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:

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>CONCENTRATION</u>
1,3-Dichloropropene	000542-75-6	94%
TRANS-1,3-D	010061-02-6	45%

NOTE: CAS# 000542-75-6 includes both the cis and trans isomers of 1,3-dichloropropene (also known as 1,3-dichloropropylene), and it is on the SARA 313 list. The CAS number for the trans isomer, 010061-02-6, is also on the SARA 313 list, but the CAS# for the cis isomer, 010061-01-5, is not on the SARA 313 list.

CONSENT ORDER FOR PMN (UNITED STATES)

In the United States, a component of this material, cis-1,3-dichloropropene (DR-0019-3180), was reviewed by the Environmental Protection Agency under PMN 88-608. There was no resulting consent order. However, the EPA is concerned that, based on an analogous chemical structure, this PMN material may cause oncogenicity, mutagenicity, neurotoxicity, and developmental toxicity and may present an unreasonable risk to unprotected workers. The EPA strongly recommends that, to mitigate inhalation exposure, workers should wear a NIOSH-approved respirator and, to mitigate dermal exposure, should wear adequate protective clothing which covers any exposed parts of the body, impervious gloves, and chemical safety goggles or equivalent.

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: This product contains a chemical(s) known to the State of California to cause cancer.

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

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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.

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>LIST</u>
1,3-Dichloropropylene	000542-75-6	NJ3, NJ2, NJ1 PA3, PA2, PA1

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

NJ2=New Jersey Environmental Hazardous Substance (present at > or = to 1.0%).

NJ3=New Jersey Workplace Hazardous Substance (present at > or = to 1.0%).

PA1=Pennsylvania Hazardous Substance (present > or = to 1.0%).

PA2=Pennsylvania Special Hazardous Substance (present at > or = to 0.01%).

PA3=Pennsylvania Environmental Hazardous Substance (present at > or = 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:

<u>Category</u>	<u>Rating</u>
Health	3
Flammability	3
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:

<u>Chemical Name</u>	<u>CAS Number</u>	<u>RQ</u>	<u>% in Product</u>
1,3-Dichloropropene	000542-75-6	100	94%

16. OTHER INFORMATION:

MSDS STATUS: Revised Sections: 5
Reference: DR-0006-0071
Replaces MSDS dated: 8/5/99
Document Code: D03-018-003
Replaces Document Code: D03-018-001

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