MATERIAL SAFETY DATA SHEET

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

INLINE* SOIL FUMIGANT

Effective Date: 13-Nov-06
Product Code: 72889
MSDS: 006596

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Inline* Soil Fumigant

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

2. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

TOXIC LIQUIDS, CORROSIVE TO THE SKIN, POISON INHALATION HAZARD. Straw-colored liquid. Irritating odor. Vapors can form flammable mixtures at ordinary temperatures. Keep unnecessary people away. Isolate hazard area and deny access to fire area. Stay upwind. Highly toxic and irritating fumes and gases are released in fire situations. Toxic to aquatic organisms.

EMERGENCY TELEPHONE NUMBER: 800-992-5994

3. COMPOSITION/INFORMATION ON INGREDIENTS:

COMPONENT	CAS NUMBER	W/W%
1,3-Dichloropropene*	542-75-6	60.8
Chloropicrin	76-06-2	33.3
Balance		5.9
*1,3-Dichloropropene is a combination of Cis Isomer and Trans Isomer		

4. FIRST AID:

EYES: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist.

SKIN: Immediate continued and thorough washing in flowing water for at least 30 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential Wash clothing before reuse. Destroy contaminated leather items.

INGESTION: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

INHALATION: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, and then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc.). If breathing is difficult, oxygen should be administered by qualified personnel.

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. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. Maintain adequate ventilation and oxygenation of the patient. May cause respiratory sensitization or asthma-like symptoms. Bronchodilators, expectorants and antitussives may be of help. Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome). Treat bronchospasm with inhaled beta2 agonist and oral or parenteral Corticosteroids. Methemoglobinemia may aggravate any preexisting condition sensitive to a decrease in available oxygen, such as chronic lung disease, coronary artery disease or anemias. If burn is present, treat as any thermal burn, after decontamination.

5. FIRE FIGHTING MEASURES:

FLASH POINT: 81°F (27°C)
METHOD USED: PMCC

FLAMMABLE LIMITS (1,3-dichloropropene
LFL: 5.5% @ 80°C (176°F)
UFL: 14.5% @ 80°C (176°F)

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EXTINGUISHING MEDIA: Water fog or fine spray, carbon dioxide, dry chemical, or foam. Water fog, applied gently, may be used as a blanket for fire extinguishment. General - purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function. Do not use direct water stream. Straight or direct water streams may not be effective to extinguish fire.

FIRE-FIGHTING INSTRUCTIONS: Keep people away. Isolate fire area and deny unnecessary entry. Contain firewater run-off if possible. Fire-water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this MSDS. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Water fog, applied gently, may be used as a blanket for fire extinguishment. Eliminate ignition sources. Stay upwind. Keep out of low areas where gases or fumes can accumulate. Do not use direct water stream, this may cause the fire to spread. Water may not be effective in extinguishing fire. Fight fire from protected location or safe distance. Consider use of unmanned hose holder or monitor nozzles. Use water spray to cool fire exposed containers and fire affected zone until fire is out and the danger of re-ignition has passed. Immediately withdraw all personnel from area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. Vapors are heavier than air and may travel a long distance and accumulate in low-lying areas. Hazardous combustion products may include but are not limited to nitrogen oxides, hydrogen chloride, hydrocarbons, carbon monoxide, and carbon dioxide.

PROTECTIVE EQUIPMENT FOR FIREFIGHTERS: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire-fighting clothing (includes fire-fighting helmet, coat, pants, boots, and gloves). Avoid contact with this material during fire-fighting operations. If contact is likely, change to full chemical resistant clothing with SCBA. This will not provide sufficient fire protection, consider fighting fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS/LEAKS: Vapor explosion hazard, keep out of sewers. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Absorb small spills and place in suitable container for disposal. For large spills, warn public of down wind explosion hazard. Ground and bond all containers and handling equipment. Report large spills to 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. Containers (even those that have been emptied) can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Use of non-sparking or explosion proof equipment may be necessary, depending upon the type of operation. No smoking, open flames or sources of ignition in handling and storage area. Never use air pressure for transferring product. Electrically ground all equipment. Storage: Minimize sources of ignition, such as static build-up, heat, spark or flame. Keep containers tightly closed when not in use. Protect from atmospheric moisture. Store in a dry area.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

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

EXPOSURE GUIDELINE(S):

1,3-Dichloropropene: ACGIH TLV is 1 ppm, Skin, A3. Chloropicrin: ACGIH TLV and OSHA PEL are 0.1 ppm. ACGIH classification is A4.

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 and 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. 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 guideline. When respiratory protection is required use a NIOSH approved self-contained breathing apparatus or positive pressure airline with auxiliary self-contained air supply.

SKIN PROTECTION: Use protective clothing chemically resistant 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 or dispose of properly. Items, which cannot be decontaminated, such as shoes, belts and watchbands, should be removed and disposed of properly. If hands are cut or scratched, use gloves chemically resistant to this material even for brief exposures.

EYE/FACE PROTECTION: Use chemical goggles. Wear a face-shield, which allows use of chemical goggles, or wear a full-face respirator, to protect face and eyes when there is any likelihood of splashes. Eye wash fountain should be located in immediate work area. 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: 200°F (93°C)
VAPOR PRESSURE: 30 mmHg @ 20°C (mod. volatile)
VAPOR DENSITY: Not applicable
SOLUBILITY IN WATER: 0.2g/100g
SPECIFIC GRAVITY: 1.34 @ 23°C
APPEARANCE: Straw-colored liquid
ODOR: Irritating odor
FREEZING POINT: -120°F (-85°C)
pH: 6.9 (1%w/v in water)
SATURATED VAPOR CONCENTRATION: 160.4 ml/M^3 @ 25°C

10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) Unstable at elevated temperatures. Avoid moisture, open flames, welding arcs, or other high temperature sources, which induce thermal decomposition. Product can decompose at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems. Pressure build-up can be rapid.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Corrosive when wet. Avoid contact with amines and strong bases. Reaction with water can generate gasses and acids. Avoid contact with oxidizing materials. Avoid contact with metals such as zinc, cadmium, and magnesium. Avoid contact with absorbent materials such as organic absorbents.

HAZARDOUS DECOMPOSITION PRODUCTS: Depends on the temperature, air supply and the presence of other materials.

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 with corneal injury, which may result in permanent impairment of vision, even blindness. Chemical burns may occur. Vapor may cause lacrimation (tears) and eye irritation experienced as mild discomfort and redness.

SKIN: Brief contact may cause severe skin burns. Symptoms may include pain, severe local redness and tissue damage. Prolonged or widespread skin contact may result in absorption of harmful amounts. The LD_{50} for skin absorption in rabbits is between 907 (males) and >1000 (females) mg/kg. Classified as corrosive to the skin according to DOT guidelines. Vapor may cause skin irritation. May cause more severe response if skin is abraded (scratched or cut). Vapors may increase susceptibility to infection. Skin contact may cause an allergic skin reaction in a small proportion of individuals.

INGESTION: Moderate toxicity if swallowed. The oral LD_{50} for rats is >100 (males) and 100-200 (females) mg/kg. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause serious injury, even death. Aspiration into the lungs may occur during ingestion or vomiting, resulting in rapid absorption and injury to other body systems. Swallowing may result in gastrointestinal irritation or ulceration.

INHALATION: Brief exposure (minutes) to easily attainable concentrations may cause serious adverse effects, even death. Excessive exposure may cause severe irritation to upper respiratory tract (nose and throat) and lungs. Excessive exposure to chloropicrin may cause lung injury. May be delayed in onset. May cause allergic respiratory response. Excessive exposure may cause methemoglobinemia, thereby impairing the blood's ability to transport oxygen. May cause central nervous system effects. May cause nausea or vomiting. Chloropicrin has also caused weak/irregular heart action and muscle damage upon severe exposure. The inhalation LC_{50} is 0.15 ml/M^3 for 4 hours.

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

CANCER INFORMATION: This mixture contains 1,3-Dichloropropene, which is listed as a potential carcinogen for hazard communication purposes under OSHA Standard 29 CFR 1910.1200. 1,3-Dichloropropene 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.

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: For the major components, chloropicrin and 1,3-dichloropropene, in animal studies, did not interfere with reproduction.

MUTAGENICITY: For the major component 1,3-dichloropropene, in-vitro mutagenicity studies were negative in some cases and positive in other cases. Animal mutagenicity studies were negative. For the minor component chloropicrin, in-vitro mutagenicity studies were negative in some cases and positive in other cases. Animal mutagenicity studies were inconclusive.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

MOVEMENT & PARTITIONING:
Based largely or completely on data for 1,3-dichloropropene.
Bioconcentration potential is low (BCF <100 or Log Pow <3).
Potential for mobility in soil is very high (Koc between 0 and 50).

DEGRADATION & PERSISTENCE:
Based largely or completely on data for 1,3-dichloropropene.
Degradation is expected in the atmospheric environment within days to weeks.

ECOTOXICOLOGY:
Based largely or completely on data for 1,3-dichloropropene.
Material is very highly toxic to aquatic organisms on an acute basis (LC_{50} or EC_{50} <0.1 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.

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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.

14. TRANSPORT INFORMATION:

U.S. DEPARTMENT OF TRANSPORTATION INFORMATION

FOR ALL PACKAGE SIZES: DO NOT SHIP BY AIR

FOR TRUCK-TANK, RAIL-TANK CAR, AND VESSEL:
TOXIC BY INHALATION LIQUIDS/CORROSIVE/N.O.S. (CHLOROPICRIN, 1,3-DICHLOROPROPENE)/ 6.1(8,3)/ UN3390/PGI/RQ(1,3-DICHLORO-PROPENE)/MARINE POLLUTANT/POISON INHALATION HAZARD/ZONE B

FOR LAND TRUCK-PACKAGE AND TRUCK-PARCEL:
TOXIC BY INHALATION LIQUIDS/CORROSIVE/N.O.S. (CHLOROPICRIN, 1,3-DICHLOROPROPENE)/ 6.1(8,3)/ UN3390/PGI/RQ(1,3-DICHLORO-PROPENE)/POISON INHALATION HAZARD/ZONE B

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
Chloropicrin	000076-06-2	33.3%
1,3-Dichloropropene	000542-75-6	60.8 %
Trans-1,3-D	010061-02-6	28.1%

NOTE: CAS# 000542-75-6 @ 60.8% 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 number for cis isomer, 010061-01-5, is not on the SARA 313 list.

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. The chemical is 1,3-Dichloropropene (CAS # 00542-75-6)

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 Environmental Protection Agency 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 Environmental Protection Agency 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.

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
Chloropicrin	000076-06-2	NJ3 PA1
1,3-Dichloropropylene	000542-75-6	PA 1 PA2 PA3 NJ1 NJ2 NJ3
Trans-1,3-D	010061-02-6	NJ2

NJ1=New Jersey Special Health Hazard Substance (present at greater than or equal to 0.1%).
NJ2=New Jersey Environmental Hazardous Substance (present at greater than or equal to 1.0%).
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%).
PA2=Pennsylvania Special Hazardous Substance (present at greater than or equal to 0.01%).
PA3=Pennsylvania Environmental Hazardous Substance (present at greater than or equal to 1.0%).

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

Health	3
Flammability	3
Reactivity	3

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

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
1,3-Dichloropropene	0000542-75-6	100	60.8%

RCRA CATEGORIZATION:

U.S. EPA Hazardous Waste # U084
1,3-Dichloropropene (CAS # 000542-75-6)

16. OTHER INFORMATION:

MSDS STATUS: Revised Sections: 3, 9 & 11
Reference: DR-0361-5223
Replaces MSDS Dated: 16-Dec-05
Document Code: D03-078-007
Replaces Document Code: D03-078-006

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