



ENVIRONMENTAL EDUCATION SERIES

# ENVIRONMENTAL QUALITY

## Agriculture & Natural Resources

EXTENSION ENVIRONMENTAL EDUCATION, AUBURN UNIVERSITY, AL 36849-5647

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## An Explanation Of Material Safety Data Sheets

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The Occupational Safety and Health Act (OSHA) Worker Right-to-Know Law and SARA Emergency Planning and Community Right-to-Know Law requires that Material Safety Data Sheets (MSDS) be supplied with pesticides and fertilizer products upon request. MSDS are available from the manufacturer for each pesticide and fertilizer product sold and should be available to the buyer at the point of sale.

MSDS are required to contain specific information items. Following is each item with an explanation of its meaning. Also, a sample MSDS for Telone (R) II Soil Fumigant is included.

**Chemical Name:** Usually the IUPAC (International Union of Pure and Applied Chemistry) or Chemical Abstracts Service chemical name is given, but it also may be a common name for the chemical (e.g., ethylene glycol is acceptable instead of 1,2-ethanediol). Trade names may be supplied, but the chemical name is also required unless it is considered to be a trade secret.

**CAS Registry Number:** This number is not required by OSHA, but most state right-to-know laws require it. This number is assigned to each chemical by the Chemical Abstracts Service. There are a few instances where a chemical has several different numbers. A few chemicals have no assigned number; most mixtures do not have assigned numbers.

**Date Prepared:** OSHA requires that the date of preparation or latest update be on the MSDS.

**Composition Of Mixtures:** This includes all hazardous materials over 1 percent and all carcinogens over 0.1

- **Vapor pressure** - Usually in mm Hg; the temperature must be specified (usually in the range of normal room temperature).
- **Specific gravity** - This is density with respect to water at a specified temperature.
- **Solubility in water** - Approximate values are acceptable.
- **Appearance and odor**
- **Evaporation rate** - Usually relative to butyl acetate.

**Fire And Explosion Hazard Data:** This usually includes the following items:

- **Flashpoint** - The flashpoint of the chemical is the temperature at which its vapor can be ignited.
- **Auto ignition temperature** - This is the temperature at which a chemical ignites spontaneously in the air.
- **Flammability limits** - Most volatile chemicals have lower and upper concentrations in air below and above which they cannot be ignited.
- **Recommended extinguishing media**
- **Unusual fire and explosion hazards**

**Reactivity Hazard Data:** This information should include whether the material is unstable and under what conditions instability exists, incompatibilities with other materials, and whether hazardous decomposition products can be produced.

**Environmental/Disposal Information:** This information states the action to take for spills/leaks and proper container disposal.

percent. Trade names can be used, but chemical names must also be included unless this information is considered a trade secret.

**OSHA PEL:** This is either a time-weighted average limit for an 8 hour day or a maximum concentration exposure limit for those items on the OSHA list. The figures may be in parts per million (PPM) or mg per cubic meter (mg/m<sup>3</sup>).

**ACGIH TLV:** This is the maximum exposure limits recommended by the American Conference of Governmental Industrial Hygienists. The same measure in units specified in the OSHA PEL are applicable. The ACGIH TLV list is updated each year.

**Health Effects:** This includes the identification of target organs or systems adversely affected by overexposure.

**Physical/Chemical Characteristics:** This usually includes the following items where applicable:

- **Boiling point** - The value may be at reduced pressure and either in degrees Celsius or Fahrenheit.
- **Melting point**

**Health Hazard Data:** This topic includes one or more of the following:

**LD50 (lethal dose 50):** This is the lethal single dose (usually oral) in mg/kg (milligrams of chemical per kilogram of animal body weight) of a chemical that is expected to kill 50% of a test animal population.

**LC50 (lethal concentration 50):** This is a concentration dose expressed as ppm for gases and vapors or as micrograms of material per liter of air for dusts and mists expected to kill 50% of a test animal population in one exposure.

**First Aid:** This item gives information on all routes of overexposure and states special notes to the physician.

**Handling Precautions:** OSHA PEL and ACGIH values are shown and safe handling information is given.

#### References

American Chemical Society, Reading and Understanding Material Safety Data Sheets, The Chemical Safety Manual for Small Business, Copyright 1989

## Material Safety Data Sheet

DOWELANCO INDIANAPOLIS, IN 46268  
EMERGENCY (517) 636-4400

Product Code: 85456

#### Product Name:

**TELONE (R) II SOIL FUMIGANT** Effective Date: 06/07/90 Date Printed: 10/24/90 MSDS:000405

#### 1. INGREDIENTS: (% w/w, unless otherwise noted)

1,3-Dichloropropene

CAS-  
000542- 94.0%  
75-6

Other ingredients, including:

6.0%

Mixture of chlorinated hexenes,  
hexanes, and hexadienes  
Cis-1,3,3-trichloropropene-1

CAS-  
002953-  
50-6

Epoxidized soybean oil

CAS-  
008013-  
07-8

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.

## **2. PHYSICAL DATA:**

BOILING POINT: Approx. 220f, 104c

VAP PRESS: 28 mmHg @ 20C, 68F

VAP DENSITY: Not applic.

SOL. IN WATER: Approx. 0.1%

SP. GRAVITY: 1.211 (a) 20C, 68F

APPEARANCE: Colorless to straw colored liquid.

ODOR: Sweet penetrating odor.

## **3. FIRE AND EXPLOSION HAZARD DATA:**

FLASH POINT: 83F, 28C

METHOD USED: TCC.

FLAMMABLE LIMITS

LFL: 5.3% @ 80C

UFL: 14.5% @ 80C

EXTINGUISHING MEDIA: Water fog, foam, alcohol foam, CO2, dry chemical.

FIRE & EXPLOSION HAZARDS: Toxic irritating vapors under fire conditions. Keep vapors away from possible ignition sources.

FIRE-FIGHTING EQUIPMENT: Use positive-pressure, self-contained breathing apparatus.

## **4. REACTIVITY DATA:**

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, or their alloys. Avoid strong bases.

HAZARDOUS DECOMPOSITION PRODUCTS: Toxic, irritating vapors under fire conditions.

HAZARDOUS POLYMERIZATION: Will not occur. Avoid contact with containers or equipment containing aluminum, magnesium, zinc, cadmium, or their alloys.

## **5. ENVIRONMENTAL AND DISPOSAL INFORMATION:**

ACTION TO TAKE FOR SPILLS/LEAKS: Allow to evaporate if in open area. Do not breathe vapors. In case of spillage indoors have available a self-contained, positive pressure breathing apparatus or a full face mask equipped with a fresh black canister meeting specification of NIOSH MSA for organic vapors. Use latter for less than 1/2 hour or when odor penetrates mask, whichever comes first.

DISPOSAL METHOD: Triple rinse containers and dispose of rinsate in field just treated. After aeration offer containers to qualified reconditioner or destroy by puncturing or crushing and dispose of in an approved sanitary landfill or bury in the user's cropland or dispose of by other procedures approved by state and local authorities. Do not pollute surface or underground water supplies.

## **6. HEALTH HAZARD DATA:**

EYE: May cause severe eye irritation and slight corneal injury. Vapors may cause lachrymation (tears) and irritation.

SKIN CONTACT: Prolonged or repeated exposure may cause skin irritation, even a burn. Animal data indicate that this material is a potential skin sensitizer. However, skin sensitization has not been encountered among employees involved in the manufacture of this material.

SKIN ABSORPTION: A single prolonged exposure may result in the material being absorbed in harmful amounts. The LD50 for skin absorption in rabbits is 333 mg/kg.

INGESTION: Single dose oral toxicity is moderate. The oral LD50 for rats is 300 mg/kg (males) and 224 mg/kg (females).

Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing amounts larger than that may cause serious 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 and lungs. The LC50 for male and female rate is 855-1-35 and 904 ppm, respectively.

**CANCER INFORMATION:** For hazard communication purposes under OSHA Standard 20 CFR Par 1910.1200, 1,3-dichloropropene is listed as a potential carcinogen by IARC and NTP 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:** In animal studies, has been shown not to interfere with reproduction.

**MUTAGENICITY (EFFECTS ON GENETIC MATERIAL):** Has been shown to be negative in some in-vitro ('test tube') mutagenicity tests and positive in others. Results of mutagenicity tests in animals have been negative.

## **7. 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. Wash clothing before reuse. Destroy contaminated shoes.

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

**INHALATION:** Remove to fresh air. If not breathing, give mouth-to-mouth resuscitation. If breathing is difficult, give oxygen. Call a physician.

**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. Animal data indicates that this material is a potential skin sensitizer. However, skin sensitization has not been encountered among employees involved in the manufacture of this material. Repeated excessive exposure may aggravate preexisting lung, liver and kidney disease.

## **8. HANDLING PRECAUTIONS:**

**EXPOSURE GUIDELINE(S):** 1,3-Dichloropropene: ACGIH TLV and OSHA PEL are 1 ppm, Skin.

**VENTILATION:** Control airborne concentrations below the exposure guideline. Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

**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.

**SKIN PROTECTION:** Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse. Contaminated leather items, such as shoes, belts and watchbands, should be removed and destroyed.

**EYE PROTECTION:** Use chemical goggles. If vapor exposure causes eye discomfort, use a full-face respirator. Eye wash fountain should be located in immediate work area.

## **9. ADDITIONAL INFORMATION:**

**SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:** Please see handling precaution on the label.

**MSDS STATUS:** Revised section 9 and regsheets.

**REGULATORY INFORMATION: (Not meant to be all-inclusive-selected regulations represented.)**

**NOTICE:** The information herein is presented in good faith and believed to be accurate as the effective date shown above. However, no warranty, expressed 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. See MSD Sheet for health and safety information.

## 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: 1,3-DICHLOROPROPYLENE

CAS NUMBER: 000542-75-6

CONCENTRATION: 94%

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**

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**For more information**, call your county Extension office. Look in your telephone directory under your county's name for the number.

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