Product Safety Assessment

1,3-Dichloropropene

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Names
- CAS No. 542-75-6
- (EZ)-1,3-dichloropropene (IUPAC)
- 1,3-Dichloropropene
- 1,3-D
- Condorsis™ soil fumigant
- Condor™ soil fumigant
- Curfew™ soil fumigant
- Deltone™ soil fumigant
- Double Stopper™ soil fumigant
- InLine™ soil fumigant
- Sollean™ soil fumigant
- 1,3-dichloro-1-propene (CAS)
- 1,3-Dichloropropylene
- 3-Chloroallyl chloride
- Telodrip™ soil fumigant
- Telone™ II soil fumigant
- Telone™ C-17 soil fumigant
- Telone™ EC soil fumigant
- Telone™ C-35 soil fumigant
- Telone™ 94 soil fumigant
- Telopic™ soil fumigant

Product Overview
- 1,3-Dichloropropene is a colorless to straw-colored liquid with a sweet chloroform-like odor. It dissolves readily in water and evaporates easily. See Product Description.
- 1,3-Dichloropropene is the active ingredient in a series of products marketed by Dow AgroSciences, a subsidiary of The Dow Chemical Company. 1,3-Dichloropropene is used prior to planting to reduce the population of nematodes (round worms) and other soil-borne pests that damage developing root systems of young plants. 1,3-Dichloropropene is commonly used as a pre-plant soil application for many crops including potatoes, vines, cotton, tobacco, peanuts, fruit and nut trees and fruit and vegetable crops such as melons, tomatoes, strawberries and peppers. It is also used on golf course fairways and greens at low use rates to manage nematodes. See Product Uses.
- Eye contact with liquid 1,3-dichloropropene may cause severe irritation with slight corneal injury. Contact with 1,3-dichloropropene vapors may cause tearing, redness, or mild discomfort to the eye. Repeated skin contact with 1,3-dichloropropene may cause burns. Inhalation of 1,3-dichloropropene vapors may cause serious adverse effects including severe respiratory irritation or death. See Health Information or Physical Hazard Information.
- Occupational exposure to 1,3-dichloropropene could occur in manufacturing operations during maintenance, sampling, testing, or other procedures. Agricultural workers could be exposed to 1,3-dichloropropene during soil application. 1,3-Dichloropropene is a commercial-grade pesticide and is not available for home use. Workers using 1,3-dichloropropene must
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- Wear proper personal protective equipment and follow label instructions carefully. Crops harvested from land treated with 1,3-dichloropropene prior to planting do not contain residues of 1,3-dichloropropene. See Exposure Potential.
- 1,3-Dichloropropene and its vapors are flammable. Vapors may form explosive mixtures with air when confined. 1,3-Dichloropropene is corrosive to some metals, including aluminum, magnesium, zinc, and cadmium. Avoid contact with strong bases. See Physical Hazard Information.

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Manufacture of Product
- **Capacity** – Dow AgroSciences is the largest producer of 1,3-dichloropropene globally.
- **Process** – 1,3-Dichloropropene is manufactured in Freeport, Texas, and Stade, Germany.

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Product Description
1,3-Dichloropropene is the chemical name for the active ingredient in a series of soil fumigants formulated by Dow AgroSciences. It is a clear to straw-colored liquid with a sweet odor that mixes readily with water and evaporates easily.

Dow AgroSciences sells 1,3-dichloropropene under multiple trade names globally including Telone™ soil fumigant and InLine™ soil fumigant. These products are restricted-use pesticides available only to growers or applicators that are certified in its use. Some of these products also include chloropicrin as an active ingredient in addition to 1,3-dichloropropene.

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Product Uses
1,3-Dichloropropene is a multi-purpose liquid fumigant applied to soil prior to planting to control nematodes (round worms) and other soil-borne pests in cropland. 1,3-Dichloropropene greatly reduces the population of root nematodes, microscopic parasites that live in soil and feed on the developing root systems of young plants. Planting of the crop occurs after the fumigant degrades or leaves the soil, which can take from a few days to several weeks. Crops grown on soil treated with 1,3-dichloropropene include tobacco, potatoes, cotton, onions, carrots, peppers, sugar beets, peanuts, strawberries, fruit and nut trees, and many others. It is also used on golf course fairways and greens at low use rates to manage nematodes.

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Exposure Potential
1,3-Dichloropropene is a restricted-use pesticide for commercial use only by those who are certified in its application.
- **Workplace exposure** – Exposure can occur in a 1,3-dichloropropene manufacturing or formulation facility. Workers could be exposed during maintenance, sampling, testing, formulation, or other procedures. 1,3-Dichloropropene is manufactured, formulated, distributed, and stored in closed systems. Each manufacturing facility has a thorough training program for employees and appropriate work processes and safety equipment in place to protect workers. Agricultural workers could be exposed to 1,3-dichloropropene during application and are required to wear proper personal protective equipment and follow label instructions to reduce risk of exposure. See Health Information.

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• **Consumer exposure to products containing 1,3-dichloropropene** – Although 1,3-dichloropropene is widely used commercially throughout the United States, it is not available for home use. Extensive testing summarized by the EPA shows that 1,3-dichloropropene is not detected in drinking water. Crops harvested from soil treated with 1,3-dichloropropene do not contain residues of 1,3-dichloropropene. See Health Information.

• **Environmental releases** – For small spills outdoors or in well-ventilated areas, wear a NIOSH-approved half-face or full-face respirator. Wear proper protective clothing. Cover or confine 1,3-dichloropropene with an absorbent material such as diatomaceous earth, clay, or sand. Collect material in a disposal drum. See Environmental, Health and Physical Hazard Information.

• **Large release** – For cleanup of large spills or small spills in a confined area, refer to the emergency procedures in the user’s guide for this product. Report large spills to Dow AgroSciences immediately at 800-992-5994 or visit www.dowagro.com/rc/response/ to access Dow AgroSciences in a specific geographic area. Evacuate personnel upwind of the spill. Stay out of low-lying areas. Personnel involved in containing the spill must wear a NIOSH-approved, positive-pressure, atmosphere-supplying respirator. In addition, body protection providing gas-tight protection is required.

• **In case of fire** – Isolate the area and deny unnecessary entry. Highly toxic and irritating fumes are released in fire situations. Use NIOSH- or MSHA-approved, positive-pressure, self-contained breathing apparatus and special protective clothing, including heavy neoprene rubber boots and neoprene gloves. Remove possible ignition sources. Vapors are heavier than air and may travel a considerable distance. Fight fire upwind from protected location or safe distance. Fight fire using water fog, foam, carbon-dioxide, or dry-chemical extinguisher. Do not use direct water stream. A blanket of fine water spray will help control fire by its cooling action. If possible, contain run-off water from the fire. See Environmental, Health and Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.

### Health Information

#### Eye and Skin Contact
Eye contact with liquid 1,3-dichloropropene or its vapors may cause severe eye irritation, tears, redness, or slight corneal injury. Repeated skin contact may cause burns. Symptoms may include pain, severe local redness, swelling, and tissue damage. Data from animal studies indicate that 1,3-dichloropropene is a potential skin sensitizer.

#### Inhalation
1,3-Dichloropropene evaporates readily. Vapor concentrations that are easily attainable may cause serious adverse effects, even death. Excessive exposure may cause irritation to the nose, throat, and lungs.

#### Cancer and Birth Defect Information
1,3-Dichloropropene has been shown to cause cancer in laboratory animals when given orally. In animal studies, 1,3-dichloropropene did not cause birth defects or other effects in the fetus or interfere with reproduction. Exposure effects have been noted on the bladder, kidney, nasal tissue, liver, lungs, and gastrointestinal tract of animals.

For more information, see the relevant Safety Data Sheet.
Environmental Information

The bioconcentration potential (ability to accumulate in the food chain) of 1,3-dichloropropene is low. 1,3-Dichloropropene degrades in soil due to microbial action and hydrolysis (reaction with water). Plants grown on treated soil metabolize 1,3-dichloropropene and its breakdown products to form normal plant constituents. 1,3-Dichloropropene vapors in air rapidly undergo photodegradation (breakdown by the energy from the sun). 1,3-Dichloropropene is highly toxic to aquatic organisms and moderately toxic to birds on an acute basis.

For more information, see the relevant Safety Data Sheet.

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Physical Hazard Information

1,3-Dichloropropene and its vapors are flammable. 1,3-Dichloropropene may form explosive mixtures with air when confined. 1,3-Dichloropropene is corrosive to some metals. Do not use containers or equipment containing aluminum, magnesium, zinc, cadmium, or their alloys. Avoid contact with strong bases. Hydrogen chloride and other toxic, irritating gases may be formed if 1,3-dichloropropene is involved in fire.

For more information, see the relevant Safety Data Sheet.

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Regulatory Information

Regulations exist that govern the manufacture, sale, transportation, use, and/or disposal of 1,3-dichloropropene. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant Safety Data Sheet.

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Additional Information

- Safety Data Sheet (http://www.dowagro.com/label/index.htm)
- BEAD’s Overview of the Use and Usage of Soil Fumigants: Methyl Bromide, Chloropicrin, 1,3-Dichloropropene, Metam Sodium, Metam Potassium, Dazomet, U.S. Environmental Protection Agency Office of Pesticide Programs Biological and Economic Analysis Division (7503), June 20, 2005 (http://www.epa.gov/pesticides/reregistration/soil_fumigants/soil_fumigant_use.pdf)
- Telone™ (1,3-D) Products as Alternatives for Methyl Bromide, Dow AgroSciences, Form No. L01-020-041, October 2002 (http://www.dowagro.com/PublishedLiterature/dh_0041/0901b80380041e85.pdf?)
- Telone soil fumigant: Stewardship Guide, Dow AgroSciences, Form No. L01-137-034, October 2004

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• Telone soil fumigant: Storage and Handling Guide, Dow AgroSciences, Form No. L16-137-001, January 2005

For more business information about 1,3-dichloropropene, visit the Dow AgroSciences soil products web site. (http://www.dowagro.com/soil/products/)

References


8. BEAD’s Overview of the Use and Usage of Soil Fumigants: Methyl Bromide, Chloropicrin, 1,3-Dichloropropene, Metam Sodium, Metam Potassium, Dazomet, U.S. Environmental Protection Agency, Office of Pesticide Programs, Biological and Economic Analysis Division (7503), June 20, 2005, page 5.


NOTICES:

As part of its 2015 Sustainability Goals, Dow has committed to make publicly available safety assessments for its products globally. This product safety assessment is intended to give general information about the chemical (or categories of chemicals) addressed. It is not intended to provide an in-depth discussion of health and safety information. Additional information is available through the relevant Safety Data Sheet, which should be consulted before use of the chemical. This product safety assessment does not replace required communication documents such as the Safety Data Sheet.

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