

# 1,2-Dichloroethene

(also called cis- and trans- 1,2 DCE )

## Answers to Frequently Asked Health Questions

### What is 1,2 DCE?

1,2-Dichloroethene (1,2 DCE) is a highly-flammable, chlorinated, colorless liquid that has a sharp, harsh odor. There are no known products you can buy that contain 1,2 DCE. 1,2 DCE is used when mixing other chlorinated chemicals and is most often used to produce chemical solvents.

### How does 1,2 DCE get into the environment?

1,2 DCE is released to the environment from chemical factories that make or use this chemical, from landfills and hazardous waste sites that have a spill or leak, from chemical spills, from burning vinyl and from the chemical breakdown of other chlorinated chemicals in the underground drinking water (groundwater).



### What happens to 1,2 DCE in the environment?

**Air:** When spilled on moist soils or in rivers, lakes and other bodies of water, most of the 1,2 DCE quickly evaporates into the air. 1,2 DCE quickly breaks down by reacting with the sunlight. In the air, it usually takes about 5-12 days for half of any amount spilled to break down.

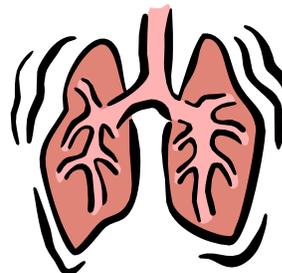
**Water:** The 1,2 DCE found below soil surfaces in landfills or hazardous waste sites may dissolve in water during rain events and leak deeper in the soils, possibly contaminating the groundwater. Once in groundwater, it takes about 13-48 weeks for half of any amount spilled to break down.

**Soils:** Some 1,2 DCE trapped under ground may escape as soil-gas vapors. These vapors can travel through soils, especially if the soils are sandy and loose or have a lot of cracks (fissures). The vapors can then enter a home through cracks in the foundation or into a basement with a dirt floor or concrete slab. 1,2 DCE in groundwater will eventually break down into vinyl chloride and other chemicals, some of which are more hazardous to people than the 1,2 DCE.

### How can 1,2 DCE enter and leave my body?

Most 1,2 DCE enters the body through your lungs when you breathe contaminated air (inhalation), through your stomach and intestines when you eat contaminated food or water (ingestion), or through your skin upon contact with the chemical (dermal).

Once breathed or swallowed, it enters your blood rapidly. Once in your blood, it travels throughout your body. When it reaches your liver it is changes into several other break-down chemicals. Some of these chemicals are more harmful than 1,2 DCE.



### Can 1,2 DCE make you sick?

Yes, you can get sick from exposure to 1,2 DCE. However, getting sick will depend on many factors such as:

- How much you were exposed to (dose).
- How long you were exposed (duration).
- How often you were exposed (frequency).
- How toxic is the chemical of concern.
- General Health, Age, Lifestyle

Young children, the elderly and people with chronic (on-going) health problems are more at risk to chemical exposures.

### **How can 1,2 DCE affect my health?**

Most information about exposure to 1,2 DCE is from occupational studies where workers were exposed at very high levels. Most environmental exposures to 1,2 DCE are at much lower than those in the workplace.

The short-term occupational studies of workers exposed to breathing high levels of 1,2 DCE found workers became nauseous (upset stomach) and drowsy/tired.

The long-term human health effects after exposure to low concentrations of 1,2 DCE are not known.

### **Does 1,2 DCE cause cancer (carcinogen)?**

The U.S. EPA classifies 1,2 DCE as a Class D carcinogen. The U.S. EPA Class D category is used when the chemical is not classifiable to its human carcinogenicity (ability to cause cancer). This classification is made because there is no solid data that this chemical causes cancer in humans or animals.

### **Is there a medical test to show whether you have been exposed to 1,2 DCE?**

Tests are available to measure concentrations of 1,2 DCE in blood, urine and tissues. However, these tests aren't normally used to determine whether a person has been exposed to this compound. This is due to the fact that after you are exposed to 1,2 DCE, the breakdown products in your body that are detected with these tests may be the same as those that come from exposure to other chemicals. These tests aren't available in most doctors' offices, but can be done at special laboratories that have the right equipment.

### **References:**

Agency for Toxic Substances and Disease Registry (ATSDR). 1996. Toxicological profile for 1,2-Dichloroethene. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

U.S. Environmental Protection Agency, Integrated Risk Information System, II.A.1. Weight-of-Evidence Characterization

### **What recommendations has the federal government made to protect human health?**

The federal government has developed regulatory standards and guidelines to protect people from possible health effects of 1,2 DCE in water and air.

**Water:** The EPA has established water quality guidelines to protect both aquatic life and people who eat fish and shellfish. The EPA Office of Drinking Water has set a drinking water regulation that states that water delivered to any user of a public water system shall not exceed 70 ppb for cis-1,2 DCE and 100 ppb trans-1,2 DCE. For very short-term exposures (1 day) for children, EPA advises that concentrations in drinking water should not be more than 4 ppm for cis-1,2 DCE or 20 ppm for trans-1,2 DCE. For 10-day exposures for children, EPA advises that drinking water concentrations should not be more than 3 ppm for cis-1,2 DCE or 2 ppm for trans-1,2 DCE. For industrial or waste disposal sites, any release of 1,000 pounds or more must be reported to the EPA.

**Air:** The National Institute for Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH) have established guidelines for occupational exposure to cis- or trans-1,2 DCE. Average concentrations should not exceed 200 ppm in the air.

### **Where Can I Get More Information?**

Ohio Department of Health  
Bureau of Environmental Health and Radiation Protection  
Radiological Health and Safety Section  
246 N. High Street  
Columbus, Ohio 43215  
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This fact sheet was developed in cooperation with the Agency for Toxic Substances and Disease Registry