

New York State Department of Health

Tenant Notification Fact Sheet for 1,1-Dichloroethene (1,1-DCE)

This fact sheet is provided to fulfill New York State Department of Health (NYS DOH) requirements for preparation of generic fact sheets under Article 27 (Title 24, Section 27-2405) of the Environmental Conservation Law.

1,1-Dichloroethene (1,1-DCE)

1,1-Dichloroethene (also known as 1,1-dichloroethylene or 1,1-DCE) is a man-made volatile organic chemical used to make other chemical products, primarily certain types of plastics, including plastics used for food containers and food wrap.

Sources of 1,1-DCE in Indoor Air

Household products made from plastics containing trace amounts of 1,1-DCE are a possible source for 1,1-DCE in indoor air. Another source could be evaporation from contaminated well water that is used for household purposes. 1,1-DCE may also enter homes through soil vapor intrusion, which occurs when the chemical evaporates from groundwater, enters soil vapor (air spaces between soil particles), and migrates through building foundations into the building's indoor air. 1,1-DCE has also been found at low concentrations in outdoor air, which can also be a source of the chemical in indoor air.

Levels Typically Found in Air

The NYS DOH reviewed and compiled information from studies in New York State as well as from homes and office buildings across the United States on typical levels of 1,1-DCE in indoor and outdoor air. Levels of 1,1-DCE in the indoor air of homes and office settings and in outdoor air are expected to be less than 1 microgram per cubic meter (mcg/m^3).

Health Risks Associated with Exposure

Long term exposure to high levels of 1,1-DCE in workplace air is linked to effects on the liver. Some humans exposed to large amounts of this chemical over short periods of time have had nervous system effects similar to alcohol intoxication. Exposure to high concentrations of 1,1-DCE damages the liver and kidney in laboratory animals. Exposure of laboratory animals to high concentrations of 1,1-DCE during pregnancy causes birth defects in the offspring. Taken together, the human and animal data indicate that long term human exposure to high levels 1,1-DCE can cause adverse effects on the liver and nervous system, and may increase the risk for kidney toxicity and birth defects.

Results from one study in laboratory animals exposed at high levels over their lifetimes suggested that 1,1-DCE causes cancer. In that study, male mice exposed to high levels of 1,1-DCE got cancer, but no cancer was found in female mice or in either sex of rats in the same study. Other studies in laboratory animals exposed to high levels of 1,1-DCE have not resulted in the animals getting cancer. The ability of these studies to detect cancer effects was limited by study-design weaknesses. Two studies of workers exposed to 1,1-DCE did not show an increased risk of cancer, but both studies had weaknesses that limited their ability to detect increased cancer incidence. Therefore, whether or not 1,1-DCE causes cancer in humans is unknown. Overall, the data from human and animal studies are weakly suggestive that long term human exposure to 1,1-DCE could increase the risk for cancer.

NYS DOH Air Guideline

The NYS DOH has not established a chemical-specific guideline for 1,1-DCE in air. However, NYS DOH guidance for 1,1-DCE and other air contaminants is that reasonable and practical actions should be taken to reduce 1,1-DCE exposure when indoor air levels are above those typically found in indoor air. The urgency to take actions increases as indoor air levels increase. The 1,1-DCE exposure levels that cause health effects in animals or humans are many times higher than levels typically found in indoor air.

Ways to Limit Exposure to 1,1-DCE in Indoor Air

In all cases, the specific actions to limit exposure to 1,1-DCE in indoor air depend on a case-by-case evaluation of the situation. Removing household sources of 1,1-DCE and maintaining adequate ventilation will usually help reduce indoor air levels of the chemical. A sub-slab depressurization system can reduce the amount of 1,1-DCE entering indoor air by soil vapor intrusion. Use of an activated carbon filter on the water supply can reduce the amount of the chemical in contaminated well water that could evaporate into indoor air.

Reportable Detection Level

The reportable detection level for a chemical can vary depending on the analytical method used, the laboratory performing the analysis, and several other factors. Most laboratories that use the analytical methods recommended by the NYS DOH for measuring 1,1-DCE in air (and approved by the National Environmental Laboratory Accreditation Conference or New York State's Environmental Laboratory Approval Program) can routinely detect the chemical at concentrations below 1 mcg/m³.

Additional Information

Additional information on 1,1-DCE, ways to reduce exposure, indoor air contamination resulting from soil vapor intrusion, indoor and outdoor air levels and the Environmental Conservation Law can be found on the NYS DOH website at

www.health.state.ny.us/environmental/indoors/air/contaminants/.

If you have further questions about 1,1-DCE and the information in this fact sheet, please call the NYS DOH at 1-518-402-7800 or 1-800-458-1158 (extension 2-7800), e-mail to ceheduc@health.state.ny.us, or write to the following address:

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