Consumer Factsheet on: 1,1-DICHLOROETHYLENE

List of Contaminants

As part of the Drinking Water and Health pages, this fact sheet is part of a larger publication:
National Primary Drinking Water Regulations

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

What is 1,1-DCE and how is it used?

1,1-Dichloroethylene (1,1-DCE) is an organic liquid with a mild, sweet, chloroform-like odor. Virtually all of it is used in making adhesives, synthetic fibers, refrigerants, food packaging and coating resins such as the saran types.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Trade Names and Synonyms:

1,1-DCE
1,1-Dichloroethene
Asym-dichloro-ethylene
Vinylidene chloride

Why is 1,1-DCE being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for 1,1-DCE has been set at 7 parts per billion (ppb) because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 7 ppb because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

What are the Health Effects?

Short-term: EPA has found 1,1-DCE to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: liver damage.

Long-term: 1,1-DCE has the potential to cause the following effects from a lifetime exposure at levels above the MCL: liver and kidney damage, as well as toxicity to the developing fetus; cancer.

How much 1,1-DCE is produced and released to the environment?

An estimated 90,700 tons/yr of 1,1-DCE were produced in the USA during the early 1980s. It may be released by evaporation or in wastewater during its production and use in the manufacture of plastic wrap, adhesives, and synthetic fiber. It may also form in groundwater that has been contaminated by similar solvents.

From 1987 to 1993, according to the Toxics Release Inventory, releases to water and land totalled over 11,500 lbs. These releases were primarily from facilities which make plastics materials/resins. The largest releases occurred in Kentucky.

What happens to 1,1-DCE when it is released to the environment?

Releases to water will primarily be lost to the atmosphere through evaporation. 1,1-DCE will evaporate from soil and will leach into the groundwater where its fate is unknown, but degradation is expected to be slow. Its tendency to accumulate in aquatic life is unknown but expected to be minor.

How will 1,1-DCE be Detected in and Removed from My Drinking Water?

The regulation for 1,1-DCE became effective in 1989. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if 1,1-DCE is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of 1,1-DCE so that it is consistently below that level. The following treatment methods have been approved by EPA for removing 1,1-DCE: Granular activated charcoal in combination with Packed Tower Aeration.

How will I know if 1,1-DCE is in my drinking water?

If the levels of 1,1-DCE exceed the MCL, 7 ppb, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Drinking Water Standards:

Mclg: 7 ppb

Mcl: 7 ppb

1,1-DCE Releases to Water and Land, 1987 to 1993 (in pounds):

	Water	**Land**
TOTALS (in pounds)	**10,101**	**1,488**
Top States		
KY	2,880	286
TX	2,061	150
LA	2,079	3
Major Industries		
Plastics materials, resins	3,942	1,299

Alkalies, chlorine	4,173	154

Learn more about your drinking water!

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect and upgrade the supply of safe drinking water. Your water bill or telephone books government listings are a good starting point.

Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

Your state Department of Health/Environment is also a valuable source of information.

For help in locating these agencies or for information on drinking water in general, call: EPAs Safe Drinking Water Hotline: (800) 426-4791.

For additional information on the uses and releases of chemicals in your state, contact the: Community Right-to-Know Hotline: (800) 424-9346.