Consumer Factsheet on: 1,1,2-TRICHLOROETHANE

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 1,1,2-TCE and how is it used?

1,1,2-Trichloroethane (1,1,2-TCE) is an organic liquid with a chloroform-like odor. It is only used to make vinylidene chloride which is in turn used to make synthetic fibers and plastic wraps such as the saran wrap.

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:

Beta trichloroethane
Beta-T
Vinyl trichloride

Why is 1,1,2-TCE 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 1,1,2-TCE has been set at 3 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 5 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 1,1,2-TCE to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: irritation of gastrointestinal tract; red or hemorrhaged lungs; pale liver.

Long-term: 1,1,2-TCE has the potential to cause the following effects from a lifetime exposure at levels above the MCL: damage to liver and kidneys; cancer.

How much 1,1,2-TCE is produced and released to the environment?

An estimated 124 million lbs. of 1,1,2-TCE was produced in the US during 1974, based on the manufacture of vinylidene chloride. It evaporates during its use in the manufacture of vinylidene chloride and as a solvent. It is also released in wastewater from these uses, and in leachates and volatile emissions from landfills. The EPA estimates the gross annual discharge of 1,1,2-TCE waste in the US to be 4 million lbs.

From 1987 to 1993, according to EPA's Toxic Chemical Release Inventory, 1,1,2-TCE releases to land and water totalled over 30,000 lbs., of which about 98 percent was to water. These releases were primarily from alkali and chlorine industries. The largest releases occurred in Louisiana and Texas.

What happens to 1,1,2-TCE when it is released to the environment?

When released into water, 1,1,2-TCE should primarily evaporate. In soils, it should partially evaporate and partially leach into the groundwater. Its break down by microbes, if it occurs, is very slow. 1,1,2-TCE shows little tendency to accumulate in aquatic life.

How will 1,1,2-TCE be Detected in and Removed from My Drinking Water?

The regulation for 1,1,2-TCE became effective in 1994. 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 1,1,2-TCE 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 1,1,2-TCE so that it is consistently below that level. The following treatment methods have been approved by EPA for removing 1,1,2-TCE: Granular activated charcoal in combination with Packed Tower Aeration.

How will I know if 1,1,2-TCE is in my drinking water?

If the levels of 1,1,2-TCE exceed the MCL, 5 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: 3 ppb

Mcl: 5 ppb

1,1,2-TCE Releases to Water and Land, 1987 to 1993 (in pounds):

	Water	**Land**
TOTALS (in pounds)	**30,326**	**756**
Top Five States*		
LA	14,481332	
TX	9,699	294
NY	4,570	130
MD	750	0

KY	447	0	
Major Industries*			
Alkalies, chlorine		21,783	361
Photograph equipment		4,570	130
Meat packing plants		981	0
Petroleum refining		959	0
Blast furnaces, steelworks		750	0

* Water/Land totals only include facilities with releases greater than a certain amount - usually 1000 to 10,000 lbs.

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.