Consumer Factsheet on: EPICHLOROHYDRIN

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 Epichlorohydrin and how is it used?

Epichlorohydrin is a colorless organic liquid with a pungent, garlic-like odor. The greatest use of epichlorohydrin is used to make glycerin and as a building block in making plastics and other polymers, some of which are used in water supply systems. It is also used in the paper and drug industries and as an insect fumigant.

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:

Chloromethyl-ethylene oxide
Chloromethyl-oxirane
Glycidyl chloride

Why is Epichlorohydrin 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 epichlorohydrin has been set at zero because EPA believes this level of protection would not cause any of the potential health problems described below.

There are currently no acceptable means of detecting epichlorohydrin in drinking water. In this case, EPA is requiring water suppliers to use a special treatment technique to control its amount in water. Since epichlorohydrin is used in drinking water treatment processes, it is being controlled simply by limiting its use for this purpose.

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 epichlorohydrin to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: skin irritation; detrimental effects on liver, kidneys, central nervous system.

Long-term: Epichlorohydrin has the potential to cause the following effects from a lifetime exposure at levels above the MCL: stomach, eye and skin irritation; chromosome aberrations; adverse changes in blood; cancer.

How much Epichlorohydrin is produced and released to the environment?

Production and imports of epichlorohydrin in the mid-1980s totalled 511 million lbs. The main source of concern for epichlorohydrin in drinking water is from its use as a clarifier during water treatment. When added to water, it coagulates and traps suspended solids for easier removal. However, some epichlorohydrin may not coagulate and may remain in the water as a contaminant.

What happens to Epichlorohydrin when it is released to the environment?

Epichlorohydrin readily evaporates from near-surface soils and surface waters. It will not bind to sediments in water bodies. If spilled on land, it may leach into the groundwater but it is easily broken down by a number of chemical reactions. It will not accumulate in aquatic life.

How will Epichlorohydrin be Detected in and Removed from My Drinking Water?

The regulation for epichlorohydrin became effective in 1992. EPA requires your water supplier to show that when epichlorohydrin is added to water, the amount of uncoagulated epichlorohydrin is less than 2 ppb.

How will I know if Epichlorohydrin is in my drinking water?

If the treatment technique for epichlorohydrin fails, 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: zero

Mcl: Treatment Technique

Epichlorohydrin Releases to Water and Land, 1987 to 1993 (in pounds):

		Water	Land
TOTALS (in pounds)		**42,705**	**22,849**
Top Five States			
AL	29,385	18,476	
LA	6,924	2,663	
NJ	2,164	16	
TX	200	1,396	
AR	1,594	0	
Major Industries			
Industrial organics		25,137	14,941
Plastics and resins		6,392	2,509
Industrial inorganics		4,200	1,600
Agricultural chemicals		2,207	1,532
Alkalis, chlorine		2,100	1,033

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.