Consumer Factsheet on: BERYLLIUM

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 Beryllium and how is it used?

Beryllium is a metal found in natural deposits as ores containing other elements, and in some precious stones such as emeralds and aquamarine. The greatest use of beryllium is in making metal alloys for nuclear reactors and the aerospace industry.

Why is Beryllium 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 beryllium has been set at 4 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 also been set at 4 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 barium to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: inflammation of the lungs when inhaled; less toxic in drinking water.

Long-term: Beryllium has the potential to cause the following effects from a lifetime exposure at levels above the MCL: damage to bones and lungs; cancer.

How much Beryllium is produced and released to the environment?

Production of beryllium metal was 490,000 lbs. in 1986. It is released principally in the smoke stacks and ash wastes of power plants which burn coal. It is also found in discharges from other industrial and municipal operations. Rocket exhaust products also consist of various beryllium compounds.

From 1987 to 1993, according to the Toxics Release Inventory beryllium releases to land and water totaled over 340,000 lbs. These releases were primarily from copper rolling and drawing industries which use it as a hardener in alloys. The largest releases occurred in Pennsylvania and Ohio.

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

Very little is known about what happens to beryllium compounds when released to the environment. It appears unlikely to leach to ground water when released to land. Erosion or runoff of beryllium compounds into surface waters is not likely to be in a soluble form.

How will Beryllium be detected in and removed from my drinking water?

The regulation for beryllium became effective in 1994. Between 1993 and 1995, EPA required your water supplier to collect water samples once and analyze them to find out if beryllium is present above 4 ppb. If it is present above this level, the system must continue to monitor this contaminant every 3 months.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of beryllium so that it is consistently below that level. The following treatment methods have been approved by EPA for removing beryllium: Activated Alumina, Coagulation/filtration, Ion Exchange, Lime Softening, Reverse Osmosis.

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

If the levels of beryllium exceed the MCL, 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.

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Drinking Water Standards:

MCLG: 4 ppb

MCL: 4 ppb

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

	Water	Land
TOTALS	**1,314**	**341,721**

	Top Five States	
PA	653	174,250
OH	490	166,292
MI	5	1,000
TX	0	174
MN	142	0

	Major Industries	
Copper rolling, drawing	405	180,502
Nonferrous metal smelting	481	151,790
Nonferrous rolling, drawing	4	8,000
Aluminum foundries	5	1,000
Blast furnaces, steelworks	250	250
Petroleum refining	142	174

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.