Consumer Factsheet on: THALLIUM

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 Thallium and how is it used?

Thallium is a metal found in natural deposits as ores containing other elements. The greatest use of thallium is in specialized electronic research equipment.

Why is Thallium 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 thallium has been set at 0.5 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 2 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 thallium to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: gastrointestinal irritation; nerve damage.

Long-term: Thallium has the potential to cause the following effects from a lifetime exposure at levels above the MCL: changes in blood chemistry; damage to liver, kidney, intestinal and testicular tissues; hair loss.

How much Thallium is produced and released to the environment?

Thallium is not produced in the US. Approximately 4,500 lbs. of thallium and its compounds were reportedly imported in 1987. Man-made sources of thallium pollution are gaseous emission of cement

factories, coal burning power plants, and metal sewers. The leaching of thallium from ore processing operations is the major source of elevated thallium concentrations in water. Thallium is a trace metal associated with copper, gold, zinc, and cadmium.

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

Thallium does not long persist if released to water, but does have a strong tendency to accumulate in aquatic life. If released to land, it may bind to alkaline soils, but may otherwise migrate to ground water.

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

The regulation for thallium 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 thallium is present above 2 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 thallium so that it is consistently below that level. The following treatment methods have been approved by EPA for removing thallium: Activated alumina; Ion Exchange.

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

If the levels of thallium 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: 0.5 ppb

MCL: 2 ppb

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

	Water	**Land**
TOTALS	**2,606**	**2,770**

	Top Five States	
TX	6	2,020
OH	1,500	0
MN	1,100	0
CO	0	500

IN	0	250

	Major Industries*	
Primary copper smelting	1,856	765
Petroleum refining	750	1,255
Primary nonferrous metals	0	500
Blast furnaces, steelworks	0	250

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.