

US EPA ARCHIVE DOCUMENT

Consumer Factsheet on: CYANIDE

[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 Cyanide and how is it used?

Cyanide is a carbon-nitrogen chemical unit which combines with many organic and inorganic compounds. The most commonly used form, hydrogen cyanide, is mainly used to make the compounds needed to make nylon and other synthetic fibers and resins. Other cyanides are used as herbicides.

Why is Cyanide 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 cyanide has been set at 0.2 parts per million (ppm) 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 0.2 ppm 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 cyanide to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: rapid breathing, tremors and other neurological effects

Long-term: Cyanide has the potential to cause the following effects from a lifetime exposure at levels above the MCL: weight loss, thyroid effects, nerve damage

How much Cyanide is produced and released to the environment?

Production of the most common cyanides was roughly 5 billion pounds a year in the late 1980s and early 1990s. The major cyanide releases to water are discharges from metal finishing industries, iron and steel mills, and organic chemical industries. Releases to soil appear to be primarily from disposal of cyanide

wastes in landfills and the use of cyanide-containing road salts. Chlorination treatment of some wastewaters can produce cyanides as a by-product

From 1987 to 1993, according to the Toxics Release Inventory cyanide compound releases to land and water totaled about 1.5 million lbs. These releases were primarily from steel mills and metal heat treating industries. The largest releases occurred in California and Pennsylvania

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

Cyanides are generally not persistent when released to water or soil, and are not likely to accumulate in aquatic life. They rapidly evaporate and are broken down by microbes. They do not bind to soils and may leach to ground water.

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

The regulation for cyanide became effective in 1992. Between 1993 and 1995, EPA required your water supplier to collect water samples once and analyze them to find out if cyanide is present above 0.2 ppm. 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 cyanide so that it is consistently below that level. The following treatment methods have been approved by EPA for removing cyanide: Ion Exchange, Reverse Osmosis, Chlorine

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

If the levels of cyanide 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: 0.2 ppm

MCL: 0.2 ppm

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

	Water	Land
TOTALS	939,611	641,082

Top Ten States		
CA	0	430,886

PA	208,239	4,909
IN	187,377	20,242
OH	160,203	850
TX	54,379	83,394
MD	89,438	23,503

	Major Industries	
Blast furnaces + steel	747,970	53,404
Metal heat treating	0	430,886
Ind organic chems	49,098	82,912
Plating + polishing	29,486	29,636

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: EPA's Safe Drinking Water Hotline: (800) 426-4791