



Drinking Water Facts:

Mercury



Introduction

There are **three forms of mercury**:

- inorganic mercury compounds,
- elemental (or metallic),
- and organic mercury compounds.

Inorganic mercury compounds are the most common form of mercury ***found in drinking water***. These compounds are water soluble.

Elemental mercury (mercury (0)) is a shiny, silver-white metal found in small amounts in the earth's crust. At room temperature, elemental mercury is an odorless liquid that has commonly been used in thermometers and pressure gauges. It can combine with other elements to form organic and inorganic compounds. Liquid mercury (elemental) is extremely insoluble in water. Human exposure to elemental mercury is mainly by inhalation where it dissolves readily into the bloodstream.

Organic mercury compounds (mercury II), such as methylmercury, are rarely found in drinking water. Organic mercury compounds are found in large fish such as bass and tuna.

How can mercury get into my drinking water?

Mercury can get into drinking water in many ways:

- Wind, rain, and snow can carry mercury from the air into surface water supplies such as lakes, rivers, and reservoirs.
- Release of naturally occurring mercury from rock and soil.
- Mercury can seep into groundwater from industrial and hazardous waste sites.
- Improperly disposed household products, such as mercury containing paints, can move through the soil and reach private well supplies.
- Past application of mercury-based pesticides on former agricultural lands can wash into nearby surface waters or through the soil into groundwater.
- Burning of coal and oil that contains small amounts of mercury.
- Release of mercury from metal smelters and factories.
- Incineration of materials which contain mercury, such as batteries.

Is mercury in my drinking water harmful to my health?

The type and severity of health effects from mercury depend upon the form and amount of mercury that you are exposed to, and how much mercury has built up in the body over time. Inorganic mercury is not as toxic as methylmercury or elemental mercury.

Inorganic Mercury:

Inorganic mercury compounds are unlikely to cause health effects in adults at the levels sometimes found in drinking water supplies. Infants and young children are more vulnerable because they absorb more inorganic mercury into their bodies than older individuals.

Inorganic mercury compounds are irritants and can cause gastrointestinal symptoms. Upon entering the body, inorganic mercury compounds accumulate in the kidneys and can cause kidney damage. People who drink water containing high levels of inorganic mercury for many years could experience kidney damage.

At high levels of contamination, inorganic mercury can affect the nervous system, causing symptoms such as irritability, nervousness, changes in vision or hearing, and difficulties with memory.

Organic and Elemental Mercury:

Organic mercury compounds are the most harmful forms of mercury. They are easily absorbed into the blood through the digestive tract and, at high levels, can damage the nervous system and kidneys.

Methylmercury, found in contaminated fish, especially large fish species such as tuna, is a neurotoxin and high levels can cause mental and motor dysfunctions and even death. Methylmercury can cross the placental barrier. Therefore, pregnant women are especially at risk as methylmercury exposure can cause neurodevelopmental effects in babies.

Exposure to elemental mercury most commonly affects the nervous system.

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Is there a safe level of mercury in drinking water?

In order to prevent or reduce the chances of health effects occurring due to contaminants in drinking water, Maximum Contaminant Levels (MCLs) have been established by the U.S. Environmental Protection Agency (EPA) and the N.J. Department of Environmental Protection (DEP). MCLs are legal limits that public water systems must meet. The MCL for mercury is 2 parts per billion (ppb).

The Maximum Contaminant Level Goal (MCLG), the level at which health effects are not expected to occur, is also 2 ppb.

Is mercury present in my drinking water?

All public water supplies using groundwater must be monitored for mercury. To obtain the test results for your drinking water system, contact your water company or use the DEP's, Drinking Water Watch website to find recent monitoring results for your water utility: dep.nj.gov/DEP_WaterWatch_public/.

Although contamination of public water supplies with mercury has been very rare in New Jersey, mercury has been found in private wells throughout the southern parts of the state. Contact your local health department for further guidance.

If you have a private well, you can get your water tested by a certified private laboratory. DEP maintains a list of certified laboratories you can find online at njems.nj.gov/DataMiner/ and follow:

- >Select 'Search by Category'
- >Select 'Certified Laboratories'
- >Select 'Laboratories Certified by Parameter'
- >Scroll to and select 'Mercury'

What should I do if mercury levels in my drinking water are elevated?

If your water exceeds the MCL for mercury, it does not necessarily mean that the water will make you sick. However, it is important that steps be taken to reduce the mercury levels in your drinking water. If you are on a public water system and your water exceeds the MCL, state law requires that the water company take action to reduce mercury levels below the MCL.

Boiling water is not recommended since this can release certain forms of mercury into the air and could increase the concentration of inorganic mercury due to the evaporation of the water.

What water treatment can remove mercury from my private well water?

The EPA has identified coagulation/filtration, granular activated carbon, lime softening, and reverse osmosis as effective methods to remove mercury. NSF International, a non-profit organization, offers information about drinking water treatment devices. info.nsf.org/Certified/DWTU/

Point of entry treatment systems are recommended because they help mitigate mercury exposures that may occur through the dermal (skin) or inhalation (lung) routes while bathing, showering, washing, etc. in addition to oral exposures through drinking water.

For private well users it may be recommended that your household should be connected to a public water system.

Resources

- **NJ Department of Environmental Protection (NJDEP):**
[NJDEP-Drinking WaterWatch
njems.nj.gov/DataMiner](http://njems.nj.gov/DataMiner)
- **NSF International:**
info.nsf.org/Certified/DWTU/