



Facts about Chromium in our Drinking Water

What is Chromium-6? Where does it come from?

Chromium is naturally found in the environment mainly as Chromium-3 (trivalent chromium) and Chromium-6 (hexavalent chromium). Chromium-3 is oxidized (loses electrons) to form Chromium-6 in the environment. The opposite reaction occurs when Chromium-6 is reduced (gains electrons) and is converted back to Chromium-3.

Chromium – 6 can be “neutralized” to Chromium-3 in the stomach. In addition, Chromium-3 is converted to Chromium-6 in the presence of Chlorine as in chlorinated public water systems.

There are also a variety of industrial sources of Chromium-6. Chromium is widely used in metal plating, stainless steel production, wood preservation and textile manufacturing. It is also found in ash from coal-burning power plants. In some places, such as Jersey City, barrels of Chromium-6 were buried underground; leaking barrels have contaminated the soil and groundwater in some places.

Health Effects of Chromium

Chromium-3 is an essential nutrient in the human body where it enhances the action of insulin and plays a role in sugar, fat and protein metabolism.

Chromium-6 is not an essential nutrient and is the toxic form of chromium. It is a carcinogen and causes liver and reproductive problems. Recent federally mandated toxicology studies are currently under review as they have indicated that Chromium-6 is carcinogenic at lower concentrations than previously thought.

Legally Enforceable Standards vs. Health Standards/Goals

Legally Enforceable Standard: There is a federal drinking water standard (MCL) of 100 ppb (100 micrograms/liter) of TOTAL CHROMIUM which is mainly Chromium-3 and Chromium 6 but not a federal standard for CHROMIUM-6. California has a stricter Total Chromium standard of 50 ppb. The only state standard for Chromium-6 is in California which has a Chromium-6 standard (MCL) of 10 ppb. The USEPA is currently reviewing the federal standard based on toxicology reports indicating carcinogenic effects at much lower concentrations than previously thought. This may result in a federal standard for Chromium-6. Because the only federal standard is for Total Chromium, public water suppliers are required to test for it.

Non-enforceable Health Goals: California has a public health goal of limiting Chromium-6 to 0.02 ppb. This is a statistical number based on 1 in a million chance of dying from cancer due to Chromium-6 exposure after drinking 2 liters of water a day for 70 years. NJ proposed a 0.06 ppb health goal but it was not adopted.

What does the 2016 report from EWG tell us about Chromium-6 in public drinking water?

The Environmental Working Group (EWG) report "[Erin Brokovich Carcinogen found in Tap Water of More than 200 Million Americans](#)" is based on USEPA data from a study of unregulated chemicals in drinking water. To assess the levels of Chromium-6 in drinking water, EPA was required to test a selected number of systems to perform Chromium-6 monitoring under the third Unregulated Contaminant Monitoring Regulation (UCMR 3). The UCMR 3 required many but not all public water systems to bet365 betting bonus codes monitor chromium-6 for a one-year period. EWG also collected data on Chromium-6 from several additional public water supplies.

The USEPA data from 60,000 public water systems indicated that 75% were above the non-enforceable California health goal of .02 ppb. The EWG calculations using the statistical risk assessment described above (under non-enforceable goals) comes to 12,000 people dying of cancer in the U.S. by 2100 (over an 84 year period of time).

Where in the U.S. was it highest? The highest concentration was in the City of Phoenix with 7.8 ppb.

What about New Jersey? In NJ, 138 municipalities had detectable levels of chromium-6, all were well below the California Enforceable standard of 10 ppb but many were well above the California health standard (non-enforceable) of .02 ppb. The highest level of Chromium-6 detected in a public water system in New Jersey was 2.5 ppb.

How does this compare to the Erin Brokovich Case? Hinkley, California's groundwater contained concentrations as high as 580 parts ppb, more than 5 times New Jersey's current drinking water standard of 100 ppb for total chromium compounds. Chromium-6 levels from well water were as high as 20 ppb in Hinkley.

Is Chromium-6 in drinking water treatable?

Chromium can be filtered from drinking water with an ion exchange or reverse osmosis system.

What is Raritan Headwaters currently doing to address concerns about Chromium-6?

Raritan Headwaters, a 501(c)(3) conservation organization, offers tests for Total Chromium and Chromium-3 through its Well Test Program ([TestMyWell.org](#)). It is recommended by GSL, our NJDEP-certified lab, that if Total Chromium is at or above 1 ppb, participants then consider testing for Chromium-6. All chlorinated drinking water has the potential to contain Chromium-6. In addition, other sources of Chromium-6 in our groundwater may be present from past industrial activities, illegal dumping of waste, and natural sources. Private well-owners are responsible for monitoring contaminants in their drinking water. Well-owners are encouraged to test for coliform bacteria and nitrates annually. In addition, due to concerns over arsenic and lead in drinking water, well-owners and those on private water in the case of lead, are encouraged to test their water for these contaminants if they have not done so recently.

Raritan Headwaters is working on more stringent, legally enforceable standards including adoption of both federal and NJ State MCLs for Chromium-6. In addition, by testing wells for Total Chromium and Chromium-6, we will be able to keep track of concentrations in our groundwater and help residents treat their drinking water if a health risk is detected. To learn about testing your water for Chromium-6 and other contaminants visit [www.TestMyWell.org](#) or contact the Raritan Headwaters Well Test Program by phone at (908)234-1852 ext. 401 or email welltesting@raritanheadwaters.org