San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

Chromium-6 and Drinking Water

WHAT IS CHROMIUM-6?

Chromium is an abundant element in the Earth's crust that is naturally found in rocks, soil, and plants. The most common forms of chromium that occur in the environment are trivalent chromium (chromium-3) and hexavalent chromium (chromium-6). Chromium-3 is an essential human dietary element and is found in many vegetables, fruits, meats, and grains. Chromium-6 in the environment is generally from the erosion of rocks containing chromium. Chromium-6 is soluble in water and can be found in both surface water and groundwater where rocks containing chromium exist. Chromium is also used in a variety of industrial processes.

IS CHROMIUM-6 HAZARDOUS?

Most studies on chromium toxicity relate to inhalation of airborne chromium-6 in the industrial workplace. These studies found that airborne chromium-6 is a potent carcinogen when inhaled. Limited human studies exist on the ingestion of chromium-6 in drinking water. Human toxicity of chromium-6 in drinking water is a concern because chromium-6 does not completely convert to the essential and non-toxic element chromium-3 in the stomach. More information on chromium toxicity can be found on the websites of the California Office of Environmental Health Hazard Assessment (OEHHA) and the US Environmental Protection Agency (USEPA). In July 2011, OEHHA established a chromium-6 public health goal (PHG) of 0.02 µg/L (ppb).

HOW IS CHROMIUM-6 REGULATED?

Currently, chromium-6 is regulated under the total chromium MCL of 50 ppb (chromium-6 is one of the forms of chromium making up total chromium). In addition, the California State Water Resources Control Board is in the process of adopting a new MCL for chromium-6 to replace the invalidated MCL of 10 ppb.

IS OUR DRINKING WATER TESTED FOR CHROMIUM-6?

The San Francisco Public Utilities Commission (SFPUC) has monitored chromium-6 in all its waters, including surface water reservoirs, groundwater wells, and treated water delivered to homes. The SFPUC's drinking water is safe to drink, with chromium-6 levels in water delivered to customers far less than the State's former drinking water maximum contaminant level (MCL) of 10 ppb established in 2014, rescinded in 2017.

As summarized in the table below, chromium-6 in surface water supplies has ranged from non-detect to 0.35 ppb and chromium-6 in groundwater supplies has ranged from non-detect to 31.6 ppb. Blending groundwater with surface water lowers chromium-6 levels such that treated water delivered to customers is always below 10 ppb, the former State MCL.

SFPUC CHROMIUM-6 MONITORING RESULTS

Location	Date	Test Results (ppb)
Surface Waters	2013 - 2019	Non-detect (<0.02) - 0.35 (median = 0.05)
Groundwater (Regional and SF wells)	2013 - 2019	Non-detect (<0.02) - 31.6 (median = 13.1)
Treated Water Delivered to Customers	**2013 - 2019**	**0.02 - 0.93 (median = 0.10)**

IS THE WESTSIDE GROUNDWATER BASIN A SAFE WATER SOURCE?

Chromium-6 detected in the Westside Groundwater Basin occurs naturally. The underlying water bearing sediments are derived from many rock types (including serpentinite) that contain chromium, which is a relatively abundant element in the Earth's crust. As rainwater moves through the water bearing layers, chromium can be leached from these layers. Industrial sources and wastes are not related to chromium-6 detections in the Westside Groundwater Basin.

SFPUC has been studying and monitoring the quality of the Westside Groundwater Basin for more than a decade as SFPUC brings groundwater into the water supply. Compliance with MCLs using a planned blending strategy is a practice approved by the State Water Resources Control Board (SWRCB). Water supplied by the SFPUC meets, and will continue to meet, all drinking water standards including the former chromium-6 MCL of 10 ppb established in 2014 (rescinded in 2017, with a new MCL expected in a few years).

Groundwater is an essential part of the state and the nation's water supply. In fact, prior to the construction of the Hetch Hetchy system, San Francisco relied on groundwater for part of its supply. In extensive drought years, groundwater can provide close to 60 percent of the State's water supply. Many of the SFPUC's wholesale customers utilize a blend of groundwater and Hetch Hetchy System water. Approximately 80 percent of Californians depend on groundwater for at least part of their drinking water supply and have been doing so safely for generations.

A serpentinite outcrop near the Presidio in San Francisco receives its green color from the chromium naturally present in the rock. Chromium-6, a form of the element chromium, has been identified in many locations of California's groundwater (U.S. National Park Service, 2015 and KQED, 2018).

CONSUMER RESOURCES: REGULATION/HEALTH

- OEHHA: Chromium-hexavalent
  https://oehha.ca.gov/water/chemicals/chromium-hexavalent
- SWRCB: Chromium-6 Drinking Water MCL
  https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Chromium6.html
- USEPA: Information About Chromium in Water
  https://www.epa.gov/dwstandardsregulations/chromium-drinking-water

NSF, WATER TREATMENT PRODUCTS COMPLYING WITH NSF61

- Search Chromium (Hexavalent) Reduction at: **www.nsf.org/Certified/DWTU/**

We're Committed to Quality: Our highly trained chemists, technicians and inspectors consistently monitor the water we serve—throughout our system, every day of the year. For additional information and materials, please visit **sfwater.org/quality**. For questions about YOUR water, please call 311. You can also visit **311.org**.

And follow us on

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