

City of Brentwood Public Works Department – Water Division

WATER QUALITY FACT SHEET

JANUARY 2011

Hexavalent Chromium (Chromium-6)

Introduction

A report released by Environmental Working Group (EWG) on December 20, 2010 showed laboratory tests that were performed by EWG that detected the carcinogen, hexavalent chromium (Chromium-6), in 31 of 35 American cities tested. The highest levels were in Norman, Oklahoma; Honolulu, Hawaii; and Riverside, California. In all, water samples analyzed from 25 cities contained the toxic metal at concentrations above the safe maximum level recently proposed by California regulators.

While EWG's report may raise concerns, it's important to remember that detecting a substance in water does not always imply a health risk. The key question to answer is whether the substance presents health concerns at the level it is detected. That's why the federal regulatory process requires EPA to examine potential health impacts of the substance, paths of exposure and occurrence data.

Chemical Properties

Chromium-6 compounds are a group of chemical substances that contain the metallic element chromium in its plus-6 valence state (hexavalent). The molecular formula is Cr(VI).

Chromium-6 is used in the production of stainless steel, chromate chemicals, and chrome plating.

Chromium-6 is not a by-product of drinking water treatment but is largely the product of industrial activities and releases; however, Chromium-6 can occur naturally.

Chromium-6 is a problem because it is soluble in water, not likely to biodegrade, not likely to adsorb to particulate matter, and not likely to volatilize.

Regulatory Considerations

United States Environmental Protection Agency (USEPA): Chromium-6 is currently not regulated, but "total" chromium is regulated and has a Maximum Contaminant Level (MCLG) of 100 µg/L. Chromium-6 was identified on USEPA's List 1 of the Unregulated Contaminants Monitoring Rule (UCMR) in 2002.

California Department of Public Health (CDPH): Chromium-6 is currently not regulated in California; however "total" chromium is regulated and has a more stringent MCL (maximum contaminant level) than the EPA. California's MCL for this chemical is 50 µg/L.

Analytical Methods

Current analytical detection limit: 1.0 µg/L by EPA Method 314.

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Occurrence in City of Brentwood Water

Chromium-6 has not been detected in Brentwood's treated surface water.

The City of Brentwood currently completes annual monitoring of groundwater for "total" chromium, which includes hexavalent chromium (Chromium-6.) Listed below are the latest test results for analyte "total" chromium. The City is in compliance with all state and federal standards for "total" chromium.

Year Sampled	MCL	MCLG	Average	Range
2010	50 µg/L	100	7.9 µg/L	5.5 - 13

Health Concerns

EPA has classified Chromium-6 as a Group A, known human carcinogen by the inhalation route of exposure. Additionally, in the draft human health assessment for Chromium-6 that was released in September 2010 by EPA for independent expert peer review and public comment, EPA is proposing to classify hexavalent chromium (or Chromium-6) as likely to cause cancer in humans when ingested over a lifetime. EPA will make a final determination by the end of 2011.

References

<http://www.ewg.org/chromium6-in-tap-water>

California Department of Public Health. *Chromium-6 in Drinking Water Sources*. (2009)

<http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Chromium6sampling.aspx>

United States Environmental Protection Agency. *Chromium Compounds*. (2000)

<http://www.epa.gov/ttn/atw/hlthef/chromium.html#ref3>

EPA Chromium-6 In Drinking Water

<http://water.epa.gov/drink/contaminants/basicinformation/upload/Chromium6inDrinkingWater.pdf>