

Hexavalent Chromium Standards for Drinking Water Being Evaluated as Health Effects are Reviewed

By: Ronnie Hawks

Chromium is an elemental metal found naturally in rocks, soil, plants and animals. Hexavalent chromium is one of the two most common forms of chromium and is naturally occurring. Long known to be a cause of lung cancer if inhaled, hexavalent chromium has recently been linked to stomach and other cancers if ingested. Chromium is used in many industrial processes and is found in many products such as stainless steel, metal coatings, wood preservatives, and dyes. Industrial uses of chromium can lead to soil and groundwater contamination.

In 1991, USEPA set the maximum contaminant level (MCL) in drinking water for total chromium at 0.1 mg/L (100 parts per billion). Total chromium includes all forms of chromium, including hexavalent chromium. To address the greatest potential risk from chromium, USEPA assumes that total chromium measured in drinking water consists solely of hexavalent chromium, the most toxic form of chromium. If total chromium in drinking water exceeds 0.1 mg/L, customers of the drinking water system are notified.

In response to a toxicity study by the National Toxicology Program in 2008, USEPA began a review of the health effects of hexavalent chromium. USEPA released a draft assessment of hexavalent chromium in 2010. An independent peer review panel urged USEPA to consider additional research then being completed before the agency finalized its assessment. The agency expects to make a new draft available to the public in the third quarter of 2013, with a final assessment in 2014. The health assessment could form the basis for stricter total chromium limits in drinking water, or a separate drinking water standard for hexavalent chromium. That would in turn trigger stricter cleanup standards at Superfund and other sites where chromium is present. Stricter drinking water standards also could significantly increase treatment costs for water providers.

California is pursuing its own drinking water standard for hexavalent chromium. California currently has an MCL of 0.05 mg/L (50 ppb) for total chromium, one-half the federal standard. But soon after the release of the film *Erin Brockovich* (which centers on the health effects of hexavalent chromium in a California community), the California Legislature passed legislation requiring the Department of Public Health to establish a primary drinking water standard for hexavalent chromium on or before January 1, 2004.¹ The Department did not meet that deadline and still has not published an MCL for hexavalent chromium.

In July 2011, the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment released the country's first Public Health Goal (PHG) for hexavalent chromium in drinking water. The PHG was set at 0.02 µg/L (0.02 ppb), a concentration at which the Office found there would be no significant health risk. Although California's PHG is not legally enforceable, it is a necessary first step to the adoption of an MCL, as the PHG provides guidance to the Department of Public Health for the promulgation of an enforceable drinking water standard. The Department has now

¹ Cal. Health & Safety Code § 116365.5.

Hexavalent Chromium Standards for Drinking Water Being Evaluated as Health Effects are Reviewed

By: Ronnie Hawks

begun the process of developing an MCL for chromium, but currently estimates that a final MCL might not be issued until July 2015.

But stakeholders may not have to wait until 2014 or 2015 for further action on hexavalent chromium. The Natural Resources Defense Council and Environmental Working Group filed suit against the Department of Public Health on August 14, 2012, seeking to force the Department to set an MCL sooner than its current estimated completion date. According to the complaint filed in Alameda County, over 6,500 drinking water samples collected in Los Angeles County since 2000 contained hexavalent chromium at levels at least 50 times higher than the July 2011 PHG. Similar results were found in other California communities, with a third of all California drinking water samples exceeding 1 µg/L. The NRDC argues that the eight-year delay in promulgating an MCL is “unreasonable and unjustified,” and that the Department has the legal obligation and the resources necessary to promulgate an MCL sooner than 2014.²

If the suit results in quicker promulgation of a California MCL, the State’s decision could impact the pending USEPA analysis. California’s MCL may not be as low as the Public Health Guidance level, due in part to the difficulty of accurately analyzing water samples for hexavalent chromium at such low levels. Nevertheless, it appears likely that stricter drinking water standards for hexavalent chromium are likely within the next several years. USEPA has already recommended that water providers begin monitoring for hexavalent chromium voluntarily, in part to assist with comments and recommendations on a possible federal MCL in the future.

That standard could significantly impact water providers and their customers, as treatment costs have been estimated to range between \$340 and \$510 an acre-foot of water, which is approximately the amount of water used by a single family in one year.³ A recent study for the City of Glendale, California estimated that drinking water treatment to meet an MCL of 1 µg/L for hexavalent chromium in the State of California would require state-wide capital and operating costs of \$3.5 to \$4.8 billion over a twenty year period.⁴ The creation of an MCL for hexavalent chromium also likely would increase cleanup costs at industrial sites around the country, because cleanup standards typically are tied to enforceable groundwater standards.

² Plaintiffs’ Verified Petition for Writ of Mandate, *Natural Resources Defense Council v. Cal. Dept. of Public Health*, No. RG12643520, Superior Ct. Alameda County (filed August 14, 2012).

³ Nichole Blute, PhD, PE, *Treatment Options for Hexavalent Chromium, Perchlorate, and Nitrate* (June 29, 2011); Bettina Boxall, Los Angeles Times, *Carcinogen in Mohave groundwater could require costly treatment* (July 21, 2012).

⁴ Arcadis U.S., Inc., *Hexavalent Chromium Treatment Residuals Management, Final Report* (March 27, 2012).