



Chromium-6 Fact Sheet

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH

The following questions and answers are intended to address issues and concerns surrounding Public Health Goals, Maximum Contaminant Levels, and detections of hexavalent chromium in drinking water, and steps CDPH and its regulatory partners are undertaking to ensure public health protection.

Background:

California is required by law to adopt drinking water standards that are no less stringent than U.S. EPA's federal standards. A drinking water standard, called a maximum contaminant level (MCL), establishes a limit on the concentration of a contaminant in drinking water. MCLs are typically set at concentrations of 'parts per million' (ppm) or 'parts per billion' (ppb).

There is no federal or state MCL specific to the hexavalent form of chromium. California's proposed MCL is the first in the nation to directly regulate this chemical in state-wide public drinking water systems. Currently, hexavalent chromium is regulated in drinking water through the total chromium MCL (hexavalent chromium is one of the forms of chromium making up total chromium). In California, the total chromium MCL is 50 ppb, which is more health protective than the federal MCL of 100 ppb. Total chromium MCLs were established without the scientific knowledge that ingested hexavalent chromium from the consumption of drinking water posed a cancer risk.

CDPH is required by California law to set an MCL for hexavalent chromium as close to public health goal (PHG) as technically and economically feasible. The state Office of Environmental Health Hazard Assessment (OEHHA) established a final PHG of 0.02 ppb on July 27, 2011. Since 2001, CDPH has been gathering data associated with hexavalent chromium occurrence, treatment, and cost and using that data to develop the proposed MCL. With the release of the final PHG, CDPH has been working to develop the draft MCL as quickly as possible, and its release for public comment now begins the formal rulemaking process and should be completed in approximately 12 months from its release.

More information about hexavalent chromium is available on the CDPH website at: <http://www.cdph.ca.gov/certlic/drinkingwater/Pages/chromium6.aspx>.

What is hexavalent chromium and why is there a public health concern?

Chromium is a heavy metal that occurs throughout the environment. The trivalent form is a required nutrient. The hexavalent form, also commonly known as “chromium 6,” has been known to cause cancer when inhaled and has also been linked to cancer when ingested.

Where does hexavalent chromium come from?

Much of the low level hexavalent chromium found in drinking water is naturally occurring, reflecting its presence in geological formations throughout the state. However, there are areas of contamination in California from historic industrial use such as the manufacturing of textile dyes, wood preservation, leather tanning, and anti-corrosion coatings, where hexavalent chromium contaminated waste has migrated into the underlying groundwater.

How is hexavalent chromium currently regulated in drinking water?

Hexavalent chromium in drinking water is regulated under the “total chromium” state MCL of 50 ppb, which is more health protective than the federal MCL of 100 ppb. The total chromium MCL was established in 1977 to address the non-cancer toxic effects of hexavalent chromium, and also includes the trivalent form.

What is a public health goal (PHG)?

PHGs are established solely on the basis of health-effects data and cannot consider technical or economic feasibility. PHGs are sometimes set at levels lower than can be detected with current laboratory methods or removed from drinking water with available treatment technologies. A PHG is a level of a contaminant in drinking that reflects the risk from long-term exposure to a contaminant. PHGs are not regulatory requirements, but instead represent non-mandatory goals. PHGs are developed by the OEHHA for use by CDPH in establishing MCLs.

What is a State maximum contaminant level (MCL)?

State MCLs are health protective drinking water standards to be met by public water systems. MCLs take into account health risks from exposure to a chemical, but also must consider factors such as detection of the chemical and the technology and cost required to reduce a chemical’s presence in drinking water below the MCL. Health & Safety Code §116365(a) requires CDPH to establish a contaminant's MCL at a level as close to its PHG as is technically and economically feasible, placing primary emphasis on the protection of public health.

Are there examples of hexavalent chromium contamination in the state's groundwater?

In the late 1980s, US EPA found hexavalent chromium in groundwater at contaminated Superfund sites in the San Fernando Valley. An overview of activities associated with its cleanup, which is important to protect drinking water supplies, is available at <http://www.epa.gov/region9/superfund/chromium/index.html>. In the 1990s, the town of Hinkley in San Bernardino County had findings of hexavalent chromium in groundwater resulting from environmental releases of the chemical in the 1950s and 1960s from a nearby PG&E facility. More information about hexavalent chromium and Hinkley is available at http://www.swrcb.ca.gov/rwqcb6/water_issues/projects/pge/index.shtml.

In addition, after drinking water sources at several locations were sampled and found to contain hexavalent chromium, CDPH required regulated water systems to test their sources for the presence of hexavalent chromium in anticipation of developing a drinking water standard specific for this form of chromium.

Sampling results showed that hexavalent chromium occurs at very low levels throughout the state, likely due to its natural presence in geological formations. More information about the sampling results including levels reported by specific water systems is available on the CDPH website at: <http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Chromium6sampling.aspx>.

Is CDPH responsible for the clean-up of contaminated groundwater?

State and regional water quality control boards have the authority to regulate contamination of groundwater, including hexavalent chromium contamination of groundwater that occurred as a result of business or industrial practices. These regional water quality control boards' authorities include requiring violators to take mitigation actions, and the boards may enforce actions they determine to be appropriate, which may be lower than the maximum contaminant level proposed in this regulation. The regulations proposing a drinking water MCL of 10 ppb do not restrict the authority of the regional water quality control boards to order the cleanup of contaminated groundwater.

Is California working on a standard to specifically address hexavalent chromium in drinking water?

In 2001, CDPH asked the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA) to develop a PHG for hexavalent chromium. A draft PHG was first released in August 2009 and again in 2010, and has gone through a series of revisions based on new research, comments received by the public, and expert scientific peer reviews. In July 2011, OEHHA adopted a final PHG for hexavalent chromium of 0.02 ppb.

Since 2001, CDPH has been gathering data associated with hexavalent chromium occurrence, treatment, and cost and using that data to develop the proposed MCL. With the release of the final PHG in July 2011, CDPH has been working to develop the draft MCL as quickly as possible and release it for public comment to begin the formal rulemaking process. Once established, the MCL for hexavalent chromium continues the

ongoing process of regulating hexavalent chromium in drinking water—an incremental process that is intended to reduce the exposure to this chemical over time as it becomes technically and economically feasible to do so.

Why will the proposed MCL for hexavalent chromium be more health protective than the current “total chromium” MCL?

The proposed MCL of 10 ppb is one-fifth the level of the current total chromium MCL and is expected to reduce the theoretical cancer risk statewide from exposure to hexavalent chromium in drinking water. Currently, hexavalent chromium in drinking water is regulated under the State’s total chromium MCL of 50 ppb which includes both trivalent and hexavalent chromium. The less soluble trivalent form is a required nutrient, while the more soluble hexavalent form may pose a risk of cancer when ingested. The proposed MCL specifically regulates the more toxic hexavalent form of chromium.

If my drinking water has hexavalent chromium above the PHG, is there a risk to my health?

A drinking water sample with a detection of hexavalent chromium above the PHG of 0.02 ppb does not necessarily represent a public health concern. The PHG represents the level of hexavalent chromium at which no adverse health effects would be anticipated over an entire lifetime of exposure (for example, drinking 2 liters of water with hexavalent chromium at the PHG every day for 70 years). However, a PHG is not a definitive boundary line between a “safe” and “dangerous” level of a chemical, and drinking water is frequently demonstrated as safe to drink even if it contains chemicals at levels exceeding their PHGs. OEHHA provides additional information on potential health risks and its PHG on its website at:

http://www.oehha.ca.gov/public_info/facts/Cr6facts072711.html.

www.cdph.ca.gov

