

Chromium FAQ

January 4, 2011

By M.U.D. with input from the State of Nebraska Department of Health & Human Services

Q. Why is chromium in the news?

A. On December 20, 2010 the Environmental Working Group (EWG) released a report on the presence of hexavalent chromium (Cr-6) in 35 cities throughout the country. The District currently monitors for total chromium, which includes the most commonly found forms of the element, Cr-3 and Cr-6. The EWG reported the drinking water in Omaha contained 1.07 micrograms per liter (parts per billion, ppb). One part per billion corresponds to 1 minute in 2,000 years or 1 penny in \$10 million.

Q. What is chromium?

A. Chromium is a naturally occurring element found in air, rock, soil, groundwater, surface water and a variety of foods. It is an essential element in the human diet. The most stable forms are Cr-3 and Cr-6

Q. Why did EWG release the report?

A. The EWG released the report to bring attention to Cr-6 and its occurrence in the U.S. The state of California recently proposed a PHG (public health goal) or MCLG (maximum contaminant level goal) of 0.02 ppb of Cr-6 as a starting point for discussions with the U.S. Environmental Protection Agency (EPA) to regulate it separately and negotiate a maximum contaminant level (MCL) for the contaminant.

Q. What is the Cr-6 level in Omaha's water?

A. The District monitors total chromium in the drinking water on a monthly basis. The tests are performed by the District's certified laboratory as well as Nebraska Department of Health & Human Services. The levels vary between less than 1 parts per billion (ppb) to 7.1 ppb throughout the year depending on source water. Considering chromium chemistry, we believe the amount reported by EWG is valid.

Q. What is the difference between an MCL and an MCLG or public health goal?

A. A **MCLG** or **PHG** is a level of a contaminant in drinking water below which there is no known or expected risk to human health. MCLGs are non-enforceable public health goals. An **MCL** is the highest level of a contaminant that is allowed in drinking water. MCLs are enforceable standards that are set as close to the MCLG as feasible, using the best available treatment technology and taking cost into consideration. The EPA has set an MCL for total chromium at 100 ppb.

Q. The EWG references the movie Erin Brockovich. What was found there?

A. Erin Brockovich was loosely based on events in Hinkley, CA in the 1990s. Levels of Cr-6 in the drinking water exceeded 560 ppb. The Cr-6 came from discharges into an unlined retention pond that leaked into the groundwater and contaminated the drinking water supply. After 20 years of observation, the incidences of cancer per capita are no higher in Hinkley compared to the rest of the country (LA Times, December 16, 2010).

Q. Is there an MCL for Cr-6?

A. The EPA has set the MCL for total chromium at 100 ppb. This includes all forms of chromium (Cr-3 and Cr-6). The state of Nebraska adopted the standard. The regulation does not require differentiation between Cr-3 and Cr-6. The MCL is based on levels that may cause "allergic dermatitis." Research shows Cr-6 may cause an irritation at levels around 25-50 ppb and may have a cancer effect at levels in excess of 10 ppm (parts per million). One part per million is 1,000 parts per billion and corresponds to 1 minute in 2 years or 1 penny in \$10 thousand.

Q. Is Cr-6 harmful for me at the levels found in Omaha's water?

A. M.U.D. is confident Omaha's water is safe to drink at the present levels of chromium in its water. Research demonstrates that Cr-6 is converted to Cr-3 in the stomach due to the low pH of the stomach acids at the levels found by EWG. The conversion occurs at pH <4.5. The normal pH of the stomach is in

the range of 1 to 3.5. However, there are certain medications which can increase the stomach pH above these levels.

Q. What are other sources of chromium through oral exposure?

A. Chromium is a naturally occurring element and an essential nutrient. Dietary supplements, including multi-vitamins and some energy drinks contain chromium levels from 35 micrograms to more than 1,000 micrograms. As it is naturally occurring, one gram of house dust can contain up to 400 micrograms of chromium. Even cookware and eating utensils may contain some trace amounts of chromium.

Q. What is M.U.D. doing about Cr-6 in the drinking water?

A. The EPA is working on regulating Cr-6. They expect to have an MCL for Cr-6 by the end of 2011 or early 2012. The District will take whatever steps are necessary to comply with the regulation. The District has been in contact with Senator Ben Nelson's office on this issue. The District will work with the EPA to develop an effective monitoring program. The process has been initiated. The District also maintains close communication with Nebraska Department of Health and Human Services and the Douglas County Health Department to ensure the safety of the water.

Q. How can I reduce my exposure to Cr-6 in drinking water?

A. The most effective way to reduce Cr-6 in water is through reverse osmosis. Certain ion exchange filters also have been shown to be effective at its removal. Theoretically, activated carbon should remove Cr-6, however this has not been proven.

The District does not recommend or endorse any type of point of use device as described above.

CAUTION: All point of use devices should be professionally installed and maintained according to the manufacturer's instructions. Serious illness may result if the product is not installed and maintained properly.