

## HEXAVALENT CHROMIUM (Cr+6) INFORMATION/FAQs – 2016 Update

### **Q. What is hexavalent chromium, also known as Cr+6?**

A. Hexavalent chromium, or Cr+6, is a naturally occurring ionic form of the element chromium. It is found in geologic soils throughout California and is mined as an ore to be used in industrial processes. The ore is used in making stainless steel, textile dyes, wood preservatives, leather tanning, paints, inks, plastics, and various coatings.

### **Q. Does Cr+6 cause cancer?**

A. Cr+6 is a known carcinogen that primarily enters the body through the lungs inhaled as dust or in a vapor form due to high-heat industrial processes. Scientific studies have been inconclusive to date, though, as to whether Cr+6 is a proven carcinogen when ingested by drinking water containing traces of Cr+6.

### **Q. How long has Cr+6 been in Vacaville ground water?**

A. Cr+6 was first detected in Vacaville well water about 15 years ago. Prior to that, the City was unable to test for it. As science has improved, so too has the testing. Since the Cr+6 in Vacaville's groundwater is from the naturally occurring Cr+6 in the soil, it is believed that Cr+6 has always been in the groundwater in Vacaville.

### **Q. Why did the state change the regulations on the maximum contaminant level (MCL) for Cr+6?**

A. According to a press release from the California Department of Public Health: "California is the first and only state in the nation to establish a maximum contaminant level specifically for chromium-6 in drinking water," said Dr. Ron Chapman, CDPH director and public health officer. "Establishing this maximum contaminant level (MCL) underscores California's commitment to safe drinking water standards to protect the public health."

The regulations set the MCL for hexavalent chromium in drinking water at 10 ppb and specifically regulate the hexavalent form of chromium. This is one-fifth the current total chromium standard of 50 ppb, which includes both trivalent chromium (Cr+3) and hexavalent chromium (Cr+6). The federal MCL for total chromium is 100 ppb. Cr+3 is less toxic than Cr+6 and actually an essential nutrient at low dosages, while Cr+6 may pose a risk of cancer when ingested.

### **Q. How many groundwater wells does the City of Vacaville operate?**

A. The City operates 11 groundwater wells.

### **Q. What happens when water wells are found to exceed the MCL for Cr+6?**

A. The City is required to notify the public when the annual average of quarterly samples is over the MCL for Cr+6. After a full year of required testing, 5 of our 11 wells require us to inform the public.

### **Q. Are the wells with elevated Cr+6 levels treatable at the City water treatment plant?**

A. No. The groundwater wells with elevated Cr+6 levels are located too far from the Vacaville Water Treatment Plant, and therefore, must be treated at the wellhead. Also, the method of treating water to remove Cr+6 is a specialized technology that is not available at the Vacaville Water Treatment Plant.

### **Q. Where are the wells located?**

A. For drinking water system security reasons we do not give specific addresses of the locations of the City's wells. However, we can say that the wells are located in the eastern section of Vacaville.

### **Q. How long have these wells been in use?**

A. Two of the five wells in question have been in service since the 1970s, two others since the late 1990s, and the other well was placed into service in 2005.

**Q. What can be done to lower or remove Cr+6 from the water?**

A. The City is looking at a variety of options at this point. The three newer wells have long service lives ahead of them. As a result, the City has been evaluating treatment solution pilot studies and is planning to install its first specialized Cr+6 treatment system at one of these wells in 2017. Additional treatment systems are planned over the next four years as part of the City's compliance plan. The typical cost for these treatment systems is over \$1 million each.

**Q. Is there anything I can do at my home to remove Cr+6 from the water?**

A. Home water carbon-based filtration systems and water filter pitchers are not specifically designed to remove Cr+6. However, reverse osmosis point-of-use water treatment is an effective, but pricey solution. Alternatively, a recent study has shown that the addition of lemon juice or ascorbic acid to a glass of water will reduce Cr+6 levels below the MCL.

**Q. How much water comes from the City's wells?**

A. The City's water system produces about 15.5 million gallons of water a day during our busiest times. Of that amount, the North Bay Regional Water Treatment Plant is sending us 7.5 million gallons per day (5 million gallons from Putah South Canal or Lake Berryessa water and 2.5 million gallons is North Bay Aqueduct or Delta water); our own treatment plant at the Corporation Yard is producing 4 million gallons a day Monday through Friday (All Putah South Canal or Lake Berryessa water); and City wells make up the balance, about 5.5 million gallons per day, of the water produced. These production rates can change daily, weekly and monthly depending on water demand, seasons, water quality, water availability and other operational considerations. We have a very dynamic and reliable water system that produces high quality drinking water.

**Q. My water tastes/smells funny. Is that from Cr+6?**

A. No. Cr+6 is odorless, colorless and has no taste.

**Q. So how come my water tastes/smells funny sometimes?**

A. There are a number of reasons that this could occur. Most objectionable taste or odor in water is caused by chlorine added to the water to ensure that it is free from bacteria and is safe to drink. This off-taste can be removed by cooling the water in a pitcher, adding a lemon to the water, or passing the water through a water filter that contains granulated carbon.

**Q. Is there Cr+6 in surface water?**

A. Yes. The level of Cr+6 in surface water sources is about 1 to 2 parts per billion.

**Q. Where can I get more information about hexavalent chromium?**

A. The City has a page on its website dedicated to hexavalent chromium. It can be found at [www.cityofvacaville.com/cr6](http://www.cityofvacaville.com/cr6). That page has links to other sites with information about hexavalent chromium as well.

**Q. Is there anyone I can call with the City who can answer my questions?**

A. Yes. Please contact Tony Pirondini, Water Quality Manager, at (707) 469-6400. E-mail Tony at [tony.pirondini@cityofvacaville.com](mailto:tony.pirondini@cityofvacaville.com).